

History of User Interfaces to Computers – A Mahoneyan Perspective

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Although the first digital computers - and calculators before them - had input/output devices such as dials, switches, and input tables, the concept *user interface* only gained foothold in computing in the 1960s, with the accompanying theoretical foundation Human-Computer Interaction (HCI) being established in the 1970s. User interfaces are tangible and conceptual artefacts such as input devices and pop-up menus, while HCI is an academic field comprising theory, concepts and methodology. Hence the two differ but they are also closely related. Indeed, there is some overlap in the the literature on their history; my focus here is on user interfaces.

The last decades have seen a growing interest in historical aspects of HCI and user interfaces. It is time to ask: What is the historical relevance of these fields? The computer has in half a century migrated from large computer rooms in highly specialized settings to everyday, mundane objects. It is increasingly invisible, embedded, and pervasive and the user interface has come to the fore at the expense of the computer itself. Accompanying this migration, a number of perspectives on user interface issues have emerged in the literature such as usability, aesthetics, emotion, media, and culture. With so wide-ranging ramifications, the user interface must be said to be a relevant candidate for historical inquiries.

In getting to grips with the emerging historical interest, it is obvious to ask if history of computing and history of technology can be helpful. Indeed they can - Michael Mahoney's papers on computer history come to mind with the most significant contributions being "The History of Computing in the History of Technology" (1988), "Issues in the History of Computing" (1996), and "The Histories of Computing(s)" (2005). By using these papers as frame of reference I will outline the state-of-art in history of HCI and user interfaces. The 1988 paper is particularly relevant as it was written when history of computers started to take shape - a state similar to user interface history now.

As to the types of literature at large, I can almost quote the 1988 paper directly. The first type emphasizes - and is to some extent written by - the people involved. It also comprises corporate stories; in computer history IBM is the big player, in user interfaces it is Xerox Palo Alto Research Center. This literature also comprises a good deal of facts and "firsts". The second type is writings by journalists "with an eye for the telling anecdote" - on pioneers and organizations alike. The third type is professionally written historical work. Only little exists - where Grudin's papers (2005, 2008) stand out with analyses of HCI as a moving target and the evolving discretionary use of computers. As opposed to computer history, another group of scholars have contributed to user interface and HCI history, namely media studies and cultural studies researchers - due to the convergence between the computer and other media.

Mahoney discusses the "tripartite nature of computing": the tactile and manifest hardware, the software with a teasing static and dynamic aspect, and the activity of programming involving individuals in an organisational context and professional practices. When dealing with user interfaces, it is in place to add a fourth component, namely that of the user dealing with the software through the interface in an organisational or social context; this aspect is also briefly mentioned by Mahoney. Just as the dynamic nature of software and programming adds to the complexity of the historian's task, the fourth component does likewise to historical inquiries into user interfaces.

Finally, Mahoney suggests a number of candidate models from history of technology that can be brought to bear on computing history: mass production, mass consumption, assembly line, Middle-town, evolution, revolution, invention, innovation, and determinism. Given the state of art in the historical writings in user interfaces, it will be quite a while before an understanding of these concepts - let alone an agreement on a set of histories - will be established.