Chapter 19
The Interplay between Humans and Technology:
A Techno–Utilitarian Approach

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ABSTRACT
A brief overview of how computers, more specifically ICT, have changed over the past half a century is presented. Decades ago, when Gunilla Bradley began investigating the use of computer systems from a psychosocial perspective, ICT was used predominantly in the work environment, particularly for data capturing. Systems were designed for the workplace. Since then computer technology has changed significantly expanding to private and social use as well as for entertainment and communication. This chapter is about the history and development of ICT of which Bradley was a part. Now, at the end of her career, ICT will move beyond social aspects. The question is: what is next? - especially as workplace metaphors are still used for interface design. I propose that the human aspect should be the next dominant focus of attention, which implies a redesign of systems in order to reduce task load, effort and stress. This proposal is founded on a techno-utilitarian philosophy.

INTRODUCTION
When Gunilla Bradley began investigating the use of computer systems from a psychosocial perspective in the late 1960s, computers were used only in large organisations such as the military, government and corporations. The “market” covered was a small proportion of possible populations. Computers at that stage were number crunching machines, predominantly used for calculations and basic record keeping. Bradley’s work naturally could only focus on the work environment, as computers were initially not used for other purposes yet.

Her interest was not so much on the computer engineering or technician side -- i.e. the white-coats who managed computers in “secret” locations inaccessible except for the initiates -- but on the end-users: the data capturing clerks in typing pools. She considered their reactions to the work
environment, and later defined psychosocial as “the process involving the interaction between the objective environment and the subjective one.” (2006:51).

Computer technology has changed significantly since the 1960s, not only technically, but also regarding their use by humans. In her summary (chapter 3 in 2006) of developments in computing the focus is more on technological changes, such as miniaturization and chip innovations, but she does not neglect interface improvements and home entertainment technology (e.g. chapter 5 in 2006). My own summary presented here of the relatively short history of computers does not focus so much on the technological history than on the human and social aspects.

The first generations of devices were computers used for military and business purposes. Some later generations were networked. In large organisations there was a server with workstations on individuals’ desks. All the computing power was on the server, and the terminals basically dumb display and input units. When the computing power was transferred to the terminal, which could now operate by itself, even without network connection, it was called a “personal computer” (the PC), which is a misnomer, as there was nothing personal about it - its main function was still office work, as demonstrated by the metaphors used for the interface: files, directories, and the name of the first general application “word processing”, on which I will elaborate below.

With reference to computing power, the PC was actually a down-scaled computer, but it could operate on its own, independent of the server or network. The first PC’s were, to put it crudely, just powerful typewriters, and the purpose of typing was creating documents for business and organisational purposes. Academics began writing books and articles on PCs, just as they previously did with typewriters. Later generations of PCs would have the added advantage of re-use of such documents, when copying sections of text became easier, but that was not possible with the early generation of PCs.

Only from the 1990s did the PC became more “personal”, as more application software products came on the market that were not primarily work-related. Entertainment products, particularly games, grew phenomenally, so that by the turn of the century the gaming industry surpassed the movie industry in financial turnover. The internet moved into the public domain, and especially the World Wide Web brought an immense digital library into middle-class homes, as well as facilitating communication by means of email. Just after the turn of the century, social networking tools were introduced that made networked communication even easier, as well as including multimedia functionality. At the time of writing some of the most popular online applications are tools focusing on the social aspects of human nature - Facebook, blogs, and twitter.

The brief history of computing, stretching over just half a century, thus saw extending its range of relevance from the workplace to homes, from formal office administration to entertainment and informal social activities, from restricted in-house network connectivity to informal global networks. Castells (2004a) and Giddens (1983) have somewhat different takes on technology and society, but they agree that ICT are social enablers. Despite these changes that penetrated society at large, and extended use to include many more and diverse social groups, human interaction models with the virtual world of information are still held hostage by workplace metaphors, by convoluted applications, and in short, by immature interfacing with the machinery of computers.

HISTORIES

The histories of different human endeavours are not the same, but similar patterns may be observed. This should not be read as a statement supporting technological determinism and progressivism,
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