**THE COMPUTER REVOLUTION AND THE PROBLEM OF GLOBAL ETHICS(1)**

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Introduction

This paper is based upon my view of the nature of the Computer Revolution that is currently transforming the world:

1. The Computer Revolution causes profound changes in peoples’ lives worldwide. In cyberspace, there are no borders in the traditional sense. The borders, as well as the links between individuals worldwide, will be increasingly defined in terms of the degree of an individual’s ability to penetrate cyberspace.  2. Because of the global character of cyberspace, problems connected with or caused by computer technology have actually or potentially a global character. This includes ethical problems. Hence, computer ethics has to be regarded as global ethics.  3. Up to the present stage of evolution of humankind there has not been a successful attempt to create a universal ethic of a global character. The traditional ethical systems based on religious beliefs were always no more powerful than the power of the religion they were associated with. And no religion dominated the globe, no matter how widespread its influence was. The ethical systems that were not supported by religion had an even more restricted influence.  4. The very nature of the Computer Revolution indicates that the ethic of the future will have a global character. It will be global in a spatial sense, since it will encompass the entire globe. It will also be global in the sense that it will address the totality of human actions and relations.  5. The future global ethic will be a computer ethic because it will be caused by the Computer Revolution and it will serve the humanity of a Computer Era. Therefore, the definition of computer ethics ought to be wider than that proposed, for example, by James Moor in his classic paper, “What Is Computer Ethics?” (Moor, 1985) If this is the case, computer ethics should be regarded as one of the most important fields of philosophical investigation.

The Computer Revolution

In his presentation of the anatomy of the Computer Revolution, Moor (see Moor, 1985) uses an analogy with the Industrial Revolution in England. He notes that the first stage of the Industrial Revolution took place during the second half of the Eighteenth Century, and the second stage during the Nineteenth Century. This is a span of about 150 years. Let me compare this with what happened after the printing press was invented in Europe. (Of course, books were printed in China already around the year 600 CE.)(2)  Gutenberg printed the “Constance Mass Book” in 1450, and in 1474 William Caxton printed the first book in the English language. Already in 1492 “the profession of book publishers emerges, consisting of the three pursuits of type founder, printer and bookseller.” (Grun, 1982) This was, roughly speaking, forty years after the invention of the printing press, the same amount of time Moor says the Computer Revolution needed for its introduction stage. In 1563, the first printing presses were used in Russia. (This was the same year in which the term “Puritan” was first used in England, one year before the horse-drawn coach was introduced in England from Holland, and two years before pencils started to be manufactured in England.) And in 1639, the same year in which the English settle at Madras, two years after English traders were established in Canton and the Dutch expelled the Portuguese from the Gold Coast, the first printing press was installed in North America, at Cambridge, Massachusetts. This is about 140 years from the first publication of printed text by Johann Gutenberg – almost the same amount of time Moor considers for both stages of the Industrial Revolution.(3)  Another point made by Moor in “What is Computer Ethics?” is just how revolutionary the computer is. He argues that logical malleability makes the computer a truly revolutionary machine – computers can be used to do almost any task that can be broken down into simple steps. Moor challenges the “popular conception of computers in which computers are understood as number crunchers, i.e., essentially as numerical devices.” (p. 269) He further writes:

The arithmetic interpretation is certainly a correct one, but it is only one among many interpretations. Logical malleability has both a syntactic and a semantic dimension.... Computers manipulate symbols but they don’t care what the symbols represent. Thus, there is no ontological basis for giving preference to numerical applications over non-numerical applications. (p. 270)

Here, too, the similarity between a computer and a printing press seems to be evident. Like the printing press, computers serve to transmit thoughts. The appearance of the printing press meant both a technological revolution, as well as a revolution in the transport of ideas, communication between human minds. The same can be said about a computer.  On the other hand, the function of the most important machines invented at the end of the Eighteenth Century – the steam engine and the spinning machine – was replacement of manual labor. But the primary function of the printing press, and the computer as well, lies in the fact that both increase so incredibly the efficiency of the labor of human minds – and not only the individual mind. Computers, like the printing press, allow human minds to work faster and more efficiently, because of their groundbreaking impact on the communication and exchange of ideas. Like the printing press, they are creating a new type of network between human individuals, a community existing despite the spatial separation of its members.  I have written elsewhere about the impact of the printing press on the western hemisphere. (Górniak, 1986) Here, I would like to mention only two of the many changes caused by the invention of movable typeface. Mass-production of texts, and hence their growing accessibility, made reading and writing skills useful and caused a profound change in the very idea of education. Gradually, the ability to read and write became an indispensable condition of a human being’s effectiveness in functioning in the world.  Printed texts also made it possible to acquire knowledge individually (i.e., not through oral public presentation) and freely (i.e., without control of either the individual tutor or the owner of the collection of manuscripts). One of the results of this situation was the loss of belief that knowledge means possession of a mystery, a secret wisdom, inaccessible to outsiders. Knowledge became an instrument which everyone could and should use. Faith in the power and universal character of the individual human mind was born – and with it a new concept of the human being. The masses of believers who used to obey the possessors of knowledge discovered that they were rational individuals capable of making their own judgments and decisions. This paved the way for the two new ethical theories that were ultimately created by Immanual Kant and Jeremy Bentham.

The Printing Press and Ethics

Since many authors who write on the subject of computer ethics, including such prominent scholars as James Moor, Terrell Bynum and, above all the author of the first major textbook in the field, Deborah Johnson, use the ethics of Bentham and Kant as the point of reference for their investigations, it is important to make clear that both these ethical systems arrived at the end of a certain phase of profound and diverse changes initiated by the invention of movable printing type.(4) The question is: were these ethical systems merely solving the problems of the past or were they vehicles driving humankind into the future?  The ethical systems of Kant and Bentham were created during the time of the Industrial Revolution, but they were not a reaction to, nor a result of, the Industrial Revolution of the 18th and 19th Centuries. There was no immediate reaction in the form of a new ethical theory to the invention of the printing press. Rather, problems resulting from the economic, social and political changes that were caused by the circulation of printed texts were at first approached with the ethical apparatus elaborated during the high Middle Ages and at the time of the Reformation. Then, there was a period of growing awareness that a new set of ethical rules was necessary. The entire concept of human nature and society had to be revised. Hobbes, Locke, Rousseau and others did that work. Finally, new ethical systems like those of Kant and Bentham were established. These ethics were based on the concept of a human being as an independent individual, capable of making rational judgments and decisions, freely entering “the social contract.” Such a concept of the human being was able to emerge in great part because of the wide accessibility of the printed text.  The ethics of Bentham and Kant, then, were both manifestations of and summaries of the European Enlightenment. They were created at a time when Europeans were experimenting with the idea of society’s being a result of an agreement (a “social contract”) between free and rational human individuals, rather than submission to divine power or to the power of Nature. Moreover, such a new, contractual society could have been created in separation from traditional social groups. The conquest of the world by Europeans – called by them geographic “discoveries” and colonization of “new” territories – made it possible. Locke’s definition of property as appropriation of nature by one’s own labor, plus lack of a concept of private property in most of the invaded societies, helped that task.   Thus, despite their claims to universalism, Kant’s as well as Bentham’s concept of human being refers to European man as defined by the Enlightenment – free and educated enough to make rational decisions. “Rational” means here the type of rationality that grew out of Aristotelian and scholastic logic and those mathematical theories of the time of the Printing Press Revolution. This tradition was strengthened by ideas from Pascal, Leibniz and others; and it permitted one to dismiss from the ranks of partners in discourse all individuals who did not follow the iron rules of that kind of rationality. The term “mankind” did not really apply to such individuals. Finally, this tradition turned into Bentham’s computational ethics and Kant’s imperialism of duty as seen by calculating reason.  The nature of both these ethical systems must be very attractive and tempting for computer wizards, especially for those who grew up within the influence of the “Western” set of values. It is quite easy to imagine that there could be a “yes” answer to a question asked by James Moor – “Is Ethics Computable?” (Moor, 1996) – if one has Bentham’s or even Kant’s ethical systems in mind.  It now seems to me very likely that a similar process of ethical theory development will occur, although probably less time will be needed for all phases to be completed. The Computer Revolution is revolutionary; already computers have changed the world in profound ways. Presently, though, we are able see only the tip of the iceberg. Computer technology generates many new situations and many new problems, and some of these are ethical in nature. There are attempts to solve these problems by applying existing ethical rules and solutions. This procedure is not always successful, and my claim is that the number and difficulty of the problems will grow. Already, there is a high tide of discussions about an ethical crisis in the United States. It is starting to be noticeable that traditional solutions do not work anymore. The first reaction is, as is usual in such situations, “let’s go back to the old, good values.” However, the more computers change the world as we know it, the more irrelevant the existing ethical rules will be and the more evident will be the need for a new ethic. This new ethic will be the computer ethic.

The Global Character of Ethics in the Computer Era

Revolution, more than any other kind of change, means that two processes take place simultaneously: the process of creation and the process of destruction. The problem is that in a human society this usually causes conflict, because both creation and destruction can be regarded as a positive (good) or negative (bad/evil) process. The assessment depends on the values accepted by the people (individuals or groups) who are exposed to the revolutionary changes.  Moor writes: “On my view, computer ethics is a dynamic and complex field of study which considers the relationships among facts, conceptualizations, policies and values with regard to constantly changing computer technology.” (Moor, 1985, p. 267) This is a broad enough definition to be accepted by almost everybody; but a problem arises when we realize how many people may be affected by and interested in those “facts, conceptualizations, policies and values” – how diverse this group is. In my opinion, we are talking about the whole population of the globe! Computers do not know borders. Computer networks, unlike other mass-media, have a truly global character. Hence, when we are talking about computer ethics, we are talking about an emerging global ethic – and we are talking about all areas of human life, since computers affect them all. What does this mean for the understanding of what computer ethics is?  For one thing, computer ethics cannot be just another professional ethics. Writers like Deborah Johnson (Johnson, 1994) and Donald Gotterbarn (Gotterbarn, 1992) sometimes appear to assert that computer ethics is simply a kind of professional ethics. I support wholeheartedly the idea of a code of ethics for computer professionals. However, there are at least two problems that arise if we take computer ethics to be just a type of professional ethics:

1. Unlike, say, physicians or lawyers, computer professionals cannot prevent or regulate activities that are similar to their own but performed by nonprofessionals. Therefore, although many of the rules of conduct for physicians or lawyers do not apply to those outside of the profession, the rules of computer ethics, no matter how well thought through, will be ineffective unless respected by the vast majority of – maybe even all – computer users. This means that, in the future, the rules of computer ethics should be respected by the majority (or all) of the human inhabitants of the Earth. In other words, computer ethics should become universal, it should be a global ethic.  2. Let’s assume that computer ethics applies only to computer professionals. Such professionals are not totally isolated from the society in which they function. The role of their profession is significantly determined by the general structure of the society in which they are included. At present, there exist various societies and cultures on earth. Many of them function within different ethical systems than those predominantly accepted in the United States or even in the “western world.” Hence professional ethics, including ethical codes for computer professionals, may differ among cultures to the point of conflict. And even if they do not differ, conflict may still be unavoidable. Example: computer professionals in two countries who happen to be at war may obey the same rule that computers should be used to strengthen national security. In such a situation, computers may become a weapon more deadly than the atomic bomb. Discussions like those about scientists responsible for the use of nuclear energy may now apply to computer professionals. And given the power of computer technology, the potential for destruction may be even greater than the case of the atomic bomb.  Or consider another example: it is well known that the United States CIA monitors the Internet for security reasons. However, the question arises whether this means that certain ethical rules, such as respecting privacy, do not apply to certain people? If the CIA does not need to respect an ethical code, who else is entitled to break the rules and on what grounds? If one country can do it, what moral imperatives should stop other countries from doing the same? Let’s assume that such moral rules could be found. If they are better, why shouldn’t they be applied on a global scale?

Problems like those described above will become more obvious and more serious in the future when the global character of cyberspace makes it possible to affect the lives of people in places very distant from the acting subject’s location. This happens already today, but in the future it will have a much more profound character. Actions in cyberspace will not be local. Therefore, the ethical rules for such actions cannot be rooted in a particular local culture, unless the creators of computer ethics accept the view that the function of computers is to serve as a tool in gaining and maintaining dominion over the world by one particular group of humans. I would like very much to believe that this is not the case. I would like to believe Smarr’s optimistic comment (quoted in Broad, 1993):

It’s the one unifying technology that can help us rise above the epidemic of tribal animosities we’re seeing world wide. One wants a unifying fabric for the human race. The Internet is pointing in that direction. It promotes a very egalitarian culture at a time when the world is fragmenting at a dizzying pace.

This may be yet another example of wishful thinking, though. And I worry that scholars in computer ethics may contribute to the problem, if they do not fully realize the importance of their undertaking. It seems to me that, unfortunately, the scholars who have chosen to explore the field of computer ethics have been too modest in defining the area of investigation, as well as the importance of the subject.

End Notes

1. An earlier version of this paper was published in the April 1996 issue of Science and Engineering Ethics.

2. The fact that print did not revolutionize life in China the way it did in Europe is itself an interesting subject for analysis.  3. Timetables for the Industrial Revolution vary greatly depending upon sources and criteria. The timetable chosen by Moor is very popular, but the view that the Industrial Revolution began with the invention of the printing press is very popular as well.  4. Of course, the printing press was not the only cause of such profound changes, but neither was the steam engine or the spinning machine. I do recognize the tremendous complexity of the processes we are talking about.

References

Broad, William J. (1993) “Doing Science on the Network: A Long Way From Gutenberg.” The New York Times; Tuesday, May 18.  Górniak-Kocikowska, Krystyna (1986) “Dialogue – A New Utopia?” (in German), in Conceptus. Zeitschrift für Philosophie, Jhg XX, Nr. 51/1986, p. 99 – 110. English translations published in Occasional Papers on Religion in Eastern Europe; Princeton, Vol. VI, No. 5, October 1986, p. 13 – 29 and in Dialectics And Humanism; Warsaw, Vol. XVI, No. 3 – 4/1989, p. 133 – 147.  Gotterbarn, Donald (1992) “The Use and Abuse of Computer Ethics” in Terrell Ward Bynum, Walter Maner and John L. Fodor, eds., “Teaching Computer Ethics,” Research Center on Computing & Society, 1992, pp. 73 – 83.  Grun, Bernard (1982) The Timetables of History: A Horizontal Linkage of People and Events. New, updated edition. Based on Werner Stein’s Kulturfahrplan, New York, Simon and Schuster Touchstone Edition.  Johnson, Deborah G. (1994) Computer Ethics, second edition; Englewood Cliffs, NJ, Prentice Hall.  Moor, James H. (1996) “Is Ethics Computable?” Metaphilosophy, Vol. 27  Moor, James H. (1985) “What is Computer Ethics?” Metaphilosophy, Vol. 16, pp. 226 – 275.