EAST AND WEST IN THE FACE OF TECHNOLOGICAL CHANGE

by Marc R. Dupuis

Abstract. Technological changes affect Western culture in three ways: the ratio between the lifetimes of technologies and the human lifetime is inverted; the three principal realms of human life (the home, the workplace, and leisure activity), as well as political systems, are affected; and the cohesion of the social body is threatened. The impact on Eastern culture is softened by a clearer role assigned to school, the resulting level of education, and the influence of Confucian ethics. However, acculturation will vary among countries, depending on the communication ability in the respective societies and the degree of development of social cellular structures, which are the most able to manage complexity.

Keywords: Confucianism; East and West; technological changes and society.

Until the end of the 1960s technology appeared to be developing along largely independent lines, whose number increased from time to time: one could distinguish, among others, metallurgy, mechanics, chemistry, electricity—to which, after the Second World War, were added nuclear energy and electronics.

With the advent of microelectronics and now optoelectronics, applied to information processing and communications on the one hand and through genetic engineering on the other hand, the intervention of technology has become ubiquitous. The multiple lines have become a network whose weaving ceaselessly increases in complexity

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and in which the softwares play a more and more central role. Indeed, compared to the progress made in previous years, which was essentially related to hardware, the technological development of most recent years shows an increasing importance of software, typified by the advent of artificial intelligence.

Thus technology has become a wave breaking on the whole of the activities of modern humanity. Broad and powerful, this wave is nevertheless fluid. Indeed, technology can be compared to a system in constant vibration, whose motion is not determined simply by its own dynamic but is equally reliant on the resonances it finds within society; technological progress is the result of an internal dynamic and its interaction with the social body.

It is certain that technology provides considerable means for raising the standard of living, and this is an advantage that can not be denied. It is not the purpose of this paper to make up a complete list either of the advantages or of the drawbacks already brought about by technological change. It can be said, however, that achievements most useful for humanity have already been obtained in the fields of energy production, information processing, communications, transportation, and health. Among them, communication technologies may have had the most positive impact by fostering the emergence, on our planet, of the awareness that all peoples belong to a global community. However, even if it can be said that the promises of technology make one's head spin by their sheer variety, it is also true that our uncertainties about results are just as daunting. Indeed, technological development poses problems, in the social as in the cultural field, to the extent that it has become impossible, wherever it is, to escape the impact of technology. In the case of France, against the background of traditionally moderate attitudes regarding the benefits to be expected from scientific and technological progress, we can detect social polarization. It seems as though for the last ten years the educated elites have become increasingly optimistic, while the less educated classes have become progressively pessimistic. Even if this situation results from conditions specific to French society, it appears that for the majority of citizens technological development breeds more destabilization than orientation, to the extent that it generates a perpetual whirl.

The Cultural Impact of Technological Change in the West

At the deepest level, the cultural impact of technological change in the West is essentially the result of three characteristics of this change rather than the change itself: "Its temporal acceleration, which inverts the ratio between the lifetimes of technologies and that of generations;

its multiplicity, whose consequence is that the three main scenes of individual human life (the home, the workplace, the places for leisure), as well as the systems of organization for collective life, that is the political systems, are affected; its social selectivity, which consequently threatens the cohesion of the social body" (Segard and Aigrain 1981).

Temporal Acceleration. While in the recent past a technological change spanned three or four generations, now a single generation can experience several successive technological changes. For example, widespread use of personal computers began only about ten years ago, and the first genetic manipulations were performed in 1976. New technological products already developed, such as direct television and optical recording, will probably be spread to the same extent within ten more years. In other words, technological change becomes permanent. The ratio between lifetimes of technologies and that of generations has been inverted, and the effects of this inversion are heightened as life expectancy is extended. Three generations can become contemporaries and can simultaneously receive the new products of technology.

This inversion has two consequences: on the one hand, for the first time perhaps in the history of humanity, the rhythms of time directly affect the consciousness of individuals and blur their identity; as change becomes permanent, each person is left without a landmark by which to situate himself. This repeated erasing of differences no longer allows individuals easily to define their personal identity by comparison with others. The result is an uneasiness that dominates our civilization, because the change has touched everything that had seemed to be stable. On the other hand, the relations between the generations are affected, because the quantity of knowledge produced is greater than that which is transmitted from the past. Older people wonder what they can pass on to younger generations, through whom they receive new information. Formerly the slow rate of change, the short life expectancy, and regional rootedness compelled people to incorporate the values of the past. These days, life is a succession of choices (choices of marriage, residence, number of children and soon their sex, employment, recreation), and each person must program her life herself. Everyone must manage and calculate his consumption and his time. We are changing from a world in which culture and the art of living were passed down to one in which they are produced.

The relations between the generations and within the family are not the only ones affected. From the viewpoint of the production and transmission of knowledge, another affected field is that of speech and information. As indicated above, Western society has oriented its technology particularly toward the development of information processing

and communications. Among the means of communication, television plays a central role, in the respect that it abolishes space and contracts time to the dimension of the instant. Through television, distant events can be lived as they occur, "on line" so to speak. If this capacity offers the advantage that each person can see world history literally unfolding moment by moment, what will be the status of knowledge in relation to culture when the method of acquisition paralyzes the mechanism of interiorization?

The extensive permeation of communication technologies is liable to have important effects upon the usage and meaning of speech. Our increasingly immoderate use of language—in speaking of everything, expressing everything, commenting on everything—essentially transforms all things into information. The rhythm of information is ultrafast; the novelty of information becomes more important than the information itself. As a consequence, information is very incompletely understood. Regardless of how broadly they are spread, the languages of economy, science, finance, and management are only partially received.

As they receive too many bits of information, people have difficulty selecting the important ones, and they find it necessary to resort to professionals who create information from information. This information, especially in its audiovisual form, generates a desire for action that cannot be fulfilled. People today imagine that they cannot act because they are poorly informed, and they demand supplementary information, which further aggravates their problem. Television allows remote vision but does not allow remote action. Indeed, it may well enhance the passivity of the people.

On the other hand, it is speech which structures internal thinking, and it is writing which in turn structures speech. The reception of visual information does not lead to speech, however; the television watcher absorbs images in silence. Increasingly, the teaching of language in school will have to take into account the predominance of audiovisual communication, and in a more distant future, the impoverished nature of computer languages.

Multiplicity. The multiplicity of technological change impacts the three main scenes of individual human life (the home, the workplace, and leisure activity), as well as political systems, the realms of organized collective life. In the home, television programs order the life of the family. The family meal is no longer a moment of family gathering, and food preparation is increasingly transferred from the kitchen to the conditioning factories. In the workplace, new production technologies clearly enrich jobs and sometimes even allow a person to be

multifunctional. But essentially, technological progress allows for alternative pursuits. The time that it frees leads to a break up of norms and modes of work, that is, to the advent of chosen schedules. The freed time also leads, in conjunction with the prolongation of life expectancy, to an increase in leisure time. Whether it is escapist leisure or creative leisure, the new technologies allow us to fill this time through audiovisual or transportational means. It is also true, however, that the maintenance of the new technological products and the hours spent in learning how to use them will consume a good part of the leisure time.

It is clear that the time segments corresponding to activity in these three scenes of life will become increasingly distinct. This is why schedules play such an important role in the world of work. Spatially, the three scenes will tend to become less and less one, because their distance will be a guarantee of liberty and will represent, for those involved, three different worlds allowing them three separate identities. For this reason working at home, facilitated by telecommunications technology, will not always be considered an advantage. Similarly, means of transportation will come to represent the possibility of living three different lives.

Existing political systems for organizing collective life are also affected by technological change. Indeed, the validity of the democratic system based on elected representation is being challenged by an over-important electronic media. Media are becoming a kind of "fourth power," together with the legislative, executive, and judicial powers. Repeated opinion polls on every matter influence the policymaking, leading to a bypassing of the elected assemblies and a direct or "on line" style of democracy.

Technological change does not have the same hold on the different layers of the social body, a situation which threatens social stability and consensus. Social cohesion is threatened because the system of values is questioned and the mechanism for creating values is disturbed. Formerly, the transmission of values was accomplished simply by a macrosocial process, in which school transcribed everyday life experience into concepts and words. Today, each individual is responsible for defining his own system of values. Despite the additional liberty that each person enjoys, this difficult task augments the anxiety and stress that seem to define contemporary life. School cannot help mitigate this hardship if the concepts and the words it teaches are not extant in everyday life and its language becomes hollow.

In summary, our problems derive less from the substance of specific changes than from the rapidity of change itself. The Western individual makes a place for change, not by voluntarily adapting to it but by

acquiescing to it and developing security mechanisms to which he clings.

The Cultural Impact of Technological Change in the East

I have detailed the characteristics and effects of technological change with reference to Western society and culture. To what extent can the same description be applied to Eastern countries? Asia encompasses countries very different not only in their cultures and systems of social relations but also in their levels of economic and social development. Thus it would appear difficult to consider them as parts of a single whole. Nevertheless, three fairly homogeneous groups can be distinguished: the countries of northeast Asia—China, Korea, and Japan—listed in the order in which they received the influence of Buddhism, Taoism, and Confucianism; the countries of southeast Asia; and the countries of western Asia, dominated by India.

The primary focus of my reflections is the countries of northeast Asia, where advanced technological development has produced conditions best suited for a comparison with the West.

While significant positive achievements in a number of fields have resulted from technological change, my description of the net cultural impact on Western nations has been somber. On the other hand—at least to date—technological change has posed fewer problems in Asia. It even appears that in certain respects technological development has been received rather favorably. If this assertion is accurate, it can partly be attributed to the fact that for Asian nations, technological development until now has been essentially the means of raising the standard of living, while in Western countries a fairly high standard of living had already been attained before the Second World War. Of course it is not guaranteed that as the new technologies assume a progressively prominent position in daily life they will enjoy in Asia the favor that they did initially.

Indeed a recent study on the comparative acceptability of new technology in France and Japan (CPE 1987) demonstrates that in the field of computers, the interest shown by the Japanese population has decreased as the "prestige image" of computers has risen. It appears that the greater the diffusion of computers, the more difficult it is deemed to live in a computerized society. The popularization of personal computers seems to be accompanied by a heightening of concern about the loss of humanity, creativity, and individual judgment. An apparent contradiction is the favorable public reaction to the use of robots. Even though inevitably their implementation increases unemployment, the jobs lost are often the most dangerous or tedious.

These partial indications lead one to expect that after a longer experience of technology, certain problems previously noted could easily present themselves in Asia. Thus it is interesting to speculate what, in the long term, the attitude of the different Asian countries might be in the face of technological change, and what sort of cultural elements are likely to shape this attitude.

An initial observation particularly concerns Japan and Korea. The present technological change is not the first that these nations have known in their history. There was first the influence of Chinese science and technology in the first millennium, then the encounter with Western science—directly for Japan, and by means of China for Korea—before the great scientific and technological advance of the Meiji era in Japan. These changes must certainly remain in the collective consciousness. The Korean and Japanese populations have therefore been long accustomed to technological change, and the rapidity with which these nations passed from Chinese science to Western science stands in contrast with the rigidity of China, which has not known how to handle the curve with the same ease. Originating from the exterior, and combining with an already significant base of local technology, Western contributions have been adopted and rapidly perfected because they have been perceived as useful; a clear dissociation has been made between technology and spiritual values.

For China on the contrary, science has been linked with traditional Confucian values, and via Confucianism, with the political system. To adopt Western science thus signified for China rejecting traditional values, reconsidering its political system, and risking a decline of its external influence. In Japan, on the contrary, there was no political rationale justifying the necessity of a similar philosophical orthodoxy, and the freedom to choose between several theories was as important for the Japanese as the adherence to a single system for the Chinese (Nakayama 1977).

A second observation is relative to the influence that Confucian ethics can have on societal reaction to technological change. Confucianism gives priority to the family and the community (Kim 1972) according to the central precept of filial devotion (Yi 1973). I noted earlier that in the West it has become the individual's responsibility to forge his own system of values. But while this is a daunting task for an isolated individual, a community can far more easily formulate a system of living to serve as a model for its members. Confronted with the destabilizing whirl mentioned above, two reactions are possible: recourse to a strong moral authority for the adoption of a general system of values; or reliance on strictly structured communities. In the countries where Confucian influence remains strong, such as Japan

and especially Korea, even if traditional values are under fire society offers stabilizing structures.

In particular, respect for aged persons, which is a manifestation of filial devotion, has the capacity to soften the effects of the inversion of the ratio between lifetimes of technologies and those of generations. Even if the process of transmission of knowledge is altered, the cohesion of the family and of groups is preserved.

A third observation concerns the comparative roles of the school in the East and the West. In the West, the role of the school oscillates between day care, instruction, child rearing, socialization, preparation for the professional world, and unification of the social body: it is clearly no longer well defined. In nations influenced by Confucianism, the teacher has a lofty moral responsibility and enjoys great respect. Consequently school remains a place where future adults can find elements of stability, calm, and value-internalization, all indispensable in the current technological whirl.

School thus occupying a central place in society, the general level of education cannot but rise, maintaining the cohesiveness of society through great social mobility. We saw earlier in the case of France that a dual society was in danger of appearing in light of the division created by diplomas. If education—especially in Japan and Korea—is the foremost criterion for promotion in society, great social mobility among the different parts of the social body will forestall the socioeconomic dualism that has afflicted the West.

Thus it seems that on several counts the nations of northeast Asia are better prepared to confront the technological whirl, considering that they have known how to safeguard certain traditional values of essentially Confucian origin. Certain sociologists of these nations (Kim 1972) have emphasized, especially since the 1970s, the regression of these values under the influence of industrial modernization; perhaps recognition of the threat posed by the acceleration and permanence of change will induce some type of return to traditional values.

It is also possible that this return will be necessitated by the complexity of post-industrial society. We know from numerous examples encountered in physical reality that cellular structures are most suited for managing complexity (Voge 1978). Accordingly, the societies possessing a powerful local solidarity will be the best equipped to confront the complexity born from the supplementary abundance of possibilities offered by technology. A cellular structure allows for the effective participation of all in the collective process of specification of new methods of organization and life. When everything is made possible through technology, it is no longer important to reach an optimum but to elicit a will for action.

In the final analysis we must reject the notion that the future of society will be determined by some inevitable non-human process of technological development. No matter how powerful technology becomes or how infinite seem to be the possibilities it allows us to glimpse, the future of society remains in the hands of humankind.

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