

# From Computing Machines to IT

## Collecting, Documenting, and Preserving Source Material on Swedish IT-History

**Per Lundin**

Division of History of Science and Technology, Royal Institute of Technology (KTH), Sweden;  
plundin@kth.se

*Abstract:* This paper presents a large-scale project on collecting, documenting, and preserving source material on Swedish IT-history between 1950 and 1980. The project created new source material using methods of contemporary history such as interviews, witness seminars, and autobiographies. The paper describes the project's organization, its methods, and its results.

*Keywords:* Autobiography, documentation, history of computing, history of technology, interview, IT-history, oral history, Sweden, witness seminar

### 1. Introduction

The intensity and speed of the development of computer technology imply new challenges for historians. The course of events is in many cases not documented. In other cases, source material exists only in the form of published reports or articles, often complicated and technical in content, and, therefore, difficult to penetrate and understand. Neither is it certain that this type of material is *representative* of the mental activity and the work that characterize technical and scientific activities. Different historical phenomena show different degrees of *visibility* in the existing sources. But how shall we be able to reach an understanding about phenomena that lack or have left insufficient source material? One approach is to *create* new source material by using different methods of contemporary history like interviews, witness seminars, and autobiographies.

In this paper, I will present a large-scale project on collecting, documenting, and preserving source material on Swedish IT-history between 1950 and 1980. The project entitled "From Computing Machines to IT" was finished by the end of 2008.

The starting point for the project was the difficulty getting a relevant and representative picture of the social phenomenon of IT as it has developed over the last fifty to sixty years from written sources only. IT-history may somewhat simplified be characterized by a development from the computing machines of the 1950s, narrowly concentrated on scientific computation, to IT, which, to an

increasing extent, has become a *generic* technology. Today, it permeates a large number of the sectors of society as well as professional and cultural contexts. A fragmentation of the technical forms, the expertise, and the meanings of IT characterize this expansion. IT in society thus forms a terrain that is hard to grasp. We believe that the key to mapping it is through the actors in the history of IT. That the first generation of Swedish IT-actors, with their unique memories, are passing away, accentuated, therefore, the urgency of the project.

The *main objective* of the project was to create, collect, preserve, and make source material on Swedish IT-history available in the form of knowledge outlines, interviews, witness seminars, and autobiographies (collected either “traditionally” or virtually). This material was administered and made available by registration in existing databases and through the publication of processed material in print and on the web. The work was done in accordance with scholarly methods and criteria, so that the results of the project can be used in future historical research in different disciplines. The project had four main tasks:

- Organize and realize the collection of memories and material;
- Make the results available in the form of databases and in edited publications; present the project and its results;
- Compile knowledge outlines covering national and international research and existing empirical material and records;
- Develop further and adapt methods of contemporary history to the study of technology and technology-related professional environments.

At the start of 2004, the Swedish Computer Society contacted the Division of History of Science and Technology at KTH and the National Museum of Science and Technology that promoted the project. The general organization of the project and the choice of methods are the product of a four-year collaboration between these three parties.

## 2. The Organization of the Project

A steering group led and organized the project. The documentation work was mainly carried out in a number of *focus groups*, a *research group*, and a *group for the administration of the material*. Therefore, I will describe these bodies in more detail below.

The project identified sixteen so-called *focus areas* in IT-history. These were early computers, healthcare, financial industry, industry, IT-industry, systems development, user organizations and user participation, transports, defense, public administration, telecommunications, higher education, archives, libraries and museums, media, schools, and commerce. A focus group, composed of a *research secretary* and a number of practitioners from the area in question, was in turn established for each area. The focus group identified to begin with important events, processes, and (still living) actors. Thereafter, it carried out interviews and held witness seminars with the actors whose memories needed collection. The research secretary acted as the link between the focus group and the research

group. A *project secretary* supported the research secretaries in their work by coordinating the flow of material from the focus groups and the research group to the group for the administration of the material, which, in turn, classified the material and delivered it to the National Museum of Science and Technology.

The research group had two assignments. Firstly, it had an overarching responsibility for developing and evaluating the methods used, for keeping the project updated with the state of the research, and for establishing contacts with national and international research environments in the field. Secondly, in every focus group there was a research secretary with the responsibility of compiling a knowledge outline for the focus area and in consultation with the focus group, deciding which events and processes required documentation. Additionally, the research secretary had to decide to which extent and for which type of methods one should use and eventually give a final account of the work carried out. His or her task was to create and collect source material as well as to edit and publish it. I led the research group, which consisted of sixteen researchers. The Division of History of Science and Technology at KTH was the home of the project.

The group for the administration of material had responsibility for taking care of the created and collected source material and preserving it at the National Museum of Science and Technology. It also oversaw that individuals performed documentation efforts along the lines a long-term preservation practice requires.

### 3. Methods for Documenting IT-History

A way to document events and processes taking place in our recent past is to create and collect new sources about them with the help of methods such as interviews, witness seminars, and autobiographies. These have gained increasing popularity during the last decades because historians have turned their attention to our recent past. The purpose of using them is to get a more comprehensive picture of historical phenomena. Because of the proximity in time it is easier for us to put ourselves in the historical situation—not seldom have we ourselves experienced the period, albeit from a different perspective—and this gives us a chance to reach a deeper understanding of historical phenomena, which is not possible to get for times long past. Above all, historians have paid attention to the “hidden” history, i.e., to groups whose activities are not very well documented or not documented at all. Three categories of historical approaches can be distinguished. The first one deals with social groups that traditionally have had difficulty making their voices heard such as immigrants, workers, and women [13]. The second one pays attention to so-called “elite” persons, whose activities have had considerable influence on societal change. In this case, it is interesting to get a picture of events and processes that never were recorded such as lobbying [10]. The third category aims to grasp and understand scientific and technical expertise and practice, tacit knowledge, professional cultures, and user participation—different phenomena that have influenced, and influence, technological and societal change [3].

### **3.1 Knowledge Outlines**

Knowledge outlines are a part of the work that consists of drawing a course map over the landscape of the past. The purpose of knowledge outlines is to give a guide for the principal task of creating and collecting source material. Which parts of the past should be documented and why? If there, for instance, are abundant written sources on the events and processes in a certain part of the past, it becomes less important to create and collect complementary oral sources. If, on the other hand, the events and processes have left no traces, or few, in the existing archives, it becomes more important to create and collect new sources about precisely these events and processes. However, an unexplored area in the landscape of the past is, at the same time, not a sufficient reason to start documenting. Such a project will easily become insurmountable. There are many unexplored areas. The documentation efforts should, therefore, ideally be linked to those problems that have been observed by earlier historical research on the given part of the past, and also, the role of the knowledge outline is to identify these. Thus, the compilation of knowledge outlines consists of two stages. In the first place, to get a picture of the existing historical research dealing with a focus area, and, in the second, to identify existing sources by compiling bibliographies and listing relevant archives. If carried out as described, the knowledge outlines will become an important preparatory work for the documentation efforts to follow.

### **3.2 Oral History Interviews**

Interviews are a method for creating oral sources that have been used extensively for decades, and we drew particularly upon the experiences of the Charles Babbage Institute (CBI) in Minneapolis and the IEEE History Center in New Brunswick, since they have interviewed IT-actors since the beginning of the 1980s [2, 9]. One should emphasize that in many aspects oral history interviews differ from, for instance, job interviews or newspaper interviews. One aspect is the “best-before date”. While a job interview has a best-before date of, say, three weeks, an oral history interview is required to last for at least fifty years. Another is the amount of preparation. The value of the oral history interview depends very much on the preparations, the purpose, and the questions, how the interviewer carries it out, and how it is documented. The interview can be more or less formalized regarding the questions posed, how careful the interviewer follows a questionnaire, which has been devised beforehand and how the interviewee’s answers are dealt with and are followed up.

I would like to underscore that a crucial difference between oral and written source material is that the former is *created* in the meeting between the interviewer and the interviewee, which means that the conduct and questions of the interviewer affect the outcome of the interview. This so-called interviewer effect makes it important to take a critical stance vis-à-vis the problems that occur when researchers and actors actively create source material together [11]. A way to facilitate source criticism is to preserve the different steps in the processing of

oral sources (recording of sound and images, transcript, and edited transcript). In the project “From Computing Machines to IT”, we preserved material from all these steps in our work with oral sources at the National Museum of Science and Technology.

In the project, we conducted around 150 oral history interviews and we recorded them with sound in digital format and then transcribed them. The research secretaries then edited the transcript regarding readability and comprehension. At the same time, they aimed at keeping the transcript’s oral character. Before making the edited transcripts available on the web, the interviewees had the chance to clarify, correct, or comment on their contributions. Minor changes such as corrections of names, dates, and technical concepts were inserted in the transcript without comments. In individual cases, the research secretaries added sentences or subordinate clauses, as suggested by the interviewee, to make lines of thought or conversations more complete. Furthermore, we included extensive comments from the interviewee using addenda. The interviews are typically between one to three hours long and the edited transcripts roughly between fifteen and forty-five pages. They are available at the National Museum of Science and Technology’s web page: [www.tekniskamuseet.se/it-intervjuer](http://www.tekniskamuseet.se/it-intervjuer).

### **3.3 *Witness Seminars***

The Centre for Contemporary British History (CCBH) has since 1986 been developing and using witness seminars as a documentation method in its research [1]. Witness seminars are a category of oral history methods where a number of individuals, who have participated in, and/or witnessed, a certain series of historical events, gather to discuss and debate their often different interpretations of the past events. Thus, we can consider them as group interviews. The witness seminars designed by the CCBH have become the model for similar documentation projects at a number of centers and institutes around the world. The Institute of Contemporary History at Södertörn University in Sweden, for instance, has carried out witness seminars patterned after the CCBH’s. These seminars have dealt mostly with political history such as the women’s liberation movement during the 1960s and the 1970s or the debate on industrial democracy during the 1970s and the 1980s [4, 5]. However, the questions and themes addressed by historians of science and technology are in many cases distinct from the ones studied by political historians. We were thus confronted with somewhat different methodological questions and aspects, and we, therefore, chose to model our witness seminars on the meetings that the Wellcome Trust Centre for the History of Medicine has been arranging since the 1990s, because they have been concerned with similar methodological questions and problems that we were faced with: How does one get hold of scientific and technical practice and the tacit knowledge embedded in it? How does one deal with sources that contain complex scientific and technical reasoning?

In the experience of both the CCBH and the Wellcome Trust, witness seminars, when compared to particular interviews, stimulate an entirely different

interaction between the participants. The meeting becomes a sort of collective recollection. But they also point out that the method has some obvious disadvantages. The lineup of participants is critical to the outcome of the seminar. If potential witnesses are unable or unwilling to participate, there is not much one could do. There is also an inherent risk that conflicts may be suppressed and that dissentients are not able to make their voices heard, with too “streamlined” recollections as a result. Another danger is that the reminiscences may be too anecdotal; a feature witness seminars, of course, share with other forms of oral history [12]. Overall, a witness seminar can serve to highlight different interpretations of an event and thereby contribute to a deeper understanding of the complexity of historical processes.

In our project, we held almost fifty witness seminars. We processed them roughly in the same way as the oral history interviews with three important exceptions. Firstly, we recorded them with both sound and images. Secondly, we added explanatory footnotes to the edited transcripts. The footnotes contain biographical information about persons as well as descriptions of subjects mentioned during the seminar. The research secretary worked on the footnotes in close cooperation with the participants, and they, therefore, function as complementary source material. Thirdly, the edited transcripts were published both in print and electronic versions. Our witness seminars normally span over three to four hours and the edited transcripts are about forty to fifty-five pages long. The electronic versions are available in KTH’s working paper series TRITA-HST at the Academic Archive On-line (DiVA): [www.diva-portal.org](http://www.diva-portal.org).



Figure 1. The project “From Computing Machines to IT” held its first witness seminar in September 2005. The theme for the seminar was “Working with the Computing Machines of the 1950s” and it was moderated by Lars Arosenius (not in the picture). From left to right: Carl-Ivar Bergman, Bengt Beckman, Hans Riesel, Elsa-Karin Boestad-Nilsson, Erik Stemme, Gunnar Stenudd, Bert Bolin and Gunnar Wahlström.

### ***3.4 Autobiographies***

Autobiographies are an effective and laborsaving way to collect the actors’ experiences. A model for us was the collections of autobiographies that ethnologists at Nordiska Museet (the Nordic Museum) in Sweden have carried out since 1945. They did them with the help of detailed questionnaires and aimed at

occupational groups of various kinds. The questionnaires were sent out *en masse* by mail or announced in the media. The result is a rich documentation of different work cultures in twentieth-century Sweden. For instance, the museum has published a selection of the collected life stories of engineers in the volume *Framtiden var vår* (The Future Was Ours). The autobiographical material gives a comprehensive and nuanced picture of the engineering profession and its role in Swedish society [14]. The method has several advantages. It is effective and timesaving. Furthermore, it makes it possible to collect large amounts of material. There are no direct intermediaries such as in interviews, and the material, therefore, becomes autobiographical in a unique sense. Nevertheless, it is also important to be aware of the drawbacks. These include certain individuals who had difficulty expressing themselves in writing; some choose not to participate; the collected written material may appear too carefully prepared and revised [6].

We collected about 250 autobiographies through different notices that featured between April and June 2007 in the daily press, specialist press, trade union press, and on the television. We wrote some of these notices for the general public; we aimed others toward specific occupational groups such as metalworkers, nurses, and doctors. Roughly, 120 of these autobiographies are available at the National Museum of Science and Technology's web page [www.tekniskamuseet.se/it-minnen](http://www.tekniskamuseet.se/it-minnen). While the oral history interviews and witness seminars we have carried out paid attention to "qualified" users, the collection of autobiographies provides a more representative picture of IT-users in Sweden between 1950 and 1980. Among the collected stories, we also find those by secretaries and operators. A measure of diversity is the number of participating women. In the interviews and seminars we carried out, the share of women was only 7 percent while it was 21 percent in the collection of autobiographies.

### 3.5 Writers' Web

In the project "From Computing Machines to IT", we also developed tools for collecting autobiographies over the internet as an alternative to the "traditional" way described above. At least one similar attempt occurred internationally, although the outcome of this pioneering work was rather poor. One explanation is that the virtual platform developed was too complicated [8]. We considered this experience when developing our Writers' Web—a simple virtual platform based on the questionnaires we used for the collection of traditional autobiographies. At the Writers' Web, which has the URL <http://ithistoria.se>, the visitors are invited to write down their memories in the form of autobiographies. It is also possible for them to upload files of different kinds, for instance pictures. We, furthermore, provided the Writers' Web with a function that allows the visitors to comment on earlier uploaded contributions, and thus makes an interaction between the platform's visitors possible.

However, the Writers' Web was not as successful as our traditional collection of autobiographies. As of 2008 October, about forty life stories and comments appear at the Writers' Web. One explanation is that we did not combine the launching of the Writers' Web with nationwide notices. Another is that there are

large variations in the familiarity with the internet among people with memories from the period between 1950 and 1980, depending on the professional, social, and cultural background. It is simply not possible to reach everybody with this kind of method.



Figure 2. The project launched its Writers' Web in June 2007. The picture shows the homepage for the Writers' Web.

### 3.6 The Necessity of Reflecting over the Choice of Methods

The presentation and discussion of methods so far show that each of them has its pros and cons. A routine-like application of any method entails a risk of collecting material of less value for scholars. I would like to emphasize the necessity of reflecting over which method is most suitable in relation to the events and the processes documented. The relation between the methodological approach and the stories one wants to collect is crucial. Depending on what is required, this relation may be more or less formalized, structured, or guided. Is it the actors themselves or the historical events and processes of which the actors only constitute a small part that are the focus of the documentation efforts? For us, it was important to find a balance between the isolated autobiography and the "technobiography", i.e. the biography of the technology in question [7].

## 4. Conclusion

The work carried out in the project "From Computing Machines to IT" has led me to the conclusion that the interaction between the practitioners and the research secretaries in the focus groups was decisive for shaping the outcome of the

documentation efforts. The practitioners taking part in the focus groups had, on the one hand, a comprehensive and profound *understanding* of the historical events because they had been *close* to them, while they, at the same time, had difficulty contextualizing and valuing the events precisely because of their involvement in them. The research secretaries, on the other hand, had as trained historians an ability to see the events as a part of a *greater whole*, precisely because of their *distance* to the past events. This interaction was also important in order to avoid so-called Whig history, that is, a history of the winners, since the networks that the focus groups emanated from in many cases represented the established actors.

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