

## SHOT 2005 Panel Proposal

**Title: Use and Usability in Personal Computing: International Perspectives**

Official Panel Proposal of the SIG on Computers, Information and Society

Relation to Themes:

Theme 2: Technologies of the Everyday – Users and Use

Teams younger and established scholars

International: participants live in three countries; each paper is on a different national story.

Cross disciplinary: one paper relates to innovation studies, another to business/economic history.

Chair: Paul Ceruzzi, Smithsonian

Organizer: Thomas Haigh, University of Wisconsin-Milwaukee

Commentator: Thomas Haigh, University of Wisconsin-Milwaukee

Presenters:

James Sumner, University of Manchester, UK

*The Mighty Microcosm: Home Computers and User Identity in Britain, 1980-90*

Martin Campbell-Kelly, Warwick University, UK

*Number Crunching without Programming: The Evolution of Spreadsheet Usability*

Frank Veraart, Technical University of Eindhoven, Netherlands

*The Introduction and Use of Personal Computers in the Printing and Publishing Industries in the Netherlands: 1975-1990*

## Session Description

Historians of technology have recently paid considerable attention to the role of users, particularly hobbyists, enthusiasts and technological “tinkerers,” in shaping technological development and in ascribing cultural meanings to particular technologies. Under close examination, even mass produced or apparently impersonal technological artifacts turn out to have been used and reshaped in strikingly diverse ways by different user communities.

Yet surprisingly little scholarly attention has been given to the users and uses of computer technology. This is particularly striking in the case of the personal computer, which as its name suggests is a technology defined by its intimacy with the user. Until the mid-1970s computer technology was arcane, expensive and impersonal. Most people had never seen a computer, let alone used one. Early personal computers were designed, produced and distributed by companies founded by technological enthusiasts, and sold to people who often lacked a clear idea of what they would do with them. Their hardware usually had to be modified or expanded to perform useful tasks. Still more importantly, the behavior and capabilities of the machine, and hence its application and social meaning, could be instantly reconfigured by loading a new piece of software onto it. Users themselves discovered new identities through their participation in computer-oriented roles and communities. Surely no other complex technology has been so mercurial, so utterly dependent on its users to reshape it in such unexpected ways.

The three papers in this session begin to fill this gap, providing complementary thematic and national perspectives on the early use of personal computer technology. The panel brings together some of the best known scholars in the history of computing with several younger historians who are developing personal computing as their main research interest.

Sumner’s paper focuses on the British user communities that formed around home computers, a distinct class of personal computer technology that flourished from the late 1970s into the late 1980s. Sumner identifies a tension between then-prevalent ideas of the personal computer as a gateway into a shared information society and the reality of happily balkanized communities of technical enthusiasts focused on particular and incompatible machines.

Campbell-Kelly focuses on the evolution of spreadsheet programs, widely viewed as the “killer application” for the personal computer and, as he points out, an invention that for the first time placed programming and modeling capabilities into a form usable by ordinary people. He focuses particularly on the role of “add-in” modules, produced (primarily in the USA) by individuals and small companies, in reconstructing spreadsheet technology as they were sold independently and, in many cases, eventually copied or licensed by dominant spreadsheet providers.

In contrast, Veeraart looks at personal computer use in a specific national industry: Dutch publishing. He contends that these users were unable to influence the design of computers, they and specialized intermediary groups nevertheless played a vital role in interpreting and “translating” personal computer technology.

## **The Mighty Microcosm: Home Computers and User Identity in Britain, 1980-90**

James Sumner, University of Manchester, UK

**Topic:** From around 1980, personal computers swiftly became a commonplace feature of British homes, as hardware manufacturers opened out an emerging consumer market and state-level agencies, including the BBC and Departments of Education and Industry, executed planned computer-literacy drives. This paper analyses the idiosyncratic, machine-specific 'micro' cultures which emerged across the 1980s, to present a view of technologies and their user groups as mutually constitutive.

**Argument:** The heterogeneous ethos of the 'micro' is often contrasted with the globalized, office-oriented 'PC' standard which supplanted it in the early 1990s. Yet early manufacturers, and the computer-literacy advocates who defined most Britons' initial perceptions, were concerned to establish the 'home micro' as an indefinitely expandable gateway, fit to accommodate emerging standards. The eventual collapse of the early home micro universe into a collection of closed machine-specific worlds should, I argue, be traced to the *users* who subverted these early expectations. Looking inwardly created localized skills, specializations and institutions, which came to be more highly prized than outward compatibility; at the same time, this emerging technical differentiation fostered the construction of user communities with distinct social and cultural identities.

**Evidence:** The case is somewhat resistant to oral-history treatment, on account of a widespread and largely unconscious tendency to recast events in the light of present-day understandings. Extensive first-hand evidence of user perceptions survives, however, in the newsletters and other communications of Britain's numerous personal computer user groups; and in the popular machine-specific magazines which printed readers' letters, and would occasionally commission articles from informed end-users. These publications may be contrasted usefully with the machine-independent journals aimed at the 'serious', typically business-oriented user, and with treatments in the non-specialist press.

**Contribution to Existing Literature:** While home computers and their users are proving an increasingly profitable area of study, most work so far has focused on the USA. The only established treatments of the British experience, in the work of Leslie Haddon and David Skinner, present the home micro as isolated from any computing mainstream: as an underdetermined commodity whose users must define its use, it becomes either a 'toy' or a simplified model to teach the elements of 'serious' computing. This position has some explanatory power: but it has fostered the presumption that the machines were somehow innately eccentric, their technical form dooming them to be short-lived yet fondly-remembered cultural artifacts. My aim is to challenge this by showing the plausibility of early moves towards general compatibility, and the contingency of their rejection as user identities became entrenched.

## **Number Crunching without Programming: The Evolution of Spreadsheet Usability**

Martin Campbell-Kelly, University of Warwick, United Kingdom

**Topic:** In 1979 the invention of the personal-computer spreadsheet revolutionized financial analysis, by making it possible for ordinary users to create numerical models without any programming knowledge. The technology diffused very rapidly—partly because spreadsheets were very easy to use, but also by means of a massive learning infrastructure consisting of newsletters, textbooks, programmed and video learning materials, and user groups. By the mid-1980s, there were tens of millions of spreadsheet users.

**Argument:** Unlike conventional programming technology, there was no standardization authority for spreadsheet programs. Initially new features (such as the visual presentation of data) were determined by the spreadsheet manufacturers, but they were unable to intuit all of the needs of users. As a result, during the 1980s, several hundred firms supplied “add on” programs for the popular spreadsheets, which implemented new features such as multiple views, superior presentational tools, error detection, and database integration. The spreadsheet program was thus transformed into an explicit technological system consisting of a spreadsheet platform and a set of add-on components.

By a Darwinian process, the market selected out the most useful add-on programs, so that a small number of firms prospered while others were forced to move on to other opportunities. In several cases successful add ons were acquired by the host spreadsheet firm and integrated into the core product. Thus, by the end of the 1980s, the spreadsheet had been transformed into a consistent, but extremely complex, dominant design that persists up to the present day.

**Sources:** Spreadsheets evolved in an informal way, outside the academy, so that there are relatively few technical records. This paper is based on the trade literature supported by interviews with the founders of prominent spreadsheet and add-on firms. The presentation will be illustrated with contemporary visual material from products and advertising.

**Contribution to the Existing Literature:** This paper will contribute to the history of technology by showing how a raw new information technology was first diffused into the community, and then shaped by market interactions between suppliers and users. It is probably the first historical study of its kind in the domain of software.

## **The Introduction and Use of Personal Computers in the Printing and Publishing Industries in the Netherlands: 1975-1990**

Frank Veraart, Technical University of Eindhoven – The Netherlands

**Topic:** The introduction of personal computers in the late 1970s and 1980s caused many radical changes in the traditional printing and publishing business. New computer technologies bypassed parts of the production process. In this turmoil new specialized businesses started up and elsewhere departments of existing printers were abolished. Firms and enterprises were very aware of this change happening and were looking for ways to innovate their own working practice at the right point in time. This paper examines how businesses were able to coordinate this innovation process in these turbulent times and how they acquired the knowledge needed for this process.

**Argument:** This paper argues for the vital role of users and a broad range of intermediary actors such as marketing departments, retailers and service bureaus technological to 'translate' and adjust these machines to the needs of the small business users in the printing and publishing industry. They were central to the technology and knowledge transfer process, even though these small businesses had little influence on actual design of computer technology, and the development of personal computers and software took place outside the Netherlands, predominantly in the USA. These actors created ideas, experiments and other means from, that created examples and opportunities of use. At the same time, they set rules for working practices and equipment use.

**Evidence:** Trade journals of the printing and publishing business elaborately discuss and cover the introduction of the computer technology in the late 1970s and 1980s. As an aid to this process of innovation, business and trade organizations founded supporting groups and advisory boards, sometimes with support of ministry of economic affairs. In addition, business and governmentally supported research groups conducted experiments testing new possibilities and schemes with computer technologies.

**Contribution to the existing literature:** This paper extends the rather sparse existing literature on computer usage, which is focused on influential users with a direct role in sponsoring new technology, by taking into account more distant and lay users. The paper adds to the research focusing on adoption and appropriation of user practices in the field of history of technology. It also explores knowledge exchange at the level of firms and enterprises, a largely neglected topic in the field of innovation studies.