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A FAUSTIAN EXCHANGE: WHAT IS TO BE HUMAN IN THE ERA OF UBIQUITOUS TECHNOLOGY?

Cultural consequences of computing technology

Daniel Memmi

Abstract Computing technology is clearly a technical revolution but will most probably bring about a cultural revolution as well. The effects of this technology on human culture will be dramatic and far-reaching. Yet, computers and electronic networks are but the latest development in a long history of cognitive tools, such as writing and printing. We will examine this history, which exhibits long-term trends toward an increasing democratization of culture, before turning to today's technology. Within this framework, we will analyze the probable effects of computing on culture: dynamical representations, generalized networking, constant modification and reproduction. To address the problems posed by this new technical environment, we will suggest possible remedies. In particular, the role of social institutions will be discussed, and we will outline the shape of new electronic institutions able to deal with the information flow on the internet.

Keywords Technology and culture · Cognitive tools · Electronic networks · Knowledge management · Social institutions · Collaborative systems

1 Introduction

We are currently witnessing a technical revolution based on the widespread use of computers and electronic networks, but this will most probably prove to be a cultural revolution as well. The ubiquitous presence of personal computers in almost every home and place of work, the spread of various mobile devices, the increasing computing capacity and accessibility of servers, combined with the explosive development of the internet and its numerous applications (notably e-mail and the web) have fashioned a technical environment in which we all have easy access to huge computational power, numerous personal contacts and practically boundless information. This technical environment is essentially new in the history of mankind, and our main point is that it cannot but have important cultural consequences.

Comparable inventions in the past, such as writing systems or the printing press, have had profound consequences on human culture (Innis 1951; McLuhan 1962, 1964; Lévy 1990). We will examine the influence of these information techniques in history, discerning long-term trends toward an increasing democratization of culture, but also toward a fragmentation of knowledge. We will then try to analyze the effects of computing technology on today's culture within this historical framework. It will be shown that recent techniques constitute a continuation of older trends, while also presenting new opportunities and challenges. In particular, data processing can be used to manage some of the very problems it might bring about in the first place.

We will also argue that social institutions remain more necessary than ever to manage and evaluate the flow of information on the internet. There is simply no obvious alternative to social consensus in order to filter relevant information and knowledge. After discussing the role of classical institutions (such as the press or universities), we will outline the form that novel internet-based institutions might take in the near future to fulfill similar functions more efficiently. This would obviate some of the destabilizing effects of computer technology.

In short, we will consider computer technology within the historical framework of intellectual tools in general, in order to better understand its present and future effects on

D. Memmi (✉)
University of Quebec in Montreal, Montreal, QC, Canada
e-mail: memmi.daniel@uqam.ca