The Information Society: What Will It Bring?

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An Information-Centered Archipelago

The construction of an advanced high-speed transportation network based on expressways and the *Shinkansen* (bullet express) railway lines was a major factor in the "remodeling of the Japanese archipelago" proposed by former Prime Minister Kakuei Tanaka about 10 years ago. It was believed that a high-speed transportation system crisscrossing the Japanese islands was essential for slowing the population flight to major cities in order to promote a more even distribution of population and industry.

A new concept, which will probably have an even greater impact on Japanese society, is now emerging on the horizon.

In August 1981, the Nippon Telegraph and Telephone Public Corporation unveiled the concept of an Information Network System (INS), presenting a futuristic image of a new composite telecommunication network that will replace the present nationwide subscriber telephone system which is currently nearing completion. Under the program, covering the final two decades before the 21st century, the concept aims at applying the wide-frequency band formula to the national telecommunication network so as to achieve a higher transmission efficiency than at present. From this point of view, the program assumes adoption of the new wide-frequency technology, including optical fiber cables and communication satellites, into principal sections of transmission lines.
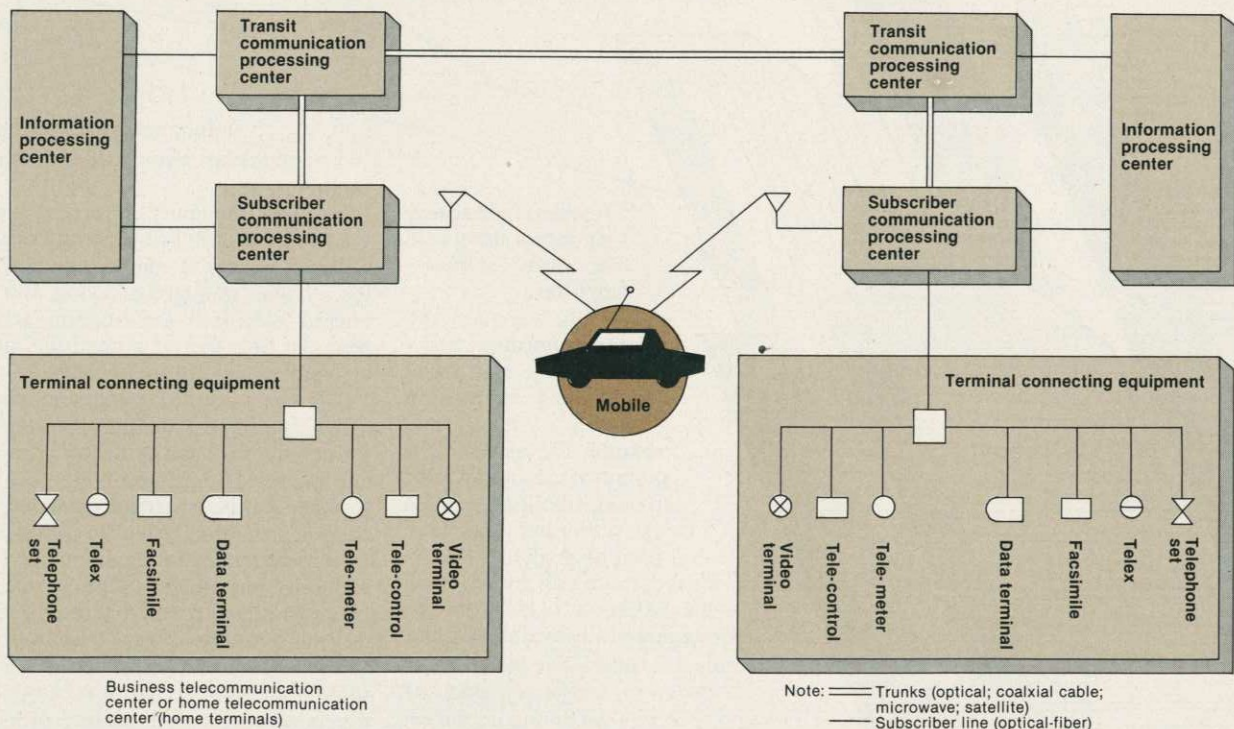
INS assumes a wide variety of home-use terminals, with telephone, fascimile, data-processing, visual information, telemeter, and telecontrol terminal functions. Their use will be controlled by micro-computers incorporated into terminal connecting devices. Conventional home-use telecommunication terminals centered round sub-scriber telephones will give way to multi-function composite "home telecommunication centers".

Similar proposals or plans have been made public in other industrialized nations. For instance, France has announced the Telematique Program.

Many futuristic works and reports have been published* on types of new communication or information services that society can benefit from when such Information Network Services come into mass use and various related software—such as data bank systems and new media—are fully developed. Accordingly, there is no need to discuss these aspects in this article. However, it seems certain that the development of a system with tens of millions of terminals with the capability for independent accumulation of information and connected into a network enabling random communication will bring about structural changes in the traditional pat-

CONCEPT OF THE INFORMATION NETWORK SYSTEM

Business telecommunication center or home telecommunication center (home terminals)

Note: Trunks (optical; coaxial cable; microwave; satellite)
Subscriber line (optical-fiber)

Terminal labels: Telephone set, Telex, Facsimile, Data terminal, Tele-meter, Tele-control, Video terminal, Mobile

Source: Yasusada Kitahara Telecommunication Revolution.

tern of communication in Japanese society.

In due time, the INS concept will come to require a national consensus and popular approval regarding its content and scope, the amount of investment necessary, and the methods of using the network. For the time being however, NTT plans to start operation of an experimental system of about 10,000 terminals in the Musashino-Mitaka Area of suburban Tokyo in 1983.

Another experiment on a smaller scale has been in progress for a few years in the new community of Higashi Ikoma, Nara Prefecture, this a two-way visual information system using optical fiber cable. The system, called Hi-OVIS (Highly Interactive Optical Visual Information System), is being tested by the Eizo Joho System Kaihatsu Kyokai Inc. (Visual Information System Development Association) with the assistance of the Ministry of International Trade and Industry. It is supplying various information services on a trial basis to nearly 200 households.

Prelude to the Information Revolution

Aside from the concepts and experimental systems mentioned above, it should be noted that more substantive moves toward an information-centered society have been in progress in the past few years. Perhaps they may be more appropriately described as the prelude to the information revolution expected to usher in the 21st century.

The first of the moves concerns the pattern of popularization and use of computers. The past practice of the concentrated use of large computers is being rapidly replaced by a trend toward expansion of the dispersed use of small computers. Utilization of micro-computers has been under way in almost all types of offices, and it is only a matter of time until micro-computers are accepted by society in about the same way as desk-top electronic calculators were adopted in the early stage of their development.

A very recent development has been the active introduction of efficient systems for the processing of documents and general business information in offices and other places. They include Japanese-language word processors, high-speed facsimile machines and data communication systems. The office automation revolution has thus been making headway in Japan along with the shift to micro-computers.

Information and communication activities have also been undergoing changes in the area of family and personal life as well. The content of communication and information services using subscriber telephone has been diversified. For instance, it has now become possible to book tickets on the *Shinkansen* railway line by using home-use touch-tone telephones.

From the long-range point of view, it is clearly becoming important for Japanese electronic manufacturers to view home users as a market with a large potential for micro-computers, sometimes called home computers or personal computers. The time will come in the not too distant future when housewives and children, as well as working people, will readily use computers as a integral parts of their hobbies, for recreation and amusement, or in their part-time jobs. This trend is clearly indicated by the emergence of advertisements for computers in popular newspapers and in mass advertising.

The spread of information systems into home life has been making rapid progress in the area of mass communication media as well. There have been signs of rapid popularization of video tape recorders (VTRs), which remove time and content limitations for television viewing. Television sets also have come to be seen as machines for video display, while new types of sets have been developed that may be connected to or combined with various new media anticipated for the future.
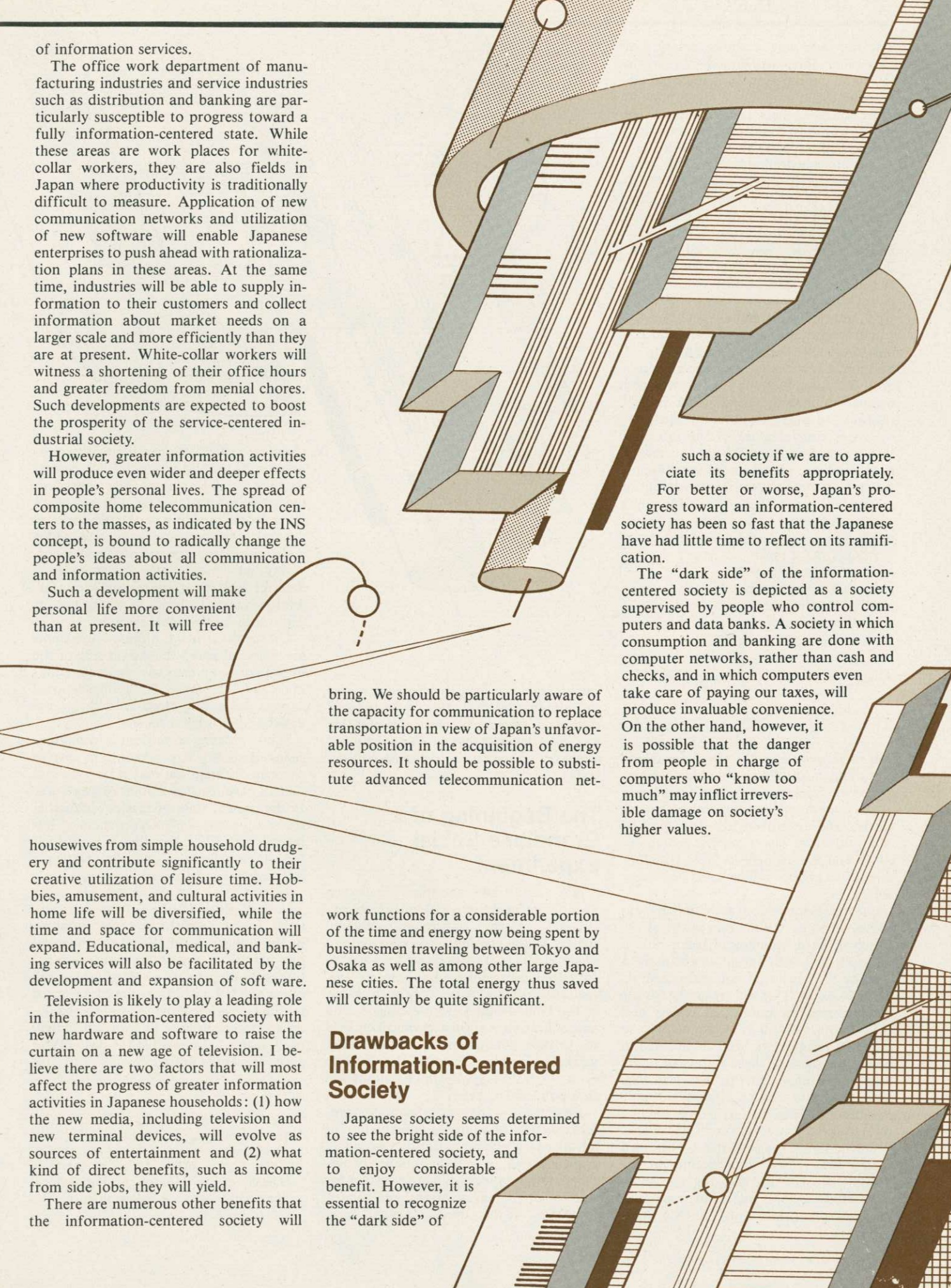
Advantages of the Information-Centered Society

The above-mentioned INS concept, and recent moves toward increased social information activities, seem to indicate the way in which Japan is developing toward a fully information-centered society in the last two decades of the 20th century.

Since the fundamental force that drives a society toward being an information-centered society is man's universal want for a higher standard of living, the trend toward enhanced information activities seems to be a fact of human life, and an unavoidable choice for society.

The trend toward greater information activities is almost identical with the trend toward the rationalization of many areas and phases of man's economic activities. In other words, information has the function of promoting effective utilization of various resources for economic activities, including manpower, time, space, and natural resources. For this reason, the industrial sector has always been in the vanguard of greater information activities in society, and is expected to take the initiative in all stages of the future promotion

of information services.

The office work department of manufacturing industries and service industries such as distribution and banking are particularly susceptible to progress toward a fully information-centered state. While these areas are work places for white-collar workers, they are also fields in Japan where productivity is traditionally difficult to measure. Application of new communication networks and utilization of new software will enable Japanese enterprises to push ahead with rationalization plans in these areas. At the same time, industries will be able to supply information to their customers and collect information about market needs on a larger scale and more efficiently than they are at present. White-collar workers will witness a shortening of their office hours and greater freedom from menial chores. Such developments are expected to boost the prosperity of the service-centered industrial society.

However, greater information activities will produce even wider and deeper effects in people's personal lives. The spread of composite home telecommunication centers to the masses, as indicated by the INS concept, is bound to radically change the people's ideas about all communication and information activities.

Such a development will make personal life more convenient than at present. It will free

housewives from simple household drudgery and contribute significantly to their creative utilization of leisure time. Hobbies, amusement, and cultural activities in home life will be diversified, while the time and space for communication will expand. Educational, medical, and banking services will also be facilitated by the development and expansion of soft ware.

Television is likely to play a leading role in the information-centered society with new hardware and software to raise the curtain on a new age of television. I believe there are two factors that will most affect the progress of greater information activities in Japanese households: (1) how the new media, including television and new terminal devices, will evolve as sources of entertainment and (2) what kind of direct benefits, such as income from side jobs, they will yield.

There are numerous other benefits that the information-centered society will

bring. We should be particularly aware of the capacity for communication to replace transportation in view of Japan's unfavorable position in the acquisition of energy resources. It should be possible to substitute advanced telecommunication net-

work functions for a considerable portion of the time and energy now being spent by businessmen traveling between Tokyo and Osaka as well as among other large Japanese cities. The total energy thus saved will certainly be quite significant.

Drawbacks of Information-Centered Society

Japanese society seems determined to see the bright side of the information-centered society, and to enjoy considerable benefit. However, it is essential to recognize the "dark side" of

such a society if we are to appreciate its benefits appropriately.

For better or worse, Japan's progress toward an information-centered society has been so fast that the Japanese have had little time to reflect on its ramification.

The "dark side" of the information-centered society is depicted as a society supervised by people who control computers and data banks. A society in which consumption and banking are done with computer networks, rather than cash and checks, and in which computers even take care of paying our taxes, will produce invaluable convenience. On the other hand, however, it is possible that the danger from people in charge of computers who "know too much" may inflict irreversible damage on society's higher values.

In the same way as the automation of blue-collar jobs accelerated changes in jobs and workplaces, the information-centered society will deal a direct blow to white-collar workers and in a press for similar changes. While some economists believe that the scale of employment as a whole will not decline because the information-centered society will give birth to new types of jobs, employment adjustment will be necessary during the transition period, at least from a micro-economic point of view. Such adjustment, though transitionary, may take the two decades to the 21st century to complete. During that process, diversification of job types and changes in employment patterns will make the labor market both fluid and unstable. The possible undermining of traditional Japanese employment practices, including life-long employment and company unions, as a result of the diversification and changes cannot be ruled out.

One essential feature of the information-centered society will be an increase in its dependence on advanced information systems. In these circumstances, the entire society will have to rely on the functions of a small number of machines and equipment, elementary systems, and groups of personnel. As a result, society will be increasingly vulnerable with a large information system, and a number of impor-

tant social systems will be built for transportation, medical care, banking service, and energy supply. Any minor breakdown of the system will produce repercussions quickly and extensively, throwing society into confusion. The wider the system extends, and the stronger its integration becomes, the greater will be society's vulnerability.

Greater information activities are expected to accelerate the movement of the society toward becoming a black box, a society from which output can be derived even by those who do not understand its inside working. This will create the danger of entrusting the control of society and culture to a handful of personnel, the so called IC technocrats, who are allowed to design the society. There is thus an undeniable possibility that this may lead to a social structure which will be less flexible than a society designed by people holding diverse opinions and different of values.

Furthermore, the information-centered society may result in a decline in the masses' capacity for thinking and judgment, and may be a major favor promoting conceptual uniformity. Such a tend-

ency is liable to lead to helplessness and easy resignation to the tide of the times in case of an emergency. From this point of view, it is believed that we should pay full attention to society's increased vulnerability.

The Beginning of a Grandiose Social Experiment

All industrial societies, including Japan, are expected, without exception, to move toward information-centered society in the coming years. The pattern of development ranges from state-led information programs, such as France's Telematique Program, to network such as that in the United States, whose construction and utilization is entrusted almost entirely to private companies operating under market principles. There is thus a wide diversity in the ways in which nations will tackle the tasks ahead.

Progress toward an information-centered society, entailing the construction of advanced telecommunication networks and the supply of a large number of terminal devices, promises a huge market for electronics, communication, and related industries. At the same time, it will bring

about an accumulation of innovative technology. From the viewpoint of exports strategy, it will be a boon. The technology must also be considered highly significant for nations intending to remold their industrial structures to favor high value added, resource-conservative, and labor-saving industries. Some countries even describe their progress toward the information-centered society as a strategy for survival in international society.

On the other hand, quite a few nations are skeptical about the darker side of the information-centered society and are taking a cautious stance. Some international surveys have also been started on the drawbacks of such a society.

While progress toward an information-centered society is proceeding at diverse paces in different nations, it may be said that all have reached a point of no return. In the present state of modern industrial societies, economic interdependence has increased to the extent that it is difficult for any to exist in a condition drastically different from the others.

In this sense, as we review the bright and dark sides of the information-centered society, it may be said that the whole of the industrialized West has embarked on a grandiose social experiment, each nation according to its own lights. On the other hand, however, it should be noted that the experiment may acquire a character and momentum of its own, which may make it nearly impossible for posterity to assess its results in time.   ●

* See for instance, A. Toffler's *The Third Wave* and the report of the Information Industry Section of the Industrial Structure Council of the Ministry of International Trade and Industry published in June 1981, etc.