

SOCIAL IMPACT OF INFORMATION TECHNOLOGY AND INTERNATIONAL COLLABORATION

Hajime Karatsu

Professor
Institute of Research & Development
Tokai University
Tokyo, Japan

Strong creative imagination is required to forecast the social impact of newly developed and innovative technology. There is a natural tendency to extrapolate past experience when predicting the future, but this when we do so, we are inevitably surprised. And these surprises bring with them much comedy and tragedy occurred. The steam locomotive invented by Trevithic had to be guided by a man waving a red flag to meet the safety regulations.

Concerning the Fifth Generation Computer, unexpected misunderstandings and wrong conclusions would result from projecting the past into the future.

The basic difference between the traditional computer and its Fifth Generation descendant is that the former is for information processing and latter for achieving knowledge processing. The Fifth Generation Computer is expected to make possible easy man-machine conversation, and to "user friendly" and offer "easy programming." In a word, the goal of the Fifth Generation is "popularization" of the computer.

According to a computer white paper by the Japan government, only 2% of the population of Japan uses a computer today. However, the number of computer users may jump up into double digits very soon. At the beginning of the automobile's development, only a man specially trained as a driver could use it. But today the car is involved in our society as a tool that can be easily used by anyone. Without the car, nearly all social activities would grind to a halt. Modern society can fittingly be called a "motorized society".

From the above considerations, we may conclude that technological conditions necessary to creating a computerized society will be realized by the Fifth Generation Computer.

The computerized society of the Fifth Generation will not be like world of "1984" envisioned by George Orwell, but will be the product of a fresh vision created in the coming era in which computing power is not concentrated in one hand but distributed and handled daily by every person.

At the FGCS '81 conference held in Tokyo, I pointed out five issues in Japan to be improved by introducing the Fifth Generation Computer to such areas as follows:

1. Application to low productivity fields.
2. Internationalization of Japanese society.
3. Ways to cope with a highly educated, aging society.
4. Limited natural resources and energy.
5. Individuals self development and fulfillment.

Issues of 1, 3 and 4 are concerned with improving the productivity of our industrial and social activity by utilizing the intellectual processing ability of the Fifth Generation Computer. Item 2 is concerned with machine translation and mutual collaboration between different cultures brought through bilateral dialogues.

In connection with the improvement of productivity, you might raise the question of unemployment. These machines could be installed at job sites to eliminate workers or clerks, and you might think, then, that unemployment will be created.

I am a member of the rationalization committee of Tokyo metropolitan government, serving as chairman of subcommittee for Office Automation. At the end of last year, a plan for OA was sent to the municipal session as a subject for discussion. A member of the session asked me, "What do you think about firing clerks when OA works well?"

I answered, "Of course, OA machines eliminate many kinds of jobs in the office, but there is no need to discharge any personnel." Today, Tokyo city has many institutions for the general public welfare. Libraries, athletic sports houses, museums, homes for the aged, etc. However, all institutions close at 5 p.m. each day and are closed on Sundays and holidays.

A library with a closed door is not a library but a vacant building. According city authorities, we cannot open the doors because of a shortage of personnel.

Public welfare, then, cannot be increased without office automation, and a shift of personnel from clerical work to libraries, museums, sport centers, and so on. This way of thinking and approach is quite important for predicting the nature of the computerized society.

To transfer personnel to a new work place, flexibility in job assignments must be prepared for before such an innovation is carried out. Some may hesitate to discuss it, but you must recognize that our social environment is under the rule of free competition. When robots were first introduced on the production shop floor, almost all scholars and statesmen were afraid of a harmful rise in the jobless rate.

In Japan, on the contrary, we made an effort to use robots to overcome a shortage of workers caused by the rapid economic growth, which lasted until the oil crisis of 1974. And again, robotization was accelerated to increase productivity as a means of survival in the economic squeeze brought about by the rapid appreciation of the yen since 1985.

We can conclude that Japan kept its jobless rate at a low level by attaining high productivity through the use of robots.

The significance of this conclusion can be understood if you imagine what would have happened had Japan not utilized robots: Japan would have lost competitive power of its industries and an enormous number of workers would have lost their jobs.

Recently, most nations have made efforts to introduce automatic machines to the production floor and office in an attempt to reinforce their competitive entrepreneurial power. To respond to the job rotation boom expected in the near future, the efficiency of education and training must be improved by using Fifth Generation computers.

It is my judgement that this improvement can be achieved in the preparation of a flexible job assignment structure in our society.

By the way, some of you may have the suspicion that nothing will be left to be done by human beings when the Fifth Generation is permeates in our social activity. Even medical diagnosis by doctors is said to have a lower rate of misdiagnosis rate when done with the aid of a computer.

However, a good answer to that question was brought up by our study at an airline company. An authority of the company said that most aircraft accidents are caused by pilot error. For example, when a plane approaches the airport, the runway is under the assault of a thunderstorm. The pilot must decide whether to stay airborne or to attempt a landing. The fate of the plane rests with a judgement

made in a few seconds. In this critical state, the computer may play a dependable role as a machine for decision consultation, acting as a stand-in for an impetuous pilot. The computer never loses its head.

Basically, I think that the computer cannot exceed the ability of human beings. However, sometimes a human being loses his presence of mind, while a computer always works well without getting excited.

So far, I have talked about the target of the Fifth Generation project and the possibilities of its application.

However, these expectations can be achieved only after we prepare a framework for society to implement the Fifth Generation computer; this preparation includes new laws, regulations, culture and educational levels, etc. As we say, "New wine needs a new bottle".