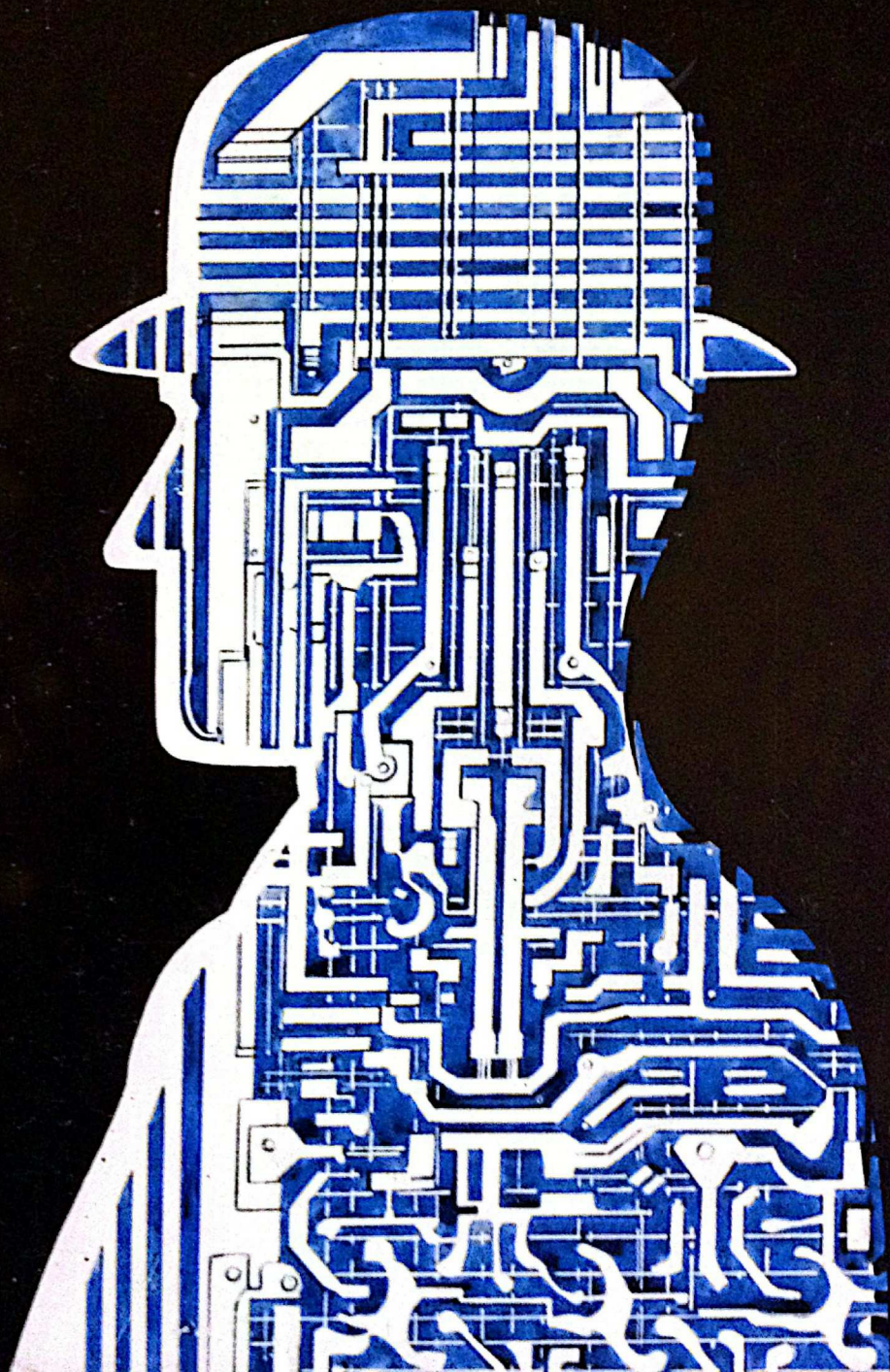


a Pelican Book



The Computerized Society

James Martin and Adrian R. D. Norman

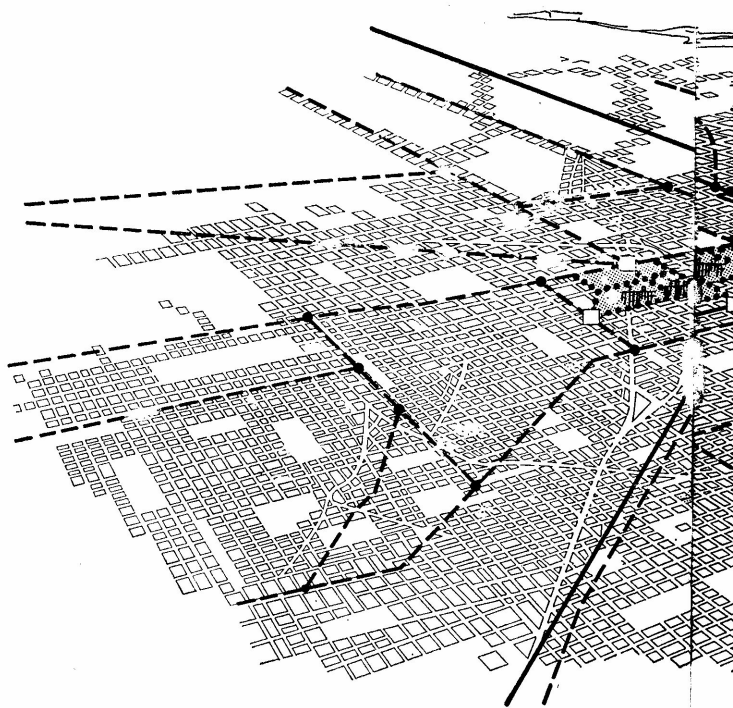


Pelican Books

The Computerized Society

James Martin graduated from Oxford with an M.A. in Physics, joined I.B.M. after two years' research on rocket motors, and has been involved in the design of many of the world's most advanced computer systems. He is now on the staff of the I.B.M. Systems Research Institute in New York, and is the author of *Programming Real-Time Computer Systems*, *Design of Man-Computer Dialogues*, *Telecommunications and the Computer*, *Security, Accuracy, and Privacy in Data-Processing Systems*, and many other books. James Martin was a member of the first Russian-American committee to study possible exchanges in computer knowledge, and has done many radio and television broadcasts on both sides of the Atlantic. He is married to an American.

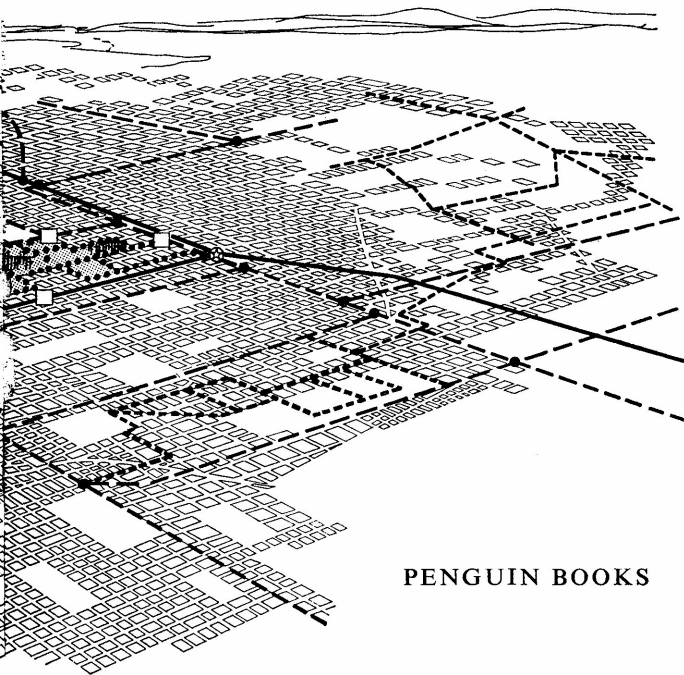
Adrian Norman was born in 1938 and graduated from Cambridge where he read Mathematics and Physics. After several years of research in the Atomic Energy Authority, he moved to I.B.M.'s Systems Engineering team in the City. He then went to Columbia University's Graduate School of Business where he took an M.B.A., and subsequently worked on the plans for I.B.M.'s world-wide internal information systems. In 1969, he returned to the City to develop computer systems for investment analysis. He is currently working for the Inter-Bank Research Organization on studies of the impact of computers in banking. He has lectured at home and abroad, broadcast on radio and television, and done political research for the Bow Group. He is married with two young children.



JAMES MARTIN &
ADRIAN R. D. NORMAN

The Computerized Society

AN APPRAISAL OF THE IMPACT OF COMPUTERS
ON SOCIETY OVER THE NEXT FIFTEEN YEARS



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PREFACE

Arthur C. Clarke, who acquired a substantial reputation for the accuracy of his earlier scientific forecasts, claims that man's role as the dominant species on this planet is near its end.

Soon, he says, our species will be surpassed by ultraintelligent computers. As today's computers become more intelligent, eventually a critical point will be reached and a kind of chain reaction will occur because the machines will become capable of rapidly improving themselves. In a very few generations (*computer generations* which, when this happens, may be very short), there will be an explosion in the machine's capability; the merely intelligent machine will swiftly give way to the *ultraintelligent* machine.

This book looks ahead fifteen years, and we assume that in that time Mr Clark's critical point will not be reached. Indeed, in attempting to evaluate this future, we have deliberately avoided extrapolating much of today's work on 'artificial intelligence'. We think that this may be slow to bear fruit.

Nevertheless, we believe that a critical point is at hand. In the years immediately ahead, there will be a sudden, massive spread of computer usage that will affect the lives of almost everyone. Several factors will cause this: first, there will be mass production of the machines with a very sharp drop in cost. Second, there will be many areas of standardization that will have a snowball effect as programs used in one installation spread to others. Programs can be reproduced almost as cheaply as newsprint. Third, staggeringly large computer files are being developed in which every item stored can be retrieved in a fraction of a second. Fourth, and this may be the most important factor, the machines are becoming linked to the telephone network so that computers will be able to communicate with other computers. Small devices with a screen like a television

set are enabling us to 'converse' with computers, and these devices will become cheap enough to allow many people to have one in their home.

Indeed, when the machines do eventually become much more capable we may someday talk not about separate computers, but rather about a vast organism interconnected by telecommunication links.

The man in the street has many misconceptions about the computer and the effect it will have on his world. The majority of persons outside computer circles totally underestimate its potential and the speed at which the changes are coming upon us. On the other hand, many of the current ideas are oversensationalized and often highly alarmist. The computer is thought of in terms overly anthropomorphic. In this book, we, two computer systems analysts, have set ourselves the task of objectively explaining to the man in the street, in language as readable as possible, what is happening in the computer industry and its laboratories, and what impact this is likely to have upon society.

The story is an exciting one because the impact will be great. The end of our fifteen-year period is 1984, and a surprising amount of what George Orwell imagined now looks plausible.

Nevertheless, we believe that man can make the society of 1984 a better one than we have today. The potential wealth that the good use of computers opens up to us is staggering.

But like most of the greatest inventions, the computer has a potential for good that is matched by its potential for harm. Many factors are highly disturbing. To live with the computer of the future, new laws, new attitudes, and many forms of social action are needed. Some of these, the education of young children, for example, have a long lead time before they become effective. Because of this, it is important that the public, sociologists, teachers, law makers, and all levels of government officials, should understand *now* what is the likely course of computer technology in the next decade or two.

In an age so rich in innovation, we have a wide range of possible futures theoretically open to us. We say 'theoretically'

because the institutions of our society have a high inertia, and the public has little understanding of the choices possible for the future. On the other hand, the technology that moulds our world is changing fast. It is changing much faster than it did when the automobile transformed our cities, and the rate of change is increasing. If devastating changes in technology occur at a faster rate than changes in our society's institutions or in the public's understanding, then society, to a major extent, is in the grip of the machine. As a new and powerful technique becomes economic, it is used *because it is economic*. The social implications are worked out afterwards, but this may be too late. The automobile has done much damage to some of our cities, especially old and beautiful cities in Europe. We know now how to build new cities in which the automobile and pedestrian amenities are separated, parking is adequate, and traffic jams are largely avoidable, but it will probably be several decades before such cities will flourish. The impact of the computer and new telecommunication facilities is going to be more sweeping than the impact of the automobile.

The question this book asks is: will we anticipate and plan for the new machines or will we let information technology race ahead undirected, leaving us to sort out the mess afterwards, as we are now doing with traffic in cities. If we permit the latter, then we have reason to be apprehensive.

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