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Informationization In Japan:
Ideology, Policy And Their Social Impact

By

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Informationization in Japan: Ideology, Policy and Their Social Impact

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In this article Japan's recent prominent social change called \textit{johoka} or 'informationization' will be described. This article is a case study with two general purposes. They are to contribute to the understanding of (a) the Japanese political and economic systems and (b) mechanisms of social change.

Understanding Japanese political, social, and economic systems is becoming more and more important for social scientists not only in Japan but also in other countries. One of the major reasons for the increased interest is Japan's remarkable economic and technological success while maintaining non-Western cultural characteristics. Until approximately twenty years ago, all the cultural characteristics in the Japanese political, social, and economic systems were simply regarded as indications of backwardness or legacies of the feudal past.

Many people have traditionally believed that most non-Western cultural characteristics hinder modernization. They advised that Japanese customs regarding human relations should be changed to make them more based on individualism, Japanese management, employment, and labor union systems must be 'rationalized.' Some extremists insisted in the mid-19th century and soon after World War II that the Japanese language was so 'illogical' and 'irrational' that it must be either drastically reformed or replaced by a Western language. These opinions have completely disappeared in present-day Japan. On the other hand, we hear that Americans and Europeans are now trying to learn from Japanese systems based on Japanese traditional customs. Such a change was apparently caused by Japan's economic and technological success. As Vogel (1985) suggested, economic or technological superiority often leads to a belief in cultural or ethical superiority.

Apart from the question of superiority, people in and outside Japan no longer regard Japanese cultural characteristics simply as indications of backwardness. Instead, it is now suggested that Japan may have provided the world with a unique model of modernization different from the 'Western model.' The 'Japanese model,' however, has not yet been fully analyzed or documented. In comparison to the 'Western model,' we have very little knowledge regarding how it actually works. Through the description and analysis of Japan's recent social change called \textit{johoka} (informationization) it is expected that the understanding of the mechanisms of Japanese political, economic and social systems will deepen.

The second purpose of this paper is to contribute to the understanding of mechanisms of social change. The 'informationization' in Japan during the past twenty years was
Marx's prediction was realized in the Soviet Union and China not because it was 'historical inevitability,' but because many Russians and Chinese believed it a historical inevitability. Therefore, Marxism is a typical example of the ideology defined here.

As early as 1969, Shibata (1969) argued:

During the past several years, concepts like 'johoka shakai' (information societies) and 'joho sangyo' (information industries) have flooded our country. As a result, a social theory called the 'information society' theory is occupying a large portion in the area of bourgeois ideology (p. 55).

Since the very beginning, the 'information society' theory has been sponsored by monopolistic capitalist groups. It has been advocated by bourgeois ideologues around these groups. It was quickly picked up by monopolistic capitalist and government ideologues and became an official ideology of the Sato Cabinet (p. 69).
speaking, the major function of endoderm organs is the maintenance of life in the individual. The major functions of mesoderm organs are movement, reaction to the outer world and reproduction. The ectoderm organs' major function is the control of all other organs, therefore, the control of the individual's behavior. In the case of human beings thought and creativity are added to the mere control of behavior.

According to Umesao, the functions of endoderm organs in a biological organism are equivalent to the functions of agriculture, fishery and cattle breeding in human society. These industries Umesao called 'endoderm industries.' Similarly, the functions of mesoderm organs in a biological organism are the equivalent of the transportation, construction, and manufacturing industries in human society. Umesao called these industries 'mesoderm industries.' Finally, the functions filled by ectoderm organs in a biological organism are similar to what he called 'intellectual or spiritual industries' which consist of the information, communication, culture and education industries. He called these industries 'ectoderm industries.'

Umesao suggested that the degree of evolution of any animal is closely related to the proportional development of each kind of organ. If one compares an amoeba, a horse and a human being, one can understand what he meant. Generally speaking, the less evolved the animal is, the larger the proportion of endoderm organs, particularly digestive organs, is. The more evolved the animal is, the larger the proportion of mesoderm and ectoderm organs, particularly the brain, becomes. Of course, although the above can
be said using a rough macroscopic description, it cannot be applied to individual species to rank them as to their degree of evolution.

Just as the proportions of mesoderm and ectoderm organs increase according to the evolution of the animal, Umesao thought that the proportions of 'mesoderm industries' (transportation, construction and manufacturing industries) and 'ectoderm industries' (information, communication, culture and education industries) must increase with the development of a society. In other words, he suggested that the development of a society can be measured by changes in the proportions of these three kinds of industries.

Some insights can be extracted from the analogy with animal evolution. Umesao emphasizes, for example, that even those animals considered most primitive have some form of mesoderm and ectoderm organs. Similarly, even in the kind of society said to be least developed, some form of mesoderm and ectoderm industries or elements exist. Without them the society cannot survive or maintain its integrity. The degree of development is only a matter of emphasis and proportion.

Umesao also emphasized that just as a human being, the most highly intellectually evolved creature on earth, cannot survive and properly function without endoderm and mesoderm organs, our society would not and could not exist without endoderm and mesoderm industries. The industrial evolution (not revolution) does not mean a complete metamorphosis, but is only a matter of change in proportion of the three types of industries. Although Umesao himself did not explicitly state the following natural conclusions, readers of his article have done so. The industrial revolution caused a drastic increase in the proportion of mesoderm industries (i.e., transportation, construction and manufacturing industries).

According to Umesao's theory, the 'information revolution' logically follows next and results in a drastic increase in the proportion of information, communication, culture and education industries. This change has come to be called "johoka α" or informationization.

What characterizes industrialization is a drastic increase in the momentum of society as a whole. This momentum includes an increase in offensive and defensive strength and a great increase in the mobility of individual members of the society. On the other hand, "johoka α" involves a drastic increase in capabilities in communication, data processing, and various cultural and intellectual activities. Furthermore, as a result of "johoka α", various components of the society become closely connected to each other by elaborate feedback systems, similar to the nervous system in the human body. In addition, many social activities become better controlled and more orderly in comparison to the pre-"johoka α" age. On an individual level, people come to enjoy not only high mobility plus affluence in food, material and energy, but also affluence in cultural and intellectual activities.

Umesao's article was reprinted and quoted in many articles and book and became widely known. In the mid-1960's his ideas were combined with a number of futuristic ideas imported from the United States such as "post-industrial society" (Bell), "knowledge industry" (Machlup), and "technetronic era" (Brzezinski). The
and manufacturing industries). Therefore, industrialization requires policies which stimulate and facilitate such change. Correspondingly, policies supporting 4 johoka 4 should be designed to stimulate and facilitate an increase in the proportion of "ectoderm industries" (i.e., information, communication, culture and education industries). The government agency which first recognized such implications and introduced the idea of 4 johoka 4 in its long-term policy plans was the Ministry of International Trade and Industry (MITI).

Ministry of International Trade and Industry (MITI)

In the mid-1960s MITI officials were concerned with two problems: (a) pollution caused by the heavy industries such as iron, steel and petro-chemical industries and (b) competition with newly industrializing countries such as South Korea, Hong Kong, Taiwan, and Singapore. MITI identified the "information industries" advocated by Umesao and his followers as especially suited to solving Japan's problems because they were pollution-free and knowledge and technology intensive industries. Thus, young MITI officials eagerly studied the concept of 4 johoka 4 and decided to introduce it into their "industrial policies." 2/

As early as in 1967, an Information Industry Section was formed in the Industrial Structure Council which is an important permanent advisory council to the Minister of International Trade and Industry. 3/ This section consisted of twenty members.
been called "johoka seisaku" or "informationization policies." Such policies have apparently succeeded in modernizing the Japanese computer and microelectronic industries, and other information and communication related industries. What MITI actually did in the early promotional stages of their informationization policy was to provide tax and investment incentives, to ensure a coordinated development effort among the government, research institutions, and industry.

A private think tank named the Information Processing Development Center (IPDC) (its name before 1976 was the Japan Computer Usage Development Institute) established by MITI in 1967 has played an important role in the promotion of MITI's informationization policies. Major activities of this organization have been (a) consultation for private businesses on computerization and information processing, (b) research and writing engineering literature and articles on computerization, (c) promotion of international exchange such as sponsoring international conferences, and (d) promotion of international conferences, and (e) publicizing computerization and information processing.

Yoneji Masuda, the leader of this project, was invited to Canada, Sweden, France, and the Organization for Economic Cooperation and Development (OECD) to talk about this project and give advice to industrialists, representing trade associations, academics, journalism, and manufacturing companies. It published its Interim Report in 1969 and Final Report in 1970. The latter was entitled "Tasks for Informationization." In this report, it compared the degree of informationization in the United States, Japan, England, and France, and recommended several policies to pursue for the promotion of informationization in Japan.
close business transactions. The connection of computers to public telephone circuits was not permitted by the Public Telecommunications Law. Therefore, private industries and MITI began to demand in the 1960s (a) liberalization of telephone circuits for computer communication, and (b) deregulation of the use of leased circuits. Public telecommunications circuits (i.e., telephone and leased circuits) were, at that time, monopolized by the Nippon Telegraph and Telephone Public Corporation (NTT) and under the jurisdiction of MPT. MITI argued that the monopoly and strict control of public telecommunications circuits by NTT and MPT were obstacles not only to freer and efficient computer communication but also to the development of new information and communication service industries, hence the informationization of Japan.

Responding to such claims, MPT revised the Public Telecommunications Law in 1971 to make it possible to use telephone lines for computer communication and drastically deregulated the use of leased circuits. Public telecommunications circuits (i.e., telephone and leased circuits) were, at that time, monopolized by the Nippon Telegraph and Telephone Public Corporation (NTT) and under the jurisdiction of MPT. MITI argued that the monopoly and strict control of public telecommunications circuits by NTT and MPT were obstacles not only to freer and efficient computer communication but also to the development of new information and communication service industries, hence the informationization of Japan.

In the 1960s the emphasis of MITI's informationization policies was on computers and microelectronics. In the early 1970s, however, the emphasis shifted from hardware to software and from computers to computer communications, namely telecommunications. In 1970, MITI enacted a special law to establish a foundation named the Information Technology Promotion Agency (IPA). Major purposes of this foundation were (a) to foster software businesses and (b) to subsidize the research and development of important software programs.

The shift from computers to computer communication put MITI in a competitive position with the Ministry of Posts and Telecommunications (MPT). This caused quite a bit of friction between the two ministries. For example, large-scale data communication using leased circuits started in Japan in 1964. The use of leased circuits then, however, was limited to among either branches of the same organization or organizations with regular
cable television system. The first experiment was called the 'HI-OVIS (Highly Interactive Optical Visual) Information System' project. The experiment began in April 1978 and completed 'Phase I' in March 1983. 'Phase II' of the experiment, which started in April 1983, is currently in progress. 

The general consensus is that the HI-OVIS experiment was successful technologically but not economically or socially. There was not enough demand for its futuristic information and communication services, and the expected social effects, such as community formation and the drastic increase of convenience in daily life, were not discerned. (See, for example, Ikeda, 1985; Ito and Oishi, 1985). Despite these results, however, MITI's belief in the informationization of Japan has been hardly affected.

The Industrial Structure Council, an advisory council for the Minister of International Trade and Industry, recommended in 1980 the promotion of the development of new types of industrial complexes consisting of the so-called 'high-tech' industries, research laboratories and technology colleges. In the 1960s MITI executed a similar policy for heavy industries, particularly the oil refinery and petrochemical industries, which was called the 'New Industrial City Plan.' Thus, the new project named the 'Technopolis Plan' may be called a 'high-tech' version of the 'New Industrial City Plan' of the 1960s.

The three major purposes of this policy were: (a) to make the Japanese 'industrial structure' more 'high-tech' oriented and knowledge intensive, (b) to disperse Japanese industries and population to less developed areas as a remedy for excessive concentration, and (c) to construct model communities for the information age.

In order to implement this plan, the 'Law for Accelerating the Regional Development Based upon High Technology Industrial Complexes' (Technopolis Law) was enacted in April, 1983. Based on this law, various promotion policies such as subsidies, low interest loans, and tax incentives are to be provided to identified areas to help construct the new types of industrial complexes outlined in the plan. After close examination, seventeen areas have been admitted as 'Technopolis areas' (as of September, 1985). Construction of new high-tech factories and research institutes is under way in these areas.

In 1983 MITI announced another national project named the 'New Media Community Plan.' The purpose of this plan is the construction of 'model cities' throughout the country for the diffusion of new communications media. MITI accepted 72 applications from all over Japan. In October 1984, MITI announced the selection of eight areas as 'model areas' under this plan. Municipal governments and industries in these model areas are expected to construct new information-communication systems using 'new media' such as two-way cable television and videotex after April, 1985. MITI and its affiliated foundations and banks will back such local efforts.
While MITI has always been extremely aggressive in promoting informationization policies, MPT, until the mid-1970s, was rather passive and conservative. Since the mid-1970s, however, MPT has changed their basic policies and begun to emulate MITI. Currently, MPT and MITI are intensely competing with each other to be the main agency for informationization policies.

Before 1970 MPT's policy for telecommunications, other than broadcasting, was rather simple. The primary objectives of their policy were (a) to eliminate the backlog in subscriber applications and (b) to provide a nationwide service of long-distance direct dialing. The slogan 'immediate installation, immediate connection' had long been the center of MPT's telecommunications policy.

Before the 1970s MPT did not seriously consider data communication and other information and communication services. Therefore, when MITI and private industries demanded from MPT the liberalization of telecommunication circuits monopolized by NTT, MPT was unprepared to face the possible disruption of the traditional public telecommunications order. However, MPT compromised with MITI and private industry and revised the Public Telecommunications Law in 1971 to enable (a) the connection of computers to telephone lines, (b) the sharing of leased lines by companies which have close business relations, and (c) the usage of leased lines to provide information to unspecified customers.

In the late 1960s the American ideas of 'wired city' and 'wired nation' entered Japan, combined with the Japanese idea of jōhoka, and developed into a feverish 'CATV boom.' The boom peaked in 1970 with the establishment of a new type of cable television company in Tokyo, Osaka, and Nagoya. These companies differed from their predecessors in that they were established in large cities, and their purposes were not merely to amplify and retransmit over-the-air television signals. Their plans included providing more sophisticated services such as original broadcasting, two-way interactive telecasting, security service, and so on.

At first MPT was disconcerted by these developments. Urban cable television networks, according to MPT officials, caused confusion regarding national broadcasting and telecommunications policies. The nature of cable television appeared a little parasitic as a broadcasting entity because cable television could not survive without retransmitting the programs produced by over-the-air broadcasters. Cable television's operation of two-way interactive services, an example of its role in telecommunications, contradicted the stipulations in the Wire Telecommunications Law which presupposes the monopoly of NTT. MPT officials believed that cable television should be confined to broadcasting and should not be used as a point-to-point communication medium. They also thought that cable television should be limited to auxiliary roles such as providing retransmission systems in areas where television signals are weak. Therefore, it adopted restrictive policies regarding the operation of cable television. The result was the Cable Television Broadcast Law enacted in 1972. (Note the name, 'cable television broadcast') This law crippled the cable television business and effectively discouraged its development in the 1970s.
In 1980 MPT was again provoked by MITI's 'Technopolis Plan' mentioned in the previous section. One of the major industries to be developed in this plan was the information and communication industries and services. MPT took this as another MITI infringement into its territory. Therefore, it quickly set about its own development promotion plans. In August 1983 the 'Future Communication Model City Plan,' which was briefly called the 'Teletopia Plan,' was announced at a press conference. In October of that year, the Teletopia Promotion Room was created within the Telecommunications Policy Bureau of MPT.

The purpose of this plan was to promote the diffusion of new telecommunications media in Japan. MPT suggested eleven 'Teletopia types' /7/ as city models utilizing new telecommunications media such as interactive cable television, digital (video) telephone, digital (high-speed) facsimile, (high-speed) data communications, VANs (value added networks), videotex (CAPTAIN system) /8/, VRS (video response system) /9/, satellite communication, sophisticated mobile communication systems, new broadcasting services, personal computer networks, etc.

At the first announcement of this plan in August 1983, applications were invited from all over Japan. By December 1984, 52 applications involving 283 new telecommunication systems were filed. In March 1985 MPT selected twenty 'model cities.' There were three major criteria for selection. First, the 'model cities' as a whole had to utilize as many 'Teletopia types' as possible. Second, they should represent as many geographical areas as possible. Third, the feasibility of success should be high and the

However, as mentioned before, MITI established in June 1971 a task force called the Community Information System Investigation Committee to study the feasibility of cable television systems as a new communication medium in the approaching information age. Naturally, MPT took this as an invasion of its territory by MITI. Thus, MPT hurriedly established a very similar task force on a larger scale called the CCIS (Coaxial Cable Information System) Investigation Committee in September 1971, only three months after MITI's 'challenge.'

When MITI established the Visual Information System Development Association in May 1972, MPT established a similar foundation named the Tama New Town Living Information System Development Association in December of that same year. The purpose of both foundations was to conduct social experiments involving highly sophisticated cable television systems. To avoid overlap, coordination by the Ministry of Finance was provided and the two foundations were merged in 1973 to create a new foundation named the Living Visual Information System Development Association. Actually, however, this did not integrate the two organizations. The MPT and the MITI groups maintained separate offices and worked individually within their own organizations. However, there was some coordination of activities. For example, the two groups agreed that the MPT group would conduct the first experiment at Tama New Town from 1976 to 1978 (later extended to 1980). Afterwards, the MITI group was to experiment at Higaishi Ikoma New Town (Hi-OVIS experiment) from 1978 to 1980 (later extended to 1983).
services' or value added networks (VANs) was not included. Value added network services were monopolistically provided by NTT. A major reason for the prohibition of entry by private business into value added networks was that they were considered to be close to common carrier service. In 1982, however, MPT again revised the Public Telecommunications Law and enabled private companies to use NTT’s leased lines for VANs with the condition that they are used by small and medium sized companies and for specified customers. One of the reasons for such a policy change was the strong demand by MITI and private industries for free entry into VAN services. Another important reason was that MPT thought that it might be able to expand its jurisdiction by allowing new private industries to enter its territory (i.e., telecommunications). In 1985, MPT abolished the old Public Telecommunications Law and completely liberalized entry into VAN services including international, nation-wide, large-scale networks for unspecified customers.

While attempting to respond to 'challenges' and 'invasions' by MITI, MPT officials realized that if it remained committed to only traditional policies, MPT, together with its constituencies such as NTT, NHK (Japan Broadcasting Corporation), and KDD (Kokusai Denshin Donwa Co. Ltd., Japan's international common carrier) would be confined to 'old media' such as telegraph, telephone, and conventional broadcasting. At the same time, the 'new media' and new information and communication services would be taken by the MITI group. Thus, they decided to counterattack.

Before 1970 there was no section in MPT which specialized in policies for non-broadcast telecommunications. In 1970 the
A government agency, other than MITI, which played a crucial role at the early stages of informationization in Japan was the Economic Planning Agency (EPA). The 1969 edition of the annual Economic White Paper issued by EPA stated as follows:

In recent years, information, together with conventional goods and services, has become one of the important elements of our economic activities. Information now contributes to the development of our economy and society by increasing productivity and providing our daily lives with excitement. Information is now as important as, and often more important than, goods and services as an economic element (Economic Planning Agency, 1969:298).

In the same year EPA established a study committee named the "Information Study Committee." This study committee collected data regarding information industries and predicted conceivable problems (such as the invasion of privacy, maladjustment and alienation) that might occur in various aspects of society as a result of informationization. These data and predictions were published as a book entitled Nihon no Johoka Shakai: Sono Bijon to Kadai (Japan as an Information Society: Its Visions and Problems), which is a result of informationization. These data and predictions were published in 1980 by the Information Study Committee.

In 1984 MPT considered abolishing all major laws guaranteeing the monopoly of NTT and KDD. Instead, it proposed three new laws which allowed entry into all telecommunications businesses under certain conditions. (For these conditions, see Ito, 1985a and Communications Study Group, 1984). It is understood that it is not really important to MPT to actually control new entrants, what is really important is to MPT to make it clear (particularly to MITI) that all telecommunications businesses including enhanced services are under MPT's jurisdiction. Therefore, MITI strongly opposed these new laws by pointing out the exorbitant cost and the problems that might occur. But MPT managed to secure the passage of these three new laws by the Diet in December, 1984. The enactment of these three new laws is considered to be a successful counterattack by MPT against MITI. (For the enactment process, the nature of the interministerial conflicts, and the consequences of these new laws, see Ito, 1985a and 1985b). The intense interministerial competition (or almost battle) between MITI and MPT has contributed greatly to the promotion of Japan's informationization.
Also, in 1969 EPA's subsidiary think tank named Association for Economic Planning published a research report entitled Johoka Shakai no Keisei (The Formation of Information Societies), in which a preliminary idea regarding the method for measuring the amount of information flow was suggested. Later, MPT adopted this idea, refined the method, and developed the 'information flow census.'

The National Land Agency (NLA) also adopted the idea of Johoka at an early stage. NLA, in the agency which plans and advises the most effective use of Japan's land. Particularly, its main concern is to realize balanced development by preventing excessive concentration of population and industry on one hand and abandonment of remote communities on the other. In order to achieve this goal, NLA (then a part of EPA and the Ministry of Construction/12/) announced in 1969 a very ambitious long-term economic plan for the 1970's named Shin Zenkoku Sogo Kaihatsu Keikaku (Neu Comprehensive National Development Plan). This development plan consisted of three major pillars: the nation-wide expansion of the Shin Kansen (Japan's well-known superexpress train) networks, the nation-wide expansion of super highway networks and the nation-wide expansion of information networks (which were often dramatically referred to as the 'Johoka of the Japanese Archipelago').

This ambitious plan, however, had to be drastically modified due to financial difficulties caused by the 'oil shock' in 1973.

Thus, in 1977 Dai San-ji Zenkoku Sogo Kaihatsu Keikaku (The Third Comprehensive National Development Plan) was announced. In this contracted plan, many of the superexpress train and super highway network projects were abandoned or postponed indefinitely due to financial difficulties. Instead, however, the need for further Johoka, or the nation-wide expansion of information and communication networks was emphasized. This modification symbolized a shift from the age of industrialization to the age of informationization. NLA is now preparing the Fourth Comprehensive National Development Plan to be announced in 1986. It is already reported that the need for continued Johoka and effective use of 'new media' for local development is to be emphasized in this plan (Imagawa, 1985).

The abandonment or postponement of the development of superexpress train and super highway networks naturally shocked the Japan National Railway (JNR) and the Japan Highway Public Corporation (JH). They knew, however, from the Japanese intellectual climate that Japan was moving from the age of industrialization to the age of informationization. If they could not resist this trend, they thought, the best thing they can do is to join it. Thus, both JNR and JH decided to enter the telecommunications business.

In 1984 both JNR and JH established subsidiary companies named respectively Nippon Telecom, Co. Ltd., and Nippon Kosoku Tsushin (Nippon High Speed Communication) Co. Ltd. As soon as the new Telecommunications Business Law became effective on April 1, 1985, these companies applied for and obtained permission from MPT to enter the Type I telecommunications business. These companies
The "local medical information system" connects local clinics, hospitals, public health departments, and fire departments (from where ambulances are dispatched), and gives ambulances on-line information regarding where to take patients. At the same time, this system provides the latest medical information to local clinics and hospitals. The "hospital information system" actually means hospital automation. The "medical information service system" is to provide doctors with medical (on-line) information regarding literature, the nature of various medicines and organs available for transplant. This center is now developing an on-line system to process medical insurance to liberate doctors from filling out complicated medical insurance forms.

One of the eleven 'Teletopia types' in MPT's "Teletopia Plan" is the 'advanced farming type' which is for agricultural communities planning to construct advanced farming systems using new media. Conceivable systems are the agricultural data communication system, the market information sharing system, the water supply control system, and the harvesting and shipping control system. The 'Teletopia Plan' also included the 'isolated islands development type' which is for isolated islands planning to use new media to promote economic and social development. Possible systems are the distant medical service system, the water supply control system, and the agriculture information system. As a result, many areas which include farming and fishing villages applied for this Teletopia Plan. Four areas were chosen as model areas for the 'advanced farming type,' and one area for the medical information service system.

The 'NTT' is certainly a mammoth company, but these two new companies have a strong potential for success due to the gigantic size and economic power of their sponsors (JNR and JH). Furthermore, there is the Ministry of Transport behind JNR and the Ministry of Construction behind JH. In addition, these two new companies have an advantage over NTT. They can start business using optical fiber cables and other advanced technology, whereas NTT is hindered by its network of antique cables and switching systems. The competition between NTT and these new entrants is expected to become intense involving the Ministries of Transportation, Construction, and Posts and Telecommunications.

In 1972 the 'belligerent MITI' (MITI was given this nickname because of its extreme aggressiveness) announced a plan to establish a public corporation named the 'Medical System Development Corporation' as a part of their "johoka b policy. The Ministry of Health and Welfare (MHU) felt that its territory was invaded, thus MHU announced a few months later a plan to establish a similar organization. After some friction between the ministries, a compromise was reached, and in 1974 MHU and MITI jointly established an organization named the Medical Information System Development Center to develop medical information systems.

The 'medical information systems' include (1) the local medical information system, (2) the hospital information system, and (3)
earlier, 52 local governments applied to the 'Teletopia Plan' and 72 to the 'New Media Community Plan.' The standard new services planned by most local governments are:

(a) Local Administrative Information Service

This is to provide information regarding local administration, local events, and various other information produced and stored by local governments. Citizens can obtain such information using videotex or two-way cable television. This service can be used as a publicity channel for local governments but also as an access channel for citizens.

(b) Document Transmission Service

This service can transmit all kinds of certificates, licenses, and other documents issued by local governments directly to homes with facsimile service. It will save citizen's trips to local government offices to obtain certificates and licenses.

(c) Local Event Information Service

This is to provide citizens with information regarding what is happening and where. Information regarding theater and movie programs, lectures, sports events, educational courses, hobby club meetings, etc. are to be provided through videotex, two-way cable television, or VRS (Video Response Service /9/).

(d) Information and Communication Service for Handicapped and Senior Citizens

As noted earlier, the Ministry of Agriculture, Forestry and Fisheries (MAFF) felt that its territory was invaded by MPT. In August 1985, MAFF announced a plan named the 'Greentopia Plan.' According to MAFF, this plan is to 'promote 4 johoka in farming, mountain, and fishing villages.' The content of this plan is very similar to MPT's 'Teletopia Plan' and MITI's 'New Media Community Plan' except that this plan focuses on farming, mountain and fishing villages. About ten areas are to be chosen as 'model areas' in 1986.

The 'Greentopia Plan' is basically an imitation of both MPT's and MITI's plans. Although this plagiarism may seem disreputable, this kind of phenomena often happens among Japanese government agencies. For example, at the time of the 'CATV boom' in the early 1970's, the EPA, MAFF, the Ministry of Education, and the Ministry of Interior announced similar plans as MPT's Tama CCIS and MITI's Hi-OVIS projects. Such phenomena demonstrate the strong consciousness of competition and territorialism held by Japanese government agencies.

MPT's 'Teletopia Plan' and MITI's 'New Media Community Plan' provoked local governments into taking a strong interest in new media and new information services. According to a survey conducted by MPT in April 1984, 150 local governments established special study groups to learn about new media and new information services and introduce them into their areas if possible. Among them 68 local governments have already made specific development plans involving new media or new information services. As noted
While government officials, scholars and journalists tend to be easily fascinated by the possibilities of social and cultural metamorphosis such as the 'informationization of society,' businessmen are more interested in maximizing profit and expanding their businesses. Naturally, businessmen are very sensitive to profit-making opportunities, and when many businessmen are attracted to the same business opportunity, an investment boom occurs. In relation to the 'informationization of Japan,' there have been three investment booms since 1960. The first was the 'MIS (Management Information System) boom' in the late 1960s, the second was the 'CATV (Cable Television) boom in the early 1970s, and the third was the 'VAN (Value Added Network) boom' in the early 1980s.

The 'MIS' actually meant 'computerization of business management.' In the late 1960s it was believed that cost could be reduced and profit increased by introducing computers into business management. It was also believed that those companies who failed to computerize management would eventually lose to the competition. Thus, many large companies introduced large computers and computerized management. In those days, Japan was far behind the United States in computer technology and computerization of management, and many company executives went to the United States to learn about the computerization of management. The 'MIS boom' in private industry coincided with the 'johoka shakai (information society) boom' in the government agencies, think tanks and journalism, and the two 'booms' reinforced each other.

Barnett and Greenberg (1967), Herman & Rand Associates (1968),
and Smith (1970) were translated into Japanese respectively in 1969, 1968, and 1970, and the term and concept *yussen toshi* (wired city) became familiar to Japanese specialists by 1970. Two popular books by Nozaki (1970) and Takahashi (1970) were widely read by businessmen and contributed a great deal to the diffusion of the 'wired city' and 'wired nation' concepts to a larger portion of the population. As a result of the popularity of these books, the 'CATV boom,' which started in the late 1960s, peaked in 1970.

Many seminars and symposiums were held in those days and many large companies sent their personnel to these seminars to learn about the feasibility of cable television as a business. As a result, in 1970, Tokyo Cablevision (Tokyo), Keihanshin Cablevision (Osaka), Nagoya Cablevision (Nagoya), and Nihon Network Service Inc. (Tokyo) were established. They differed from conventional cable television systems in that they were established in large cities, and their purposes were not merely amplify and retransmit over-the-air television signals. Their plans included providing more sophisticated services such as original broadcasting, two-way interactive telecasting, security service, and so on. A trade magazine entitled *CATV Janaru* (CATV Journal) was inaugurated in 1971.

Cable television businesses in the early 1970's, however, were soon found to be a fiasco. The reasons were: (1) Conventional over-the-air television stations feared cable television and obstructed its development by, for example, rejecting retransmission of their programs. (2) MPT's conservative policy supported conventional television stations, and did not help cable television. MPT thought at that time that if the number of UHF stations in remote areas increased, cable television would disappear. The most serious difficulty of all was: (3) There was not enough demand for local original broadcasting or other sophisticated services.

As early as 1972 the article below illustrated private industry's disappointment with cable television:

> The rosy future of cable television was not based on the actual development of the business. It was just an inflated expectation in the context of the great campaign chorus of *johoka shakai* (information society) and information industries. (Katamura, 1972: 192)

As indicated in the above quotation, the 'CATV boom' in Japanese private industry occurred during the 'johoka shakai' boom' in other sectors. Although the 'CATV investment boom' was a failure in the 1970s, it is possible to say that it might not have occurred without the 'johoka shakai' boom.

Data communication and on-line information processing attracted business managers for the same reasons computers attracted them --- cost reduction. Development of data communication followed these stages: (a) networking of branches of the same organization, (b) networking of different organizations with close, regular business transactions (such as between different banks), (c) providing information to specified or unspecified customers using leased lines, (d) networking of...
different organizations or individuals with only casual business transactions.

As a result of the revision of the Public Telecommunications Law in 1971, (c) became possible for private companies. However, (c), (b), and (d) were monopolized by NTT, and private companies were not allowed to provide services in those areas until the second revision of the Public Telecommunications Law in 1982. Under its monopoly NTT earned huge profits every year from circuits leased from NTT on the condition that the services are for (a) specified customers and (b) small and medium-scale companies. Furthermore, in April 1985, the Public Telecommunications Law was replaced by the Communications Business Law. Under this new law, entry into large-scale VAN services for unspecified customers was to be permitted. Thus, as of June 1985, six large-scale (Special Type II) VAN companies and 42 smaller-scale (General Type II) VAN companies (serving specified customers) were able to operate in Japan.

Mass Media and Educational Institutions

Mass media particularly newspapers, magazines, and books made great contributions to the diffusion of the Johoka Shakai ideas among the Japanese general public. For example, as early as in 1969, the Nihon Keizai Shimbun (Japan Economic Journal), one of the most prestigious national newspapers in Japan (circulation is more than 170 million copies), featured a series of articles entitled Johoka Shakai (Information Society) and discussed all aspects of informationization and information society such as theory, measurement method, technology, policy, industry, communications media, education, culture, personal life, privacy, vulnerability, international comparison, etc. The series started on September 18.
Information and communication related companies were ranked as the top 10 in the numbers university students to be hired out of 1,969 companies questioned. This phenomenon has continued for more than ten years. Educational institutions naturally have responded to this trend. Computers have been introduced to most 'special' high schools for computer education. In colleges and universities, divisions of electric or electronic engineering, computer engineering, information processing have become very popular among students. Many universities expanded such divisions, but it is very difficult to enter these areas of study.

A course entitled "Joho Shakai Ron" (Information Sociology) is taught at many universities in Japan. In 1972, the Division of Information Society Research was created in the Department of Mass Communications at Tokyo University. In 1980, the Department of Information and Communication was created at Bunkyo University. This department collects all kinds of studies on information and information flow that would ordinarily belong to different schools such as the Schools of Communications, Technology, Library Science, Economics, Sociology, or Business Administration. Some of the courses offered collect all kinds of studies on information and communication technology, social psychology, sociology, and public relations.

In 1970, the Mainichi Shimbun-sha, the third largest national newspaper company in Japan, published a seven-volume series entitled "Joho Shakai Ron" (Dictionary for Information Societies). This dictionary collected special terminology used in the study of information societies and its related concepts held by Japanese scholars and students. In 1971, a 20-volume series entitled "Koza: Joho I'nakaikagaku" (The Social Sciences for Information Societies) was published by Gakushu Kenkyu-sha. The number of books written on information societies or informationization exceeds one hundred.

Educational institutions, particularly universities and 'special' high schools (such as industrial high schools and commercial high schools) most of whose students work after graduation, are very sensitive to job opportunities for their students. The "Nihon Keizai Shimbun" carried in September 1985 an annual questionnaire survey results regarding the number of students written on information industries, information theories, information economics, and information sociology. The survey asked about the current state of information companies in Japan. According to this survey, 1,969 companies were surveyed from November 1984 through November 1985, and the results carried in 43 articles, 14 by the Wall Street Journal, and 29 by the Nihon Keizai Shimbun. The Wall Street Journal in Japan and the Nihon Keizai Shimbun are similar to the Wall Street Journal in the United States and widely read by the political, business, and intellectual elite. Therefore, it is very likely that this series had a strong impact on the Japanese elite. The "Nihon Keizai Shimbun" carried in September 1985 an annual questionnaire survey results regarding the number of students written on information industries, information theories, information economics, and information sociology. The survey asked about the current state of information companies in Japan. According to this survey, 1,969 companies were surveyed from November 1984 through November 1985, and the results carried in 43 articles, 14 by the Wall Street Journal, and 29 by the Nihon Keizai Shimbun. The Wall Street Journal in Japan and the Nihon Keizai Shimbun are similar to the Wall Street Journal in the United States and widely read by the political, business, and intellectual elite. Therefore, it is very likely that this series had a strong impact on the Japanese elite.
processing, information seeking, information management, management information system, international information flow, journalism, mass communications, and others.

Curricula of older universities are more conservative. Even in such universities, however, courses on telecommunications, communication policies, information economics, information industries, and information behavior are increasing.

A. Laws

Sometimes a law is designed as an instrument to implement a certain specific policy and plays an active role in social change. Such a law is usually clearly goal-oriented since it is a part of policy. We discussed such laws in the section on government policies. Most laws, however, are more passive. Laws are usually enacted when problems are anticipated or after they actually occur. Such laws usually facilitate smooth social change (as long as the change is considered desirable by the society).

Cultural differences appear to exist regarding under what circumstances laws are made. For example, in the United States, laws are usually made after problems have actually occurred. Therefore, court decisions often play a crucial role in social change in the United States. In Japan, however, people tend to expect administrative agencies to predict the occurrence of problems in advance and enact laws before any problems actually occur. If a social problem occurs because of the deficiency of laws or lack of proper laws, the government is severely criticized by the public. This is one of the reasons why Japanese laws are, in general, very cautious, detailed, complicated and often criticized by foreign governments as a "non-tariff barrier" against foreign goods. Thus, administrative agencies play a very important role in Japanese law making.

If Japanese society is to move toward an advanced information society, administrative agencies will be expected to predict what kind of problems might occur as a result of such change and make laws in advance to prevent or solve these problems. For example, the Fair Trade Commission has been studying the possible consequences of networking between companies currently in progress. The Fair Trade Commission is concerned with how the conditions for competition will change, what kind of anti-social behavior will result, and what type of behavior may emerge restricting competition.

The Economic Planning Agency, which is in charge of consumer policies, has been studying possible problems in home shopping, home banking, home reservation, and home doctor consultation using telecommunications. Many survey reports have been published by EPA on these subjects.

Other agencies have also been researching different effects of informationization on society. The Agency for Culture Affairs has been studying how to protect computer software, data bases, and privacy. The Ministry of Finance has been studying the security system of inter-bank networks and how to prevent computer crimes. In addition, the National Police Agency has been investigating
Most of the agencies mentioned above did their studies by creating special study groups or study committees. Outside experts such as independent lawyers, journalists, university professors, or leaders of consumer unions were invited to join these groups or committees. After meeting regularly for one year or two, reports were usually published. The majority of these reports are available at government publication centers. The policy recommendations in such reports are expected to be used for revising or making laws and thus contribute to the smooth informationization of the Japanese society.

Summary and Conclusions

In this article, the "jihoka" or 'informationization' taking place in Japan was first identified as a kind of social change. Thus, 'informationization' was analyzed as a social change.

The most important theoretical implication proposed in this article is that various social sectors and groups have different motivations and purposes for action, and a particular social change occurs as a result of complicated interactions among them. Academicians are motivated to propose original ideas, theories, or research methods to society. Government officials are motivated to increase their power, influence, and jurisdiction. Businessmen want to increase profit and expand their businesses. Educational institutions want to secure good jobs for their students, attract better students and research funds, and thus become more prestigious. Lawyers and lawmakers are expected to prevent or solve various social problems and conflicts. When these different motivations held by various social change factors do not interlock with one another, social change does not occur. When they do, however, movement of those change factors drive the whole society in a certain direction.

Outside Japan there is a belief that if the Japanese government decides to promote a particular policy, everybody faithfully follows. In other words, Japan is like a big company with a one-man president. This view of Japan has usually been called the 'Japan Inc. model.' This 'model' might have had some validity in explaining social changes in Japan before the 19th century. However, in the 20th century, even before World War II, social changes in Japan can never be explained by such a simple 'model.' There are many examples in modern Japanese history in which government policy failed or did not function properly due to objections, resistance, or negligence of other social change factors. If the government alone cannot bring a social change,
then what makes major factors interlock with one another to drive the whole society in a particular direction? In the case of Japan, the answer lies in (a) ideology (as defined previously), and (b) strong pressures or threat from outside Japan. /17/

As pointed out by many observers, Japan is a consensus-oriented society. Strong leadership by a charismatic leader is not a Japanese phenomenon. Before World War II, when the cabinet could not reach a consensus, all the cabinet members, including the Prime Minister, had to resign. /18/ Due to the importance of consensus, the Japanese have developed various socio-political techniques to create consensus in a group or across different groups. Some unique techniques like A ringi and A nemawashi have become known to the world as a part of the Japanese management technique. Such techniques, however, are limited to within the same organization or among relatively small groups and cannot be applied to larger groups such as the whole nation. As the group becomes larger, "ideologies" come to play an important role for consensus building.

In fact, whenever (modern) Japan experienced drastic social or political change, there were always ideologies which integrated major social change factors. In some cases the 'ideology' was nothing but a piece of idea or even a slogan. However, it was something that fascinated major social change factors in Japan, helped create consensus regarding the direction Japan should move toward, and made major change factors cooperate for the same goal.

A Johoka as an 'ideology' should be understood in the above context. This idea was not created by Japanese government officials. As explained in the first section, it was invented and developed by Japanese and American scholars. However, this idea attracted major social change factors in Japan for different individual reasons. Thus, consensus regarding the future direction of Japan was formed, and the informationization of Japan has become vigorously promoted.
the CAPTAIN system was commercialized and started regular service on November 30, 1984.

(9) This is also a Japanese videotex system that is more sophisticated than CAPTAIN. In order to overcome the shortcomings of CAPTAIN (slow transmission speed), broadband transmission lines instead of existing telephone lines are used to transmit signals. Thus, not only still pictures and voice but also motion pictures can be provided instantly at the request of users. The Nippon Telegraph and Telephone Company has experimented with this system since 1977. Since this system needs broadband transmission circuits, its diffusion cannot be expected before large-scale installation of broadband circuits such as ISDN using optical fiber cables. However, once this system is commercialized and diffused, it will have characteristics of both cable television and existing videotext.

(10) As far as the underknous, the first book in the world which used the term 'information society' as a title was published in Japan in 1968 (Masuda, 1968). In 1969 four books which used the term 'information society' were published in Japan. They were Koyama (1969), Hayashi (1969), Ministry of International Trade and Industry (1969), and Economic Planning agency (1969).


(13) For the definition of 'Type I,' see Ito (1985a) or Communications Study Group (1984).

(14) Most of these projects except Ministry of Education's 'Tateyama City Educational Broadcasting System' did not materialize due to various difficulties. For the details of these unrealized experimental projects, see Takagi (1974:147-149) and Tanaka (1975:136-137).

(15) The johoka shakai boom which started in the mid-1960's faded for several years after the 'oil shock' in 1977 or '78, however, it was revived and called the 'second johoka shakai boom.' The reasons for its revival were: (a) The United States and Western European countries began to be interested in the Japanese ideas of informationization and began to learn from Japanese experiences. (For examples, see Ito and Ozawa, 1984).

(16) Those 10 companies were: 1. Japan IBM. 2. Nippon Electric

NOTES

The author would like to thank Jerry L. Salvaggio of the University of Houston and Rebecca Rice of The American University for helpful comments on an earlier draft.

(1) One of the reasons why the similar concept of 'post-industrial society' did not have as strong impact on the Japanese as johoka shakai may be its lack of this 'sense of direction.'

(2) For the definitions and practice of Japanese industrial policies see Ito (1985b).

(3) For the nature of this Council see Ito (1985b).

(4) More sophisticated international comparative studies regarding the degree of johoka were conducted by researchers at the Research Institute of Telecommunications and Economics. See RITE (1968), RITE (1970), and Ito (1981).


(6) For the details of the Hi-OVIS experiment, see Ito and Ogawa (1985); Visual Information System Development Association (1983).

(7) For more on these eleven 'Teletopia types', see Ito (1985c).

(8) The CAPTAIN (Character and Pattern Telephone Access Information Network) system is a Japanese version of videotex. Technologically speaking, however, CAPTAIN is quite different from European and Canadian counterparts because of the difference in the characters used in the written languages. The European and Canadian system is a 'code transmission system,' in which coded information sent from the center is converted into characters and patterns in a pattern generator in each terminal. This system, however, is not suited to the Japanese language because a large-scale generator will be necessary at each terminal to convert transmitted codes into patterns since more than one thousand characters must be used in the written Japanese.

For this reason, a unique method called 'pattern transmission system' was developed for the CAPTAIN system. The advantage of this 'pattern transmission system' is that it can transmit more elaborate patterns and pictures than is possible using the 'code transmission system.' Its disadvantage, on the other hand, is that its transmission time is longer than the 'code transmission system.' Therefore, movement is slower in the Japanese system than in European or Canadian systems. After five years of experiments, the CAPTAIN system was commercialized and started regular service on November 30, 1984.

(9) This is also a Japanese videotex system that is more sophisticated than CAPTAIN. In order to overcome the shortcomings of CAPTAIN (slow transmission speed), broadband transmission lines instead of existing telephone lines are used to transmit signals. Thus, not only still pictures and voice but also motion pictures can be provided instantly at the request of users. The Nippon Telegraph and Telephone Company has experimented with this system since 1977. Since this system needs broadband transmission circuits, its diffusion cannot be expected before large-scale installation of broadband circuits such as ISDN using optical fiber cables. However, once this system is commercialized and diffused, it will have characteristics of both cable television and existing videotext.

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