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### **Title**

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### **Permalink**

<https://escholarship.org/uc/item/91m711kt>

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### **Publication Date**

1979-02-01

To be submitted to the International Federation  
for Information Processing Congress 80, Tokyo,  
Japan, October 6-9, 1980, and Melbourne, Australia,  
October 14-17, 1980

LBL-9097 c. 2

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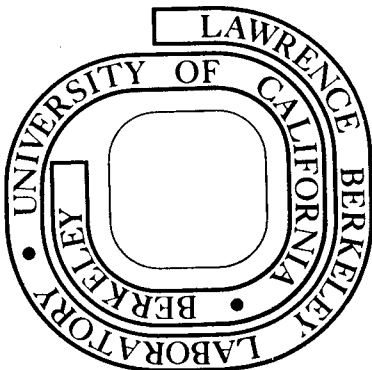
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The Role of the Microcomputer in the Demise  
of Western Civilization\*

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\* This work was supported by the U.S. Department of Energy under contract  
No. W-7405-ENG-48.

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ABSTRACT

Every revolutionary new technology has been accompanied by a host of Cassandras prophesying the end of the world as we know it. Unlike Cassandra, heretofore they have all been wrong. The microcomputer has come into its own as a revolutionary new technology, and the new generation of Cassandras is beginning to appear. They, too, for the most part are wrong, but their error is not in their conclusion--for the microcomputer will bring about the end of Western Civilization--but in their concentration on technological consequences. It is rather a social consequence, the willful dis-integration of society, which will be the motivating force.

But Cassandra's tragedy was that no-one listened to her.

The Role of the Microcomputer in the Demise  
of Western Civilization\*

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1. INTRODUCTION

One of man's more popular pastimes has always been the prediction of the end of the world. Some predictions, such as the Armageddon of the Revelation of St. John, are the result of inspiration, divine or otherwise. Others, such as the original Malthusian prediction or, more recently, those of the Club of Rome, have arisen from the development of input/output models of greater or lesser accuracy. A third category, one of the favorites of the disaster school of science fiction writers, springs from the uses and abuses of technology. We are concerned here with one of these.

There are several standard avenues down which we can follow technology to our destruction. The first proceeds from the laboratory of the mad, misunderstood, or frustrated scientist. This road, exemplified by Dr. Frankenstein's creation, has often not been followed to the end (i.e. the good guys often win), although the potential is always there. The second major avenue is that of technology out of control. It has three major branches: the accidental catastrophe, the unforeseen consequence, and the deliberate seizure of control by the technological creation. The computer

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\* This work was supported by the U.S. Department of Energy under contract No. W-7405-ENG-48.

which raped Julie Christie in order to produce progeny in the movie Demon Seed is a modern example of the last of these. The others have spawned innumerable tales of escaping pestilences, Midas touches, and well-meaning or short-sighted bunglers who fail to let sleeping super races lie. A well-traveled byway, which is often related to one of the above is the mutual annihilation drama: for it is often started by a mad scientist or soldier (Dr. Strangelove) or an accident or act of God (the string of coincidental failures which started it all off in Fail Safe).

The last major theme of technological destruction is that of overdependence on technology, to the extent that man loses some essential skill, mental toughness, or the physical strength to survive unaided (the big-headed intelligentsia encountered in The Time Machine, for instance).

Before I examine the particular track down which the microcomputer will carry us, however, I would like to explain what I mean by the phrase "the demise of Western Civilization". And I will begin that by explaining what I don't mean. In a trivial sense, every major technological advance has destroyed the civilization which existed at the time of its introduction into everyday life: the steam engine pushed us out of the fields and into cities, the automobile out of the cities and into the suburbs. The movies gathered us in huge crowds in darkened halls, television returned us to our own--darkened--living rooms. The compass and chronometer made intercontinental travel possible, the airplane makes it trivial, and the present advances in communication technology can be expected to make it unnecessary.

This is NOT the demise I mean.

The tapestry which is Western Civilization is the result of a

continuous--but perhaps not always monotonic--developmental process which has been going on for thousands of years through all the vicissitudes which such a span of time implies. Not all of its threads have been continuous or constant. The relative roles of "science" and "religion", for instance, have been at times united, at times in conflict; when in conflict, each has had its times of supremacy. Some threads have been continuous, however. It is my belief that some of those persistent threads have been essential, that without them Western Civilization--the civilization which developed the microcomputer--could not have come into being.

It is also my belief that one of the consequences of the development of the microcomputer will be the severance of one of the most crucial of these threads. Furthermore, I believe that the ensuing disruption will cause the whole fabric to tear in an irreparable fashion. That the result will be the end of man or even the end of civilization I much doubt, although the possibility should not be dismissed out of hand; that it will be the end of Western Civilization I have no doubt whatsoever.

## 2. HOW IT WON'T HAPPEN

There is common speculation about at least four possible dismal futures which the microcomputer can help to bring about: total unemployment, the revolt of the robots, the misapplication of genetic engineering, and the ultimate Terminal Man. I will begin by dismissing them.

### 2.1 Total unemployment

This particular specter has been raised with the introduction of each new labor-saving device since time began (the log-rollers probably protested the invention of the wheel), and each time, in fact, quite the reverse has prevailed. The spinning jenny may have done the work



of a thousand women, but hundreds of thousands were eventually needed in the mills. The automobile may have put the horse out of business, but Henry Ford saw to it that many more mechanics are needed than blacksmiths, many more oil industry personnel than haymakers. The computer itself was hailed (or cursed) as the end of any of a number of occupations; the computing industries now support many more people than the computer has displaced.

In the actual event, it is the nature of the work which changes, not the size of the work force. While it is true that each new tool has displaced some workers from traditional tasks, it is also true that each new tool has encouraged man to attempt ever more difficult challenges and these new challenges have led to totally new occupations. There still remains an ample supply of problems which are beyond our capacity: real time weather prediction, positive weather control, the domestication of the earthquake and the volcano, colonization of the moon, regeneration of lost or broken limbs or organs--the list is endless. One assumes that the microcomputer will contribute in some measure to the solution of some of these problems or their preliminaries, and in so doing will generate whole industries which even the science fiction folk have not yet dreamed of.

Furthermore, the microcomputer will help combat unemployment in another, more important, way by providing opportunities for the previously unemployable. A few of the ways in which this could happen--is happening--are

- artificial voices for those who cannot speak
- work stations for the sightless
- simpler and finer controls for prosthetic limbs

- communication for those paralyzed by stroke
- augmentation of brain power for the mentally handicapped  
(thus reversing the traditional division of labor between man and machine)

Again, I am sure that this list is incomplete, and that the next decade will see advances beyond my wildest speculations.

As an aside, I might note that there are two opposing schools of thought on the unemployment issue. One is implicit in the term "universal unemployment"; the other might prefer to use "opportunity for expanded leisure". Whether you find the absence of labor to be a Utopian situation and devoutly to be wished, or whether you believe that it is only the Devil who makes work for idle hands, I believe that you are worrying about the wrong problem. The microcomputer will not put the human race out of work.

## 2.2 The revolt of the robots

There are those who think that such a thing could not happen because of the Asimovian Laws of Robotics. There are also those who think that the robots may never hear of Dr. Asimov. This section is addressed to the latter group.

It seems to me that the principal pre-requisite for a true Revolt of the Robots is the simulation of the human brain in very nearly equivalent volume, and without cryogenics. (I can think of no creation more dependent upon the maintenance of a high technology than a cryogenic brain. The miniaturization necessary to get both the brain and its cooling factory into some sort of reasonable volume is awesome to contemplate.)

However, let us for the sake of argument assume the occurrence of a Revolt of the Robots. I claim that in the absence of the annihilation of the human race such a revolt will not end Western Civilization, regardless of which side is victorious. Obviously, if Man wins, he will repress--and possibly lobotomize--the robots. (This will lead to the creation of the Society for the Prevention of Cruelty to Robots (SPCR) which will work diligently to improve the conditions of robot life.) It is not in Man's nature to turn his back on a convenience simply because it is recalcitrant. He will therefore NOT extirpate the robots, but he may overspecialize them and try to deny them any inter-robot communication in an attempt to keep them under control. Either he will succeed, or we shall have had a successful Revolt of the Robots.

In this case we shall have a situation in which Robot is master, Man is slave. This event will undoubtedly slow the progress of Western Civilization, but it is unlikely to result in its end. There are two major reasons for this. Firstly, because the Robots are unlikely to do other than simply reverse the original roles of Robot and Man and maintain the existing civilization. But more importantly, because slavery has been an important concomitant of much of Western Civilization from its very beginnings in Ancient Greece.

Man knows how to deal with slavery, and how to survive serfdom. He has been subjected to many forms of mental and physical enslavement including domination by conquest, by fear (of this world or the next), by economic chicanery (indenturement and the company store), by patronization, by mass hysteria, and by drugs. He has always survived. And while history shows that we don't study it carefully

enough to avoid the pitfalls of the past, it also shows that we continually climb out of the pits and are occasionally somewhat the better for the experience.

A successful Revolt of the Robots would simply be yet another pit, which would not contain mankind for long. It would also not materially change the outward attributes of Western Civilization, but merely provide, temporarily, a new set of beneficiaries.

A final opinion: Unless and until the robots develop a sense of humor and the ability to act irrationally they will never understand Mankind well enough to dominate it. In any case, whether or not the microcomputer brings about the Revolt of the Robots, the Revolt of the Robots will not bring about the demise of Western Civilization.

### 2.3 The improper application of genetic engineering

This whole area is such an emotional one that it is probably best if I begin by stating a prejudice and a presumption.

(i) I am opposed to genetic engineering on a number of moral and philosophical grounds, none of which is germane to this discussion. The opposition itself may be germane, however, for it may distort my view of this portion of the future.

(ii) I believe it's going to happen, soon, and that the microcomputer will play a major role.

Experiments in genetic engineering will go forth, with or without the blessing of the legal, social, religious, or professional establishment. The essence of Man's history is the posing of ever more difficult tasks and questions which, when once posed, nag at him until they are accomplished or resolved. Genetic engineering is but the

logical extension of earlier work in the biological sciences. Whether or not we approve of genetic engineering, we are standing on its threshold, and Man is not known for pausing at such thresholds for reflection. The threshold, then, will be crossed and the microcomputer will play a part. What then?

Almost certainly there will be some great disasters and perhaps a giant stride forward or two. (I find it impossible at this juncture to imagine which direction might be construed as "forward".) But neither the triumphs nor the disasters will rend the very fabric of Western Civilization. Pretty much by its very nature the changes wrought by genetic engineering must be slow ones, and Western Civilization has shown itself to be quite adept at accommodating itself to slow change.

The effect of genetic engineering on Western Civilization will be less profound and more gradual than the effect of television.

#### 2.4 The ultimate terminal man

The Ultimate Terminal Man, as a result of the implantation of microcomputer-controlled sensors, receivers, servos, and other mechanisms, will be capable of more than human operation but possess less than human volition. This will not be a new phenomenon, but merely a substitution of microelectronics for the psychological, hypnotic, and chemical means which have been used for such ends for centuries. The Ultimate Terminal Man is thus seen to be a form of robot constructed from rather perishable material and with rather high maintenance costs; the discussion of the Revolt of the Robots therefore pertains to this case also, leading to the same conclusion.

In summary, while it is indisputable that the microcomputer can

accentuate these four threats, they are not really new ones, and Western Civilization can be expected to survive them. One should always remember that the Good Guys will have micros, too!

### 3. THE REAL REASON

The real reason that none of the situations described above will come to pass is that Western Civilization will be dead, a victim of the microcomputer, long before any of these other influences will have a chance at it. Some of these events, indeed, may happen, but if so they will happen as consequences of the demise of Western Civilization, rather than as contributory causes.

What, then, is it about the microcomputer which will bring about the end of Western Civilization? Which essential thread will it break? How can we best characterize this phenomenon?

These questions are most conveniently answered in the reverse order. The phenomenon can be characterized in a single word: Isolation. The essential thread is face to face communication. Western Civilization cannot survive without it.

A man, in order to retain his humanity, must remain in face to face communication with other men. All masks and intermediaries distort the message and dehumanize the man. The automobile provides an admirable example of this effect. People who are polite and courteous in person, and who remain so to their passengers, frequently become aggressive and impatient as drivers. The walls of the automobile serve to divide the universe into two portions: the smaller one--within--where friends may be found, and the great outside which is peopled by enemies, antagonists, fools, and incompetents.

Recent technology as a whole, in fact, appears to possess a definite bias towards increasing the isolation of individuals.

Television is more isolating than either radio or the movies. Radio drama, by forcing the listener to apply his own resources to flesh out, in his mind's eye, the bare sounds, somehow managed to create an identity and feeling of kinship which has escaped television. Television, by contrast, feeds the viewer so much information that use of his own imagination is strongly impeded, if not entirely prevented. And while the movies flood the viewer with as much information as television, at least they involve him in the pseudo-social exercise of leaving his den and mingling with other people, with some of whom he may have actual face to face conversation.

A more recent phenomenon is the walking earphones. Conrad Aiken wrote a very poignant short story of a child falling into the isolation of schizophrenia as his "Silent Snow, Secret Snow" cut him off from the rest of the world. Walking earphones are little less than a voluntary dive into a far from silent, but quite secret, snowbank.

Before looking specifically at the microcomputer, let us consider the role of computers and computerniks in general in the increasing isolation of mankind. The first point to note is that people who work with computers generally prefer computers to people. Their failures at communicating with real people in the design and construction of their systems are legion and legendary. It is therefore not surprising to see them push HERMES as a substitute for person-to-person or even telephone-to-telephone conversation, or to push PLANET or DELPHI as a substitute for face-to-face conferences.

DELPHI in particular has an impressive weight of authority behind it, but to work it must be tightly controlled: so tightly controlled in fact as to be extremely manipulable. On the other hand, the absence of such control can lead to the following sort of teleconference experience: Overenamoured by the technical glory of the whole concept a teleconference was established to coordinate a number of people whose offices were in the same or adjoining buildings. A simple misunderstanding arose concerning the vocal distribution of information which was not then entered into the conference. The result was an edict that no information could be considered valid which did not appear in the teleconference. This did not quite require an insertion of Peano's axioms so that we could discuss arithmetic, but nearly so....What did develop was the Interactive Pie-Throwing Conference, a juvenile exercise in vituperation and graffitic one-upmanship.

The second point, of course, is the astonishing number and variety of ways in which machines in general, and computer-controlled machines in particular, already come between two people engaged in transactions which in simpler times would have been person-to-person. Vending and change machines are obvious examples. Another is the telephone, which was bad enough when it merely stood between two people, but which now may hide another machine--a tape recorder or a speech synthesizer--at the other end. One can turn to the computer for "companionship" in the form of participation in such human games as chess, bridge, and poker. Even procreation is not immune to the intervention of the machine.

And so we finally come to the question of the specific role of the minicomputer: How is this little device going to exploit the present tendency towards isolation to bring about the demise of Western



Civilization? In brief, by bringing total isolation within the reach of anyone who wants it. We are surrounded by ample evidence of how this will come about. There is essentially no profession--except the world's oldest--which cannot be followed in complete isolation. It is already common to do all of one's shopping by telephone and mail; the microcomputer will make it possible to extend that to the remote ordering--and even fitting--of tailor-made clothes. Computers are already assisting in medical diagnoses. It will not be long before microcomputers will be able to monitor all ones vital signs 100% of the time with 99% accuracy, not to mention the automatic specimen analyser which will be built into the potty of the future. And speaking of analysis, it will no longer be necessary to leave ones womb even for psychoanalysis. More than one psychiatrist--much to Weizenbaum's horror--has already advocated more sophisticated training for ELIZA's psychiatric aspect. I think it is not necessary to elaborate the point. The microcomputer will enable one to live his entire life without face-to-face contact with another human being.

As an illustration of the seductive powers of the computer, consider this possibly apocryphal story from the early days of time-sharing. One of the pioneers had had a teletype installed in his bedroom so that he would be readily reachable in emergencies. He saw no reason to remove it when he got married. For some years the marriage was childless. Then one day the teletype was moved into the next room. The first child was born within a year.

But just because complete isolation is possible, why would anyone--or more particularly, everyone--want to do it? Because it is there, for starters. Because someone else is doing it. Because it is efficient as a way of delivering individualized services, and efficiency is the very essence of

Western Civilization. But most importantly, because it is safe. To meet people face to face is to risk involvement, and involvement is certain to result in pain. Most people will willingly eschew the possible joys of direct contact in order to escape the certain pain. And as face-to-face meetings become more rare, people will forget how to conduct them, the pain will become sharper and more certain, and the withdrawals more prolonged.

As might be expected, the computer folk will lead the way. The home terminal is the first step of the great shift away from the office and into the home. As computerpowered toys become ever more seductive there will be ever less reason for unfiltered interpersonal communication.

Writing in the San Francisco Chronicle, Charles McCabe has characterized the influence of television as a "new loneliness [which] is an inhuman condition, a deliberate removal of self from the concerns which have always moved human beings. Worse, it is an abdication of self." This abdication of self is a technologically induced change which Western Civilization cannot withstand. The result may be chaos or another civilization (I think the latter). It may be better or worse than Western Civilization (right now I'd put my money on worse). But it will not be Western Civilization.

This report was done with support from the Department of Energy. Any conclusions or opinions expressed in this report represent solely those of the author(s) and not necessarily those of The Regents of the University of California, the Lawrence Berkeley Laboratory or the Department of Energy.

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