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ScienceDirect

BIOETHICS UPdate 5 (2019) 69–74

BIOETHICS UPdate

www.elsevier.es/bioethicsupdate

Editorial

Technological development and ethics

Desarrollo Tecnológico Y Ética

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Technological development has been considered as the driving force of human progress during the second half of the 19th and the first half of the 20th century. The terrific military applications of technology during the two world wars, and especially the use of the atomic bomb, gave the first shot to that optimistic view. Then serious damages derived from uncontrolled industrial activity in terms of environmental pollution and squandering of vital resources have aroused additional serious concerns and even fear regarding the development of technology against which many people adopt today a clearly hostile attitude. All these are so well known and widely discussed facts that it would be uninteresting and boring to revisit them. A more interesting discourse, however, can consist in the clarification of the reasons for which we cannot eliminate an essentially positive evaluation of technology and at the same time consider other damages that its development has produced on the human condition, and submit them to a specifically ethical judgment.

A salient characteristic distinguishes the human kind from other living species: whereas such species can survive, flourish and reproduce by adapting themselves to the environment, humans attain the same goals by adapting the environment to their needs. This is why there is no proper "natural environment" of the human species, whose individuals can secure their normal living conditions in the most different physical environments. They can do this because they create a lot of *artefacts* going from igloos to huts, tilts, stone buildings, garments, weapons, and a large display of

https://doi.org/10.1016/j.bioet.2019.07.001
2395-938X/Published by Masson Doyma México S.A. on behalf of Centros Culturales de México, A.C.

instruments for the satisfaction of their basic material needs, but also by realising temples, palaces and other buildings for the satisfaction of other not material needs linked with their individual or social life. Finally, humans have elaborated explicit norms for the regulation of their conduct, social institutions for the preservation of their tradition, as well as concrete symbolic instruments for the fulfilment of such tasks, of which the different types of writing are the most important example. The whole of these realities is often called "culture" and presented as a counterpart of "nature": it actually constitutes the wide domain of the *artificial*. The natural and the artificial can be distinguished but cannot be considered as opposed, for one simple reason: the artificial is what is specific of the human *nature*, is a substantial part of what is *natural* for humans. It is appropriate to call *technology* the whole of those human activities that produce the artificial and is subdivided into a variety of "techniques" corresponding to the skills needed for the satisfactory realization of the single types of artefacts. The terms "technique" and "technology" are commonly related with material activities and productions but they can correctly apply also to other kinds of skills, such as the technique of playing a musical instrument, of dancing, of making mathematical calculations, of constructing a correct argument, of defending a legal thesis in a court, all of which require specific competence, exercise and training. In conclusion, the real environment of the humans is largely a technological environment, *in which* they live and *of which* they live. Therefore, the program of "going back to the virgin Nature" would be not only practically utopian, but intrinsically absurd and this justifies the positive appreciation of technology as such that we have advocated above. Of course, one cannot overlook that this environment is in turn embedded into a physical natural environment with which it must attain a satisfactory mutual interaction, and this is a very controversial issue debated today. Our intention now, however, is to consider the problems linked with the development of technology *within* the technological environment itself.

Focusing only on the material side of technology, one can say that its development has accompanied the progress of humankind since its origin and the world of artefacts has broadened its dimensions without conflicting with the domain of the other intellectual, social and spiritual dimensions of human culture, while humans could adapt themselves to the gradual changes slowly occurring in their specific environment. The situation changed drastically with the birth of modern natural science in the 17th century. At the beginning it seemed to offer the ground for the realization of the Baconian dream of establishing the "kingdom of man" by dominating Nature thanks to the discovery of its secrets through the new science, but what really happened was the application of the scientific knowledge for the production of modern

machines that were able to accomplish very quickly and efficiently single tasks that had required before a specialized human work. Hence, a machine was an artefact *emulating* one or more human persons in a particular activity and capable of doing it better. The implicit consequence was that it is reasonable to *replace* the human work through machines in particular productions and when this conclusion was put in practice the consequence was the first appearance of *technological unemployment.*

Machines are very expensive so that only people who had much money could buy them and make profit by selling the great quantity of their products. The quick diffusion of machines gave rise to the *industrial revolution* and its capitalist social consequences. At that moment technology ceased to appear as the tool for putting nature at the service of man, but rather appeared as an enemy of the largest part of society. The "Luddite protests" of late 18th and early 19th century Britain whose aim was the destruction of machines was a first violent reaction against the development of technology, produced by its negative social consequences mainly consisting in the exploitation of the workers in factories. The challenge of this crisis stimulated several philosophical, ideological and social debates, gave rise to struggles and political initiatives in the 19th and 20th century that produced measures for the regulation of this complex domain in the most industrialized countries.

Those were more or less successful efforts for keeping control of the technological development. Today, however, technology has exploded exponentially and tends to grow in an autonomous way out of any control. When some applications appear theoretically possible, almost inevitably they will be realized rather soon. In this sense one can say that the internal logic of technology is that of "realising all possibilities" and this is at variance with the logic of ethics that in many cases says "this is possible but *ought not* be done". No science and no technology have room in their conceptual space for an "ought to be", "ought to do", "ought to be done", in the precise sense of what is a *duty* to do or not to do. Science and technology consider matters of fact but not duties and this simply indicates that they fail to have within them criteria for guiding *human actions* that are specifically the outcome of *moral judgments*. On the other hand, the attitude of anti-science and anti-technology that we have mentioned above relies upon a negative judgment which is ethical in a general sense, that is, that considers *bad* or *wrong* the human condition that technological development has generated or is about to generate.

Yet one cannot think that the spontaneous and autonomous process of development of technology happens at random and, if one considers the stimulus and

condition that is very often expressed today for supporting science and technology, one finds a precise imperative: *innovation*. The *new* is the preeminent value that inspires our societies in several domains but, even from the point of view of common sense, there is no warranty that the new will necessarily be good or simply better than the old. This lack of critical reflection leads to consider the new as good as such and creates the negative status of its opposite: the old, that is denoted with the derogatory word *obsolete*. It is not difficult to perceive behind this implicit value judgment the economic logic of our consumer society: in order to keep prosperous the market of a certain product its duration has to be short, so that one can offer the "new" model of that product and sell it to replace the "obsolete" model even when this is still perfectly functioning. Since powerful multinational companies dominate the market of a wide spectrum of products, their skilful advertising of the new has a notable influence on our general mentality.

The problem becomes more serious when innovation concerns technologies rather then products, because very often they constitute the working conditions of a certain profession. Therefore, if a certain technology of this kind becomes obsolete and is discontinued in favour of a new one, also the people who were trained in the use of the obsolete technology become professionally obsolete and lose their job. In such a way the phenomenon of *technological unemployment* reappears in our societies and tends to increase owing to the rapidity of technological change. The persons so dismissed cannot hope to be relocated in the new profession (even in the unlikely case that they were able to quickly learn how to use the new technology) because one of the more attractive reasons for the introduction of the new technology is precisely the fact that it allows for a drastic staff reduction (and, as a consequence, a substantial diminution of costs). This situation is particularly urgent in those fields were computerization, digitalization, informatization, artificial intelligence, robotics and similar technologies are applied and it is well known that the trend in contemporary "advanced" societies is that of increasing the adoption of these technologies.

The optimist fans of technology object to the above considerations that the unemployment produced by the introduction of new technologies will be compensated by the offer of new jobs related with the new technology. This is only partially true for more than one reason. The first is simply quantitative: as we have already noted, the adoption of the new technology is largely motivated by the staff reduction it entails and this already means that in any case there will be a number of people that cannot be recycled in the new profession. Moreover there is a generational fact: young persons are spontaneously familiar with electronic devices, computers and in general with

the use of informatic technologies, whereas even middle aged persons are much less conversant with such technologies and meet more difficulties in being "recycled". Therefore, they often do not even try to be relocated or are not preferred. This obviously increases that phenomenon of *generational gap* that is considered as one of the most serious problems of contemporary societies and also contributes to that "premature aging" of the active population that constitutes a burden for contemporary societies.

The scenario is still incomplete: among the people of the young generation only a restricted minority of particularly gifted creative individuals are able to invent something new that can count as a radical innovation capable of marking a significant difference with the existing technology. These young persons will normally patent their invention and sell it to one of the big enterprises of the market and are also hired with a rich salary. The average of their peers, however, will receive a much less favourable treatment and be employed in humble and poorly paid tasks related with the practical use of the machines, such, for example, that of "labelling" those situations of the environment that, once recognized by the super-intelligent computer, will start the right option for its action among the dozens present in its program. These people will have the status of "technological labourer" not very different from that of the unskilled labourer that in the past were common in agriculture and industry. In the long run there is the serious risk that our societies be split into two different classes: the strongly privileged one of the owners, managers and super-experts of the high-tech companies and the very low class of the technological unemployed and labourers.

This scenario would not be the result of a perverse strategy pushed by a blind greed, but rather the consequence of the race towards automation and facilitation that penetrates so many sectors of our way of living. Indeed, if we have a machine that, in order to provide a certain product, is able to perform "automatically" (that is, by itself) a certain operation that, if performed by humans, requires a certain level of concentration, a choice of suitable constituents, a precise succession of steps, the fact of availing ourselves of this machine will save the effort of performing these operations and reduces the competence needed to obtain that product to the elementary action, say, of pushing a button. Hence, the more efficient and performant the automatic machine is, the easier and elementary becomes the use of the machine. This explains why the technological labourers are necessary, but need not be skilled in order to prepare the interface between the complex machine and the unskilled potential users. }

Another point deserves consideration. It is well known that all our skills and capacities need exercise and training in order to be preserved and improved, otherwise they decay in a considerable measure. Therefore, those capacities and skills that were exercised when we performed the operations that now are delegated to the automatic machine are inevitably destined to decline. This is a real impoverishment of our individual and also collective reserve of vital resources, that must be adequately compensated not only by the advantages offered by the use of the machine, but also by other forms of our way of living.

The opportunity for this discourse is offered here by the reflections we have proposed regarding the technology of professions, but are becoming particularly relevant to the current phenomenon of the diffusion of robots able to simulate an increasing number of activities of everyday life. In certain cases they can be of real help like, for example, for assistance to handicapped persons but if their use becomes too general as replacements for the performance of normal elementary activities the consequence can be a decrease of our habilities also in the domain of basic activities so that we would risk to become "robot-dependent" and, hence with a serious diminution of our freedom of action. This possibility should be carefully analised, in particular, in the current discussions on "transhumanism".

We have considered just a few examples of potential negative situations that could be the consequence of technological development, and we consider them "negative" from an ethical point of view, because they contain inequalities, discriminations, social injustice, threats to human integrity and autonomy. There are no easy recipes that could consist in the adoption of concrete measures to avoid these consequences: the passable road may consist in a "positive" orientation of technological development according to certain fundamental *values*, instead of leaving it depend on certain drives of an economic nature. If values such as solidarity, equitability, altruism, personal dignity, self-esteem, thriftiness could gradually penetrate the mentality of our societies through education, and at the same time we could propose ways to meaningfully spending our time also out of job, we could hope to put technology "at the service of man". This, however, is not a discourse that can be proposed in few words.