History of Computing

Per Lundin

Documenting Early Use and Trends

History of Computing

The History of Computing series publishes high-quality books which address the history of computing, with an emphasis on the 'externalist' view of this history, more accessible to a wider audience. The series examines content and history from four main quadrants: the history of relevant technologies, the history of the core science, the history of relevant business and economic developments, and the history of computing as it pertains to social history and societal developments.

Titles can span a variety of product types, including but not exclusively, themed volumes, biographies, 'profile' books (with brief biographies of a number of key people), expansions of workshop proceedings, general readers, scholarly expositions, titles used as ancillary textbooks, revivals and new editions of previous worthy titles.

These books will appeal, varyingly, to academics and students in computer science, history, mathematics, business and technology studies. Some titles will also directly appeal to professionals and practitioners of different backgrounds.

For further volumes:
http://www.springer.com/series/8442

Per Lundin

Computers in Swedish Society

Documenting Early Use and Trends

Springer

Per Lundin
Centre for Science and Technology Studies
Department of Economic History
Uppsala University
Uppsala, Sweden

ISSN 2190-6831 ISSN 2190-684X (electronic)
ISBN 978-1-4471-2932-5 ISBN 978-1-4471-2933-2 (eBook)
DOI 10.1007/978-1-4471-2933-2
Springer London Heidelberg New York Dordrecht

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

Library of Congress Control Number: 2012938458

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

Eleven years ago, I was done with the IT industry—or so I thought. Just before the bubble burst at the turn of the millennium and put an end to the Swedish "IT boom," I had—very timely indeed—quit my job as development engineer for a new career as historian of technology. After some comfortable years in the ivory tower, my supervisor by then, Arne Kaijser, one day came into my office at the Royal Institute of Technology (Kungl. Tekniska högskolan, KTH) and mentioned that some senior practitioners affiliated to the Swedish Computer Society (Dataföreningen i Sverige) had been in touch with him. Wouldn't I be interested to join them for a meeting? After all, I had been a programmer. Rather hesitantly I said yes and found myself all of a sudden in a room with a handful of gray-haired gentlemen who since a couple of years had been busy with the idea to present a book on "the heroes of the Swedish IT history," presumably themselves, as an encouraging example to the Swedish youth. Wouldn't we be interested to write this book? We frowned at the idea (of course) but were also caught by their enthusiasm, friendliness, and considerable energy. So instead of dismissing their planned hagiography, we persuaded them that a first step must be to document the computing history and also that the National Museum of Science and Technology (Tekniska museet) must be involved. They bought our argument, and the rock began to roll.

Initial funding from the Bank of Sweden Tercentenary Foundation (Riksbankens Jubileumsfond) and the Marcus and Amalia Wallenberg Memorial Fund (Stiftelsen Marcus och Amalia Wallenbergs Minnesfond) allowed us to run a number of pilot activities and to design a large documentation project named "From Computing Machines to IT: Collecting, Documenting, and Preserving Sources on Swedish IT History" (Från matematikmaskin till IT: Insamling, dokumentation, bevarande och tillgängliggörande av källmaterial om svensk IT-historia) for which we received substantial funding from the above-mentioned financiers as well as the Swedish Arts Council's Access Fund (Kulturrådets accessprojekt). Later, we also received additional funding for specific project activities from the Knowledge Foundation (KK-stiftelsen), the Swedish Governmental Agency for Innovation Systems (Vinnova), the Sven Tyrén Foundation (Sven Tyréns Stiftelse), the National Land Survey of Sweden (Lantmäteriet), the Swedish Tax Agency (Skatteverket), the

Swedish National Road Administration (Vägverket), Volvo IT, and the four banks Handelsbanken, Nordea, SEB, and Swedbank, as well as the three insurance companies Folksam, Länsförsäkringar, and Skandia.

The only drawback with the generous funding was that it had to be spent within a period of 2 years. Thus, I was set with the formidable task to establish and train a large research group with the aim to document Swedish IT history from a user perspective within this given time frame. Several people were instrumental in this process, but without the support of Rolf Berndtson, Peter Du Rietz, Gunnar L. Johansson, Arne Kaijser, Anne Louise Kemdal, and Per Olof Persson, we would not have succeeded.

After completing the project, I was done with documenting IT history—or so I thought. I had just written a final report that contextualized, described, and evaluated the project, and I was on the brink of moving on to tourism history, when Wayne Wheeler at Springer UK contacted me, and encouraged me to revise the final report for the purpose of publishing. Rather hesitantly I said yes …

This book has been special for me to write since it gravitates around a project rather than a well-defined historical problem. My aims have been to describe how we eventually found a rationale for the project "From Computing Machines to IT"; to place it in its proper historiographical, methodological, and theoretical context; and to exemplify how oral evidence can advance our understanding of history of computing. Chapters 1 and 2 of this book are a thoroughly revised version of the final report for the project, while Chap. 3 is newly written. For the completion of this book, I wish to thank the anonymous referees who reviewed the original draft and Isabelle Dussauge, Johan Gribbe, Anna Orrghen, and Gustav Sjöblom for valuable suggestions. Simon Moores and Caroline Wulff have revised the English. Eva Derlow and Anna Gerdén at Tekniska museet have provided me with several images in the book. At Springer UK, I thank Wayne Wheeler and his assistant Simon Rees for both having been enthusiastic, helpful, and most patient publishers. The book has been finalized with financial support from Jan Wallanders och Tom Hedelius Stiftelse.

Contents

Chapter 1
Background and Theoretical Assumptions

> Bang, the last file goes in the garbage can. That's how I picture the late summer of 2007 when we at the Corporate Strategy Department move to Stureplan. Full digitization is what counts. I have no intention of riding there and back on the Hässelby–Stureplan metro just because I have forgotten a paper. Most of it is already thrown away, even if some documents were scanned. The 4-cm-thick evaluation study of the TIDAS project is also thrown away. That's typical, just as I was asked to write some lines about it.[1]

1.1 Introduction

Looking at the role of computers in society over the past 60 years, the change has been nothing short of dramatic.[2] While the use of computing technology in the 1950s was narrowly focused on scientific computations and specific administrative routines, it takes an almost infinite number of forms in today's society. Computers are developing into a generic technology. In its various shapes, the technology has become an indispensable part of the world we live in.

The point of departure for this book is that the user and the use of computing technology have to be taken into account in understanding the role of computers in society. During recent years, the historiography of computing also shows a shift in perspective from inventors and innovations toward the more complex relationship between the design and use of computers. Research questions are changing as well. However, finding sources that can help us answer the new questions posed is not always a straightforward task. Historians interested in the use of computing share

[1] Erik Sandström, "En resa i TIDas," autobiography no. 54, http://www.tekniskamuseet.se/it-minnen (accessed June 1, 2009).

[2] "Computers" and "information technology (IT)," and also "history of computing" and "IT history" are used synonymously in this book.

P. Lundin, *Computers in Swedish Society: Documenting Early Use and Trends*, History of Computing, DOI 10.1007/978-1-4471-2933-2_1, © Springer-Verlag London 2012

many of the difficulties that scholars of contemporary history in general face, such as archives not yet accessible, not migrated or even deleted digital sources, etc. In addition, they have to deal with sources that often are complicated and technical in content. The widespread use of computing technology implies, furthermore, that users are found throughout society, which, in many cases, makes it difficult and time consuming to trace written sources. A way to cope with these difficulties is to create and collect new sources with the help of methods of contemporary history.

The project "From Computing Machines to IT" has been such an attempt. Its main objective was to create, collect, and preserve sources on Swedish computing history from a user-centered perspective and make them available on the Web. The project was a collaboration between the Swedish Computer Society, the Division of History of Science and Technology at KTH, and the National Museum of Science and Technology. It became large scale in January 2007 and was finished in December 2008. The approach consisted of several methods and tools. Traditional oral history interviews and collections of autobiographies were used alongside new self-structuring and time-saving methods, such as witness seminars and an Internet-based collection of memories (the Writers' Web). The project resulted in more than 160 interviews, almost 50 witness seminars, and a collection of about 240 autobiographies. The created sources consist of more than 8,000 pages of text (see Appendix I: List of Created and Collected Sources). All in all, nearly 700 people contributed with their stories. The contacts with these people generated, in turn, several donations of archival records, artifacts, movies, and photographs. In addition, the participating scholars and researchers provided meta-documentation on the process of creating sources (see Appendix II: List of Meta-documentation). Also developed within the project was an adapted project model for cooperation between museums, trade and industry, and universities (see Appendix III: Formal Description of Organization and Work Process). The people who participated in the project are listed and presented in Appendix IV: Participants in the Project.

In this book, which consists of three chapters, I consider the methods, organization, and theoretical approach of the project as well as its results.[3] Chapter 1 begins with a discussion of the recent shift toward a more elaborated user perspective in the international historiography of computing. The Swedish historical writing on computing is related to this development, and its lack of explicitly formulated user-oriented approaches is pointed out. After that, the different theoretical traditions on user-technology relations are addressed, and the concept of the user is problematized

[3] Earlier accounts of the project are: Per Lundin, *Documenting the Use of Computers in Swedish Society between 1950 and 1980: Final Report on the Project "From Computing Machines to IT"* (Stockholm, 2009); idem, "From Computing Machines to IT: Collecting, Documenting, and Preserving Source Material on Swedish IT-History," in *History of Nordic Computing 2: Second IFIP WG9.7 Conference, HiNC2, Turku, Finland, August 21–23, 2007: Revised Selected Papers*, ed. John Impagliazzo, Timo Järvi and Petri Paju (Berlin, Heidelberg & New York, 2009), 65–73; idem, "Inledning: Projektet och fokusgruppen," in *Användarna och datorerna: En historik 1960–1985*, ed. Birgitta Frejhagen (Stockholm, 2009), 13–20; idem, "Metoder för att dokumentera historia," in *ibid.*, 21–30.

in order to find, if not a precise, at least a loose definition of how this term was understood within the project. The first chapter of the book goes on to discuss the need to create and collect sources on the use of computers in Swedish society by giving a brief account of similar documentation projects both nationally and internationally. This account also considers the different methodological approaches developed and used by these projects.

Chapter 2 outlines the history of the project. It is shown that during this process, methodology, organization, and theoretical approach mutually shaped each other. After a discussion of the methodological considerations made in the project, it is described how oral history interviews and witness seminars were conducted, how written recollections were acquired, and how the Writers' Web was designed. Details are also given about the created and collected sources as well as the meta-documentation. This chapter is concluded by a number of observations on the organization and the methods of the project.

Chapter 3 analyzes how the collected and created sources of the use of computers in Swedish society between 1950 and 1980 can contribute to the Swedish historiography of computing. This final chapter starts out with a critical discussion on the interpretation of oral evidence. Three cases follow, each one considering how oral evidence can inform us about the interaction of computing with large-scale transformations in economies, cultures, and societies. The first case demonstrates how it can help us to examine career patterns, social networks, as well as the transdisciplinary, transsectorial, and transnational character of the flows of computing-related artifacts, expertise, and knowledge. The second case exemplifies how it can contribute to our understanding of how users adapted, modified, reconfigured, and resisted computing technology in order to fit their purposes and the intentions of their organizations. The third case discusses how it can inform us of the materiality and geography of computing.

1.2 Toward a User Perspective in the Historiography of Computing

In a recent article, the American historian of technology Thomas J. Misa argues that, although everybody knows that "computing has changed the world," the existing historiography faces, strangely enough, difficulties in addressing this question directly, and he suggests that scholars shift to focus "on the interaction of computing—including hardware, software, and institutional dimensions—with large-scale transformations in economies, cultures, and societies." Since citizens and policymakers today know that computing has changed the world, Misa continues, historians should help them understand this history.[4]

[4] Thomas J. Misa, "Understanding 'How Computing Changed the World,'" *IEEE Annals in the History of Computing* 29, no. 4 (2007), 52 f. A similar shift in perspective for the history of technology in general has previously been advocated by David Edgerton, "From Innovation to Use: Ten Eclectic Theses on the Historiography of Technology," *History and Technology* 16 (1999), 111–36.

He distinguishes three thematic traditions in the field of the history of computing. The first focused initially on identifying the "first" digital computers and understanding the technical, i.e., hardware and software, details, and it was dominated by the practitioners and pioneers of digital computing. Scholars criticized this approach as an "insider history," and they argued for, and pursued, a contextual technical history. The second thematic tradition showed instead an interest in the historical roots of the "Information Age," and, as Misa points out, in this view computers were machines that "first and foremost processed information and only secondarily provided the functions of calculation, control, or communication." The third thematic tradition represents an institutional approach. Instead of emphasizing microstudies of individual computing machines or macrostudies of the information society, scholars shifted focus to the governmental, engineering, or corporate institutions that shaped computing.[5]

Since none of these traditions explicitly address the question of how computing has changed the world, Misa proposes the "making" of a fourth tradition that takes up the challenge of "comprehending the twin-fold shaping of computing and society." On the one hand, "we need to show how developments in computing shaped major historical transformations, that is, how the evolution of computing was consequential for the transformations in work routines, business processes, government activities, cultural formations, and the myriad activities of daily life," and, on the other, our narratives and analysis should "show how major historical transformations shaped the evolution of computing." He, therefore, urges historians of computing to undertake studies that "situate computing within major historical transformations."[6]

I believe that historians interested in undertaking studies in the direction Misa proposes would benefit from addressing the role of the user. They have to understand how businesses and government developed to become leading users of computers. They have to understand how computers entered everyday life and transformed work as well as leisure activities. Nevertheless, they also need to go the other way round and examine how users have shaped digital technology and thoroughly changed our cultural and social understanding of what computers are.

There are examples of recent scholarship, albeit not many, that follow this trajectory. The three-volume *The Digital Hand* written by the remarkably productive American historian and IBM manager James Cortada is perhaps the most notable example. Cortada asks how computers first were used, by whom, and why, and he examines how computing technology was appropriated in American manufacturing, transportation, retail, financial, telecommunications, media, entertainment, and public sector industries (40 in total) during the past half century. He also discusses how the industries in question changed the nature of computing technology. By naming his study *The Digital Hand*, and thus paraphrasing the American business historian Alfred D. Chandler's seminal book *The Visible Hand*, Cortada wanted to emphasize "the crucial supportive role played by computers in helping companies and industries

[5] Misa, "Understanding 'How Computing Changed the World,'" 53 ff.

[6] Ibid., 56 ff.

do the work for which they existed."[7] Among Cortada's key findings are that the use varied more by industry than by company, that companies as well as government agencies "preferred to implement new uses in increments," that they concentrated their use of computing to "improve internal business operations and lower operating costs" (and only secondarily to acquire new customers), that they used computers "only if they could both perform a function and support conventional managerial practices," and that users and uses became more alike (regardless of industry) as technology and applications matured.[8] As we shall see below, the outline of our project parallels Cortada's broad approach toward the use of digital technology.[9]

1.2.1 The Swedish Historiography of Computing

How, then, has the history of computing or IT history been written in Sweden? Is it possible to discern "traditions" in the Swedish historiography in a similar manner as Misa has done for the international historiography? And what about the user? Has he or she been taken into account? It must be stressed that Swedish historians in general have paid little attention to the role of computers in society, which makes it difficult to identify traditions in Misa's sense, but the studies undertaken so far can be clustered, albeit loosely, around three different "themes."[10]

---

[7] James W. Cortada, *The Digital Hand: How Computers Changed the Work of American Manufacturing, Transportation, and Retail Industries* (Oxford, 2004); idem, *The Digital Hand: Volume 2, How Computers Changed the Work of American Financial, Telecommunications, Media, and Entertainment Industries* (Oxford, 2006); idem, *The Digital Hand: Volume 3, How Computers Changed the Work of American Public Sector Industries* (Oxford, 2008). He summarizes his three-volume work in James W. Cortada, "The Digital Hand: How Information Technology Changes the Way Industries Worked in the United States," *Business History Review* 80, no. 4 (2006), 755–66; idem, "Studying the Role of IT in the Evolution of American Business Practices: A Way Forward," *IEEE Annals in the History of Computing* 29, no. 4 (2007), 28–39.

[8] Cortada, "The Digital Hand," 760 f.; idem, "Studying the Role of IT in the Evolution of American Business Practices," 33 f.

[9] Examples of other studies pursuing a user perspective in a similar fashion are William Aspray and Paul E. Ceruzzi, eds., *The Internet and American Business* (Cambridge, MA, 2008); David Caminer, ed., *User-Driven Innovation: The World's First Business Computer* (London, 1996); Thomas Haigh, "Inventing Information Systems: The Systems Men and the Computers, 1950–1968," *Business History Review* 75, no. 1 (2001), 15–61; idem, "The Chromium-Plated Tabulator: Institutionalizing an Electronic Revolution," *IEEE Annals of the History of Computing* 23, no. 4 (2001), 75–104; Arthur L. Norberg, *Computers and Commerce: A Study of Technology and Management at Eckert-Mauchly Computer Company, Engineering Research Associates, and Remington Rand, 1946–1957* (Cambridge, MA, 2005); Petri Paju, "National Projects and International Users: Finland and Early European Computerization," *IEEE Annals of the History of Computing* 30, no. 4 (2008), 77–91; JoAnne Yates, *Structuring the Information Age: Life Insurance and Technology in the Twentieth Century* (Baltimore, 2005).

[10] In addition to my own *Documenting the Use of Computers in Swedish Society between 1950 and 1980*, I have found Hans Fogelberg's working paper *Research on IT Use and Users in Sweden, with Particular Focus on 1990–2010* (Stockholm, 2011) useful when compiling this historiographical survey.

The first theme deals with computers and politics. Already in 1970, the political scientist Jan Annerstedt and his coauthors discussed in the book *Datorer och politik* (Computers and Politics) the introduction of computers in the state bureaucracy, the fall of the Swedish computing technology industry, IBM's corresponding strong influence on the Swedish state, and the lack of an official policy on computers.[11] Scholarship that partly questioned, and partly complemented their study followed, with the historian Hans De Geer's *På väg till datasamhället* (Toward the Computer Society) from 1992 as the most important contribution. De Geer identified the government agencies and government committees (independent and powerful in international comparison) as well as the professions and their organizations as the key players in the extensive computerization of the public administration.[12] The historian Lars Ilshammar analyzed, in turn, the debates on computers and integrity as well as the establishment of Swedish legislation on digital information, and in an interdisciplinary study, Jonas Johansson followed the political debate in Sweden (and Norway) on "the information society" during the 1990s.[13] Others focused on aspects of the computerization of the Swedish "welfare state," state-led innovation, and the role of the labor movement in these processes.[14] A reason, perhaps, for the relatively large interest in the relationship between computers and politics is the rise of the welfare state and the quickly expanding public sector in Sweden during the postwar period.

---

[11] Jan Annerstedt et al., *Datorer och politik: Studier i en ny tekniks politiska effekter på det svenska samhället* (Lund, 1970). See also Jan Annerstedt, *Staten och datorerna: En studie av den officiella datorutvecklings- och datorforskningspolitiken* (Stockholm, 1969) and the computer scientist Sten Henriksson's section in Peter Naur, *Datamaskinerna och samhället*, med ett tillägg om svenska förhållanden av Sten Henriksson, trans. Sten Henriksson (Lund, 1969).

[12] Hans De Geer, *På väg till datasamhället: Datatekniken i politiken 1946–1963* (Stockholm, 1992); Hans Glimell, *Återerövra datapolitiken! En rapport om staten och informationsteknologin under fyra decennier* (Linköping, 1989); Sten Henriksson, "Datapolitikens död och återkomst," in *Infrastruktur för informationssamhället: Teknik och politik*, ed. Barbro Atlestam (Stockholm, 1995); idem, "De galna åren – en efterskrift," in *Informationssamhället – åter till framtiden*, ed. Barbro Atlestam (Stockholm, 2004); Kent Lindkvist, *Datateknik och politik: Datapolitiken i Sverige 1945–1982* (Lund, 1984); Thorsten Nybom, "Det nya statskontorets framväxt 1960–1965," in *Statskontoret 1680–1980: En jubileums- och årsskrift*, ed. Arne Granholm and Margot Rydén (Stockholm, 1980), 133–79.

[13] Lars Ilshammar, *Offentlighetens nya rum: Teknik och politik i Sverige 1969–1999* (Örebro, 2002); Jonas Johansson, *Du sköna nya tid? Debatten om informationssamhället i riksdag och storting under 1990-talet* (Linköping, 2006). See also Stefan Karlsson, *Nödvändighetens väg: Världsbildande gränsarbete i skildringar av informationssamhället* (Karlstad, 2005); Åsa Söderlind, *Personlig integritet som informationspolitik: Debatt och diskussion i samband med tillkomsten av Datalag (1973:289)* (Borås, 2009).

[14] See, for instance, Thomas Kaiserfeld, "Computerizing the Swedish Welfare State: The Middle Way of Technological Success and Failure," *Technology & Culture* 37 (1996), 249–79; Per Lundin, "Designing Democracy: The UTOPIA-Project and the Role of Labor Movement in Technological Change during the 1970s and the 1980s," in *History of Nordic Computing 3: Third IFIP WG9.7 Conference, HiNC 3, Stockholm, Sweden, October 18–20, 2010: Revised Selected Papers*, ed. John Impagliazzo, Per Lundin and Benkt Wangler (Heidelberg, 2011), 187–95; Bertil Rolandsson, *Facket, informationsteknologin och politiken: Strategier och perspektiv inom LO 1976–1996* (Göteborg, 2003).