Course presentation

In 1971 the company IBM commissioned the designers Charles and Ray Eames to prepare an exhibition on the complex origins and influences of the computer. The outcome of the project was a *history wall* made up of floor-to-ceiling panels in which the history of computation was illustrated from the end of the 19th century to the mid of the 20th century using a mix of printed explanations, artefacts, documents, photographs and quoted texts placed in a three-dimensional grid. Moving from one decade to the next, the visitors walking along the wall could see some objects disappear, while others became visible.

The exhibition, named *A Computer Perspective*, wanted to remind with its arrangement that “the computer is the product of men’s minds and hands, and that the manifest complexities of its influence upon our lives reflect the incredible variety and complexity of sources from which it has sprung”.

In the age of smartphones and tablets, big data and cloud computing, the Eames’ invitation to put the computer into perspective cannot be forgotten, as it offers an opportunity for a cultural
understanding of this technology, too often stereotypically portrayed as revolutionary or future-oriented.

The course will offer an overview of the history of computing from the pre-computer age of mathematical tables and human computers to present day social networking. The case studies examined will give the opportunity to reflect on the technological, social, scientific and gender issues that are intertwined with the development of the computer.

The aim of the course is to provide critical instruments for a deeper understanding of the computer as an artefact and to set its history in the broader scenario of the history of science and technology in the twentieth century.

There is no prerequisite for attending the course. A basic knowledge of the history of science and technology in the twentieth century is helpful, but not mandatory. Lectures and discussions will be in English and the evaluation tests (essay and presentation) must also be prepared in English, but the use of German sources and German case studies to complement the English ones suggested by the course organiser is welcome and can certainly offer opportunities for stimulating discussions.

Evaluation

Kleine Leistung

A 1,500 words critical summary of one group in the following list of readings on the history of computing. In writing a critical summary I ask you not only to summarise the argument(s) of the book/papers, but also to use the information learnt during the course to point out how these contributions can be framed in the current historiography of computing and whether their argument(s) is/are convincing or not. Proposals for further readings are welcome, but the feasibility must be discussed in advance with the course organiser.

Group 1: Working with the first computers.


**Group 2:** Konrad Zuse and his autobiography

Read Konrad Zuse's autobiography (in the English or German version) *The Computer – My Life/ Der Computer Mein Lebenswerk* and provide a critical summary in English.

**Group 3:** The Computer, the Military, and the Government


**Group 4:** Women and Computing


**Group 5:** The computer business as a case study of industrial innovation


**Große Leistung**

1) An essay in English (3,000 words excluding bibliography) to be prepared by the end of the winter semester.

Suggested essay questions:

a) The historian Michael S. Mahoney (Michael S. Mahoney, *The histories of computing(s)*, [http://www.thecorememory.com/THOC.pdf](http://www.thecorememory.com/THOC.pdf)) has argued that the history of the computer is not a single one, but there are several histories, derived from the histories of the groups of practitioners who appropriated this technology to realise their agendas and
aspirations. Discuss Mahoney’s claim using case studies and the general literature on computing.

b) What can the issues in the history of computing tell us about the history of technology in the twentieth century? Does technology drive history or rather is society that shapes technologies? Useful ideas for the essay can be found in Donald Mackenzie and Judy Wajcman (eds.) *The Social Shaping of Technologies*, Open University Press, 1985; Merritt Roe Smith and Leo Marx (eds.) *Does Technology Drive History? The Dilemma of Technological Determinism*, The MIT Press, 2001.

c) During the twentieth century scientific research has found an ally in the computer and this technology has even promoted the development of a new branch of science, computational science. Yet, the history of computing in the sciences is much longer and complex than revolutionary accounts of the role of the computer (for instance, Douglas S. Robertson, *Phase Change: The Computer Revolution in Science and Mathematics*, Oxford University Press, 2003) might suggest. Compare and contrast computing in the sciences before and after the development of digital computers.

d) From the 1970s onwards the computer has become a personal technology besides being a business and scientific tool. How can we assess the impact of the computer in the arts, humanities or entertainment?

Proposals for further essay questions are welcome, but the feasibility must be discussed in advance with the course organiser.

2) A short presentation in English (15 min.) to be given in the final lectures of the course. The topic of the presentation will be chosen by the students in agreement with the course organiser.

**Course program and readings**

*Suggested pre-course reading*


This booklet is a brief introduction to the history of computing. It can be useful to get acquainted with some of the issues examined during the course. Available in the TU Zentralbibliothek.
Week 1

**General Introduction**


Week 2

**Computing before computers/1: Mathematical tables**


Week 3

**Computing before computers/2: Human computers**


Week 4

**Computer hardware: The stored-programme principle**


Week 5

**IBM and the computer business**

Week 6

**Computer software: The black art of programming**


Week 7

**Gender issues in computing**


Week 8

**The personal computer**


Week 9

**The Internet and social media**


Week 10

**The historiography of computer pioneers: Konrad Zuse as a case study**

Readings: Konrad Zuse, *The Computer – My Life* (Berlin Heidelberg: Springer-Verlag, 1993); pp. 33-73. You can also read the original German version of Zuse’s autobiography. Konrad Zuse, *Der Computer Mein Lebenswerk* (Berlin Heidelberg: Springer-Verlag, 1993); pp. 30-65.
Week 11

**Biomedical computing**


Week 12

**Computing in agricultural science**


Week 13:

**Computer (r)evolution?**


Week 14:

**The computer and the arts: Pietro Grossi**


Week 15: Student presentations

Week 16: Student presentations
Readings on the history of computing useful for preparing the essay and the short presentation for the Große Leistung. [I will be happy to advise on the most suitable readings in the list once you have chosen the topic of your essay and presentation]


A good starting point for researching the literature on the history of computing is the archive of the journal *IEEE Annals of the History of Computing*. The MIT Press has published over the years major titles in the history of computing and browsing its online catalogue can be helpful. A further source on the history of computing is also represented by oral histories. Two main repositories are the *IEEE Oral History Project* [http://www.ieeeghn.org/wiki/index.php/Oral-History:List_of_all_Oral_Histories](http://www.ieeeghn.org/wiki/index.php/Oral-History:List_of_all_Oral_Histories) and *An Oral History of British Science* by the British Library [http://sounds.bl.uk/Oral-history/Science](http://sounds.bl.uk/Oral-history/Science) (searchable for subject, e.g. computer hardware or computer software or name of the interviewee).