Scope of the Conference

The overall objective of the conference is to review our present understanding of the history of software and to establish an agenda for further research, rather than to provide finished histories for any of the areas of software history. By exploring our current understanding of software and its history, speakers and commentators will explore the fundamental elements that make software what it is. Problems and questions to be discussed at the conference will comprise the whole realm of issues ranging from purely technical to societal ones.

Virtually all the literature about the history of software presents reviews of the development of a particular software artefact. Articles on programming languages, operating systems, applications programming, and network protocols, to name only a few, make up the examples in this area, along with a group of essays on members the software industry. In this conference speakers and commentators will take a fresh view of this history through fresh categories and cross cutting themes. For this perspective, presentations will compare and contrast software with artefacts in other scientific and engineering disciplines, so as to ascertain in what ways software is similar to and different from other technologies.

The conference is composed of five sessions that focus on software as an entity, not on software examples as has been the case in the past. The sessions are:

Software as Science

The past emphasis on the history of software artefacts has obscured the scientific nature of software. In this session, an elaboration of the epistemological foundations of software will highlight this aspect of software. A comparison of the distinctive features of the community of computer scientists with other professional disciplines might also shed light on the nature of software as science.

Software as Engineering

Software as engineering is a natural counterpart to software as science, especially as it is here that we can investigate software as a practical development. In designing programs, computer scientists operate within various constraints-economic, technical, regulatory, managerial, social. The design process is often more one of revising and maintaining programs, rather than simply creating new programs. In this session, a focus will be placed on a more unified perspective of the highly innovative and rapid changes in software development over the decades as well as the more routine activities in software care.

Software as Reliable Artefact

In the treatment of software as a reliable artefact, we need to pay special attention to the specific nature of software, and to the interplay of formal methods and cooperative processes, verification, testing, validation, and standards. In many parts of the software enterprise, reliability is a high priority, for example, in areas of safety-critical systems such as in medical systems and aircraft control systems. In other areas, such as in typical off-the-shelf packaged software, reliability is not a high priority. Practitioners in each of these domains seem to employ different tools and approach problems differently. An exploration of these differences could uncover the idiosyncrasies in software and its development and reveal the consequences of these differences.

Software as Labour Process

Recently, much attention has been paid to development of software in specific organizations. But what are common elements that are fundamental to software itself, and not subject to organizational idiosyncrasy? In other areas of the history of technology, an argument rages as to whether a gender bias is built into technology or is a by-product. A similar discussion is going on in computing. Is there a gender bias in software development? Do particular organizations influence software developments in certain directions, and how is these played out generally?

Software as Economic Activity

The focus here will be on examining the size, location, and practices of software producers. Producers have included computer users and computer

manufacturers, but software firms have increasingly taken center stage. Presentations will explore the evolution of the different sectors within the software industry, including programming services and packaged software firms. The structure and strategies of firms will be related to the ever changing technological and market environment as well as the broader economic and business context. In keeping with the other sessions, the focus will be to seek out the overarching similarities of member firms in the industry. Comparing this new view with existing literature will allow a better view of distinguishing features of firms and how the software they develop influenced the firm and its strategy and vice versa.

The conference format is structured around a principal speaker for each session. The speakers principal role is (1) to present a range of ideas that need exploration; (2) to comment, in so far as possible, on the literature of each area; and (3) to suggest a possible research agenda for further exploration of the topic. The commentators in each session, two or three in each, comprise an illustrious, international array of computer scientists, historians, and sociologists, all of whom have explored one or more of these themes in detail in their own work. Their role is to comment on the viability of the ideas presented by the speakers. Ample time will be allotted for audience participation.

Museum historians have encountered obstacles in the development of exhibits on the history of software, especially those designed to inform a non-technical audience about the nature of software. Thus, a session at the conference will be devoted to this topic as well. Analogous to the other sessions, several speakers from the world's prominent science and technology museums will present their views on how exhibit designers might surmount the obstacles in these exhibits. Comments and analysis also will follow these presentations.

Program

April 5, 2000 (Wednesday)

3.00 pm Welcome
Norbert Ryska (Heinz Nixdorf MuseumsForum)

3.15 pm Themes and Objectives
Arthur L. Norberg (Charles Babbage Institute)

3.45 pm Keynote Address
Friedrich L. Bauer (Technical University Munich)

4.30 pm Coffee Break

5:00 am Workshop 1: Software as Science
Moderator: Gerard Alberts (University of Nijmegen)
Speaker: Michael S. Mahoney (Princeton University)
Commentator 1: David Edge (Edinburgh)
Commentator 2: Gerhard Goos (Technical University of Karlsruhe)

7.00 pm Reception

April 6, 2000 (Thursday)

9:30 am Workshop 2: Software as Engineering
Moderator: Wilhelm Schäfer (University of Paderborn)
Speaker: James E. Tomayko (Carnegie Mellon University)
Commentator 1: Albert Endres (Technical University of Munich)
Commentator 2: Bruce Seely (Michigan Tech)

11:30 am Lunch break

1:00 pm Workshop 3: Software as Reliable Artefact
Moderator: Wolfgang Coy (Humboldt University Berlin)
Speaker: Donald MacKenzie (University of Edinburgh)
Commentator 1: Bernd Mahr (Technical University of Berlin)
Commentator 2: Victoria Stavridou (SRI, Menlo Park)

3.00 pm Coffee break

3.30 pm
Introduction to the HNF Exibition and Special Guided Tours to the Exhibition

5:30 pm Museums and Exhibitions Workshop
Moderator: Ulf Hashagen (Heinz Nixdorf MuseumsForum)
Speaker 1: Doron Swade (Science Museum London)
Commentator 1: Joachim Fischer (Kulturstiftung Berlin)
Speaker 2: Ernst Denert (sd&m GmbH) / Klaus-Peter Löhr (Free University of Berlin)
Commentator 2: Friedrich L. Bauer (Technical University of Munich)
Speaker 3: David K. Allison (National Museum of American History, Washington D.C.)
Commentator 3: Hartmut Petzold (Deutsches Museum Munich)

8.00 pm Conference Dinner

April 7, 2000 (Friday)

8:30 am Workshop 4: Software as Labour Process
Moderator: Reinhard Keil-Slawik (University of Paderborn)
Speaker: Nathan Ensmenger (University of Pennsylvania) / William Aspray (CRA Washington D.C.)
Commentator 1: David Hounshell (Carnegie Mellon)
Commentator 2: Lars Mathiassen (Aalborg University)

10.30 am Lunch break

11:00 am Workshop 5: Software as Economic Activity
Moderator: Steve Russ (University of Warwick)
Speaker: Martin Campbell-Kelly (University of Warwick)
Commentator 1: Pierre Mounier-Kuhn (CNRS/Sorbonne)
Commentator 2: David Mowery (University of Colifornia at Berkeley)

1:00 pm End

URL: http://www.hnf.de/termine/tagung/ichc2000/