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IIPS

Institute for
International Policy Studies
・Tokyo・

IIPS International Conference

"The IT Revolution and the Transformation of Society"

Tokyo

November 5-6, 2003

Conference Outline

The IT Revolution and the Transformation of Society

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The Institute for International Policy Studies (IIPS) has hosted two previous conferences on the impact of information technology (IT) on nations and societies. In 2001 the conference entitled "The IT Revolution: Challenges from Innovation in Information and Communication Technology and the Role of Government" featured general considerations on this topic, and in 2002 the conference entitled "The IT Revolution and Security Challenges" featured more in-depth discussion of IT security issues. Now, in an attempt to pull the various strands of discussion from the previous two conferences together, IIPS staged a third international conference and symposium. This conference was entitled "The IT Revolution and the Transformation of Society" and was held with the cooperation of the Nippon Foundation on November 5 and 6, 2003, at the ANA Hotel Tokyo.

Conference Themes

In economic, social, political, and other spheres, the continuing permeation of society by information technology (the so-called IT revolution) has drastically reduced the limitations of time and distance, and has created new opportunities and capabilities. In the early days of the adoption of IT (later known as the "IT bubble"), the rapid rise in productivity due to the use of information technology and the welter of new business opportunities created led to wildly optimistic expectations of economic growth. However, it has also become clear that in many ways the reality differs from initial expectations. Still, now that IT has permeated society to the extent that it has become indispensable in numerous fields, there is awareness of various new issues that necessitate discussion from an international perspective on how best to deal with them. Building on this awareness, the conference assessed how the IT revolution has affected society so far, and at the same time broadly discussed future possibilities and trends.

Summaries of the Sessions and the Public Symposium

The first session, entitled "Changes in Social Structure as a Result of the Spread of IT" and moderated by Mr. David Farber, distinguished career professor at the School of Computer Science, Carnegie Mellon University, saw reports from three panelists.

First, Professor Ryuichiro Matsubara of Tokyo University explained, from a socio-economic perspective, that initial predictions of how IT would "cut out the middle man" never materialized. Then, using the Japanese distribution industry as an example, he explained the influence of the IT revolution on consumer behavior. He identified a number of characteristic benefits conferred by IT, including (1) the ability to acquire concrete information on consumer trends, (2) a reduction in the cost of transmission of specialized information, (3) ease of accumulation and search of

information, (4) access to information on each individual product, and (5) two-way transmission of information. He went on to point out how the Internet, as a "personal medium," has created possibilities and opportunities that the mass media never could, but that on the other hand the anonymity of the Internet has led to a decline in ethical standards.

Next to speak was Mr. Gary Marx, professor emeritus in sociology at Massachusetts Institute of Technology. In discussing the spread of information technology and change in society, Professor Marx explained that urbanized and industrialized societies have experienced revolutionary changes through the continuing spread of IT, but that in the course of these changes the sanctity of the individual is being lost. He went on to suggest that the range and complexity of viewpoints—both positive and negative—make it difficult to distinguish between the merits and the drawbacks of information technology. Citing the loss of anonymity due to the accumulation of personal information on individuals, he suggested that, in terms of the sanctity of the individual, information technology has both advantages and disadvantages.

The final speaker was Mr. Christopher Gibson, attorney and partner at the firm of Steptoe and Johnson. In his discussion of intellectual property (IP) rights, he cited examples, such as the problem of digital copying, to illustrate how IP infringement has become widespread, and explained that this has made IP rights more important than ever before. In the course of his report, he described the impact of the IT revolution in terms of the following seven trends: (1) an increase in the general awareness of IT; (2) IP regulations with the appropriate scope of protection; (3) problems, such as illegal copying, resulting from the spread of digital networks; (4) problems with the ethics of the new generation of Internet users; (5) re-assessment of IP in light of digital networks and limitations on the extent of IP protection; (6) an "arms race" in IP protection technology; and (7) problems with the education of the new generation of lawmakers and lawyers. Mr. Gibson also made mention of problems with the balancing and strengthening of regulations internationally.

In the ensuing discussion, the first topic to be addressed was that of the problems associated with the protection and violation of privacy and brand rights that have resulted from the spread of IT. In the discussion that developed, various examples of these problems were cited, including the decline of ethical standards on the Internet, the pros and cons of allowing the storage of information on individuals (such as DNA information) in databases, privacy violations due to the increased use of surveillance cameras, and brand protection

litigation in the United States. It was pointed out that there are limits to what can be achieved through legal regulation, and that in the end, it will be necessary to address this problem through non-legal means as well, particularly the development of a good culture through "etiquette" and education. This was followed by discussion of whether efficiency has been improved through the adoption of IT. Citing the role played by face-to-face communications in Japan, the adoption of IT notwithstanding, one delegate commented that the behavior of companies has not differed greatly from that prescribed by classical theories of organization. One delegate expressed the opinion that standards of etiquette are shaky, even in Japan, and cited the problem of illicit pictures taken using mobile phones equipped with cameras. Furthermore, it was pointed out that there is technology on sale both for collecting information on individuals and for protecting against this, and that this clash of values could be said to betray a certain schizophrenia.

The second session, entitled "The Role of IT and the Internet in Democracy," moderated by IIPS Research Director Dr. Taizo Yakushiji, featured presentations by three panelists. First, Dr. Younchung Chung, Senior Researcher in the IT Policy Department Team at Korea's National Computerization Agency gave a presentation on the effect of the use of the Internet in the election of President Roh Moo-hyun. Citing website hit counts and the effectiveness of fundraising over the Internet, she explained the importance of how candidates and voters will perceive the Internet as a tool of democracy.

The next speaker was Dr. Rachel Gibson from the Australian Consortium for Social and Political Research Incorporated (ACSPRI) at Australian National University, who is deputy director of the ACSPRI Centre for Social Research. Dr. Gibson compared the usage of the Internet in elections in the US and other countries. Since the 1990s, political parties around the world have been moving into cyberspace, and election candidates too have attempted to make more effective use of it. Describing interactive website functions and their influence on the electorate, she went on to explain that, although this type of function has affected the speed with which change propagates throughout the voting public, it has not changed the voting public itself.

The final speaker of the session was Professor Yoshiaki Kobayashi of the Department of Law and Political Science at Keio University. Explaining the role of IT in democracy, Professor Kobayashi first stated that the Internet is fulfilling the functions both of widening the channel of communications between the electorate and politicians and of making it more reliable, and that the efficacy of IT has become clear. He went on to explain that up until now

ballots in Japan have been filled out by hand, and that when balloting problems have occurred (for example, when ballots have been filled out incorrectly), regional variations in interpretation have led to problems such as inconsistency in election results. Thus, the adoption of IT—in the form of an electronic polling system that uses magnetic cards or IC chips—constitutes a more effective alternative. On the subject of the use of IT to share information, Professor Kobayashi pointed out that since no information on domestic election results or on census data has been compiled, political analysis has proved difficult, and that as companies expand overseas, it has been difficult for them to investigate the laws and judicial precedents in the countries concerned. He added that demonstrations have been conducted of database systems that are intended to address these problems.

After the delivery of these presentations, vigorous discussion ensued. First, the suggestion was made that use of the Internet is more advantageous to opposition parties than to the ruling party; however, it was pointed out that the ruling party can in fact make good use of the Internet for fundraising and for publishing up-to-date information. Also, the opinion was expressed that the nature of the actual content posted on a website is important. Next, in response to the assertion that the effects of IT have been so great in the US and other countries, it was suggested that a broader perspective is required that takes account of factors such as the indirect influence of IT. In the context of discussion of the use of IT for sharing information,

one questioner suggested that it is in fact impossible to simply say that "information is a good thing." The response was that while the sharing of information certainly creates the possibility of conflicts of interest, in this day and age, where it is no longer possible for countries to close borders and keep their distance from each other, information sharing must be made as easy as possible, and several instances of collaboration between Japanese and Korean companies were cited.

Another questioner asked whether increased political participation will have positive effects—that is, whether it will lead to the protection of civil liberties and the revitalization of business. Among the opinions expressed in response were the following: the publication of election candidate backgrounds on the Internet is highly effective in promoting their suitability as candidates, and similarly, since the means exist for funneling consumer dissatisfaction and other feedback to companies, consumer behavior too is being affected. Additionally, one delegate said that increased political participation in the form of voting represents a healthy trend.

It was pointed out that, as a news medium, the Internet grants people access to a variety of opinions, such as different political opinions regarding the troubles in Iraq, and that analysis of how the Internet differs from traditional media such as newspapers and TV is required. Specifically, in the Korean presidential election, the Internet served as a vehicle for stirring up anti-American sentiment in the younger generation and for broadening the agenda. An example was given of a political e-mail magazine in Japan that enabled anonymous supporters to influence the direction of a workgroup, which led to discussion of how the interactivity and anonymity of the

Internet affects the policymaking process. In the end, transparency and participation in the decision-making process was considered very important. Successes and failures in other realms were pointed out as well, such as handling of consumer complaints against companies, which points up problems in management responsibility for the information released, but the potential for public participation at no cost of time or money should be highly valued. Finally, the discussion of anonymity that had featured in the first session was extended to e-democracy. It was recognized that since (for better or for worse) political activity is affected by anonymity, debate on this topic must continue.

The third and final session was entitled "The Spread of IT into New Areas and its Associated Problems." This session featured three presentations and was moderated by NEC advisor Mr. Tomohiro Okamoto. First, Mr. Okamoto himself delivered a presentation on military applications of IT. He explained that it was in the first Gulf War that the Internet had first been used to great effect in military affairs. At that time, systems were not integrated and their effectiveness was thus limited. However, command and control had subsequently been integrated through the sharing of information between air, sea, and land forces via the network, and advancing the division of labor in war. Examples cited include (1) it is now possible to conduct multiple operations concurrently (this is known as "parallel war"); (2) there has been a revolutionary increase in the speed of operations (due to correction of the disparity between perceptions on the frontline and those in the rear); (3) contact between the rear supply line and the frontline is now possible; and (4) frontline commanders can now be hold strategic conferences on-line.

Next to speak was Dr. Hideyuki Tokuda of the Faculty of Environmental Information at Keio University, who is also chairman of the university's Graduate School of Media and Governance. Professor Tokuda stated that advances in the integration of cyberspace and physical space in 2002 show that recent developments in IT are heralding a new technological revolution, and while this is also generating concerns, it makes possible a future ubiquitous network society. Such a society would imply a fundamental change, in that the network would not be centered around computers as it is now, but would be centered around people. As attempts are made to employ this technology in fields such as health, education, the environment, and security, increased traceability might also lead to more violations of privacy. Professor Tokuda identified several problems, including the need to maintain confidence in and the credibility of the network, and connectivity between

different architectures.

The final speaker in this session was Mr. David Farber of the School of Computer Science at Carnegie Mellon University. Professor Farber began by asserting that, as information technology spreads, security and reliability are important. He went on to highlight the problem of the deterioration in service caused by viruses and spam on the Internet, and explained the necessity for countermeasures that would guarantee network integrity. As wireless Internet use increases, there are public policy issues relating to the allocation of radio frequencies. Professor Farber then introduced Carnegie Mellon University's Project Libra (for optimizing individual and public interest in information technology), and described the concept of PRM (privacy rights management)—modeled on DRM (digital rights management)—for the protection of information on the individual. This embodies the notion that it should not be possible to establish the identity of an individual against his wishes. Doubts also remain among users about whether information technology is strictly necessary, and there is anxiety over who will get to make use of information on the individual, in what form this information will be used, and how this can be regulated in order to protect this information. Finally, Professor Farber concluded that further closed discussions, such as this conference, might serve to increase knowledge about these issues.

After the delivery of these presentations, various questions were posed. The first questioner asked how cyber-attacks had been conducted in the war in Iraq. The response was that research is progressing on computer network attacks and computer network defense, but that specific information is presently unavailable. Although some countries do possess the capability to launch cyber-attacks, the anonymity of such attacks makes it difficult to ascertain the identity of the attacker.

This was followed by a question on the evils of increasing over-dependence on information technology. It was stated in response that IT helps eliminate barriers for people with disabilities, and current and past experience as regards training and IT literacy should be discussed.

The next questioner suggested that the increasing use of IT in war was causing people to lose their sense of morality. The response was that until World War II the enemy was always in view. However, since the enemy now often cannot be seen, war can seem like a video game, which is highly questionable from a moral standpoint.

Further questions were posed and opinions stated. One delegate said that the implementation of new technology indicates the need for the technology, but that this technology is often introduced without adequate safeguards. There was discussion on how best to build a new society—for example, whether legal systems are necessary in

the realm of intellectual property, and how, from a technological standpoint, privacy and the rights of the individual could be protected. In response it was pointed out that those who draft policy are often unversed in technological matters, and that this problem might be addressed by instituting compulsory interdisciplinary courses in technology and other subjects at universities, to ensure that they are learned. A question was posed regarding a timetable for measures to make Japan a ubiquitous network society, through the introduction of technology such as IC tags. In answer, it was stated that both the fundamental research for such a system and the practicalities of its application in society require consideration. Applications in industry will advance by the year 2005, but costs must come down in order to increase industrial applications, consideration must be given both to the technology itself (in light of strict radio spectrum regulations) and to the way in which it is to be introduced into society. A policy framework that does not create anxiety about the introduction of IT must also be devised.

After the discussions in the three conference sessions, **a public symposium** was held, which was moderated by IIPS Research Director Dr. Taizo Yakushiji. First, Professor Ryuichiro Matsubara, ASPR deputy director Dr. Rachel Gibson, and Dr. Hideyuki Tokuda reported the proceedings of the respective sessions.

Professor Matsubara related that discussion in Session 1 had dealt with the effects of the adoption of IT in Japan, and in particular the way in which it has affected consumption. Two pivotal points in the relationship between the company and the consumer had been identified: (1) the initial adoption of IT in the shape of POS (point of sale) terminals in convenience stores in the 1970s—prior to the IT revolution—that enabled restocking to be closely managed in line with consumer preferences, and (2) the acquisition of the capability to distinguish between goods that sell (chart-toppers) and goods that do not sell, as a result of the shift away from "mass media" and towards "personal media" in the latter half of the 1990s. There had also been discussion of whether it is possible to protect all ownership rights solely through the law (for example mannerisms or facial expressions, or even a characteristic walk), and discussion of measures to counter malicious postings on Internet bulletin boards and the misuse of brand names.

Dr. Rachel Gibson reported on Session 2, which featured discussion on two aspects of the role of the Internet in e-democracy: (1) how ordinary citizens and politicians obtain and provide information using e-mail and the World Wide Web, and (2) how the Internet can be used for political research. These discussions covered the effects of being able to provide information to the electorate and to search for information on

the Internet since the 1990s, and the extent to which President Roh Moo-hyun made use of the Internet in the Korean presidential election—in the month of the election, Web usage in Korea jumped to five times the normal level, and the effectiveness of on-line fundraising. These fascinating presentations show how the strategies of the political elite and candidates in the political arena are changing. It was also reported that the sharing of knowledge between Japan and various foreign countries by means of multilingual databases could lead to improved economic and political relations.

Dr. Hideyuki Tokuda then described the discussions that took place in Session 3. The effects of the adoption of IT in military operations were apparent in the network-centric operations conducted in the war in Iraq, in which epoch-making improvements in strategy and speed of operations resulted from the achievement of large-scale collaboration. On a separate topic, in the opinion of Professor Farber (who has been involved with the Internet since its inception) the tidal wave of DoS (denial of service) attacks and spam today are eroding trust in cyberspace, and there is thus a need to build networks and computers on a trustworthy foundation. A research experiment is presently being conducted on an entire university campus, in an attempt to strike a balance between security and privacy. Further, it had been stated that while the 1970s were computer-centric and the 1980s and 1990s were network-centric, the post-2000 period will be human-centric. With the onset of ubiquitous computing environments, a balance between reducing privacy risks and the security of the community will be crucial.

Professor Gary Marx, attorney Christopher Gibson, and Professor David Farber then offered their respective opinions.

Professor Marx stated that it had been useful for him as a sociologist to attend the conference and engage in discussion with lawyers and IT specialists. He added that while the ability to use information that has been conferred by the development of IT appears beneficial, conversely there are anxieties regarding such matters as the protection of privacy and the over-use of information and technology.

Christopher Gibson then explained the connection between the IT revolution and IP (intellectual property) from the legal viewpoint in terms of seven trends (as listed in the description of Session 1), and stated that the concept of IP has now attained a greater level of importance than ever before. Mr. Gibson went on to describe the problem of determining the categories of intellectual rights and the extent to which protection should be extended, the discord that has arisen within a system based on the laws of different countries where perceptions of intellectual property rights vary according to

region, and the need to teach young people (who are its principal users) what the Internet really is.

Finally, Professor David Farber offered his opinions as a technology specialist, in contrast to those of a sociologist and a lawyer. First, post-9/11 society is exposed to threats and increased use is now being made of surveillance cameras. Project Libra, a joint project conducted by the RAND Corporation and Carnegie Mellon University, is intended as a model for introducing surveillance technology to society and achieving a balance between the requirements of security and privacy. Professor Farber then touched on the use of sensor technology in a ubiquitous network. In identifying the problem of whether a user should be able to have control over the acquisition and inspection of information that pertains to him, he asserted that there is an obligation to explain how information is used, that a concept akin to "rights management" in the realm of IP is emerging, and that there must be a means to ensure that responsibility is assumed, should abuses occur.

The symposium was then opened to the floor, and discussion and questioning continued with the involvement of all the panelists. Following are some of the opinions and questions voiced.

- In Japanese case studies it can be seen that the function of middle management is changing due to the adoption of information technology. Since Japanese companies spread risk by buying small quantities of products of multiple brands from wholesalers, "cutting out the middle-man" has happened less in Japan than in the Europe or the US.
- Campaigning in the US presidential election includes "off-line" activities as well as "on-line" (Internet-based) activities. Supporters have arranged small gatherings and, in addition to branches all over the US, have even formed a branch in London. When problems have arisen, supporters of Howard Dean, (the so-called DDF or Dean Defense Force) have endeavored to neutralize any negative impact.
- With the approach of ubiquitous networking, there is a need for SLAs (service level agreements) as a means for resolving conflicts, such as between the demands of efficiency and convenience on the one hand, and privacy on the other, or between the demands of security and freedom. Prior to the SLAs, it may also be necessary to define a pan-industry service profile, such as the Privacy Profile Negotiation Protocol, developed at Keio University.
- With the advance of information technology, the incidence of unwitting violations of contracts and agreements between individuals will probably continue to increase, due to new technology (such as cameras made in Japan).
- With the adoption of IT and changes in society—in other words, as new technology is introduced to society—various systems will undergo change and will eventually be accepted by society. Consideration should be given to the ways in which information technology will be used in countries and societies with different cultures. With regard to IT and privacy too, the time is fast approaching when problems such as anonymity will have to be confronted; however, IT cannot

simply be dismissed. Means must be devised that allow IT to accommodate problems associated with different countries, security problems, and problems in society.

Over the course of three years, IIPS has been advancing research on information technology by gathering together specialists from many countries. In summing up the symposium, IIPS President Yoshio Okawara made these closing remarks:

"Post-9/11, there is a new awareness in the US of problems related to networks and the collection of information. In the campaign for the 2004 US presidential election, the candidacy of Democrat Howard Dean has drawn attention due to its highly successful fundraising over the Internet. In the Korean presidential election, the support of the younger generation via the Internet was of great significance. In the war in Iraq, US forces employed the latest technology in weaponry in battle, which afforded them overwhelming superiority and brought them victory. However, it is abundantly clear that in the subsequent reconstruction planning they are now confronted by difficult problems beyond the realm of technology. In the future we would like to intensify our research into all these problems."