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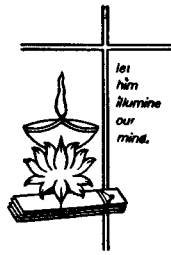
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ETHICAL IMPLICATIONS IN THE USE OF COMPUTERS

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1. INTRODUCTION

Whether the common man is aware or not, computers have invaded every section of public service today. While the computer-specialist is too busy to keep himself up to date, and the user is too excited with the results that the computers produce, the philosopher cannot just take this "wonder-machine", for granted. The computer arouses in the philosopher a number of questions - philosophical and ethical. Could computers become superior to man? Could the activity of the computer be called "thinking"? What would be the basic difference between an advanced computer (Artificial intelligence - AI)[1] and man? Would AI acquire personhood? Would the AI be capable of qualities of the spirit - emotions, love, compassion; and above all, would it acquire self-consciousness? Could there be a limit to technological progress itself? In other words, when should man say, "this is the last piece of our invention"? And a myriad of similar questions.

Besides these, there are also a number of moral questions that the computer has brought in. Linked computer systems are a threat to the privacy of the individual. Even the government could intrude into private secrets. How ethical is this? Who is really responsible if a World War breaks out due to an error in a computer? Is it moral to fill my PC with pirated software? On the one hand, software are too costly to buy and pirated

copies are so easily available. On the other hand, it is justice to give the producers their due. And what about computer viruses, is it moral to produce them, while they could cause damage to data and thus bring about enormous loss? And at the socio-economic level, progress in computers would lead to more and more automation and this would aggravate the already existing problem of unemployment. Again moral dilemmas.

The list of moral questions raised by the chip could go on endlessly. Perhaps, the list of these questions would expand as the chip-technology itself progresses.

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But of course some of the questions listed earlier, regarding the status of the computer, are meaningless once one becomes acquainted with the working of the computer. However, the moral questions seem to become more acute. This essay attempts at posing these moral questions a little more logically, and tries to search for possible solutions. We must also acknowledge that, since the topic for our discussion here, is only a recent sensation, the material available for research is wanting. Hence the essay may lack a proper scientific tone.

Our reflection here primarily concerns four areas in which the arrival of computers have raised moral questions.

1. Moral questions affecting the individual, the question of privacy in particular.
2. Questions in the area of Business Ethics.
3. Use of computers in decision making.
4. Questions concerning Social Ethics.

Before we proceed on to discuss these questions, it is in place, to have a brief look at the nature of computers themselves.

2. WHAT ARE COMPUTERS?

It is little difficult to formally define computers. But an attempt may be made to state the functions of a computer. "A computer is a device that stores and manipulates data, that can control other devices as a result of its manipulation and storage of data, and that can communicate with other computers, with other types of devices, and with human beings."[2] Hence computers can **calculate** (from calculations involved in weather forecast and flight paths of an aircraft to **generating payrolls**), **store information** (from a simple document to complex bank-data, library catalogues, etc.), **communicate** (satellite to telephones, man to man, machine to machine, etc.) and **control** (supervise operations and dictate directions depending on prescribed conditions).

Nonetheless, a layman should not think that computers are magic machines, that they can produce results out of thin air. Computers just carry out orders, of course, efficiency, speed and accuracy being their strengths. Commands work on the basis of conditional logic. That is, if A is the condition the machine is commanded to carry out action A1, and if B is the condition then to carry out action B1. And then as regards actions A1 and B1 themselves, directions are fed in by way of formulas. Here is a simple example: One wants to find the area of a square. The programmer has already fed the formula into the computer in his programme, in our case, $A = a^2$. That is, Area of a Square = (Length of a side of the Square)^2. Now the computer is instructed to ask the user for the value of the variable 'a'. This being the case, when one wants to find 'A', he gives the computer the value of 'a'. And the computer calculates the value of 'A' and communicates it to the user, within fractions of a second. It is on the basis of this principle that all computers work, including the most advanced ones. It is not relevant for us to enter into details regarding the functioning of the computer. What is indeed important is to realize that computers are not mere magic machines. With this basic understanding we can now proceed on to discuss the moral questions.

3. THREAT TO THE PRIVACY OF THE INDIVIDUAL PERSON

The primary ethical question affecting the individual person, in the use of computers, is the problem of privacy. There is a possibility of network systems in computers, through which a number of autonomous computers and other devices, in a defined area or even the whole globe, could be linked via telephone lines or satellites. This facilitates the access to data from sources other than one's own, distance not being a barrier. [3] On account of this, information fed into computers could sometimes be available to unauthorized users. In this way, one can, not only have access to others' data but could also manipulate them. Now, how moral is it to use the data in someone else's computer, when it is linked, and when the other does not provide sufficient security, and particularly if the information is confidential?[4] The same could also be said of "Data-banks", where information about individuals are stored. Surely, this sort of storage of personal information in a data-bank itself makes the information less private. Besides, what is the criterion for one to have recourse to these personal data?

These questions become acute, particularly, in the light of the contemporary debate regarding privacy.[5] The word 'privacy' itself has a number of meanings. In very ordinary linguistic usage, privacy could be defined as the right "to be let alone".[6] Privacy could also be considered as a zone of control "that a person ought to be able to exercise in respect to the access by others to information about himself or herself".[7]

Privacy is best defined by Alan Westin as, "the right of the individual to determine when, how and to what extent there should be disclosure of information of himself".[8]

Is there any information which is really private?, some ask. Still others ask: Is privacy a right? For even the information which may be private could be of use, may be to save one's life or one's dignity.

There is also a possibility that governmental institutions intrude into the personal privacy of the citizens. Thus computers may be used for increased social control speeding up surveillance by police and other authorities.[9] And since information is power, those who have access to more information by the use of computers can become superior to others. They could dominate the rest. This could also pose a threat to our democratic systems.

It isn't really easy to answer these questions as it has been easy to raise them. However, in conclusion to this section, we may suggest that while the computer-linked-systems and data-banks need to make their protection as foolproof as possible, the users need to have a basic respect for the individual other.

4. COMPUTER-BUSINESS-ETHICS

Let us confine our reflections primarily to two problems that the computer raises in the area of business ethics, viz., Piracy and Computer Virus.

a) Software Piracy

The problem here is not much different from that of piracy of books, video and audio cassettes, etc. How moral is it to copy expensive software when I cannot afford a personal copy myself, and when pirated copies are so easily available? On the other hand, when computer software are so costly, would anyone think of buying them from authorized dealers?

The issue at stake here is justice. Hence, we can speak of the relationship between the producer and the user in terms of rights and duties. The producer has the duty to price his product at a reasonable rate. At the same time, he has the right to be paid for his work and creative contribution. On the other hand, the user has the duty to pay the producer for the software he uses; and simultaneously, has also the right to get the worth of the money he has paid.

Evidently this relationship is dialectic and the problem of piracy and high cost is a vicious circle. While the reason for piracy could be attributed to the exorbitant cost of the software, piracy itself could be the cause of the high cost of the software. Copying and using software without paying for it, limits the mass production of that software which could reduce the cost of it for all.[10] This also reduces the amount of money available, for the producer for further research and production.

In this context of the discussion on the relation between the producer and user, a few more questions may be posed. For instance, how well-tested does one's software have to be before he could sell it to his customers? On what criteria does he price his software? Is it on the criteria of the time spent, work invested or the creativity and novelty involved therein?

b) Computer Virus

The second problem in the area of business ethics in the world of computers is virus. Computer viruses are, in simple terms, micro programmes created and hidden in computer software. They get activated when a particular condition is fulfilled. Its apparent purpose is to give some trouble to the user, by benignly causing some disorder on the monitor, or by preventing "booking," or perhaps by occupying more and more space in the memory and thus destroying data. Another important and dangerous characteristic of these viruses is that most of them are contagious. That is, they may copy themselves wherever memory is available, thus depriving the user of working space and even destroying data. Everyday new viruses are created, with a score of destructive abilities.

We can speak of three purposes of viruses. First, viruses may be put as part of a software package to prevent pirating. These viruses get activated when the software is illegally copied. The use of virus for this purpose seems apparently justifiable. If one attempts to copy a programme illegally he is violating a principle already discussed above, and the virus is only a punishment for his illegal act. Nevertheless, a further question could be raised: Shouldn't there be a proportion between the value of the copied software and the havoc that the activated

virus could cause? Since viruses could destroy data worth millions of dollars and could irreversibly affect individuals and companies, the software programmer who has recourse to a virus to protect his software has to weigh the ends and the means.

A second category of viruses are made for business. Someone may create a virus and a corresponding vaccine. He, first introduces the virus into the computer world. Later he markets his vaccine. And of course the vaccine does work because a computer expert who knows how to create a virus would also logically know how to "kill" it. Viruses created for this purpose seem unjustifiable.

There is still a third purpose for creating viruses. Just for fun. Fun, which is destructive, is ruled out without any further debate. Hence viruses of this category could be rejected as totally unjustifiable.

5. USE OF COMPUTERS IN DECISION MAKING

In this section, we go on to discuss certain other issues that are at stake with the advent of computers, like the use of computers in decision-making, the automation of nuclear weapons, and about the possibility of computer errors and the implications of the same.

With the coming of computers militarism has acquired a new dimension. They speak of more precision and less loss of human life. This seems to remain only a mental hypothesis. We know that the nuclear warheads are all mostly computerized. Which means that if certain conditions are fulfilled the warheads would automatically be fired; there would be no way of reversing them, and there would be no human element involved in making the final decision. Now the question is, can the decision of a nuclear war be left to the cold deterministic decision of the computers?

Secondly, there are also possibilities of computer errors leading to a nuclear war. During a summer war games exercises off San Francisco, a Navy gun was shot in the wrong direction and nearly hit a Mexican freighter on the open seas at what should have been a safe distance away.[11] This was due to a typographical mistake in programming the computer. Computers are simply machines. Though machines cannot go wrong by themselves, when their components or their environment is not favourable they can go wrong. (Just as a car would be consistent in its job, unless there is some disorder with any of its parts.) And since machines *can go wrong*, they *will* go wrong. Apart from mechanical errors (hardware error), since computers fundamentally work on the basis of a sequence of commands, an untested error in the programme could lead to a software error. Moreover, computers "can be like the logical paranoiac, who is perfectly consistent with his premises, but completely out of contact with the real world".[12] If the command has been improperly given the machine will grind out answers, which, though may be logical in terms of the instructions given, could be at odds with the actual purpose of the programmer. Therefore computers can make mistakes, sometimes irreversible and serious

decisions involving the existence of the humankind.

All this raises the moral question of the use of machines, which in effect make major decisions for us without human verfication. We cannot continue to naively believe that since the results come from a computer they must be correct. Hence computers could be dangerous if those who programme it and those who use it do not have a sound social sense and an awareness of the limitations of the machine.[13]

6. QUESTIONS IN SOCIAL ETHICS

Since computers are more efficient, accurate and fast, they could substitute to do a lot of work that men were conventionally doing. This, in technical terms, is called Automation. Automation, in simple terms, is the substitution of a machine (could include a tractor to a computer) for the human organs of observation, decision and effort, so as to increase productivity, control quality and reduce cost. Automation specifically began with industrialization. But this process has become more intense at the advent of computers, which is rightly called the second industrial revolution. In the first industrial revolution machines substituted man in his *muscles*, but in the second they have begun to substitute his *brains*. The immediate problem automation gives rise to is unemployment - displaced labour. The problem of displaced labour would be more acute in developing countries, particularly in countries where there is already a surplus of human labour. But this is also a growing phenomenon in many European Countries.

Today's economic system is based on competition. Hence on the one hand, one has to automatize his factory to increase efficiency and productivity. On the other hand, is not the company responsible for the workers who may lose their jobs? Hence, is there an obligation to re-train workers in computer related jobs? Or does the company have an obligation to keep the factory only "semi-automatic", thereby integrating human and mechanical workers together?

On a deeper philosophical level, automation seems to threaten the worth of the human person. Man could be identified as one among machines. Besides, automation, mechanization and computerization would lead to less human contact and thus dehumanizing our society. Further more, can all aspects of human life be computerized? Computerization of data itself could lead to a form of an alienation of the human person. Can human worth be codified in computer storage systems?

Computer experts speak of "world brain" - it is a "global electronic encyclopedia". Will this be used and controlled only for the rich and privileged of the world or will it serve universal human need?

Besides these, there is also the possibility of increased surveillance of social control with the use of computers, as we have already discussed in reference to privacy. There is also a possibility of social inequality between the have's and have not's - between those who have access to computerized data and those who do not have. In other words, as Theodor Nelson speaks of, there will be a "computer

Priesthood" - experts who make things necessrily complicated to keep others dependant on them.[14]

There is also a lot of competition in the field of computer research, because computer manufacturers are also sponsored by governments which have military interests. And computer would go on to the 7th, 8th, to the nth generation. But is all this investment of human energy and money morally justified in terms of basic human need? We may say such a progress is "inevitable". To accept the "inevitability" of progress is to say that somebody or something else is making our choices. Hence how far can human inventions go? Shouldn't man take control of the reins of technological progress? More precisely, shouldn't we make certain moral norms to control human inventiveness? Alvin Toffler, of *Future-Shock* fame, would insist that if man does not take up the reins of "progress" he would probably end up in a mess ruining himself. With the ever increasing progress in cybernetics, Robotics and Artificial Intelligence, the above discussed problems bear a serious significance.

By saying all this, we are not trying to oppose progress altogether. We are not drawing a black curtain over scientific inventions. But we are only making an attempt to understand progress in the right sense. We only intend to assert the immediate good of every individual person and the long term collective good.

7. CONCLUSION

Technology being a practical science cannot think beyond and about itself. It is not self-reflective. It is not aware of the implications of its own progress. Hence it is the duty of the philosophers to educate technology in this regard. In our context, it is the duty of the philosopher of morality to point out the moral implications of the progress and the use of computers. Particularly because computers are at their infancy, the discussions we now hold and the ethical codes that we, as philosophers, prescribe are going to have a deep impression in the ages to come.

It is with this awareness that this paper has emerged. Perhaps this essay merely raises questions. Solutions are not so easy to find. But any solution would lie in the realm of either controlling the process of progress itself, or limiting the use of the products of progress. Computers, like any other innovation of human technology, could be used for good and for ill, depending on the user. Computers do not merely exist. They are used. Hence, if any problem should arise out of this new marvel, it would arise out of the misuse of it than out of something intrinsic to itself. Therefore, the intent of this paper is not fully achieved if this paper has not made also the computer users to be more reflective in dealing with their "magic machine" and the business related to it.

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NOTES

1. AI is machine with reasoning, learning and thinking capabilities that resemble those of humans.
2. Susan Curran & Ray Curnow, *Overcoming Illiteracy* (New York : Penguin Books, 1983), p. 19.
3. *Ibid.,* p. 200.
4. Cf. Dennis C. Smolarski, " The Spirituality of Computers," *Spirituality Today* (vol 40, No. 4, 1988), p. 294. Many modern movies portray this sort of mischiefs and also the implications of the same.
5. Paul Brett, "Privacy," *A New Dictionary of Christian Ethics,* ed. John Macquarrie & James Chidress (London : SCM Press Ltd., 1986), p. 498.
6. This definition was given by Braneis and Warren, "The Right of Privacy," *Harvard Law Review* (1890).
7. Richard A. Wasserstrom, "Privacy," *Today's Moral Problem,* 2nd Edition. (Macmillan Publishing Co., 1979), p. 205.
8. Alan Westin, *Privacy and Freedom,* (New York : Athenaeum, 1976), p. 7. as cited in Joseph R. Desjardins, "An Employee's Right to Privacy," *Contemporary Issues in Business Ethics,* ed. by Desjardins (California : Wadsworth Publishing Co., 1985), p. 222.
9. Paul Brett, "Computers," *A New Dictionary of Christian Ethics,* p. 110.
10. Parker Rossman & Richard Kirby, *Christians and The World of Computers* (London : SCM Press, 1990), p. 101.
11. Smolarski, p. 294.
12. Thomas M. Garrett, *Ethics in Business* (New York : Sheed & Ward, 1963), p. 112.
13. *Ibid.,* p. 119.
14. Theodor Nelson, *Computer Lib / Dream Machines,* (Microsoft Press, 1987), as cited in Rossman and Kirby, p. 3.