JAPAN STUDIES 1995

The Information Society in Japan

Papers presented at the
Eighth Annual Conference of the Japan Studies
Association of Canada

Dunsmuir Lodge
University of Victoria
Victoria, British Columbia
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September 30 - October 1, 1995

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INTRODUCTION

Japan as a Post-Industrial State derives an increasingly larger proportion of wealth from its tertiary sectors, and less from manufacturing with the development and adaptation of advanced technology to service and communications. Having created a dominan electronics industry, Japan now must position itself to take advantage of the hardware it has mass-produced. The transition from hardware to software has not been easy, and many in the West speculate that this may be the Achilles' heel of Japanese supergrowth. Entertainment conglomerates and computer software firms may be purchased by Japanese companies but the creative soul cannot be reverse-engineered - so government does what it can to encourage science cities, basic research, and aggressive patent evelopment. The direction and particular policies of Japan's construction of the new information society was the focus of this Seventh Annual meeting of the Japanese Studies Association of Canada meeting held in Victoria, British Columbia at the scenic Dunsmuir Lodge.

More and more specialists in Japanese studies recognize that one of Japan's major advantages over other advanced industrial states lies in the high rate of information diffusion within and between Japanese organizations and groups. This was one of the unerlying themes of the and is reflected in this volume of papers from the conference.

If information in Japan does in fact flow at a lower cost - that is, information flow faces less legal, social and/or economic impediment to diffusion - why is this case? Are the reasons cultural? Is the Japanese language a more efficient carrier of inforation in post-industrial society? Is it a product of the way Japanese companies are organized? Is it an outgrowth of government policy, especially industrial policy? Does the hollowing out of heavy industry in many parts of Japan due to the high value of he yen endanger the comparative advantage conferred by low costs of information diffusion within Japan? Spirited debate over the issues took place at the conference and various approaches to these and other questions can be found in the following papers b the leading specialists in Japanese studies in Canada.

While the economic implications of Japan's information society provided a core theme of the conference, social, legal, historical, cultural and linguistic questions were also addressed, reflecting the diversity of interests and disciplines represented at he conference and within the Canadian community of scholars who engage their attention on Japan.

The papers also address how Japan is faring in the brave new world of the information super highway and the internet. In some important ways communication by computer threatens corporate and governmental control over information flow and therefore could waken some of the institutional mechanisms which have determined the channels of information flows in Japan. Whether this trend will seriously undermine Japan's advantage in information diffusion in the future remains to be seen. If any summary of the conerence is possible, it is that Japan is meeting the challenge of new information technology in its own way

The conference was made possible through a generous grant from the Japan Foundation, and with financial help from the University of Victoria.

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The Extraordinary Growth of the Information Society

One year ago, in the keynote address of the Networld-Interop Conference in Tokyo, Anthony-Michael Rutkowski described the phenomenal growth of the Internet: "all measures of the network and its use continue to scale inexorably: ever more connected countries, gateways networks, hosts, users, services and traffic. A network analyst recently noted that if one of those services-- the World Wide Web -- continues its traffic increase at present rates it will exceed the world's digitized voice traffic in three years."[1]

According to a 1995 survey by the NPD Group in the US, 5 million households are now on-line there and Web access from homes rose by 50% in the month of May over the month of April.[2] Citing experts who fear slowdowns and even gridlock in the net over the next few years, *Computer Player* reports that the "Internet's millions of worldwide users now are generating more that 30 terabytes of information each month-- the equivalent of 30 million 700-page novels."[3] Half of all Internet host sites are now located outside of the US. According to the *Globe and Mail*, in 1994, China went from 2 to 593 Internet hosts, Argentina from one to 1,415 and Japan from 38,267 to 99,034.[4]

The majority of us in this room have Internet addresses printed on our business cards. We are connected. So are our colleagues. So are the businesses and the governments we deal with. So are our friends and our relatives. And if we, a relatively few privileged and middle class establishment types are connected now-- here comes the rest of the world as well.

Universal access is a frequently cited rallying cry among politicians and public interest groups. Beyond the egalitarian ideals of these voices lie strong economic interests, working in exactly the same direction; imagine the profits to be made managing ever more vast networks, connecting all of these potential consumers with suppliers, providing infrastructure, software and services. Stentor, the consortium of Canadian telephone companies is ready to invest $8.5 billion to upgrade Canada's broadband capability, reaching 90% of households. According to the *Georgia Straight*, "By the year 2000, BC Tel hopes to have 80 percent of B.C. households connected via broadbands... allow(ing) for simultaneous two-way transmission of high quality

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[1] Anthony-Michael Rutkowski, in a presentation to the Networld-Interop 94 Conference entitled " The Present and the Future of the Internet: Five Faces," July 29, 1994.

[2] *Computer Player*, August, 1995, p.9.

[3] *Computer Player*, August, 1995, p.13.

[4] Andrew Pollack, *The Globe and Mail*, August 10, 1995. p. A10.

video along with voice and text messages."[5] The projected cost of these investments are drops in the bucket compared to the revenues that the control and the management of such networks could generate over the longer term. Companies all over the world are asking governments to be allowed to develop the financing and spend that money. And governments are anxious to make it possible with the drastic revision of regulatory structures. Pure capitalism as well as idealism militate strongly in favor of connecting everyone, everywhere, as fast as possible -- turning everyone, everywhere into a client and customer of the information infrastructure.

Personal experience

On a personal level, I finding it extraordinary how an Internet connection has begun to change the way I work and the way I communicate professionally and personally. Gathering policy documents for this paper could now be done from a desk. Developing a couple of key terms, invoking a couple of powerful search tools, I "traveled" from Montreal to Vancouver to California to Ottawa to Tokyo. I traveled from research centers, to libraries to government data banks, to newspaper archives, checking sources against each other, downloading texts, picking up new leads along the way, until the references became circular and I felt satisfied that I hand found many of the useful sites of relevance. I was able to accumulate a variety of official and non-official descriptions and policy documents. I was able to find out who seemed to be working in these areas.

The Internet has begun to fundamentally alter the way I relate to colleagues on a daily basis at the University. We have a system of internal mail which is relatively simple to use and extremely powerful. A culture of communication is developing which is virtually paperless. This means that less time is spent composing the perfect message. Formal niceties are often overlooked. Messages tend to be casually worded, whether to a colleague, or to the Vice-President. Messages tend to be brief and they solicit immediate response. This is really a new kind of communication-- more like the spoken word in writing, than writing itself. The results are often intimate, even surprising. It seems to be a form of expression innately more egalitarian than the old form of written memos, which it has largely replaced and which I now reserve only for truly eye-catching and formal occasions.

This form of communication in fact seems so much like speech that I wonder if, as it continues to entrench itself, we don't risk losing the desire for face to face contact, just as we might lose the desire to actually do primary research on site. The temptation to sit comfortably at your desk in a virtually no-risk environment is unfortunately real.

Interestingly, the Internet has begun to change some personal relations as well. Over the last few years I refound a cousin and several friends with whom I hadn't communicated in over thirty years. We seem a lot more comfortable talking on the net than we ever did in person. The net provides just the right feeling of intimacy and distance.

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[5] Charlie Smith, "Universal Access Urged for BC Info Highway," *Georgia Straight*, August 4, 1995. pg. 9.

In a word, the Internet connection has begun to change some fundamental relationships with time and space, in both personal and professional spheres. On a personal level, it has helped make the past alive, bring old acquaintances back into the present. On a professional level, it is shrinking the size and distances of the academic world and the resources to be found there-- down to the size of a computer screen.

The Importance of the Information Superhighway

Albert Gore, the Vice-President of the United States, has become one of the most visible and influential proponents of these emerging technologies and new forms of communication. He has likened the development of the information superhighway to the development of the US interstate highway system, which his father helped to create in the 1950s. Arguing for a bill to fund the National Research and Education Network in 1991, Gore said it would be "the prototype for a network which will be as ubiquitous and as easy-to-use as the phone system is today, and probably not much more expensive. Such a network will be able to deliver HDTV programming, provide for teleconferencing, link your computer to millions of computers around the country, give you access to huge 'digital libraries' of information, and deliver services we cannot yet imagine."[6]

The very aggressive, pro-active and nationalist stance of Al Gore over subsequent years has worked to foreground the issue for policy makers around the world. Gore framed the question partly as a race for dominance: "Without this bill, and the money it authorizes," he argued, "it is almost certain that our foreign competitors in Japan and Europe will move ahead of us in this critically important field. . . We cannot afford not to make the investment necessary to deploy such a national network. The alternative is to wait until other nations show us how to take advantage of this technology-- and they will. We must move first."[7] In 1993, the US action plan for the National Information Infrastructure was revealed. It promised enormous improvements in health care, education and economic growth. The world took notice. In Canada, John Manley, Minister of Industry carried Gore's automotive rhetoric even further: "Henry Ford and other automotive pioneers left a legacy of transforming significance. . . the impact of the information society will be no less profound."[8] In Japan, the US proposals scared a relatively reluctant and satisfied bureaucracy into a flurry of reports.

Most countries are now attempting to face up to the profound economic, political and cultural implications of these emerging communication technologies, through the development of new regulatory and economic policies. In the formulation of these policies, they must face as well the simultaneous turmoil induced by other related and equally fundamental global trends: general worldwide policy deregulation in telecommunications, the collapse of traditional national market barriers, economic concentration in truly transnational companies and breathtaking technological innovation, as communication technologies converge into a digital sea.

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6 Albert Gore, "Viewpoint," *Communications of the AMC*, November, 1991, Vol. 34. No. 11, pp. 15-16.

7 Albert Gore, Ibid.

8 John Manley, "Linking the World," speech presented on February 20, 1995 to the APEC-OECD-PECC Symposium on the Information Infrastructure.

The head of the US House Telecommunications and Finance Subcommittee, Rep. Edward Markey, described his feeling as a key policy maker in 1994 "as riding the front car on the roller coaster. . . It may look like you're steering the cars, but in fact you're just holding on."[9]

This has led to profound questions about the role and capacities of policy itself in the new communications environment. But as tumultuous as the environment for policy initiatives may be, governments have little choice but to face the phenomena head on from the perspective of their specific policy goals and assumptions.

Another way of talking about the information superhighway is the Information Infrastructure. Beneath surface events, something truly profound is happening: the development of a new communications infrastructure. This is a phenomenon which will equal or exceed in its social impact the introduction of other information infrastructures such as the telephone and television. The Information Infrastructure in fact proposes to link all previous communication infrastructures, from the printed word to satellite communications to television to computers at home, office and government, in a global information society.

Infrastructures normally exist below the level of everyday experience. They are taken for granted, like the sewage system or the electrical system or the phone system. Only at moments of birth, crisis, breakdown, or profound change are they even considered by most people. But they are profoundly important. Invisibly, they shape and determine the way we live every day. But as they shape us, so too they have been shaped by the most profound cultural, political and economic assumptions of the societies in which they develop. The shape of technology is never entirely neutral. It is imbued with many social values. Throughout the world cultural, political and economic values have been key factors in the debates over the design, capacities and implementation of communications infrastructures.

Communications Policy Perspectives: the Three Axes

Communications policies have been determined by a series of often competing cultural imperatives. Historically these imperatives-- these large national goals and value systems which help shape policy-- have fallen along three general axes:

The first is the control of information to the public and the regulation of content. Policies relating to the control of information may be justified on the basis of political, social, or moral values. For example, maintaining order has often been cited, historically, as a reason for the control of print, film and broadcasting content in Japan; while moral imperatives and national cultural imperatives are often cited in US and Canadian contexts for similar controls.

A second set of imperatives concerns economic principles and priorities: strategies to assure the national ownership of critical media and communication industries, industrial development strategies, employment policies and principles relating to the general economic vitality of major industries.

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[9] Edward Markey, Cited in *The New Yorker*, January 17, 1995, pg. 50.

A third set of values concerns the protection and development of a national culture and this can be found expressed in two different forms: as the protection of diversity, multiculturalism and minority cultures within a national culture; or as the development and protection of a strong, unifying national cultural itself.

These three sets of concerns traditionally underlie the formulation of communications policies throughout the world: policies regulating content, ownership, etc. Looking back at the history of Japanese and Canadian film and broadcasting policy, we have elsewhere traced the types of assumptions at work in policy formulation. In each case, a different mix of concerns is involved, a mix which reflects the values and historical pressures on the particular society and culture at that historical moment.

Without going into the details here, Canadian film and broadcasting policy has responded to cultural concerns literally unimagined in Japan: it has formed in response to perceived threats from the outside, namely American popular culture; it has formed as well in response to ideological imperatives having to do with the creation of a pluralistic, multicultural society within a tenuous unified state; and it has formed lastly in response to purely economic considerations of employment and the development of an industrial infrastructure.

In Japan, on the other hand, with a very few exceptions (such as the control of pornography) we have found only small, economically-based communication policy initiatives. These policies have been largely developed within the closed walls of the bureaucracies after a long and intangible consensus-building process involving variously interested ministries and important elements of the communications industries. These are considered industrial rather than cultural policies.

In Canada, communications policies have been perceived as the concrete embodiment of important national cultural objectives and are the subject of active and bitter public debate. Policy is a major factor determining the health and the shape of the feature film and television industries. The Japanese film and broadcasting industries are for the most part self-regulating and self-financing. Policy in relation to these industries evokes little public debate.[10]

Policy and the Information Superhighway: Canada

Turning now to the information superhighway we find that policy makers everywhere have begun to find the traditional policy contexts inadequate, indeed irrelevant.

The new conjuncture of forces mentioned above -- the extraordinarily rapid pace of technological innovation, the general trend toward deregulation in telecommunications, the collapse of traditional national market barriers, economic concentration in transnational companies, the merging of previously distinct sectors of the communications industries and digital convergence itself -- has thrown policy makers into uncharted seas. Are the old values attainable -- or even desirable anymore?

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10 Brian Lewis, ed., *Japan-Canada: Comparative Communications Policies*, Montreal: Joint Centre for Asia Pacific Communication Research, 1994. See also Brian Lewis, "Japan-Canada: Perspectives on Communications Policy," forthcoming in the Proceedings of the *Japan Studies Association of Canada*, 1993.

As of three years ago, the Canadian policy makers apparently hadn't a clue as to what they were going to do. In 1992 I attempted to find out what work was being done on the policy level. Someone in the Department of Communications, remarkably, referred me a to a working policy group at Stentor, the consortium of major phone companies, admitting they really weren't up to speed on the issues.

But, typically and traditionally, Canadian policy makers have now rallied to approach the question publicly-- in full battle gear-- as if the fundamental values of the nation itself were at stake.

In the Speech from the Throne in January, 1994, the Government affirmed its intention to implement a grand strategy for the information superhighway. In March and April, 1994, the first step of a three-stage, full public policy process was launched. Industry Minister John Manley issued a discussion paper on the "Canadian Information Highway," and announced the composition of the National Information Highway Advisory Council, with the broad mandate to foster discussion, gather information and advise the government on a strategy for the development of the information superhighway.

The second step in the development of the strategic plan was launched in October, 1994, when the Canadian Radio-television Telecommunications Commission was ordered to conduct reviews and public hearings on the information superhighway, within its mandate as the regulatory body overseeing broadcasting and telecommunications. The CRTC was to submit its findings to the Advisory Council for further comment and analysis.

The third step, the publication of a final government action plan and the enactment of a new policy, would be expected at end of 1995, only after the submissions of the CRTC and Advisory Council were fully analyzed and debated.

The CRTC eventually received written submissions from over 1000 groups and individuals, entertaining 78 parties in public hearings. It submitted its report to the Advisory Council in May, 1995.

The Advisory Council actively met in groups and sub-groups over the past year. Some 300 recommendations have been issued by the Council in a variety of information areas. The minutes of its meetings are available on Internet, as well as interim and final reports.

The search for an overall Canadian strategy has from the beginning been framed rhetorically by three policy objectives, which were cited in the Minister's announcement of the Advisory Council, in his Discussion Paper and in the orders given to the CRTC: to create jobs in Canada through innovation and investment, to ensure universal access at reasonable cost and to reinforce Canadian sovereignty and cultural identity. These are what we might call fundamental and traditional "national priorities," which have long guided Canadian communication policy formulation.

A series of four equally important operating principles were also announced, that a policy must somehow encourage an interconnected and interoperable network of networks, promote collaborative private and public sector development, assure fair competition in facilities, products

and services, and guarantee privacy protection and network security.[11] These are relatively new preoccupations; we might call them "globally-oriented" concerns, in that they are meant to prepare Canada's position for participation in a new world-wide information infrastructure.

Looking at the documents issued thus far, it becomes clear that the implementation of the new infrastructure poses terrific challenges to the traditional policy perspectives.

For example, we find that the policy focus has shifted from the traditional national question of Canadian job creation, to the larger question of our ability to compete on the international stage. Thus businesses are now being allowed to merge vertically and horizontally, to expand to a size and strength deemed appropriate to compete globally, even as they swallow up domestic competitors, rationalize their operations and downsize personnel. We find less concern with cross- ownership of industries and concentrations of power. We are offered the spectacle of industrial giants competing with giants, overseen but encouraged by governments, whose job becomes setting the broad rules of the competition and assisting their efforts. The days of the national regulated monopolies in their current forms are doomed, replaced by a competitive marketplace model on a global scale.

Another example can be found in relation to questions of cultural and national sovereignty. On a rhetorical level, these have always been key notions employed by policy makers to justify their initiatives: to justify subsidies for Canadian producers, establish restrictions on the ownership of industries and establish quotas for Canadian content on television and radio.

In fact, while certain small and symbolic efforts may now be made, from a regulatory perspective, to limit a percentage of communication industry ownership to Canadians and to assure access to "Canadian" products somewhere out there in the million channel universe, these rhetorical underpinnings are thrown into dramatic question by the realities of the information superhighway and the economic context in which it is evolving. Will Canadian content matter anymore in a world without information borders? Will Canadian ownership make any difference in a globalised market? The notions of Canadian carrier and Canadian content, already severely challenged by trends toward globalisation and commercialization in film and broadcasting, seem ever more vulnerable and dubious in the new environment.

In short, the government's commitment to a globally-oriented, privately-developed, market-based regulatory framework has thrown into question entirely the nationalistic policy framework of the past several decades. Not surprisingly as a new infrastructure is being established, an entirely new policy framework is developing as well.

Policy and the Information Superhighway: Japan

The Internet, which has functioned for people throughout the world as a tangible introduction to the potentials of the information superhighway, has developed much more slowly in Japan than in most Western industrialized countries.

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11 Canada. Industry Canada, "Building Canada's Information and Communication Infrastructure," Ottawa: Minster of Supply and Services Canada, April, 1994, p.4.

Several interrelated practical and cultural reasons can be cited for this. A first must be the predominance of the English language throughout the Internet and the Roman keyboard as its primary interface mechanism. Even in Canada (i.e. in Québec) we are seeing that the predominance of the English language can retard the application of new communications systems.[12] If manipulation of the Roman keyboard and some knowledge of English remain tickets to full global entry for the near future, Internet use can only be expected to grow relatively slowly in Japan, depending primarily on local and business applications. In development now are real-time translation programs to allow on-line, cross-border, inter-linguistic communication. Unfortunately, however, the English language remains an important laissez-passer for global networking applications, and even Japanese government home pages are invariably offered in English as well as Japanese versions.

A second reason relates to the fact that Japanese offices have traditionally and historically been much less aggressive in adopting office automation and computer technology. In 1993, only 10% of all Japanese office workers were equipped with personal computers and only 9% of these were hooked into a local network (comparable figures for the United States were 52%). Even recently, only 8% of top Japanese office managers say they believe computers to be essential to their jobs, according to a survey by Kondo Katsuto, cited in *The Economist*.[13]

A third major reason has been the traditional culture of business communication in Japan, which is inherently dependent on face to face contacts and the development of contextual relationships as crucial elements in the decision making process. As I mentioned above, communication by email is by nature a form of communication which is direct, abrupt and de-contextualized. According to Mr. Kondo, "the Japanese rarely even make decisions on the telephone. Making them by email would be a revolution indeed."[14] *The Economist* ends its snapshot of the Japanese situation with a paradox: "Many would argue that Japan's collective decision-making process cannot be computerized. On the other hand, there are clearly enormous gains in efficiency to be made in Japan's offices."[15]

What is certain is that the communications infrastructure which would allow change to happen is now beginning to be implemented at a more rapid pace. Mr. Kondo found that Japanese managers are increasingly dissatisfied with current information management systems. The demand for PCs is up. Access points to the Internet are increasing rapidly, although still much less rapidly than in the US. A few large corporations are beginning to establish networks for interoffice and interbranch communications. The Ministry of International Trade and Industry itself claims to look toward implementing a paperless office.[16]

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[12] In Québec, where the official language of business and education is French, the provincial government has been slow to assist in the implementation of Schoolnet, the ambitious project to link all schools in Canada on-line.

[13] *The Economist*, August 12, 1995, pg. 51.

[14] Ibid.

[15] Ibid., pg. 52

[16] Ibid., pp. 51-2.

The information superhighway has become a key stimulus for discussion, investment and planning activity within Japanese government and industry, since 1994-- and especially following the February, 1995, G-7 Ministerial Conference on the Information Society. At that meeting eight principles were adopted to guide infrastructure development globally; these included the promotion of private investment and competition, the interoperability of systems, and the development of stable and unified regulatory standards. Eleven pilot project themes were also established. Through applied research in these eleven areas new technologies would be tried out, social problems would be addressed concretely and a critical mass of resources would be developed. The clear direction of the meeting was to move towards an integrated, world-wide information society.

What we see in the new policy-making situation in Japan is in one sense similar to what we have already seen in the case of film and broadcasting: this situation has stimulated the creation of a whole series of independent groups working within the various ministries and bureaucracies, in consultation with their particular industry clients and partners. The bureaucracies tend to compete among themselves for increased influence and control in communications areas.

In the case of film and broadcasting it can be argued that the lack of a top-down, coordinated policy resulted in the more or less complete capitulation of public imperatives to market forces. But here the somewhat competitive and anarchistic situation might even be considered beneficial: lots of interesting initiatives are being developed and rich new versions of the information society are being proposed and debated and tried out. Initiatives are springing forth from private industry, public interest groups, the Ministry of Post and Telecommunications, the Ministry of International Trade and Industry, the Ministry of Education and the Prime Minister's office itself, among others. While plans and proposals might seem far from clear, overly ambitious and even at odds with each other in the fight for limited resources, ideas are bubbling happily.

A year-long study by an advisory board to the Ministry of Posts and Telecommunications, the Telecommunications Technology Council, has set out the central rational for the implementation of an advanced information infrastructure in social terms. This key report, "Reforms toward the Intellectually Creative Society of the 21st Century: Program for the Establishment of High-Performance Info-Communications Infrastructure." names seven social problems that could be concretely addressed through the new information infrastructure: the isolation of a rapidly aging population, the overconcentration of population and economic forces in Tokyo, reforming the economy from an emphasis on manufacturing to services, increased public services and enhanced leisure time, opening Japanese society both internally and internationally, promoting international understanding and addressing major environmental problems. The report pushes for the establishment of a national fiber-optic network by the private sector and encourages increased Government investment, policy coordination and active deregulation to support that end. It insists on the importance of direct government involvement

as partner to private sector investors, comparing Japan's investment policies unfavorably to those of the US.[17]

In the meantime, MPT has launched a three-year pilot project to assess the feasibility of such a broadband fibre-to-the-home network. The New-generation Communications Network Pilot Project is supposed to include 300 homes and offices in Kansai Science City, and will test video-on-demand, high-definition television, videoconferencing, teleshopping and telemedicine. The Director-General of the Communications Policy Bureau cited the "aggressive stance of the US administration" in emphasizing the importance of the test network.[18]

In addition, following the G-7 conference, MPT signed on to support pilot projects in all eleven theme areas listed by the Ministers: Global Inventory; Global interoperability, Cross-cultural education and training, Electronic libraries, Electronic museums, Environmental and resource management, Global emergency management, Global healthcare applications, Government on-line, Global marketplace and Maritime information systems. The 1995 MPT White Paper on communications goes on to list literally dozens of on-going projects and regulatory initiatives, all related somehow to the implementation of an advanced information infrastructure, and touching on all of the corners of its empire: from broadcasting to telecommunications to postal services to space communications.

Not to be outdone, in 1994, the Ministry of International Trade and Industry, following studies by its own committees, published a "Program for Advanced Information Infrastructure."[19] This report agrees with an earlier MITI study that the "principle means of generating economic value has shifted from manufacturing to intellectual activity..."; and increased productivity in intellectual activities is linked directly to the rapid development of new communications technologies.

The report projects a completely new information environment for Japan. The new Japan will see PCs present throughout society. The PCs would be networked locally, nationally and internationally, and virtually all information would be digitized and accessible. This new information environment would profoundly affect public, industrial, commercial and home activities and relationships. Short-term and long-term prospects for the implementation of the communications infrastructure are described in detail for each of these areas. In each case, the description of MITI initiatives is prefaced by a paragraph on what the United States is doing, and how Japan lags sadly behind.

The report lists dozens of actual or proposed MITI-supported activities in this context of competition with the US. With the Ministry of Education, MITI has set up an educational software development center and is helping to establish a model educational network linking 100 schools. It is participating in experiments on the exchange of medical image information. It is

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[17] Japan. Minister of Pasts and Telecommunications "Reforms Toward the Intellectually Creative Society of the 21st Century." Tokyo: Minister of Pasts and Telecommunications, May, 1994.

[18] *MPT News*, Vol. 5, No. 6, June, 1994.

[19] Japan. Minister of International Trade and Industry. "Program for Advanced Information Infrastructure.", May, 1994.

experimenting with non-technical computer interfaces for at-home use by the aged. It is funding software packages for multimedia applications. It is contributing to the development of a high-speed inter-ministerial network. It is promoting the improvement of government data bases, on-line resources, a paperless patent system and on-line libraries. The descriptions of US initiatives and Japanese efforts to catch up goes on and on.

MITI argues that the infrastructure should be developed by competing commercial interests. It would not be a single system, but layered; that is, different types of compatible systems with different capabilities. Consumers and users would chose appropriate levels of service. The report cites several critical roles for government: funding targeted research in key areas; promoting the use of the information infrastructure in a multitude of public spheres, such as health, education, public information and leisure; encouraging the deregulation of industrial and commercial environments so as to support competition, private investment and even foreign partnerships. Essentially, the government's role is to promote the idea of the infrastructure, stimulate research and development and "reinforce the initiatives taken by the private sector." MITI too has signed on to pilot projects in seven of the theme areas listed by G-7.

In response to many factors-- the new de-regulatory environment, targeted government research funding, global enthusiasm and the sheer profit potential of successful implementation-- industry has been the source of a multitude of new initiatives as well. Commercial and business servers are increasing rapidly in Japan. Multimedia teams are being developed in education, medical and communications industries. NTT plans to hire 1000 people in multimedia applications alone. Five large companies have embarked on a Cyber Business Park to explore the potentials of on-line sales, service and research activities. The most fundamental infrastructure project is clearly Nippon Telegraph & Telephone Corporation's plan to wire every school, home and office with a broadband Integrated Services Digital fibre-optics Network. Latest estimates call for an investment of some $426 billion by the year 2010 (the year established by G7 as the goal for a global information infrastructure).[20] The NTT scheme is one of only several by large companies, anxious to develop fibre-optic networks, on more limited scales.

At the same time influential non-governmental groups have formed in Japan to study the issues and help inform the debate. The Committee for the New Century of Information, organized to input ideas from industry and public perspectives, described the information revolution as a paradigm shift leading to new forms of society: a shift in power to consumers and citizens, a borderless world shaking the very foundations of national sovereignty, shaking as well traditional industrial structures and values such as devotion to company. It upheld five general principles for action: public education, encouragement of private sector initiatives, focus on end users, international harmonization, and governmental support and coordination. Government, it argued, should establish a legal and regulatory environment which would encourage

20 Embassy of Canada in Japan. "Japan Sci/Tech News," Nov./Dec. 1994, pg. 15.

internationalization and maximize efforts by private sources. And it calls on the ministries to set aside their traditional rivalries in a coordinated effort to face these challenges. [21]

At about the time of the G-7 Conference, a new group was publicly announced, headed by the Prime Minister himself. This group, named the Advanced Information Telecommunications Promotion Society was given, finally, the mission to guide overall Japanese policy coordination in light of the evolving positions. It published a document called "Fundamental Policies for the Creation of an Advanced Information-Intensive Society."[22] The report summarizes and endorses many of initiatives described above and consolidates the major principles as government policy. It is hard to find anything fundamentally new-- anything that would change what was already happening-- apart from the fact that the ministries are ordered to publish specific plans and policy coordination itself had become a public issue. A type of working consensus has thus eventually emerged through the multiple activities and documents of diverse sectors.

Policy Convergence As Well...

Earlier I had argued that the shape of technology is never entirely neutral. It is imbued with many social values. Throughout the world cultural, political and economic values have been key factors in debates over the design, capacities and implementation of communications infrastructures. I mentioned three axes or themes along which these debates regularly occur: national cultural objectives, national industrial strategies and moral or political concerns relating to content.

So we had found that Japanese and Canadian policy-makers approached broadcasting and film industries differently, from their own assumptions of what was truly important, and that their respective industries were structured, regulated and policed differently.

But something new is happening here. Late last month, in August, 1995, when, a draft of the final report of the Canadian Information Highway Advisory Council was leaked to the *Toronto Star*, Reporter Robert Brehl described what he saw this way: "The overriding theme of the report is that the private sector should drive the construction of the information highway. . . the government should act like a referee, not an owner. And industrialists should take the risks and reap the rewards."[23] This and the other statements ascribed to the report could as well describe the consensus plans developing in Japan. Or the United States. MITI was exactly correct in 1994 when it proclaimed that the market system itself-- and users, such as you and I-- would be King: "...the advanced information infrastructure society will basically be materialized by users making active efforts to promote the introduction of information systems, and by

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[21] Committee for the New Century of Information ."Meeting the Challenge of the Coming Information Century." Tokyo, November, 1994.

[22] Japan. Prime Minister's Office. "Fundamental Policies for the Creation of an Advanced Information-Intensive Society," February, 1995.

[23] Robert Brehl, "Access called the key to information highway," Toronto Star, August 30, 1995.

information-related industries supplying advanced products and services in a diverse, advanced and seamless network environment prepared by the private sector."[24]

The policy maker's job has largely switched from policing to boosting and this in Japan, Canada and globally. As we seem to be entering a new age of information, so too we seem to be entering a new age of policy. If the role of the policy maker had been to moderate market forces in light of national goals, the role has now switched to the moderation of national goals in light of new global economic and technological imperatives: market competition, convergence, globalisation, interoperability. The social context, the national values which have guided public policy, have themselves begin to change focus. This is perhaps the best evidence we have of a genuine paradigm shift, a new world view.

Essentially we have embarked on a world-wide game of chicken. No one is quite sure where Al Gore is going, but everyone is desperately afraid of being left behind. Policy convergence is following fast upon technological convergence in the race to keep up.

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24 Japan. Minister of International Trade and Industry. "Program for Advanced Information Infrastructure.", May, 1994. pg.16.

CUSTOMIZED SOFTWARE STRATEGIES FOR ACQUIRING AND SUSTAINING COMPETITIVE ADVANTAGE: A JAPANESE PERSPECTIVE

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Introduction

This paper examines the proposition that customized software in the Japanese market is used by Japanese companies as an integral part of their strategies for gaining and sustaining global competitive advantage on a long term basis. It thus postulates that large Japanese customers' persistent use and development of customized software despite its high cost is rational and economically efficient in terms of their own industries and competitive environments. This is true even though most analysts generally see Japanese firms' extensive use of customized software as an historical anomaly that has saddled them and their managers with inefficient and technologically backward software systems.

Further, interviews with several large customers as well as software suppliers indicate that because of the high cost of converting to new systems and the slow pace of incorporating newer hardware and software technologies into their existing organizational software systems, the extensive use of customized software by large Japanese customers will continue for some time. Therefore, the issue of economic efficiency and rationality is important for Japanese industry, their foreign competitors, Japanese software developers, Ministry of International Trade and Industry (hereinafter MITI) officials and foreign packaged software companies. This is especially so when many industry analysts who see the current system as inefficient also predict custom software's replacement by packaged software solutions, particularly open systems, as inevitable and proceeding quickly (Murchinson 1995, JISA 1993 & 1992 and Boyd 1995).[1]

The outcome of this debate is critical to the evolution of the Japanese software industry given that over 85% of current Japanese software expenditures are on customized software (MITI 1993 and Boyd 1995). Indeed, if their internal costs are included, an even higher percentage of large customers' software expenditures is for customized systems (JISA 1993 and Baba et al 1995). In addition, the industry has shifted from one determined by producers strategies to a user driven paradigm (Baba et al 1995 and Rapp 1995). Therefore, understanding the actual dynamics of the customization versus package software decision process and large customers' motivations in deciding on one approach or the other is critical to any assessment of the development of Japan's software industry.

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[1] The conclusions reached in this paper are based in part on a recently completed two year study of the Japanese software industry done under a Japan-US Friendship Commission grant. Several large users in various industries were interviewed along with industry experts, industry associations, software developers, integrated systems producers and government officials. A complete report of the research findings has been filed with the Commission and diskettes containing it are available from the author on request (Rapp 1995).

Also, the mainframe and minicomputers used by larger Electronic Data Processing (hereinafter EDP) customers are particularly wedded to customization. Since they presently account for over 80% of the software market, the persistent use of customized software will affect the trend to downsizing and open systems too. That is, most PCs as well as workstations are used in offices not homes. There they must be tied into the company's overall mainframe and minicomputer system. So their adoption becomes part of the customization framework. Because both companies and employees desire to integrate PC use with the firm's information systems, customization of even packaged PC software is actively pursued in Japan and such usage decisions by large customers influence the sale of PC software. When one considers that Toyota alone will buy 25,000 PCs for its office workers this year, or almost 1% of Japan's total PC market, the customization issue for packaged software developers is obvious. In sum, while Toyota and others are gradually downsizing, they are also maintaining their existing highly customized systems and continue to pursue customized or semi-customized solutions software across the board.

Yet large customers' apparent continued preference for customized software, even for the newer downsized systems, seems at odds with its high costs and stated inefficiencies as perceived by government officials, industry analysts and software developers, particularly foreign packaged software developers. Further, though an historical artifact and market anomaly compared to the US or Western Europe, its widespread and continued use by Japan's leading, best managed and most efficient producers raises questions concerning the actual nature of its inefficiencies and the inevitability of its elimination.

MITI, of course, correctly understands that Japanese companies' continued emphasis on using customized software is as an important obstacle to Japan's development of a globally competitive packaged software industry (Rapp 1995). However, it is the conclusion of this paper that this focus on the packaged software industry and the high cost of customization represents only one dimension of a much more complex economic and competitive situation. This is because it appears these customized systems are an integral part of what makes Japan's leading companies competitive in producing and marketing their own products and services. From this perspective, large Japanese firms can be seen as being very expert and sophisticated world class users of software even if they are not world class developers of packaged software. In fact, they may represent the leading edge of what the U.S. International Trade Commission sees as an important new trend for the global software industry (Brown, Johnson and Warlick 1995), i.e. "Vertical market expertise is particularly important as an increasing number of clients choose to enhance competitiveness through effectively integrated information technology systems."

The higher manufacturing productivity of their lean manufacturing systems, including supporting organizational and software developments, justifies the continued use of customized software and is thus quite rational. Indeed, from both a firm and a national economic viewpoint, using customized software may be more efficient and productive than trying to use a less expensive packaged software solution that results in lower productivity in processing and manufacturing such as has been documented for the automobile industry (Krafcik 1988, Womack, Jones and Roos 1990 or Clark and Fujimoto 1991). American software customers relatively greater reliance on packaged software, though less expensive at the EDP level, may sacrifice

process innovation and superiority at other points in the value added chain. This would explain Japanese firms' heavy customization of even packaged software to make it conform with their unique and proprietary software systems.

User Driven Paradigm

The market for software in Japan and the continuing demand for customized software is thus being driven by large Japanese companies' perception of their software requirements as part of their total operating systems. Currently, these perceptions are being determined by three major forces: first, their own competitive evolution since the 1950s, second, the historical development of the Japanese computer industry and third, by current technological trends in their own industries and in computers and computer software. In this sense, their decisions are path dependent.

The interview results have shown that software customization is in fact part of a system of rules and routines to which Japanese firms for various reasons appear to be institutionally committed and which are thus very difficult to change, even when they may not be optimal in terms of current software and computer technology (Rapp 1992). However, in most cases, this decision relative to software usage and development appears related to a firm's commitment to other routines as a way to maintain its competitive advantage in its own businesses. This conclusion concerning the origins of Japan's management practices as they relate to software in turn seems important to understanding the future of the Japanese software industry and well as the user industries themselves. This is because other competitive or use criteria than just the price and quality of the software are generally involved in software purchase or usage considerations. These factors are frequently historically based and indicate that an evolutionary approach is likely to give the best analytical results (Nelson and Winter 1982 and Rapp 1995).

Foreign governments and industries, including the US, have of course had policy concerns that the strategies, rules and routines that succeeded for Japanese corporations in certain industries were applicable to computer software. The global competitive success of many Japanese firms made this quite logical. However, the persistence of customization makes it appear that instead the Japanese software industry has been co-opted by the strategies of its large user industries such as steel, automobiles and consumer electronics. This is because computer-related software is an essential input into virtually all forms of manufacturing and services but in terms of cost is usually a relatively small percentage of the total required to produce and deliver a product or service. It is therefore the economics of those businesses rather than the economics of the software industry that ultimately determines large organizations' demand for and usage of software (Baba et all 1995 and Rapp 1995). In turn, those economics continue to stimulate large customers' extensive use of proprietary software systems to maintain or improve competitive advantage, now an emerging trend in the US envisioned by Brown, Johnson and Warlick (1995). Nevertheless, because of these customers' continued commitment to customization, Japanese software suppliers have not been successful in transferring from hardware to software Japan's successful corporate production practices based on the continuously improved production of standardized products in large volume (Imai 1986), but neither has there been a great incentive to do so.

In contrast to the 1960s and 70s, though, most large customers are presently buying software from multiple vendors. Large integrated systems suppliers now find that only about 10% of their customers buy only from them. Thus, at one level the issue of group affiliation and historical ties appears less important in software usage than in some other industries. But at another level it has become more intense. This is because most large software buyers have created software development subsidiaries as a way to centralize their management and cost controls over their software use and development. These subsidiaries are thus part of these parents' vertical *keiretsu*. In this respect, they try to reduce their costs per software system developed for the *keiretsu* while maintaining their tacit expertise within the group by selling their customized software to other group members. Additionally, they and the companies' traditional mainframe supplier are managing the semi-customization process where outside and particularly foreign packaged technologies are heavily modified to work on the customer's proprietary system.

Thus, such software development subsidiaries and affiliates specialize in producing customized software or in heavily customizing package software for their parent's and group's use. These parent and group purchases account for between 50 and 100% of the software development affiliate's total sales, with the average about 70% (interviews and Baba et al 1995). More importantly, for the structure of the Japanese software industry and in determining future trends, they are among the very largest software companies in Japan and serve several functions.

In addition to helping control costs, they offer careers to specialized EDP personnel outside the parent firm's personnel system. They also expand the firm's software user base to reduce the overall cost of maintaining a proprietary software system. The multi-subsidiary as opposed to the multi-divisional approach to Japanese corporate organization of course has a long history in Japan and appears to be a preferred organizational form when, as in this case, it meets firms' basic strategic objectives. Yet, the importance of this phenomena cannot be overestimated for Japan's software industry and large customers' software usage. This is due to the fact that these captive developers are increasing their market share while the independent developers and systems integrators are losing sales and going bankrupt in record numbers (Baba et al 1995). Indeed, five of the top ten software developers are so affiliated (Rapp 1995), as are 53 out of the largest 100 (Baba et al 1995).

As might be expected from this analysis, most of this customized software is for proprietary application programs (Boyd 1995). Most large customers buy their operating and middleware systems from hardware vendors or specialized software developers and then develop their own proprietary application systems either internally or through their software development subsidiaries rather than purchasing standardized packages off the shelf (Rapp 1995). So application software accounts for a smaller part of the packaged market than it does of the customized market. However, even when application packages are bought, they are usually extensively customized except for simple word processing and spread sheet programs.

The questionnaires and interviews indicate the cost of semi-customization usually runs about twice to three times the cost of the basic package. This situation has forced most software developers and systems integrators to specialize by industry. They are then quite dependent on specific customers in those industries, each with their own large proprietary systems, making

software demand sensitive to developments in such customer industries. The close affiliation between software developers and specific firms of course limits the former's familiarity with other software systems and has created difficulties in rewriting code for the newer open systems. It has also made large numbers of existing programmers and software engineers heavily specialized with limited skills or interest in developing more generalized packaged software solutions or learning new programming languages.

From this description it can be seen that leading Japanese software producers and most major customers have developed their software systems in an evolutionary manner to incorporate specific technologies and routines to achieve definite business purposes. These systems and routines largely determine their future software requirements. Because of this evolution, Japan's software industry now faces some distinct competitive disadvantages relative to foreign packaged software developers that Japanese policy makers are trying to address. At the same time, such systems appear to have created barriers to entry in the industries that are using them, helping to continue those industries' and their firms' global competitive advantage. Indeed, to the extent the Brown, Johnson and Warlick (1995) study is right, it may have given them a headstart in a more global trend where "spin-off firms growing out of joint ventures are likely to emerge as competitive providers of specialized information technology services ...."

Contributing to this overall condition, is the fact that Japan's large mainframe producers are confronting difficulties in modifying their production processes to accommodate rapid changes in software technology. Their past competitive success in manufacturing and competing for market share based on distinct operating systems has hindered their adaptation to new circumstances. Further, many continue to be successful hardware manufacturers, limiting the resources they can or want to devote to software development, while applying their successful manufacturing routines to software has not developed a large user base for packaged software. Rather, it has helped them control the cost of continuing to develop customized applications, perpetuating the current paradigm. Finally, to maintain technological parity for their own and their customers' information systems, many have entered into strategic alliances with US and other foreign packaged software developers to adapt the former's advanced software technology and developments to their operating systems. This has further contributed to the custom/semi-custom approach to software usage and development by large customers.

Structure of the Japanese Software Industry

Entering into strategic alliances with foreign packaged software developers has neatly complemented the strategic objectives of the foreign packaged software developers. This is because the heavy front-end development costs and low cost of reproduction for packaged software systems have made expanding one's user base the primary goal for foreign software producers (Rapp 1995, Steinmueller 1993). Structural differences between the Japanese and US software industries have particularly favored US producers in this regard. For example, the relative ease of completing acquisitions in the US compared to Japan, despite some recent US Justice Department actions, gives US packaged software firms a distinct advantage in rapidly building or expanding their user base. Indeed, responding to such forces, firm expansion via acquisition appears to be a major trend in the US and Canada as witnessed by several large recent

transactions across a range of software segments, e.g. IBM-Lotus, Adobe-Aldus and Computer Associates-Legent.

Such large structural and software demand differences between the US and Japan have also severely hampered Japan's expected rapid technological convergence in computer and software use with the US relative to downsizing and open systems. Thus it is not surprising that predictions in Japan of the end of the mainframe and its inevitable replacement with network servers have proved highly exaggerated. MITI surveys that showed user interest in downsizing and open systems failed to specify the extent or degree with which such downsizing would take place or the desired continuation of customization within this framework. Therefore, corresponding predictions about the rapid growth in packaged software sales turned out to be inaccurate as well (AEA 1992 and Boyd 1995) since increased use has actually depended on their customization requirements and the ability of customers to quickly integrate the packages into their proprietary operating systems.

In sum, software system convergence is not occurring in Japan. The increased use of servers and workstations for downsizing while progressing in Japan is only happening at the margin. Further, even what is happening will take 10 to 20 years for many major firms to achieve. In addition, at the conclusion of their adoption plans, mainframe activities will still represent 30% to 50% of large customers' EDP expenditures. Downsizing and the shift away from mainframes is thus proceeding only very gradually in many industries and end uses. The degree of shift in turn appears closely related to a firm's need for large data bases, security and access control, existing programming systems (i.e. installed cost), large processing or computational requirements and high speed mission critical operations. Finally, the software to connect and operate these newer systems must be still be customized or semi-customized to integrate it with the firm's overall unique proprietary software system.

From this perspective, Japanese EDP and Management Information Systems (MIS) managers in leading firms seem to be moving much more slowly than their US counterparts due to their different system and business requirements. Partly this is because reliability and continuous operation appear to be more critical variables than possible cost savings or increased flexibility. However, the organizational changes required to maximize the use of such systems seem to be difficult for Japanese firms to adopt as well. Downsizing and possibly increased labor redundancy actually are potential negatives. In addition, customized Japanese application software in the areas of Japan's competitive strength such as steel, autos or consumer electronics production technology appears to be quite competitive on a global basis and is a key part of the foreign direct investment (FDI) in these industries (Dalton and Genther 1991, Florida and Kenney 1991 and Rapp 1993).

While MITI is concerned with the implications of this situation for development of a packaged software industry, this situation causes little stress for most large customers. In the interviews, most could not name a single major Japanese producer of packaged software other than for word processing. Yet they did they did not feel their dependency on adapted foreign packaged software was a business or policy issue so long as it met their requirements. Further, their continued emphasis on customization and the relatively small 5-15% share (depending on

the data source: MITI 1993, JISA 1993 and Boyd 1995) of packaged software in overall software use from 1991-1994 means their real dependency has been relatively small in any case. So it is hardly surprising MITI officials readily admit past policies have failed and that they are looking for new software industry policies (Nakahara 1993). But unlike the situation for computers and semiconductors in the 1960s and 70s, government has little influence over software as large customers and producers pay scant attention to its policies and initiatives.

The permanent employment system often considered a plus in early high growth periods also acts to support the current customized approach to software use and development. This is because software engineers and programmers feel little compulsion to leave their existing firms to start new ventures, while their skills can be and are highly focused on the requirements of maintaining and expanding a specific company's existing large installed base and proprietary software system. The employment structure thus facilitates the extensive use of customized software and the necessary personnel resource allocation. Indeed, such institutional arrangements have tended to lock the EDP departments of large Japanese firms more into their software history and older programming languages such as COBOL than their US counterparts who purchase more packaged software (Steinmueller 1993). Under these circumstances, cost improvements come more from experience curve economics and subsequent manufacturing efficiencies for their products than from the user base economics that determine global competitiveness in packaged software (Cusumano 1991 and Rapp 1995).

Large integrated systems producers as well are no longer the dominant force shaping the software market as they have been in hardware (Anchordoguy 1989). Influence has shifted to the large systems customers. Some feel this shift has implications for Japan's entry into the Information Age as a "Supra Industrial Society" as opposed to a "Post Industrial Society." Some analysts have even hypothesized that Japan's transition to the Information Age will be adversely impacted by its weakness in software development (Coultas 1994). However, it is this paper's conclusion that through customization they will just be taking a different path

This is because the research results show that Japanese weakness in packaged software is due to continued fragmentation of its industry based on customer economics not because of any cultural advantages the US may have in writing software or US managers' ability to better or more quickly introduce new software systems as some have hypothesized (Delaney 1994). In turn, this fragmentation has perpetuated the overwhelming allocation of Japan's computer software resources to the mainframe and customized market. There is in fact a cycling effect at work where the existing base of incompatible operating systems and installed proprietary software necessitates constant customization even of packaged products to both maintain and upgrade each customer's system. Having put in more resources, the existing commitment to the old customized system is expanded, forcing the continued allocation of resources to maintain it in the future, including the training of personnel to use older programming languages. This situation is accepted due to its small impact on final product cost and its perceived benefits as supporting superior processing technology and organization.

But the resulting industry structure has facilitated foreign firms' dominance of the Japanese market for packaged software for PCs and workstations, given their large global user

bases and close relationships with the most widely diffused microprocessors and operating systems (Cottrell 1995). Their strategy of successfully developing alliances with the major integrated systems producers has proved effective as well (Rapp 1995). This is because it has enabled them to pursue a hub and spoke strategy that permits them to adapt their packages to the various Japanese operating systems and thus access the widest number of customers, expanding their global and Japanese user bases and therefore improving their cost position (Kitzmiller and Throne 1993).

Customization Commitment: An Historical Anomaly?

From this analysis, one can see that while large Japanese users' continued emphasis on customized software is part of a larger historical legacy, its continuation serves the current needs of several important industry players. Understanding the origins and development of the Japanese computer industry makes this clear. That is, the Japanese Government's computer industry policies in the 1960s and 1970s led to multiple platforms and operating systems as fledgling Japanese computer manufacturers entered agreements with a variety of foreign producers (Anchordoguy 1988, 1989, and AEA 1992). These firms in turn became technologically isolated as these foreign partners were consolidated or exited the business. Further, to compete with the growing global power of IBM, the large integrated Japanese producers supported by government subsidies gave away software to lock-in their customers (Anchordoguy 1989). This "free good" combined with additional internal expenditures to greatly increase customization by these large customers (JIPDEC 1993). The installed total now amounts to billions of lines of code, with most large customers having hundreds of millions of lines of installed customized software that works and is an integral part of running their businesses.

Despite this large installed base, however, there is support by large customers for localizing and adapting foreign packaged software together with a shift towards greater system flexibility and openness, provided these localized foreign software packages and open systems can be integrated into the customers' larger customized systems. This is called semi-customization and is currently closely associated with the growth in the demand for packaged business software and represents the high growth part of the business software market. This is because it is a good way to keep costs down but still constantly incorporate new software technology into the existing system while maintaining the large firms' systems and computer heritages. It also keeps the customers' mainframe operations "locked-in" to their Japanese integrated systems' supplier so the systems suppliers support this trend as well. The current approach effectively manages and upgrades the multiple systems and incompatible platforms existing in Japan due to the various historical ties that have left a hardware/software environment strategically difficult to change, especially for large mainframe systems that support large firms' mission critical applications.

The Size and Growth of the Japanese Software Market

These developments can be seen in the estimated size and growth of Japan's software industry by market segment (Source - Rapp 1995 based on JISA & MITI 1993):

Estimated Growth Rates 1990-94 by Market Segment (%)

	Custom	Packaged
Mainframe software	**5.0**	**7.2**
Mini Computer software	**7.3**	**11.8**
Work Station software	**13.3**	**34.7**
PC software	**10.3**	**12.0**

One can see from these figures that as expected mainframe software sales are growing more slowly than that for minis, work stations, or PCs. This pressures mainframe producers to strongly defend their existing customer base. Further, while the mainframe software market is a very large (estimated at Y2409 billion in 1992) of which Yen 2233 billion is customized with growth for 1991-94 estimated at 5.0% p.a., the high growth opportunities are in downsizing and related applications, both customized and packaged.

However, it is also clear that Japanese firms are not abandoning customization and moving aggressively towards packaged software solutions as part of the downsizing and open system process. Rather as described above they are quickly shifting to semi-customization, where packaged software purchases entail substantial customization. This can be seen in the following market forecast where because packaged software starts from a low base and customizing it runs about 70 percent of total cost, compared to customized software's current 85 to 90 percent of the market, packaged software only appears to be growing faster. Ultimately, excluding internal software development costs, its share will level out at twenty to twenty-five percent of the market.

Customized & Packaged Market (Yen billions)

	1992 (Estimate)		
	Custom	Package	Total
Total	3635	661	4296
Mainframe	2233	176	2409
Mini	550	56	606
Work Station	545	95	640
PCs	305	336	641

Difficulties and Cost of Conversion versus the Benefits of Customization

Contributing to the logic of this trend towards customized software is the fact the cost of converting and adapting packaged software and the new open systems, including network servers and workstations, to the installed proprietary systems is much cheaper and easier than converting the proprietary software systems to work on the new hardware and operating systems. Firms have limited programmers and system engineers familiar with the new languages and able to check the converted systems. At the same time, these individuals are needed to develop new systems or to adapt and integrate purchased programs to the corporate system. In addition, they have few incentives to learn new programming languages and systems while they are needed to maintain existing ones and monitor the overall system. Adding to this perceptual imbalance is the fact that large scale conversion programs from COBOL to C++ do not exist, while the new converted programs would in any case have to be checked and run in parallel. Finally, the risks from a problem are of very different scale with respect to the two approaches since installed mission critical mainframe systems supporting data bases and key operating systems involve hundreds of millions of lines of code and work, where the risk of a failure is unacceptable! On the other hand, a single new packaged program can be vetted and tested before it is installed with little risk to the overall system.

There are the additional perceived benefits from customization too. Customized systems are seen as institutionalizing and permanently incorporating the firm's tacit knowledge and processes (rules and routines) from the shop floor and other business areas into an integrated whole, while maintaining secrecy and restricted access. Then through the permanent employment structure, firms can realize a return on the cost of training staff in the unique features of their proprietary systems, including the operating system, without raising employee mobility concerns. This helps the large firms compensate for Japan's relatively weak education in

computer science (Baba et al 1995 and Brown, Johnson and Warlick 1995) through specialization and on-the-job training in the firm's unique system for an extended period. This process includes learning to use and manage its software and EDP's finely tailored adaptation to the firm's business, processes and operating needs.

The use of dedicated software subsidiaries that specialize in developing and adapting software to the business and competitive needs of the firm and its group rather than just accommodating a purchased system is of course a key aspect of achieving these perceived benefits. It also fits well with the intra-industry strategies of the large established firms in transportation, steel, electronics, finance and power (Rapp 1992) and their historical emphasis on process versus product innovation supported by specialized software development. Their experience and skill at adopting and adapting foreign technologies to achieve sustainable advantage makes them feel very comfortable with this strategic routine as does the emphasis on continuous improvement (Imai 1986) in software support and the use of new technologies. Nor is a currently weak Japanese government able to press for institutional or strategic changes in these established rules and routines as they did in the 1960s and 1970s in computers (Anchordoguy 1989 and Rapp 1995).

Persistence of Customization

Leading Japanese companies feel comfortable and committed to this process because in most of Japan's competitive industries leading firms have generally gained competitive advantage by adopting and improving products invented elsewhere (Rapp and Abegglen 1972, Abegglen and Stalk 1985, and Rapp 1993). They have usually done this through process innovations that have not only enabled them to acquire competitive advantage but to sustain it through their ability to do high quality precision manufacturing in volume at constantly lower costs (Imai 1986 and Womack, Jones and Roos 1990). Apparently, customized software has been a fundamental aspect of this development, especially when closely linked and integrated with corporate culture and organization. Therefore, their commitment to customization is not going to change!

Actual implementation is presently via increased semi-customization and a "three tier" hardware system where customized middleware is the element that integrates minis, PCs and workstations into the overall system managed by a mainframe. This and other adapted software is already localized for language and format as well as converted to the system suppliers' mainframe platforms before the large customer has it semi-customized for its own proprietary system to satisfy their unique processes and other business needs.

Large customers like to control this process and the system integration themselves because they try to incorporate their tacit learning from the shop floor, their permanent employees and their captive customer/supplier base (Baba et al 1995). This enables them to maintain their special or unique system and process advantages where software is both an important input and institutional arrangement with little chance of leakage to competitors. Customized software is thus one way Japanese firms incorporate and institutionalize continuous process innovation, competitive advantages and tacit knowledge. In this respect, software development has been a key part of a firm's competitive evolution from imported technology and

products to global competitiveness, including its organization and the integration of suppliers and customers into a network. This closely links corporate culture, competitiveness and software systems. It also creates potentially large competitive barriers to entry if these systems must be copied to achieve similar productivity results. In those cases, software system barriers could affect the ease with which foreign firms can copy or emulate such practices as lean production, thus questioning an essential policy proposition of Womack, Jones and Roos (1990). Yet, the trend towards vertical integration and specialized software in certain industries as a way to enhance competitiveness as identified by Brown, Johnson and Warlick (1995) indicates that at least for some industries and firms such barriers exist or can be developed. More research therefore needs to be done on this issue on an industry and firm basis identify what the barriers are and for which industries they are most important.

Customization Costs: A Total Cost Management Approach

An important business management issue in addressing this question of course centers on the issue of cost. Presently, many US companies regard their EDP operations as cost centers and therefore something to be minimized. It is not seen as an integral part of their business strategy or as a way to institutionalize certain competitive practices as their Japanese competitors do. Some representative numbers may put the reasons for this divergence in perspective. Customization in Japan costs 10 -15 times a localized package or 20 -30 times its import value. Even a semi-customized product is 5 - 6 times its imported value. On the other hand, a typical US firm using packaged software would expect its costs to increase only about 20% to install it. Thus, a Japanese firm expects to pay more than four times its US competitor to install a semi-customized software solution or more than twenty times for a fully customized version. The differential in software costs on a percentage basis is thus enormous. Thus shifting to using just a localized and installed package would reduce software costs at least 60 -70 percent. This could save Toyota, for example, about Y3500 per car or over US $150 million per year. For many US EDP managers the decision would be clear.

From Toyota's total corporate perspective, however, there is a potential cost to this conversion, i.e. reducing Toyota's manufacturing and delivery productivity or increasing its inventory and floorplanning costs to US levels (Womack, Jones and Roos 1990). Disregarding capital and other costs, an increase in assembly times by eight hours would increase labor costs alone by over two hundred dollars a car, swamping any benefits from the lower software costs. Japanese managers in steel and consumer electronics firms believe similar cost calculations apply to them. From this viewpoint, packaged solutions available to everyone and not tailored to the particular organization and production process could prove very costly.

This why when examining the future competitive dynamics in software development continued heavy customization aided by the hub and spoke Strategies of foreign software developers seems the most likely scenario. Large customers will assure this by maintaining and further developing their customized systems as competitive barriers to entry, including incorporation into their FDI. This may have potential adverse strategic implications for foreign firms emulating lean production or NICs following the product cycle. To further strengthen their positions, large Japanese customers and systems suppliers will push towards alliances and

exclusive licensing arrangements with foreign firms in new software technologies and formats. Their goal will be both to continuously upgrade and maintain the global technological parity of their proprietary systems and to try to tie or control the entry and use in Japan of the new technology. In both cases, the objective is to improve their own relative competitive position and the firm's market advantage from a total cost or total business viewpoint.

Thus they will not just emphasize maintaining technological parity through localization, conversion and customization of foreign software but actually will seek to improve the firm's overall competitive position in its own industry. While this process will subsidize the entry and presence of independent foreign software vendors in the Japanese packaged software market, it will also improve and maintain the competitiveness of Japan's leading corporations. Of course these large customers will try to reduce software costs, but the approach will be more to reduce costs per line of code rather than to increase revenues or the user base, especially as the latter could compromise the integrity of their proprietary system advantage. Naturally, this means the present pattern of fragmented operating systems and software applications will persist and non-customized standard packages will not be used except for some operating and network systems for workstations and PCs.

Since the strong yen will continue and may get stronger, self development of software will be very expensive and the added cost of localization and customization will keep even converted foreign software high cost. This is another reason why Japanese software will have to be customized and integrated by large customers into their proprietary production systems or manufacturing processes to be competitive. But because of these customers' importance to the large integrated systems producers, the latter will assist this development by providing foreign software developers with the necessary operating platform support, either directly or by entering various alliances. The government's role and influence in this process will be minimal. Overall, these developments will force the Japanese software industry in the Japanese market into a structure of profitable niche players affiliated with foreign firms or those supported by the large integrated producers and the large customer groups. Overseas Japanese software will be incorporated into the large customers' successful FDI. This is a user driven paradigm where the goal is to sustain global competitive advantage in the clients' own industries using customized software as a key element in their global strategies.

For those who wish to sell packaged software to Japanese MNCs, a strategy of localization, adaptation and semi-customization using a hub and spoke marketing approach is clear. For those who have to compete with the firms using customized proprietary systems, the strategic issues are more complex. These companies have seen Japanese competitors consistently improve productivity and successfully achieve their objectives of increased global market share during the postwar period in several major industries and markets. To the extent that customized software has been a key element in achieving and sustaining this situation, it becomes another aspect of Japanese business one needs to understand and manage for both policy and competitive reasons.

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TRANSFERRING JAPANESE TECHNOLOGY: LESSONS FROM THE MULTIFUNCTION POLIS

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Introduction

Can the tools of the information age be used to convert Japanese domestic 'high tech' achievements into a model for international technology creativity and exchange? This paper examines the attempt to transfer a Japanese urban model of integrated 'high tech' and 'high touch' industries into another country and culture. Technology transfer is usually considered in terms of a single product or process. This paper examines a far more ambitious proposal - the creation of a new urban form aimed at promoting Pacific wide development through the creation and dissemination of new technologies and ideas. Would it provide new models of environmental management and social equity as suggested by Yencken (1989), or would social justice and environmental conditions be worsened by an emphasis on profitability as predicted by van Moorst (1990)?

The greatest attraction of the proposal was the intention to promote technology creation and transfer, yet the likelihood of success in this area remained uncertain. Although Japan had succeeded in promoting innovation and technology development domestically, Littler (1990) argued that their record on outward technology transfer was not good. Others argue that Japan has become an important source of technology for other countries. Pollution control technologies illustrate the pattern of Japan initially importing a technology and later becoming a major exporter of improved technologies (JEA 1992). Given the uncertainty governing successful technology transfers, not to mention the uncertain requirements to build the capacity to create new technologies, an evaluation of the achievements and failures of the MFP is required to gain lessons for future initiatives of this kind.

MFP Proposal

> The MFP... is Australian in location, but Japanese in name, Japanese in origin, and, perhaps, peculiarly Japanese in its entire basic concept (Castells and Hall 1994: 204).
>
> The aim of this project is for Japan and Australia, located at the northern and southernmost edges of the Pacific Rim, to cooperate in the construction of a multifunctional "City of the Future" which would present new ideas for new industry and life in the 21st century while serving as a center for cultural and technological exchange in the Pacific (MITI 1987:26).

Hajima Tamura, the Japanese Minister for International Trade and Industry (MITI) proposed the creation of the Multifunction Polis (MFP) when he met Senator John Button, the

Australian Minister for International Trade and Commerce in January 1987 (McCormack 1990, Castells and Hall 1994). He proposed that a futuristic city which combined high technology with high quality life style and leisure be created in Australia with Japan as a partner. The proposal was received enthusiastically by Senator Button and four of the six Australian state governments bid to have the MFP located in their state

The MFP was first described in the MITI (1987) proposal submitted to the Australian Government in September 1987. Overall, the MFP concept was based on a desire of Japan and Australia to create a new international focus for the expanding Asia-Pacific region: an environmentally sensitive centre for living, learning and working in the 21st century (MITI 1987). The original proposal identified target 'high tech' industries (biotechnology, new materials and rare metals, and computer software) and 'high touch' industries (convention services and resort industries) to be supported by leading edge infrastructure (medical and health care, education and training, information systems and transportation systems). This initial list of target industries was modified by joint feasibility studies and 'Think Tanks' in Australia (JSC 1989, 1990). The revised view of the MFP included: a 'technopolis' featuring (1) information technology and telecommunications, (2) advanced transport services, and (3) construction and design industries; a 'biosphere' in which the MFP would become a major centre in the (4) international environmental management industry; and 'Renaissance living' in which people's needs -- (5) health, (6) education, and (7) leisure, entertainment and media -- are specially catered for. The result was the identification of seven future-oriented industries for investment within the MFP.

The urban form selected for the MFP in Adelaide was a mosaic of villages separated by parks, lakes and gardens, yet linked by state-of-the-art communication and transport services. Each village was to have a population of 2,000 - 10,000 and a distinguishing feature. For example, one village would have the headquarters for the communications centre, the next would have environmental management stations and research institutes, while another would house the World University Centre (JSC 1990).

A vision was articulated for each of the seven target industries. For example:

> information technology and telecommunications will be the dominant feature of 21st century industrial and commercial activity. It will provide the means of establishing the knowledge network; constitute an industry in its own right; and facilitate the development of all other industries (JSC 1990:27).

Existing information technology facilities in Adelaide include the Australian Digital Signal Processing Institute, the Centre for Information Technology and Telecommunications at Flinders University and the Centre for Software Engineering (a university joint venture with the Commonwealth Scientific and Industrial Research Organisation). The Defence Science and Technology Organisation has research facilities nearby and has generated spin-off firms (Centre for Lasers and Optoelectronics, Vision Systems) located in Technology Park. These existing strengths in information technologies would be complemented with a proposed Communications and Information Technology Centre as part of the World University. Research at the centre would focus on digital communication, signal and image processing, software engineering and

knowledge networks. An Information Utility was also proposed to service industry and government users (JSC 1990).

The whole MFP initiative was premised on the ease of transfer of information and the resulting creative stimulation afforded by the information age. The motivation to use these technologies could be based on economic colonialism, utopianism or economic rationalism according to McCormack (1990). Under economic colonialism, the MFP was seen as a way to extend Japan's control over international resources ranging from rare earth metals to prime coastal resorts to the latest research findings. In this context, the language of the proposal was compared to that of the proposed harmonious and multi-racial East Asian Co-prosperity Sphere of the 1930s (McCormack 1990, Sugimoto 1990). Japan has changed in the last 50 years, but fears remained of their superior economic and technological power. Alternatively, the idealistic language reflected the latest in a series of attempts by Japan to design the perfect city project (Super City, Green City, Intelligent City, Sunshine City, Portopia, Technopolis, Teletopia) (McCormack 1990, Morris-Suzuki 1990b). More generally, the proposal was assumed to be based on economic rationalism with an emphasis on technology creation and transfer.

The information age and technology transfer

The information age provides the tools central to MFP operations. International telecommunications are to link satellite offices in the MFP to the major cities of the world. International conferencing would take advantage of electronic links. Visiting researchers and 'semi-residents' would keep in electronic contact with their home office throughout their stay of several months to two years.

Inkster (1990) and others have argued that technology transfer dominates the twentieth century. The ability to adopt new technology can create competitive advantage and result in growing global market shares. Japan is highly regarded for its emphasis on *kaisen* or continuous improvement and the resulting improvement in its technology (Imai 1986). Technology was thus regarded as the best means for Japan and Australia to respond to the economic changes of the late 20th century and the MFP was expected to provide technological benefits to both countries.

By the late 1980s Japan was considered to have caught up or surpassed other industrialised countries in several important technologies. The restructuring of Japanese industry thus required the creativity to raise technical capacity beyond other nations. The earlier process of importing technologies and then improving on them was no longer adequate (Inkster 1990). An emphasis was placed on creativity to form the mental capital for global industrial leadership. Although the greatest emphasis in MFP documents was placed on the potential to create new technologies, several Japanese objectives were suggested:

1. to gain access to international research (Yencken 1989) (Inkster 1990)
2. to generate creativity (Inkster 1990)
3. to extend the exposure of Japanese people to an English-speaking culture (Yencken 1989)
4. to promote international exposure and strategic positioning of business (Yencken 1989)

5. to experiment in new urban alternatives (Yencken 1989)
6. to develop stronger east Pacific relationships, improved image (Yencken 1989) (Inkster 1990)
7. to maintain its premier position in the new international division of labour (McCormack 1990)
8. to overcome problems of Japanese economic institutions (Stilwell 1990)

In contrast, Australia needed to escape its dependence on the export of staples and change the orientation of its manufacturing industry from reliance on the small domestic market to an orientation toward the export of high value manufactured goods and services. The complimentarity of the Australian and Asian economies was recognised and greater integration was promoted (Garnaut 1989, EAAU 1992). In addition, Australia was suggested as an ideal location for the MFP because of its politically stability, rich resource base, intellectually and scientifically creative culture, developed industrial infrastructure and close links to other major Pacific countries. Suggested Australian objectives for supporting the MFP include:

1. to expand its research and technology base (Yencken 1989)
2. to explore opportunities for new service industries serving the Pacific Rim (Yencken 1989)
3. to promote industrial restructuring and export competitiveness (McCormack 1990) (Yencken 1989) (Inkster 1990)
4. to reinvent a regulatory environment for industrial innovation (Inkster 1990)
5. to capture foreign investment (Inkster 1990) (McCormack 1990)
6. to gain access to Japanese markets (McCormack 1990)
7. to integrate the Australian economy with the world's most successful and dynamic industrial state (McCormack 1990)

The timing of the MFP proposal coincided with rising trade tensions between Japan and the United States and Europe (McCormack 1990) the emergence of techno-nationalism in the 1980s and the Maekawa reports which promoted a greater international emphasis by Japan. The MFP proposal thus appears as a precursor to MITI's promotion of 'techno-globalism' 'to facilitate access to technological progress "for the benefit of all mankind" (Ujimoto 1994). The goal of techno-globalism is supported by many as a mutually advantageous arrangement. However, models that predict these mutually beneficial outcomes often assume a uniform or similar process within each of the units. In this case, it is assumed that the process of developing new technologies is similar in different countries. Equally, the development of science cities or high tech cities has been attempted in several Pacific countries (Castells and Hall 1994). The basic MFP model for technology creation and transfer was derived from the Japanese Technopolis policy to create a series of satellite science cities throughout Japan. Technology transfer, and the associated ability to develop new technologies, has received increased attention in the 1990s as one form of international communication and interaction where Japan can play a leading role. Asquith (1994) called for Japan to engage in cooperative research with other countries on major projects.

An international approach was evident in the MFP with the bilateral initiative designed to include Pacific Rim partners and others from the international community. An International Advisory Board was established with two representatives from Australia and Japan, respectively, and a single representative from three Asian countries (South Korea, Taiwan and Thailand), three European countries (Germany, UK and Sweden) and the United States. An emphasis on a broad international orientation was necessary because of a reaction against the possible formation of a Japanese enclave and fears of increased Japanese control over the Australian economy. Even though both countries agreed from the start that no Japanese enclave was to be formed, fears lingered from the earlier Japanese proposal for 'Silver City' retirement settlements of Japanese seniors located along the Australian coast. The Liberal opposition party decided to use the enclave issue in the last week of the 1990 federal election campaign to try to win increased support by attacking the MFP (Kelly 1992). However, the attempt failed as Labor won the election and continued to support the MFP. Other critics rejected the assumption that technology could solve Australia's economic problems and labeled such proposals as technocratic dreaming or technofixation (James 1990, Smith 1990, 1991, 1992).

Result: the MFP of the 1990s.

Some commentators believe that the MFP is dead and should be forgotten. The expected investment and technology transfer from Japan did not take place. However, the reality is that the MFP name and at least some of its ideas continue to exist as a major urban development project in Adelaide, South Australia. The current version of the MFP is very different from that initially expected, so it is important to briefly review the process of change and the reality that has resulted. A site was chosen and efforts made to stimulate investment. However, by 1995 the MFP appeared not to have met the initial technology creation and transfer objectives of either the Australian or the Japanese government. Instead, it had been transformed to meet the development strategy of the state of South Australia and focused on urban development and environmental remediation.

Although Sydney and Melbourne had been suggested as preferred sites by the Australian Bureau of Industry Economics because of the large number of researchers and size of research institutes or universities located there. However, the dispersed series of properties proposed to form the MFP in Sydney and the lack of a clear MFP identity in Melbourne led to the rejection of both proposals in favour of a single 'greenfield' site (JSC 1990). The Gold Coast in Queensland was initially selected as the preferred site, but the ownership of properties was divided among various parties, including some recent Japanese investors, and the state government refused to fund the necessary acquisitions to have a consolidated site. The federal government quickly responded by announcing that Adelaide was the preferred site where the state government owned 1840 hectares in a continuous parcel located just 15 kilometers from the centre of the city and the international airport. The site offered ample size for the envisioned series of MFP villages. However, the site had significant environmental problems as it consisted of lowlands and reclaimed mangrove swamps which served as storm water ponds, large landfill operations, a rifle range and 700 hectares of soda evaporation ponds (SAOPUD 1992). Social issues were also important as the neighbouring suburbs included a high concentration of government housing and

lower income families. Fears of the formation of social if not racial enclaves arose (SAOPUD 1992).

The state government responded to criticisms of the site by passing an act of parliament, the *MFP Development Act 1992* which expanded the original site to include the adjacent Technology Park and the existing Science Park in the southern part of Adelaide. In this way, the MFP included all three of the state initiatives in the technology promotion field and avoided competition with the two other 'high-tech' parks in Adelaide. A 1992 review of state economic directions also served to narrow the target industries from seven to three: information technology, environmental management and education (Little 1992). Despite strong opposition to the MFP while in opposition, when the Liberal Government came to power in South Australia, they changed their position. Their proposal to spread MFP initiatives throughout the Adelaide metropolitan area was rejected by the federal government and the MFP remained a distinct site with the MFP Development Corporation jointly funded by the state and federal governments (1993-94 expenditures were $18 million, including approximately $3 million allocated from the federal government for MFP operating costs) (MFP 1994a).

By 1995 environmental remediation work was underway to rehabilitate the main site for future development while initial development was directed to the Technology Park site. In 1995 bids were called for a $1 billion stage one urban development to be staged over 10-12 years and based on initial design investigations by the Australian consortium of Delfin and Lend Lease (MFP 1994c). While residential investment is assured because the project offers a substantial opportunity for urban infilling, the role of 'high tech' research and development remains less certain. Investments in information technology are proceeding with large projects by Motorola Australia Pty Ltd, pay-TV operator: Australis Media Ltd and EDS: contractor for state government computer services (MFP Australia 1994a), but these are the result of state development initiatives and are only MFP related because the MFP has expanded to include Technology Park where the investments are underway.

On the environmental management side over twenty projects are active. Some of the larger projects, including the construction of wetlands, are funded in part by $40 million from the federal government's Building Better Cities program. The projects represent both an essential investment to make the site suitable for development and an opportunity to demonstrate new technologies to reduce the environmental impact of urban development. The New Haven project in an adjacent suburb is termed 'MFP-inspired' as it uses currently available technology to reduce electricity and water demands and increase urban density (MFP Australia 1994a, SAHT 1994). This demonstration project should encourage wider use of these technologies, but the extent to which local production and export opportunities are created remains uncertain.

Education initiatives have also changed direction. The proposal to have a World University in the MFP has been replaced with a plan to establish the Australia Asia Business Consortium to offer a specialised business executive development program focused on the expansion of member corporation's business in Asia-Pacific markets (MFP Australia 1994a).

Analysis: lessons across the Pacific

Given the changes from the MFP proposal in 1987 to the projects actually underway in 1995, what lessons can be gained from the experience?

Cultural differences and specialists

One explanation for the lack of Japanese investment in the MFP is a cultural misunderstanding. Some Australian bureaucrats suggested that the idea was offered as *omiyage*, or a ceremonial gift and that the Japanese did not expect it to be taken so seriously (Hamilton 1991, Castells and Hall 1994). When the Australian Minister responded so enthusiastically to the suggestion in January, the Japanese Minister was obliged to have a proposal prepared for a subsequent meeting in September.

A more systematic problem was that although Japanese interests were at the core of the proposal, few of the Australian administrators working on the project had specialist expertise in Japanese studies and their competence in Japanese language was limited as well (Sugimoto 1990). This situation was considered ironic because Australia had accumulated significant knowledge resources about Japanese society and culture over the years, yet Sugimoto suggested that these resources were dismissed as irrelevant to the MFP:

> There is considerable apprehension, reservation and even suspicion about the project (MFP) in the professional Japanese studies community in Australia. Most scholars who have in-depth knowledge about Japan remain at least cautious because they are painfully aware that the Japanese pattern of development has yielded not only a substantial measure of techno-economic advancement but also a wide spectrum of undesirable consequences in work, education and community life (Sugimoto 1990: 140).

Neustupny (1990) suggested that Japan specialists ranged from those who strongly opposed the MFP to those who strongly supported it while many others believed that a compromise between the two extremes would be the best result. More fundamentally, he suggested that the objective of academic disciplines should be to provide knowledge needed for the solution of particular short term tasks and to provide the understanding necessary for the establishment of long term policies. He questioned whether the MFP debate was contributing to a realistic understanding of Japanese society or simply reinforcing stereotypes and half-truths that support particular political positions while detracting from the long term aim of understanding Japan (Neustupny 1990). Clearly Japan studies specialists should have been involved to overcome some of the uncertainty.

If cultural subtleties and differences could be ignored and the project allowed to proceed on the basis of economic rationalism, surely the technological emphasis of administrators in the Japanese Ministry of International Trade and Industry and the Australian Department of Industry and Commerce would lead to shared expectations. This conclusion, however, is not apparent when the formal objectives of the two sides are examined.

Differences in national objectives

The Japanese and Australian governments set out their respective objectives to guide the feasibility study for the MFP. The language used and objectives given by each side showed significant differences (Table 1). At the global level, Australia sought to achieve its economic and social potential while Japan set much broader goals in terms of contributing to peace, development, the environment and cultural exchange. At the national level, Australia identified wealth creation as a priority. The Japanese desire for new cultural and lifestyle experiences had no equivalent on the Australian list. Even when both sides wanted to promote internationalism, the Australians limited this to the business community while the Japanese side included people and systems along with the business community. The Japanese desire to increase research skills (presumed to include creativity) and the Australian desire to strengthen its ability to take research onto the development stage reflect the priorities on different aspects of technology creation and transfer discussed earlier.

Table 1: Objectives to guide the feasibility study

LEVEL	AUSTRALIA	JAPAN
Global	• to achieve Australia's economic and social potential	• to contribute to world peace, economic development, environmental preservation, and cultural exchange
Region	• to establish a strategic role for Australia in the Asia-Pacific growth economy	• to establish a basis for economic cooperation and to clarify Japan's role in the developing Pacific Region
National	• to establish wealth creation opportunities for all Australians • to increase internationalism of Australian business • to develop international trading positions in value-added manufacturing/service • to establish stronger connections between research and development and downstream markets	• to advance internationalism of Japanese companies, people and systems • to increase research skills and technical cooperation for future industries • to introduce Japanese people to new cultural and lifestyle experiences

Source: Joint Steering Committee 1989. *Multifunction Polis: A Concept to Create the Future*, p3.

One explanation for the different sets of objectives put forward is that the MITI proposal was prepared by the leisure division of MITI and therefore had a greater emphasis on the resort and lifestyle components than the industry focus of the Australian department. However, the listing of the resort industry as one of the target industries in the 1987 proposal had been replaced with the much broader leisure and entertainment industry listed in the 1990 feasibility study (JSC 1990). The potential investment opportunities listed under this industry were a world media centre, high definition television centre, world sports centre and international shopping network (JSC 1990). Clearly the promotion of resort and convention activities had been set aside.

Even if Australia and Japan had set out identical objectives the means used to achieve government objectives may differ between the two countries and require further examination. In particular, the role of government in investment in new technology initiatives needs to be reviewed.

The role of public investment

The role of public investment differs between Japan and Australia. In the case of science or 'high-tech' cities, Japan has made substantial investments while Australia has witnessed the establishment of much smaller research or 'high-tech' parks associated with several universities. These 'high-tech' parks generally follow the British experience (Massey et al., 1992) and are usually industrial subdivisions funded primarily by public investment from state government, municipalities or universities to promote 'high-tech' industries. Technology Park in Adelaide proclaims itself as the first (1984) and most successful of the research parks established in Australia (MFP Australia 1994b). By 1994 there were 37 tenants with six of them having constructed their own building while the others were in one of the four multi-tenant buildings (MFP Australia 1994b). The success of Technology Park has been based in part on contract work for the Defence Science and Technology Organisation. Research links with the University of South Australia, the University of Adelaide and Flinders University have also developed, as in the case of the Signal Processing Research Institute.

In Japan, many types of science cities and 'high-tech' centres have been attempted. The largest efforts are the establishment of Tsukuba Science city near Tokyo and Kansai Science city between Osaka, Nara and Kyoto. Tsukuba was funded by the national government to consolidate its many research facilities and move them out of Tokyo. Estimated public expenditure by 1990 was over $1 billion (Castells and Hall 1994). The Kansai Science city is proclaimed as a public-private partnership, but many argue that the government remains a major investor with private investment stimulated by special tax and depreciation provisions. On a smaller scale, the series of 26 technopolises established throughout the country rely on funding from local government and private industry with extensive involvement of 'third sector' (joint public-private) firms (Morris-Suzuki 1990b). By 1990 the Japanese Ministry of Construction estimated the average cost of constructing 11 technopolises at $200 million each (Castells and Hall 1994). National government policy supported these investments and MITI reported that the technopolises have been successful in attracting manufacturing investment, even though research and development investment remains concentrated in the Kanto region around Tokyo (Morris-Suzuki 1990b, Malecki 1991). The proponents of the MFP were strongly influenced by the technopolis experience in Japan. However, Australia lacks third sector firms to make the desired investments. If third sector firms are not available, are Australian governments likely to make direct investments to stimulate technology creation and transfer opportunities in the MFP?

From the outset, the Australian government said that it would not use location specific incentives to promote the MFP (BIE 1994). If the MFP was to gain federal funds, it would have to compete with other centres in the regular range of federal programs. This position was consistent with government policies of deregulation and increased reliance on private sector investment decisions in the 1980s (Kelly 1992). The Australian government had no intention of becoming the 'developmental state' described by Johnson (1982). Castells and Hall (1994) assert that all governments intervene to promote technology creation in some manner, but the Australian commitment was to not create new mechanisms for the MFP. In the 1990s the federal contribution of $4 million per annum for MFP operating costs was allocated with $1 million

spent by the Canberra secretariat and $3 million allocated to Adelaide based operations. A few projects with partners in other cities were supported, but even the contribution to the Australia-Japan global climate change project was only $100,000. When larger amounts were made available as in the case of $40 million under the Building Better Cities program, commentators were quick to question the decision. "If all public investment decisions were made on the basis of such 'blue sky' projections, the result would be a major increase in public sector waste and inefficiency." (Scott 1992 : 97)

Given the limited availability of federal funds, the state government might be expected to fund significant MFP initiatives in the expectation of gaining many of the benefits within the state economy. However, the reputation of the South Australian state government for good financial management was shattered in 1992 when the State Bank of South Australia disclosed that it had a net debt of $1 billion and another $2 billion in non-performing loans due to the collapse of the property market and its lending to some high risk clients (Parkin 1992). As guarantor of the bank, the state government had to provide financial support while also facing the highest unemployment rate in Australia and lower revenues as a result of the recession. Resources were limited and the MFP could not expect large state investments.

Australian private investors were hesitant to invest until there was evidence that their investments would prove profitable. Japanese interests reported that they would expect Australians to invest in the MFP first and that they could then join in a supporting role. Overall, the lack of major investment by the Australian public sector required investment in the MFP to be paced by private sector interests and their response to small incentives provided by the government, especially the state government. The Japanese model of joint public-private partnerships in research and development investments was not followed.

To follow or create a trend

Some analysts argue that MITI succeeded in its industrial and technology policies when it correctly identified trends that were evident in the economy and then acted to accelerate or encourage existing trends (Morris-Suzuki 1990b). If the Australian MFP was to succeed using the Japanese model, it needed a trend to follow. The selection of Adelaide rather than Sydney or Melbourne as the site of the MFP implied a shift away from the largest concentrations of research in the country and steps needed to be taken to stimulate research and development activities in Adelaide if technology creation and transfer were to remain the primary objectives of the MFP.

In the mid 1990s, the MFP has started to turn to increasing local capacity rather than simply expect international stimulus to drive the project. The 1994 annual report announced that the MFP was "A community initiative to build a better future for our children."(MFP Australia 1994a:3). This sharp shift in language overstates the case, but important links to the three local universities were being promoted and it appeared that local capacity could grow to act as a base for the MFP to build upon.

The more general local trend was the opportunity created by the MFP to achieve urban infilling by the development of a large site near the urban centre. This urban development trend is

expected to proceed and the MFP has the opportunity to shape this trend in a positive way by paying attention to local social and environmental issues.

Conclusion

If we agree on a proposal to jointly build a model Pacific city for the 21st century which is based on state-of-the art technologies, recreation and life long learning, why should the project fail? This paper presents the argument that although Japan and Australia agreed to support the MFP project, they failed to agree on a common set of objectives or on the assumptions underlying the way in which such a city could be built. A critical examination of the original objectives highlighted differences that were never resolved. More fundamentally, differences in cultural interpretations and the role of key actors (government, industry and community groups) result in distinct development processes in the two countries. Simply assuming that development processes are globally uniform can lead to project failure and highlights the need for more complete communication among partners at the start.

After eight years, the MFP has failed to meet the initial technology transfer objectives of its sponsors. Japanese technology has not been transferred to the MFP to stimulate economic restructuring in Australian industry nor has the MFP stimulated creative new ideas to generate new technologies for the next generation of Japanese industry. However, these objectives are too expansive for the small resources allocated to the MFP to be expected to achieve. Instead, the MFP has changed its emphasis to evolve into an urban development and environmental remediation project which demonstrates how a degraded environment can be improved and the environmental impact of urban development lessened. A new emphasis on meeting local social and environmental goals is combined with new links to South Australian university, research and industry groups which could build the local capacity required to achieve some of the technology creation and transfer objectives. The slow construction of this base implies that only in its second decade will the MFP be in a position to start to stimulate technology creation and attract the international investment to accelerate the process.

In contrast to its technological shortcomings, the MFP has evolved as an urban development project which promotes residential development with reduced environmental impacts. Mixed land uses are planned with residential areas build adjacent to the research and industry facilities of Technology Park. The objectives of urban design experimentation are being pursued and the next decade should indicate how well the new urban areas will meet their high quality of life and environment objectives. Initial projects look promising. The next challenge is to transfer the example of the New Haven subdivision and environmental rehabilitation projects to wider adoption in Adelaide, Australia and the Pacific Rim.

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FROM CRISIS TO INFORMATION SOCIETY IN JAPAN

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Japan appears to be in the midst of a crisis of national identity. With the end of the Cold War, Japan underwent changes in its polity, economy and society that disrupted the patterns of its success since 1945. A polity based on the alliance with the United States no longer skews domestic party alignments and factional defections have ended one-party dominance. An economy that benefited from unfettered access to the US market as a quid pro quo for Cold War loyalty has shifted more overtly to diversified bases of global and regional markets as well as broader economic priorities. And Japanese society itself reflects the changes from its interdependence with countries overseas in addition to inherent domestic trends as a wealthy industrial nation with its workforce rapidly becoming the oldest population in the world.

Amid such a short-term crisis, Japanese are already deciding upon their future economic-based efforts as global leaders. This paper argues that a key aspect of economic growth will be based on the emergence of information technology and communications policies that are likely to sustain Japan as a global power. The basis for reorganization builds upon the strengths of political consensus, economic infrastructure and social capital that will fuel Japan's future economic growth. The degree of success and final shape of this new identity remain open to question, but the fundamentals will be based upon a broad sense of "informatization" or *johoka*.

A single key sector of the political economy offers clues about the direction of larger shifts in Japan. Japan is heading in directions never before imagined about its social and global relations. This paper makes an argument that is largely contrary to the doomsayers in the Japanese media and the self-congratulatory writers in foreign economic media that amplify problems in Japan. In the future, Japan is poised to enter the next century with new politics, restructured economics and information technologies applied to its advanced society. But first we must recall the conventional views that observe contemporary problems and project an image of crisis in Japan.

THE PROBLEMS OF A CRISIS OF IDENTITY

Compelling questions arise about whether the Japanese have a common national identity since the end of the Cold War. Do common purposes and core values exist in the politics, economics and society that motivate Japan's citizens and drive institutional reorganization

Whether such questions can be answered by public opinion, or by media perception, or by some other single measure is unclear. At the least, the media has convinced some overseas experts that there are problems. In one example, the 1995 annual World Competitiveness Report rated Japan fourth and well below the leaders of the United States and Singapore. Reuters news service noted that the report from the Geneva-based World Economic Forum does a survey of actors ranging from domestic economic strength through government policies affecting competitivity to its infrastructure and its people, or the availability and qualifications of a

country's human resources. Critics note that such surveys simply report stereotypes, but the report itself said that "Japan's decline seems to be socially rather than just economically related, which means that the challenge will lie in the country's ability to reform itself."[1] Thus on the one hand, Japan is seen as crisis-ridden. In 1995, events such as the Great Hanshin Earthquake, terrorist attacks on Tokyo and continued economic problems including yen fluctuations, trade frictions, hollowing-out of industries, unemployment and bank failures are all said to undermine national consensus. On 18 September 1995, a 14 trillion yen (US $140 billion) stimulus package met tepid response from traders and world markets which await banking reform and economic revitalization. The perception of problems has had economic impacts.

On the other hand, Japan is perceived by contrarians as restructuring its economy, pursuing new industrial policies led by its bureaucracies and looming over future dominance of key technologies and industries. Employment is strong with jobless still accounting for only 3.2% of the workforce--high for Japan, but very low by world standards. Economic activities are not expanding, but firms still operate and plan for future developments. Indeed, many experts on Japan tend to see continued strength and even long-term dominance by leading industries and technology centers in Japan. About Japan's future, the viewers of crisis confront the contrarians. Which of these polarized views is correct?

Conventional Views of Crisis

Crisis-based assessments remain popular within Japan. Despite the demise of Godzilla in the final episode of the popular disaster movies, Japan has in fact suffered from recent real calamities. Since the mid-1980s, economic deflation and yen appreciation have steadily eroded consumer and producer confidence in their economy. After 1989, the fundamental rationale for a strategic alliance with the United States changed with the demise of a Soviet threat in the Pacific. As Japan entered the 1990s, a drift in the economics and politics of the nation have meant that national consensus and social order have become increasingly unclear.

In 1995, the perception of insecurity and national crisis intensified. On January 18, an earthquake hit the Hanshin area near Kobe. National confidence in the government fell when the Murayama Administration hesitated and local response appeared disorganized. The economic damage to ports, railroads and buildings mounted and finally the basic sense of citizens about public security was called into question. By March 1995 when the first subway attacks by *Aum Shinrikyo* cultists began in Tokyo, public security underwent a further shock.[2] The loss of life, property and trust dominated reports in the popular media, although the actual impact of these events was isolated and loss of life or injury limited to a few regions within Japan.

The economy is a key element in current perceptions of crisis. In Japan, economic analysts often subscribe to the view that long-term problems such as slow growth, yen rate fluctuations and bank failures are all pieces of the "post-bubble" economy. International openness of the Japanese economy will also require more changes in markets and company

[1] *Reuters New Service*, Wire Story, 7 September 1995.

[2] All newspapers in Japan reported the 20 March 1995 attack in evening editions, and in English see the *Asahi Evening News*.

strategy. In particular, the problems of stagnation and the banking industry attracted government and international attention in the summer of 1995. The Clinton Administration adopted such a view with its "reverse course" away from pressure on Japanese trade practices and toward support of dollar values vis-à-vis the yen. The strong likelihood is that the U.S. Administration will consolidate trade agreements as the Clinton reelection campaign has now set its course for November 1996. That course needs an North American economy with stable long-term interest rates depending on bond purchases by foreign investors and these investors still include a significant percentage of Japanese insurance companies and assorted banks. The Treasury Department position and the fears and motivations of Robert Rubin, Jeff Garten, Joan Spero and other interest rate watchers relate to the formative October 1987 experiences in the crash on Wall Street. There may even be a compelling reason and threat, in terms of helping Clinton's reelection, for seeing this role of the Japanese investors as a crucial linkage that led U.S. officials to relieve pressure on the yen and help Japan's economy.[3]

The conventional view calls for greater easing of the exchange rate pressures from overseas and steady supports from government and business in their efforts to stimulate the economy. The media has fed the sense of crisis and markets have even accepted the conventional view. This view now holds that "Japan bashing" of a smug leader in Asia be replaced by "Japan passing" of a lame and hollow political economy that, in *The Economist* editor's poignant title is where The Sun Also Sets.[4] But is this view of economic-based crisis correct? In fact, some critics assert that all such crisis is a facade.

Revival of the Contrarians

The contrarians argue that these passing problems overlook the fundamental strengths of Japan. Such views tend to rely either on the past assessments of bureaucratic leadership, or extended distinctions about key technology. In short, these critics look past the hyperbole of the media, the official manipulation of short-term campaigns to stimulate markets or shift exchange rates and the mass perceptions of uncertainty and crisis. The contrarians emphasize Japan's strengths.

Among these critics are the "revisionists" who were first identified in an influential piece by Robert Neff in *Business Week*. Rather than accepting the long-standing positions about US-Japan alliance, these "revisionists" questioned the fundamental reasons for this relationship.[5] Revisionists note that US-Japan relations were characterized by long-term stability and cooperation amid the Cold War and can be traced in part to the efforts of the late scholar-diplomat Edwin Reischauer. With subtle shifts during the Bush presidency and the election of Bill Clinton in 1992, revisionists began to influence American policy through a transition in views towards Japan and Asia. However, the range of opinion in this camp has broadened.

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[3] "Task Force's (Nicholas) Brady Says Japanese Sales of U.S. Bonds Touched Off Oct. 19 Crash" (on "Black Monday" in 1987) *Wall Street Journal*, 22 April 1988. News services report as well that a bonds trader at Daiwa Bank lost $1.1 billion in U.S. Treasury bonds deals. *Yomiuri Shimbun*, 27 September 1995, page 1.

[4] Bill Emmott, *The Sun Also Sets: Why Japan Will Not Be Number One*, New York: Simon & Shuster, 1989.

[5] Chalmers Johnson, Clyde Prestowitz, James Fallows and Karel von Wolferen.

At present, it may be more apt to say that the leading alternative views are "contrarian." Instead of accepting the common views of economic and political crisis, these observers focus on fundamental strengths of Japan as a national power and future sources of social cohesion, economic strength and political leadership. There are differences among these post-revisionist views that have overtaken both those that dominated the Reischauer era assessments and those that see the ending of the U.S. alliance with Japan.[6] Further, there are contrarians who emphasize how conventional views of Japanese economy focus on indicators that fail to capture the continuing strengths of Japan. Robert Neff, in his last cover story for *Business Week* before taking position as Executive Director of the American Chamber of Commerce of Japan, wrote that such a future lies in integration with Asia.[7] Writers sharing such sentiments emphasize different strengths of the Japanese political economy and make distinctions about possible futures of Japan.

On the one hand, there remains a long-standing view that government policy leads the process of economic growth. State leadership as a model has been strongly criticized. The role of bureaucracies such as MITI was always paralleled by the banks in postwar Japan and has been increasingly driven by markets and corporate managers. Chalmers Johnson has developed his views of bureaucrats and offers many nuances about the process, if not the overall unity, of his "developmental state."[8] More recently, an expanded definition of industrial policy sees the coordination by bureaucracies beyond "notorious MITI" that have a cumulative effect on support of industry in risky ventures and technological breakthrough.[9]

Another view emphasizes the strengths of business and the domestic economy. Such views are often based on an intuitive sense that Japanese industry remains competitive and technologically advanced. Eamonn Fingleton has written about the reasons that financial institutions support the Japanese economy and has focused on key areas of technology where Japan still leads the world.[10] Several economic specialists see reasons for Japanese economic strength and the need for banking reform to unleash new growth.[11] In thinking about the links of business and government, Richard J. Samuels has noted that ties of "reciprocal consent" bind these actors within the Japanese political economy in what may be a new form of "Japan, Inc."[12]

In short, viability and stability, due to government policy, technology and a domestic economy, support the contrarian views. Additional factors such as the educated workforce are likely to sustain Japanese economic activity. Services are improving and the retraining of a skilled workforce can also create demand. The degree to which Japan resolves problems of finance,

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[6] Contrast the revision of Edwin O. Reischauer and Marius B. Jansen, *The Japanese Today: Change and Continuity, An Enlarged Edition*, Cambridge: Belknap Press of Harvard University: 1995, with Chalmers Johnson and E. B. Keehn, "The Pentagon's Ossified Strategy," *Foreign Affairs*, 74, No. 4 (1995), 103-114.

[7] "Japan's New Identity," *Business Week*, Cover Story, 10 April 1995.

[8] Chalmers Johnson, *MITI and the Japanese Miracle*, Stanford: Stanford University, 1982.

[9] Marie Anchordoguy, comments at JPRI Institute Workshop, 15 September 1995.

[10] Eamonn Fingleton, "Japan's Invisible Leviathan," *Foreign Affairs*, 74, No. 2 (1995), 69-85 and ACCJ Journal, Aug. 1995, pp. 8-13.

[11] Ken Courtis in columns and comments on TBS "News Station" with Kume Hiroshi, commentator.

[12] Richard J. Samuels, *The Business of the Japanese State*, Ithaca: Cornell University, 1987, p. 283, and Rich Nation, *Strong Army*, Ithaca: Cornell University, 1994.

openness to imports and the transition to a new form of economy remain open questions. Yet the fundamental strengths identified by contrarian views may in fact be the harbingers of Japanese revival as a global leader.

A Contrarian View Based on Policy Coalitions

A fundamental basis of Japanese revival will rely on a policy coalition in support of developing an "information" society. This process will occur within the political, economic and social basis of order in Japan, and not mainly on the common elements of economic indicators or political performance used in North America. Such elements can be extremely misleading when taken in isolation and within the social context of Japan there are clear indications that a restructuring or revival is taking shape. This paper will address those questions with evidence from a single leading example of on-going changes.

The following set of related questions frame this inquiry:

1. What is Japan's emerging role in the future global order?
2. If Japan was an economic miracle in the past, how will that legacy affect the future identity of the country?
3. If Japanese economic institutions and political consensus are still largely intact, then where will these institutions and this consensus lead the Japanese political economy in the twenty-first century?

Such sweeping questions require a frame of reference and cannot be answered in quotes from leading politicians or isolated insights of particular business leaders. The alternative is to approach a single area of political economy as a critical case for reference.

Perhaps the single area with the greatest impact of change involves digital technologies and the broader information infrastructure that will result. This research argues that the legacy of success, the restructuring of the bubble economy and the focus of efforts to provide value-added economic activities in Japan will find a specific and well-defined meaning in the future. In Japan, the meaning will result at the least in the spread of digital technologies and the revision of information infrastructure.

TECHNOLOGY AND SOCIAL INFRASTRUCTURE

Digital Technologies in "Information Society"

Digital technology is the impetus for a rapid set of changes in societies. The introduction of digital format means that computers and software can be linked in ways that increase productivity and develop into new industries. The change can be described very briefly as follows. Changing to digital technology means that all information about software commands, computer code, programming language, or data symbols and numbers can ultimately be expressed as a set of zeroes and ones in binary code. In other words, all information can be reduced to a common denominator, sent over electronic circuits and recreated with the same or compatible digital technologies. It is these elemental changes, and the infrastructure to handle such technology, that is starting a global shift in the spread of knowledge and communications.

However, technology does not dictate convergence, or explain substantial variation among advanced societies.

The background for assessing impacts of digital technology was anticipated by sociologists and futurists. Daniel Bell wrote a classic account about the varied elements of post-industrial trends in knowledge-based society.[13] Many others have developed and popularized such notions; Alvin Toffler is just the latest and most successful in discussing his "third wave" seen in the new technologies that were employed by Republican candidates in 1992 Congressional elections in the United States.[14] Yet it is not only in the United States that these long-term trends were anticipated as changing industrial societies to new forms.

In Japan, "information society" is a concept and social theory about the fundamental differences of work and social action due to the digital technological revolution. The Japanese scholar, Mieno Kazuhisa notes that the roots of theories of "information society" are found in German economic history as well as various accounts of futurists and social analysts.[15] Mieno traces the actual impact of such processes through a careful analysis of social contexts to specify the actual effects in economic, political and societal terms. As digital technology is introduced, for example in software and human interfaces as well as organizational changes, a broad brush will be needed to account for changes and for variations. There is substantial reason to believe that societies will differ in the ways that they deal with the impact of such pieces of technological innovation, and ultimately with the changes of corporate strategies and public policies.

Analysis of the varied impacts on societies is critical for adjusting public policy and sustaining economic growth. In the United States, Ithiel Pool wrote that communications systems faced challenges from new technologies for public policies towards print, common carriers and broadcast industries.[16] Pool applied his analysis to areas where others had earlier introduced these matters; what Pool worried about is that technology outpaced the abilities of regulators and industries to accurately respond to rapid change. At present, a computer and software industry has developed in ways that further complicate the policy choices. These "technologies of freedom" are rapidly becoming a basis for global economic growth, as well as political conflict.

The global developments in networks, computers and software also provide a background to understand the vision of a new policy shift in Japan. The attention now given to worldwide growth of the Internet, the use of personal computers and the distribution and localization of software are making much of Pool's vision into a reality. The reality is driven by digital code, but spreading to software, databases, communications, personal computers and home offices that all contribute to the new concept of "information technology." Unfortunately, these technologies are also bringing about the prescriptions of problems.

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[13] Daniel Bell, *The Coming of Post-Industrial Society*, New York: Basic Books, 1976.
[14] Alvin Toffler, *The Third Wave*, New York: Bantam, 1980, and *War and Anti-War*, Boston: Little, Brown, 1993.
[15] Mieno Kazuhisa, *Joho shakairon (Theories of Information Society)*, Myoshobo, Tokyo: 1994. "Johokashakai" as a term is attributed to the work of Umesao Tadao and his work on changes of civilization, see Kumon Shumpei, *Joho bunmeiron (Theory of Information Civilization)*, Tokyo: NTT Shuppan, 1994, pp. 60-73.
[16] Ithiel de Sola Pool, *Technologies of Freedom*, Cambridge: Harvard University, 1983.

Though the technologies exist, the moves of business and government often lag behind the introduction of these new innovations and stifle or misguide reform of telecommunication laws. Substantial uncertainty exists about the future social impacts of such technologies, even though U.S. business leaders have applied their ideas of digital convergence.[17] In Japan, the social impacts of these technologies are just beginning to be felt and the potential for their connections to economic revival and to overcoming the sense of crisis are just beginning. Yet in the next year, a realization of major policy shifts will begin to determine the extent of Japanese economic recovery, and indeed the shape of national identity in the future.

Japan Begins "Informatization" (*Johoka*)

The emerging domestic agenda in Japan will embrace information technology, but mostly within the context of the existing strengths of computer hardware, local area networks and communications infrastructure specific to Japan. By information technology, this paper refers to the range of digital, software, hardware and network technologies that transmit data, text, audio and video. For most observers, the high levels of education along with successes of microelectronics, international trade and overseas investments would make this introduction a foregone conclusion in Japan. Indeed, the bigger concern may be why Japan's introduction of information technologies has taken so long.

Service-based and knowledge-oriented economic activity are terms that have long existed among economic planners in Japan. In the 1960s, officials in the Economic Planning Agency first proposed the growth of knowledge-based, information-oriented activities in services and other industries as a process of "information" (*johokashakai*).[18] In the seventies, discussions of economic restructuring saw that global openness and services meant that heavy or hard industries would give way to value-added and soft industries in "softnomics" based on more varied industrial structure. Such rhetoric was replaced with raging popularity for financial instruments under *zaitech* in the eighties, though the bitter shock of stock market collapse in October 1987 did much to dampen the enthusiasm for that particular part of economic change. However, the multiple lines of discussion about economic change at the end of the twentieth century have yet to reach a conclusion.

Several specific features of information technology are likely to influence the future of Japanese political economy. For the first time, the earlier vision statements and rhetorical flourishes are being replaced with actual plans for software, hardware and services industries never before offered in Japan. Industry is now reorganizing along lines of several separate sectors and firms that generate economic development in the future, not the least of which will involve NTT. Bureaucracy is deciding to place priority on spending for infrastructure projects, not the smallest of which is a commitment to have fiber optic cable in every home by 2010.

Social scientists have anticipated the economic and anthropological basis for such changes due to technology. Kumon Shumpei writes that the introduction of information technology will

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[17] John Scully with John A. Byrne, *Odyssey*, New York: Harper & Row, 1987, translated into Japanese by Aizu Izumi.

[18] Attributed to EPA official, Hayashi Yujiro.

become a major force in Japan.[19] Of three major trends in Japanese society, Kumon sees the impacts of aging, international openness and information-based changes with the latter bringing about information civilization--as a common set of patterns of human life with both physical and mental aspects--that will represent a third phase of modern civilization.[20] In this view, civilizations went through phases after military and industrial revolutions gave our planet the entities of states and markets and the information revolution will usher in non-governmental and intellectual communities as a new axis of human civilization. Kumon is not totally sanguine about the impacts of such civilization on all "cultures" which he defines as the "composite of the internalized human behavioral modes that are learned, applied and transmitted almost unconsciously among members of a society" and as the source for potential conflicts.

Other analysts are optimistic about these technologies in Japan. Thomas P. Rohlen is positive about the prospects for Japan to succeed through processes of "learning." If knowledge is the basis for future growth, then Rohlen sees that Japanese society is in an enviable position to benefit from such trends.

Japan's capacity to evolve economically and to adapt successfully to an exterior world of superior technology and economic power has rested on an extraordinary capacity for learning, which, in itself, followed a pattern of apprenticeship, one rooted in traditional values and well established in contemporary education and work organizations. A highly educated population and a work force engaged in continuous learning make for impressive and regular gains in productivity. Such a population constitutes a strong platform for continued adaptive change.[21]

Yet Rohlen also notes that Japan has never succeeded in taking international leadership on a scale needed for the next generation of knowledge-based civilizations. It is the apprentice role as a follower rather than the pioneering as a leader that has set the pattern for introductions of the digital and information technologies in Japan.

The Economic Follower and *Gaiatsu*

Japan's plans to emulate U.S. information technologies build on patterns for economic activities that the nation used as a follower in its late development. Indeed the twin sides of such emulation, both for the impetus of having a well-set goal from overseas and for using foreign pressure (*gaiatsu*) at key junctures in the policy process, are common methods of actors in the Japanese political economy. For communications policy, particularly with the central role of Nippon Telegraph & Telephone (NTT), a history of emulation makes the scenario fairly certain. In fact, the current evidence raises more questions about timing rather than basic scenario of these activities.

The scenario for adoption of information technologies by industry relies first on a coalition seeking to overcome Japan's status as an economic follower. The roots of such a

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[19] Kumon Shumpei, *Joho bunmeiron (Theory of Information Civilization)*, Tokyo: NTT Shuppan, 1994.
[20] Shumpei Kumon, *Japan Review of International Affairs*, Vol. 9, No. 1, Winter 1995, page 16.
[21] Thomas P. Rohlen, "Learning: The Mobilization of Knowledge in the Japanese Political Economy," in *The Political Economy of Japan. vol. 3. Cultural and Social Dynamics*, Shumpei Kumon & Henry Rosovsky, editors, Stanford, California: Stanford University, 1992, Quote at page 363.

coalition date back over a decade ago. The administrative reform movement centering on Nakasone Yasuhiro encouraged the reform of NTT. In 1985, steps towards privatization began with NTT stock issues two years later and efforts to introduce competition. Changing from a public corporation and introducing competition for long distance services began to change NTT planning. Japan's deregulation was slowed by lack of clear international precedent. Policymakers noted delays and confusion about U.S. reforms of telecommunications, as well as the rise of joint ventures by the American long distance companies with European partners. Japanese observers believe themselves behind in telecommunications and information technologies, even without clear steps about how to respond foreign competitors.

The Japanese side built limited relationships with foreign partners and governments. For its part, NTT began research and development with foreign firms and responded to pressures of foreign governments. United States government officials expressed satisfaction with the gradual increase in sales by their firms, including a high profile January 1995 settlement by Motorola in order to secure cellular phone sales in Japan. Japanese firms also were active in procurement from overseas and formed joint ventures, such as the high profile example of NTT's relationship with Silicon Graphics.

Business and government leaders are more likely to act because the sense of crisis has led to economic stagnation. To recall that the crisis of national identity is one of political and social malaise, there is nonetheless an increasingly acute sense of economic problems. As Japan watches the erosion of comparative advantages in price and quality, economic planners are searching out new options.

Japan's policymakers see potential in the "information society" for economic growth and new markets. In May 1994, the Ministry of Post and Telecommunications (MPT) advisors filed report with the subtitle, "Program for the Establishment of High-performance Info-communications Infrastructure." [22] Most striking in this report was the scale and employment of the various markets and job growth it envisions.

Multimedia Markets (approximate values at 2010 prices)

New markets related to the fiber-optic network	**56 trillion yen**
Existing multimedia markets	**67 trillion yen**
TOTAL	**123 trillion yen**
Jobs created	**2.43 million (approximately)[23]**

The economic impact is greater than a 25% increase as a part of nominal GDP (465 trillion yen in 1993) and a 3-4% increase in jobs (64.5 million in 1993). In such reports of government deliberative councils, government sought to gauge the likely impacts that an infrastructure of fiber optic networks and multimedia services might have in Japan. But it is the

[22] Reforms toward the Intellectually Creative Society of the 21st Century," *MPT News Supplement* No. 1, 20 June 1994.

[23] Table from June report by MPT, ibid.

context of on-going U.S. reforms and likely reform of telecommunications regulation that form the basis of foreign pressures in this particular instance.

U.S. Vice President Al Gore began a series of initiatives that spurred Japanese observers to respond to these proposals. Gore had developed his involvement with these issues while in the Senate and proceeded to articulate his vision of new information technologies and network-related communications such as began with the Internet. It was on the basis of these discussions that the political backing for reconstruction of information infrastructure has gathered momentum.

National Information Infrastructures (NII)

National Information Infrastructure (NII) refers to the plans in each country for networks used to transmit and communicate using the latest information technology. The National Research Council, composed of leading U.S. scientists, engineers and academics, noted in a well-known report, *Realizing the Information Future: The Internet and Beyond*, that the NII is imminent:

A national information infrastructure (NII) now lies within striking distance of becoming a reality. Academia has pioneered the pathways, technology is providing the capability, industry is deploying the networks and government has primed the funding engine and articulated broad goals.[24]

The report of the so-called NRENAISSANCE Committee is an overview and develops the meaning of the NREN or the "National Research Education Network" that connects networks from the four leading U.S. government agencies (NSF, NASA, DOE and ARPA) in support of the Internet. In the United States, the report emphasizes needs for global coordination of networks. An appendix of this book noted the global contacts and international issues raised by this information infrastructure.

A key part of the national context of Japan's policy change is the need to maintain parity in its information infrastructure. Realization of the problems of being behind where apparent as the US Congress debated reforms of the 1934 Communications Act which became mired in election politics during 1994. The corporate interests of long-distance carriers (AT&T, MCI and Sprint) differ from regional operating companies (ROC, so-called "Baby Bells") and further slow the process. Indeed, Japanese officials expressed relief that the consolidation of American industries and competitiveness under a new policy framework did not occur. Instead, the Japanese side has moved to create a vision of its own information futures.

In the Brussels meetings in February 1995, the seven leading G7 economic countries created greater impetus for change. With a series of initiatives again orchestrated by Vice President Al Gore, the G7 Summit agreed to a set of eleven pilot projects that explore the basis for a "global information infrastructure" (GII). This GII is a part of outside pressures that bring competing industries and territory-conscious policymakers to the table. Japan faces pressure to

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[24] National Research Council, *Realizing the Information Future: The Internet and Beyond*, Washington, D.C.: National Academy Press, 1994.

agree to a common agenda for its businesses and bureaucracies as these issues take on international stature. Japan has set goals for its basic infrastructure in telecommunications. The ministries, and top managers of NTT, have set a goal of reaching 60 million households with fiber optics by 2010, as well as continuing wireless and other forms of development. Contrary to many reports of bureaucratic conflicts, policy coalitions with cooperative efforts among business and government actors have moved forward in these activities. To see the significance and to weigh the promise and limits of such a goal, requires an account of the technology and industry that are organizing in this area.

INFORMATION TECHNOLOGY AND INDUSTRY

Producers Before The Consumers

Japanese economic organization has suffered from the limits of centralization. In heavy industry and large-scale projects, top-down organization associated with Henry Ford or Josef Stalin had some success. In Japan, similar success allowed rapid catch-up in the scenario of follower that ranged across industries. Richard Samuels correctly notes, however, that "consuming for production" in industries such as aerospace have meant that Japanese consumers suffer relative to counterparts elsewhere in developed countries.[25] Other analysts argue that Japan should absorb a greater share of manufactured exports from other Asian countries to improve the quality of life of Japanese consumers as well as stimulate export growth from developing countries. Those observers studying the "hollowing out" of the Japanese economy believe that the move of manufacturers overseas appears to support that trend. However, the simultaneous point of revitalizing Japan and providing for employment tends to be the focus of debate about the shape of future industry.

Unlike the U.S., Japan is not entering the digital age with vast numbers of personal computers. Indeed, this fact may slow the impact of these technologies on economic growth more than any other factor. Though the central control of bureaucracies and industrial concentration of *keiretsu* may have helped earlier economic growth, the future pattern cannot rely on such a formula. The use of information technologies has required active users. The alternatives are new forms of multimedia or new types of individuals in Japan. Technology is driving change perhaps beyond the logic of the market. Some researchers question whether the economics of many proposals for new products such as multimedia and information services are truly worthwhile. In Japan as well, technology such as fiber optics is driving the early planning rather than market-based demands for products and services. What is unanswered is whether visions of the best technology are correct, any more than the best means of economic management are certain. Peter Drucker notes that when commodity prices and industrialized economies find their theories unable to deal with the "uncoupling" of connections of exchange rates, foreign trade and transnational corporations, then the "new realities" of future planning must look beyond past models.[26]

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[25] Richard J. Samuels, "Consuming for Production: National Security, the Domestic Economy, and Nuclear Fuel Procurement in Japan," *International Organization*, Vol. 43, Autumn 1989, pages 625-646.

[26] Peter Drucker, *The New Realities*, New York: Harper & Row, 1989.

Information technology (IT) differs from earlier realities of technology and industry in several related ways. First, software rather than hardware is increasingly critical to the value-added of related industries. Second, industry standards are increasingly open and uniform around the world which allows easier market entry and quicker innovation beyond national borders. Third, global competitiveness and ease of transnational communications means that products, architectures and infrastructures develop with increasingly rapid speed. Fourth, the target of such technology is increasingly at the level of the individual rather than the large organization as a whole.

Such technology poses a special challenge to industrial organization in Japan. Rather than large hierarchical firms with structured teams, the key form of organization will be small entrepreneurial groups or firms. The transition of large organizations is not impossible: entrepreneurial American firms such as Microsoft and Apple were imitated by older large organizations such as Hewlett-Packard and Motorola. However, adoption of the new technology will require changes for Japanese electronics firms such as NEC, Fujitsu, Toshiba and NTT. Widespread recognition exists of problems in service sector productivity, yet many fear an American-style reorganization with higher unemployment.

The challenge is likely to be met with an emphasis on markets. Unlike the past, at least some MITI and MPT officials are committed to joint ventures and openness, even at the expense of firms that refuse to meet competitive challenges. Along with bureaucrats, the stars among the politicians are the same. Shinshinto leader Ozawa Ichiro was a key figure in the Motorola cellular phone agreement and Jiminto's Hashimoto Ryutaro was key in opening telecommunications markets to foreign procurement. These officials face a special problem because the past export-based strategy of followers in the East Asian developmental model may face insurmountable obstacles of high yen rates, overseas competitiveness and a large U.S. lead that will stop the efforts to emulate leaders in this area.

As the consumer seems less critical to current planning, industry is rather varied in its response. Partly, the ways that information technologies span industries makes the debate even less certain for parties that might insist on the role of markets, or make claims about the demands of the consumer. However both business and government are moving forward. Japan is building coalitions in support of multimedia, database and communications media, and telecommunications.

Multimedia and NTT Convergence of audio, video and computing electronics due to digital format will support new forms of multimedia. In Japan, multimedia industry builds on the strengths of Japanese microelectronics and consumer electronics firms and has already produced products such as personal computers and hand-held devices that have integrated packages, new applications, interactive formats and attractive contents. All such features are needed to build consumer demand in a multimedia market. A complete discussion of related firms would include the successes in consumer electronics by Sony, the innovative high-definition television efforts of NHK and manufacturers, and the interactive CD-ROM and personal computer combinations of Fujitsu. But further product development and marketing of multimedia remains in question. In this regard, business benefits from government support for symposia, projects and consortium

that sustain a policy coalition placing priorities on multimedia. But a key player in the near future is the local telephone monopoly and part of its central vision appears in the corporate strategy of NTT towards multimedia.

NTT managers act on a working definition of multimedia. Dr. Tetsuhiko Ikegami in charge of planning in NTT's research division acknowledges that multimedia is now seen "as a kind of networking among PCs and workstations" but increasingly relies on the personal computer (PC): "The PC is very versatile: it has a man-machine interface, a high performance computer and, if you add a CD ROM, it has a very large memory. So everything is in this device. If we link these devices, we can offer many different kinds of services."[27] Multimedia will also require new hardware developments and components such as multimedia terminals will require the advanced display (i.e., liquid crystal display) and memory technologies of Japanese manufacturers. Newton, a personal computing tool developed in the United States by Apple Computer and manufactured in Japan, was an experiment with such integration.

NTT has deep pockets to finance developments. NTT is the world's biggest company in market capitalization terms at 780 billion yen (over $7.5 billion). In the fiscal year ending March 31, 1995, NTT's consolidated operating revenues were 7 trillion yen (about US $70 billion) with an increase of 5.8%, or 384.8 billion yen (US $3.848 billion). Note that these revenues were slightly larger than the nominal GDP of Malaysia, Singapore, the Philippines and Russia. The significance of NTT reorganization, division or "breakup" (*bunkatsu*) cannot be underestimated; it will effect the Japanese economy and, at the very least, spur developments of multimedia.

Financing for NTT projects such as fiber optics is not limitless. Fiber optic lines will cost at least 16 trillion yen, and perhaps as much as 100 trillion yen with switching, architecture and wiring to the home. To pursue this plan, the MPT officials arranged a 32.3 billion loan program under the Japan Development Bank to create fiber optic networks through NTT, other common carriers and cable TV operators. The moneys are not sufficient, particularly to meet a target date of 2010 and still the plans continue to emerge from the companies and the government. Within the Japanese context, the momentum of planning and coalition-building provide a context. A policy coalition is forming for later claims on the shortfall.

In January 1995, NTT announced its plans for multimedia. Four features included first, joint use with other providers; second, software development with other firms (such as Microsoft, General Magic and Silicon Graphics); third, fiber optics for transmission to urban business, suburban residences and all homes over the next ten to fifteen years; and fourth architectures based on an "open computer network" (OCN) that overcomes differences of quality, protocol and capacity. A June 1995 memo clarified these points. NTT will construct a new open computer network using nodes independent of the existing telephone network and conventional data network for the following reasons:

1. Service quality is different for a network designed to offer highly reliable transmissions, compared to a network which stresses inexpensiveness over quality.
2. Protocols differ between networks.

[27] *NTT Global News*, Kanagawa, Japan, No. 4, July 1994.

3. Node capacities and expansion speeds differ between mature networks and emerging networks.[28]

NTT managers are convinced that the future of network architecture must match the developments of the Internet and information infrastructure as seen in the United States. The OCN concept alone does not mean problems of protocol and standards have disappeared. Indeed, the effort to create common standards remains critical to spur investment by manufacturers. But these efforts are beginning. In the meantime, NTT sees Japanese industry in the lead in many of the hardware technologies critical to multimedia, including ATM, optical-fiber transmission and image data coding technologies. Meanwhile across the Pacific, U.S. companies are ahead in terms of creating concepts for multimedia services and developing services combining hardware and software. Corporate strategy is still able to match these trends and cope with the upcoming proposals about NTT reorganization.

In 1996, NTT will undergo scrutiny and perhaps division. No less than four major deliberative councils are considering the reorganizational plans. The first to report was an administrative reform council that followed the AT&T or JR plans and proposed regional breakup into at least five companies. But this proposal is preliminary and draconian. Industry sources have yet to report and the key government Telecommunications Council begins hearings in November 1995. The key report due in March 1996 will emerge from the Electronic Communications Deliberative Council (*Denkitsushinshingikai*).

The common view is that no final proposals about regional division are decided and functional division of NTT is just as likely as five or so regional companies. In the near future, the debate about NTT begins in earnest and infrastructure developments will then take shape in Japan.

Other Communications Industries

Beside NTT, multiple industries are affected by these changes in technology. The classic discussion of an "NTT Family" noted that procurement by the public corporation supported electronics giants of Fujitsu, NEC, Hitachi, Oki Electric and Mitsubishi Electric. Along with Toshiba, these firms became the basis for the Japanese computer industry and for the subsequent strengths of Japan in microelectronics and hardware. The merger of these various industries and products are likely to continue with digital technology and there are regulatory and corporate issues to consider.

Broad impacts on industry will result on other media as well as entry by start-up firms such as the new common carriers (NCC) in Japan. Among the three NCC that are NTT's long-distance competitors, MPT has helped DDI (Daini Denden Inc., or a Second Phone Company) run by former NTT managers; the Ministry of Transportation has backed Japan Telecom because Japan Railways (JR) provides a bed for fiber optic lines; and the Ministry of Construction assists Teleway with its lines alongside national roadways. MITI is also backing

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28 "NTT's Activities for the Coming Multimedia Age," Jun Sawada, Senior Manager, *NTT Corporate Strategy Planning Office*, 7 June 1995.

electric power companies efforts to provide service, for example, with TTNET emerging from Tokyo Electric Power.

In other countries, technology is creating relations among common carriers, print and broadcasting firms. In this context along with common carriers, the problems for the major media industries include the challenges of developing their domestic industries amid a changing international context. Through joint ventures and independent efforts, Japanese firms rebuild their competitiveness and remain solvent due to a base within the domestic market. The changes in industry will first draw upon their strengths and market positions at home.

In Japan, the media are moving to respond to new technology and create products for domestic markets. Newspapers and television broadcasting are covering the developments on the Internet and applying the latest technical developments. Publishers are beginning their home page offerings and studying commerce on the Internet. Television is considering greater offerings of CATV and satellite broadcast. In many firms, the latest technology is present. Awareness of technologies such as VRML and the efforts to develop HTML, have kept Japan abreast of worldwide developments.

For critics, problems in major public projects in Japan distract from the gains for coalitions in support of new technologies. The Fifth Generation computer project is said to be a failure according to MITI goals; yet business gained a set of engineers trained in the use of artificial intelligence for the purposes of creating new software. The TRON project has not met its stated goals; yet again, researchers worked in robotics and other technologies that apply elsewhere. Numerous other examples might be listed.

Beyond such projects, formerly weak industries have grown. For example, database-related industries developed in Japan over the past twenty years. In 1979, the industry association (DINA) started with 19 firms and in 1982, MITI began efforts to publish a database white paper through an affiliate called the Database Promotion Center. Industry data from DINA showed that the number of databases grew from 296 in 1986 to 808 by 1991, while MITI claims 2,799 existed by 1992 including many on business. Categories of information services are divided among business (1059) science and technology (816) and others on society, general issues, or news of current events.[29] Unlike education-led database industries in North America, business dominates the market and drives developments for databases in Japan. Further, there are other examples such as the recent settlement between Sony and Toshiba on the standards for digital videodisc (DVD) technology. DVD standards as a compromise promises that wasteful battles such as videotape differences between VHS and Beta formats will not be repeated and the likely coalitions of industry and government can emerge.

In communications-related industries, a policy coalition is forming which seeks public policies as business introduces new technology and draws on past strengths of industry. Awareness of technology and learning about options is continuing. Of course, the applications will not precisely match elsewhere but rather emulate and move beyond overseas applications;

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[29] *Database Promotion Center, Database Whitepaper, various years and Keizai Koho Center, Japan 1995: An International Comparison*, Tokyo, 1994.

draw on hardware rather than software, build domestic demand before exporting; and nurture experimental projects with collateral benefits. The familiar patterns of Japanese economic developmentalism, in the terms of the late Yasusuke Murakami, provide the basis for catching up.[30] This background, as well as the consensus of a grand coalition, are supported by public policy.

Information Technology and Communications Policy

The tools for shaping the range of Japan's information technology fall in a variety of jurisdictions. This raises the speculation that gridlock and bureaucratic rivalry will slow development of infrastructure. Infrastructure is needed to support Japanese achievement of the promise of these new forms of technology and of the economic growth they might bring. Will bureaucratic battles slow the growth of industry and its business? In short, this is doubtful. Already, the government has shown several specific options for telecommunications deregulation and progress is apparent.

Japan's policy for multimedia and related technologies is being made in several locations. MITI has created consortium and bureaucratic alliances. MPT has filed key reports submitted by the Telecommunications Council and organized in a headquarters of companies jointly developing multimedia. In regional and global activities, APEC and the G7 Summits provide impetus and an international context. In particular, the G7 Ministers Conference on the Information Society held in Brussels, Belgium in February 1995 created eleven pilot projects to explore guidelines for global information infrastructure (GII). Along all these lines, Japan is creating its public policies for the information future.

MITI and Multimedia

The Ministry of International Trade and Industry (MITI) advanced the term and a range of efforts in "multimedia" industry. In FY1995, the MITI "Project for New Industry Creation" gives funds to industry commissioned to develop advanced multimedia software. The resulting software is jointly owned by the government and firm, but payment of a copyright fee then allows the firm to use and market the software. Such policy tools allow MITI to encourage the shape of developments. MITI also cooperates with other ministries and, contrary to the stereotype of notorious competitiveness among ministries, in specific areas they act in tandem.

In education, MITI cooperates to develop software and networks. MITI along with the Ministry of Education (MOE) and the Ministry of Home Affairs supports a center to produce educational applications. "Educational Software Development and Utilization Promotion Center" supports facilities and creates a database for research in this field. MITI and MOE cooperate on networks as well. In 1994, a MITI-MOE "100-School Networking Project" will be based at the Center above and connect over 100 elementary, junior and senior high schools over a wide area network and accessible on the Internet. The network project received a thousand applications showing the interest in this area and also the limitations on schools as they try to enter the age of

[30] Murakami Yasusuke, "An Anticlassical Political-Economic Analysis: A Vision for the Coming Century," Translated manuscript with an introduction by Kozo Yamamura, Stanford: Stanford University, forthcoming 1996.

networks. And in support of digital libraries, MITI supports a network among MOE, the National Diet Library, public libraries, the Ministry of Home Affairs and The Agency of Science and Technology. The draft plan seeks to build an "electronic library" on the Shonan Fujisawa Campus of Keio University. The MITI efforts are all indicative, but not the total picture of the government efforts to support multimedia.

Beyond MITI cooperation, Ministry of Education (MOE) projects are also using multimedia. "Monbusho" or MOE will open 247 "Educational Software Library Centers" to increase teacher computer literacy by the end of the decade and to distribute new types of educational software. Distance learning trials will also allow schools in larger cities to collaborate with schools in remote locations over digital networks. By 1998, these trial efforts with distance learning will assess the applications for a broader use.

MPT Does Multimedia, Too

As a parallel effort, the Ministry of Posts and Telecommunications (MPT) is also supporting multimedia under the term of "info-communications." Since November 1994, a group of almost 800 firms are enlisted in meetings and exchanges under MPT and organized under a promotion agency. Agency activities included the "Information-communications Infrastructure Promotion Conference," with NTT and NHK involvement in showcasing their projects with multimedia. An additional vast number of MPT research and application activities exist in its institutes and local offices. The support of telephone, mail and banking institutions make MPT a formidable agency in support of new applications for multimedia, regardless of the terms used for translation about these activities for Japanese consumers.

MPT must make key decisions about its complex views of NTT. With international pressures and domestic economic stagnation, MPT wants greater competitiveness. MPT also has competing regulatory goals and must make a determination that accounts for equity, quality, openness, competitiveness and standards. In the impending debate about NTT, the early reports about division of the phone company are no more than distractions. Multiple goals for restructuring the company will decide international competitiveness as well as domestic market competition. Until fall 1995, the support for projects indicates MPT willingness to seek new roles for a variety of firms in areas such as multimedia.

The activities of MITI also bring parallel effort by MPT. The funding of MITI "technopolis" or "new media communities" led to MPT "teletopias" in various localities. The support of some consortium by MITI met a counter-response by MPT. The result is that the related industries benefit from multiple subsidies and complementary or overlapping activities. There was little reason for industry to avoid such largesse.

Multimedia Wars Overcome

Jurisdictions may overlap, but the onset of "multimedia wars" are not likely to slow the momentum building in Japan. By such conflicts among ministries, some analysts see gridlock in the policy process. Chalmers Johnson followed "telecom wars" as MPT deregulated telecommunications and his students have followed with studies about "VAN wars" about Value-

Added-Networks to regulate the digital communication services as well as other areas where MITI has lost its clout.[31] The trend towards a style of "industrial policy" practiced by agencies other than MITI is emphasized by other students of the policy process; T.J. Pempel was correct to note that new technologies cause such battles over bureaucratic turf.[32]

Such struggles do not necessarily lead to gridlock and cannot stop industry from pursuing multiple priorities. The evidence of progress comes from the industries themselves and focuses on multimedia as a direction that may cause the growth of industrial policies after the fact. In particular, there is an apparent responsiveness of the bureaucrats to areas where Japanese business has already developed its initiatives.

International agreements about these technologies are moving actors in the policy process towards consensus. Though not conclusive, MPT hosted a major meeting of the International Telecommunications Union (ITU) in November 1994, at which time MPT first created its home page on the World Wide Web. This movement, perhaps first seen as a means of public relations, nonetheless showed that the bureaucrats would respond to keep up with international trends. The results from ITU were not totally to the MPT' s wishes, but there was an effort to begin to address technological developments.

Problems of an "Asian Information Infrastructure" are examples of the frustration of MPT leadership superseded by international agreements. "AII" was part of a package that MPT tried to advance within the ITU agenda, but met resistance from that body as well as tepid response in other international forum. Under the International Telecommunications Union (ITU), a ministerial meeting was held in Kyoto on 22 September 1994, on the theme "Toward the Information Network of the 21st Century."

The first-ever summit by the heads of telecommunications groups from around the world adopted the Kyoto Declaration urging strengthened regional and global cooperation to work toward advancing telecommunications infrastructures. The Ministers addressed the development of telecommunications, such as the Global Information Infrastructure (GII). With coverage given at a World Wide Web site, the details of such a package included fiber optic or other networks through traditional telephony and the standards set by broad international bodies of the ITU. Other bodies and formats, such as in the G7 Summits or APEC meetings, advance the same regional and international infrastructure concerns along with Japanese involvement. International involvement supersedes jurisdictional conflict and forces domestic actors to place their differences aside and join a robust policy coalition that pursues common national interests.

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[31] Chalmers Johnson, "MITI, MPT, and the Telecom Wars: How Japan Makes Policy For High Technology," in *Politics and Productivity: How Japan's Developmental State Works*, Cambridge: Ballinger, 1989. See also Joel West, "Building Japan's Information Superhighway," *CRITO Report*, February 1995, distributed by the Asian Technology Information Program, and Steven Vogel forthcoming work on bureaucrats.

[32] T.J. Pempel, "The Unbundling of 'Japan, Inc.:' The Changing Dynamics of Japanese Policy Formation," in *The Trade Crisis: How Will Japan Respond*, Seattle: Society for Japanese Studies, 1987.

Moving Forward In the G7 Summits

The G7 Summit was the key impetus in 1995 for Japan to form a policy coalition to support information infrastructure. On 25-26 February 1995, G7 Industry Ministers held a conference on the Information Society in Brussels. The conference examined emerging technology towards communications with its focus on regulatory frameworks and competition policy; implementation and accessibility; developing applications; and social and cultural aspects. Officials endorsed 11 pilot projects to show the potential benefits of related technology in society and stimulate its deployment as a basis for global information infrastructure.

In March 1994, Vice President Albert Gore introduced the framework for a Global Information Infrastructure (GII) that encourage G7 activity. In a speech to the World Telecommunication Development Conference of the International Telecommunications Union (ITU) in Buenos Aires, Gore set an agenda. Gore's long-standing interests in information technologies and telecommunications stared a global effort encouraging investment and harmonizing regulation across borders. The proposal also seeks to encourage U.S. political values and brought forth criticism on such grounds. The GII will be composed of local, national and regional networks. As a "network of networks," the GII will facilitate the global sharing of information, interconnection and communication -- creating a global information marketplace. As a cooperative effort among countries, the GII will afford economic and social benefits to all participants, ranging from job creation, economic growth, infrastructure improvements, to advanced services at lower prices for consumers.[33]

The model of a GII remains controversial. In Brussels, Gore first mentioned in explicit terms that the Internet was likely to be the model. Indeed, U.S. experts had long suspected and many openly stated that this model was appropriate for an open data network. With the Internet as the de facto standard, what remains is for the development of the infrastructure to define limits and responsibilities of users.

Japan is among the lead countries in four of the eleven G7 pilot projects. The projects have objectives that include:

1. support international consensus on common principles for applications, access and interoperability of networks;
2. establish groundwork for cooperation among G7 partners to create a critical mass to address the global information society issue;
3. create an opportunity for information exchange leading to further development of the information society;
4. identify and select exemplary projects with tangible, understandable and demonstrable social, economic and cultural benefits;
5. identify obstacles to implementing applications related to a global information society;

[33] "U.S. Challenges World to Build 'Network of Networks'" *Reuters News Service*, 22 March 1994.

6. help create markets for new products and services.[34]

Representatives of companies whose executives participated in a business leaders roundtable discussion during the February 24-26 in the G7 ministerial conference on the Information Society have issued a plan for follow-up actions by G7 member governments. In a paper drafted for presentation to the heads of G7 member states during a summit meeting in Halifax, Nova Scotia, on June 15-17, the group urged governments "to take urgent and coordinated action at national and international levels to accelerate the building of the global information society." The June 1995 Halifax Summit confirmed these projects and launched a set of announcements on the World Wide Web. By the Lyon Summit scheduled for 27-29 June 1996, the G7 Projects are expected to develop a basis for international cooperation for information infrastructure.

Asia Pacific Information Infrastructure

Challenges posed by information technology (read, the Internet-related networks, personal computers and digital technologies of various types) are still years away from broad multilateral agreements. Nonetheless, building such an infrastructure is well within the possibilities of tasks that a forward-thinking APEC might achieve. Where the European Economic Community started with iron and steel, the next generation of economic growth in the Asia-Pacific might start with information infrastructure. Asian-Pacific Information Infrastructure (APII) is needed a supplementary step for the building of global standards for commerce and communication.

Regional and national developments can set arbitrary constraints and standards for this rapidly developing area. Global efforts among wealthy countries must be supplemented by efforts between North and South and within regions. After progress in Brussels in February 1995, the leading developed countries (known as the G7) started their eleven projects for global cooperation. In this light, the regional and even bilateral negotiations will be needed to define the specific steps to harmonize and to achieve specific projects for telecommunications, software and computers.

An example arises from ISDN standards. On 22 May 1995, Japan's Ministry of Post and Telecommunications held a meeting of the Asian Integrated Services Digital Network (ISDN) Council in Tokyo. On May 29, a meeting of ministers from APEC member nations holding telecommunications and information portfolios convened in Seoul. While the G7 industrial nations proceed with their Global Information Infrastructure (GII), Asian nations are seeking steps to develop jointly the necessary technology to establish a regional information infrastructure, but these moves must be cautious. Just as within APEC, the regional agreements must strive for compatibility and harmony with global ones. As such, the potential friction of exclusionary pressure from an "East Asian" or "Asian" solution must not exclude countries or economies. Thus an "Asia Pacific" solution under APII is the best solution as it embraces the 18

[34] A G7 Summit World Wide Web site offers materials on the details of the meeting at URL=http://www.ibm.com/Sponsor/g7live/G7live.html that began during the sessions.

members of APEC, and perhaps even more parties, in order to encourage the growth of information technology and the management of its social impacts worldwide.

Two international organizations show that only minimal standards exist among governments. Key for these sectors are the ITU and ISO. In 1993, the ITU (International Telecommunications Union) was reorganized along a wired/wireless division: ITU-T deals with telecommunications while ITU-R deals with radio and wireless communications. Japan has the Telecommunications Technology Committee and the Research and Development Center Radio Systems as its main groups to set standards. Further, the Industrial Standards Organization (ISO) has set standards for software developments. With the rapid technological changes in recent years, the existing standardization organizations have been unable to keep up with the changes.

Industry acts to improve standards where international organizations lag behind. Equipment makers, communications carriers, users and others have come together to form private-sector meetings and organizations to develop and publicize the standards created under the ITU and other organizations. Examples include a group on Asynchronous Transfer Mode (ATM) that seamlessly connects local networks with networks outside (WAN). In 1991, the industry and its users created the "ATM Forum." To supplement the ITU-T and involve end users, the ATM Forum sets technical specifications based on international agreements about connectivity of equipment. Similarly, the Digital Audio/Video Interactive Council (DAVIC) was established in June 1994 by a group of companies involved in the interactive services. DAVIC seeks to ensure compatibility of systems providing interactive video and sound services. DAVIC limits itself to specifications for video-on-demand services with its recommendations due by December 1995.[35]

Industry is especially successful in providing de facto standards for later approval of government. De facto standards are not usually official, yet prove themselves by their competitive superiority in the marketplace. The current trend in de facto standards is for several companies to create a forum such as with ATM and agree on standards that all will abide by. Manufacturers of video servers, set top boxes, portable information equipment and communications software are also cooperating on possible de facto standards. As such, the national, regional and international coalitions for changes in public policy and developments of infrastructure, continue to move forward.

Alternatives for National Identity

This paper began by asserting that a key aspect of growth in Japan will be based on the emergence of information technology and communications policies designed to sustain the country as a global power. The basis for reorganization builds upon the strengths of political consensus, economic infrastructure and social capital that will fuel Japan's future economic growth. Each of these strengths will allow for options that remain for Japanese identity as leader in the world. Political consensus is largely based in broad policy coalitions rather than specific political parties. A myopic view of party politics may wait for the next election to give all new directions. No matter how the election goes, decisions about NTT are likely in the near future.

[35] Chris Stiles, "Japanese Multimedia Industry Development Update," Tokyo: *ATIP95.61 Report*, 30 August 1995.

The failure of the mass party model for Japanese political parties is one of the key puzzles explored by political scientist Gerald Curtis, and indeed does not seem to fit the Japanese realities. Yet there is also no settlement of the new two or more parties that will replace the end of one-party dominance.[36]

Even the creation of two moderate parties, or a series of coalition governments, does not seem to give a sense of the future trajectory of politics in Japan, at least as it will determine public policies. For some writers, the bureaucracy will forge the consensus, while others watch for business to craft consent.[37] A focus towards the latter, emphasizing "policy coalitions" rather than a state-centric locus in subgovernments, emerges in areas within Japanese policy processes. Japan appears to have nurtured groups that will assure rapid impacts of information technology and communications policies.

Economic infrastructure exists to implement such policies due to flexibility of finance institutions. The much maligned Japanese banking industry distracts attention from the continued existence of the tools of national policy in the postal savings system, the Fiscal Investment and Loan Plan, and the interactions of bureaucrats and bankers. Though some observers see small banking institutions as excessively weak, the political will to finance large infrastructure projects introducing fiber optics and other aspects of information technologies are a possibility for the near future.

Social capital is the basis for action that draws on norms and networks in the Japanese context. In his book on the differences between north and south in Italy, Robert Putnam emphasizes that "norms of reciprocity and networks of civic engagement" are critical elements that determine institutional performance.[38] As for evidence about the basis for reciprocity and civic engagement in Japan, media observers tend to consider momentary crises of a single bank or isolated religious cult. Instead, the common identity and civic consensus rest solidly on a basis of Japanese nationalism. Experts on the country, ranging from Chie Nakane to Kenneth Pyle, do not question the fundamental sense of psychic distinctiveness and shared experience that reside in that nationalism.[39] Questions certainly arise about the direction that such nationalism will take in the future.

In the next year, numerous events will influence the specific issues of information technology, related communications policies and the larger polity. Technology will be introduced by business, new policies will be decided by bureaucracy and an impending election will define the contours of a new political party system. Japan's "information future" and the broader

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[36] Gerald T. Curtis, *The Japanese Way of Politics*, New York: Columbia University, 1987, and Stephen J. Anderson, "The End of One-Party Dominance," *Current History*, December 1993.

[37] Chalmers Johnson emphasizes the "developmental state," while Richard Samuels asserts that "reciprocal consent" comes from business. State leadership has found numerous critics and degree of consent from civil society including labor brings equal number of questions. The appearance of "policy coalitions" held true for welfare policies across different areas of social security for public pensions, health care and social services. Stephen J. Anderson, *Welfare Policy and Politics in Japan: Beyond the Developmental State*, New York: Paragon House, 1993.

[38] Robert D. Putnam, *Making Democracy Work*, Princeton: Princeton University, 1993, quote at page 167.

[39] Chie Nakane, *Japanese Society*, Berkeley: University of California, 1970; and Kenneth B. Pyle, *The Japanese Question*, Washington: American Enterprise Institute, 1992.

national identity will then begin to take shape and to meet timetables. From a period of crisis, Japan's new identity as an "information society" will be a key part of its roles in the world order at the start of the millennium.

THE JAPANESE BRAIN AND HEMISPHERIC INFORMATION PROCESSING

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1. Introduction

The human brain exhibits hemispheric differences in information processing functions and this fact of laterality preferences has found its way into both popular and psycholinguistic discussions of how the Japanese language differs in its processing requirements.[1] This paper evaluates the scientific literature in three areas and attempts to distinguish between myths and models in adducing evidence from experimental psychology, clinical aphasiology and second language acquisition studies to answer the question of whether Japanese differs from other languages in its characteristic pattern of laterality preferences as cognitive resources are deployed in information processing tasks.

In Section 2, we introduce Tadanobu Tsunoda's experimental claims regarding speech perception and his implicit contributions to modern elaborations of the *Nihonjinron* discussion. Native Japanese speakers were said to generally show left, linguistic hemispheric dominance for certain pure vowel sounds, while speakers of other languages were said to exhibit right, non-linguistic hemispheric dominance for both the vocalic and pure harmonic sounds. Tsunoda went on to suggest that the brain in Japanese speakers is highly lateralized and processes both linguistic, logical input and natural, non-logical input through the single hemisphere and that, in contrast, the brain in non-Japanese speakers is functionally divided. We evaluate and ultimately reject this hypothesis, simply because none of his experimental claims can be duplicated in the laboratory. Nor can they be supported from the relevant linguistic or clinical reports in the literature.

In Section 3, we examine the dimensions of a widely-held belief about laterality preferences, that *kana* is processed exclusively in the left hemisphere and *kanji* in the right hemisphere. The enormous literature derived from psychological and clinical studies does not support this hypothesis, but rather points to more refined view of cerebral lateralization and *kana* and *kanji* processing. Our synthesis of the relevant literature shows that information processing tasks which involve *kana* and *kanji* processing are not script-dependent but are instead function-dependent.

Lastly, in Section 4, we review pedagogical studies from the field of second language acquisition which confirm our view that laterality preferences tied to orthographic processing requirements are function- or strategy-dependent.

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[1] We wish to acknowledge the research grant provided to Joseph F. Kess by the Japanese Ministry of Education (#07NP1001).

In sum, the classical view that *kanji* is processed in the right hemisphere and *kana* in the left is simply incorrect. A more accurate view reflects the fact that both left and right hemispheres are involved in processing both *kanji* and *kana*, but that their participation in processing tasks inevitably reflects different aspects of the task as the human brain responds to varying functional requirements posed by the task at hand.

2. Laterality Preferences in Speech Perception

Our paper takes its first inspiration from a unique event in the information processing paradigm of the past several decades. From a modest beginning which involved several articles in the scholarly literature about speech perception (1972, 1973, 1974, 1975), the oto-laryngologist Tadanobu Tsunoda created, through a series of best-sellers (1978, 1984, 1985), an enormous popular following who came to share his assumptions about the nature of the Japanese brain. His original experimental framework, which examined Westerners' perceptual lateralization for vowel sounds by using a dichotic listening technique coupled with a finger-tapping task,[2] was quickly superseded by global assertions that Japanese information processing strategies exhibit different laterality preferences when contrasted with Western languages. In point of fact, Tsunoda claimed to have found this to be true for almost all other languages of the world, even for *nisei* speakers of a native language other than Japanese when they were tested for hemispheric dominance patterns. Unlike speakers of other languages, Japanese speakers show left, linguistic hemispheric dominance for certain vowel sounds.

Despite a lack of experimental support from others who attempted to replicate his findings (see Hatta & Dimond, 1981; Uyehara & Cooper, 1980), Tsunoda went on to argue that the brain in Japanese speakers is highly lateralized and processes both linguistic, logical input and natural, non-logical input through the single hemisphere, while the brain in non-Japanese speakers is functionally divided in its processing of logical input and non-logical input. In keeping with popular *Nihonjinron* assumptions, such differences in lateralization were often uncritically accepted as additional factors underlying respective differences in mental attitude, appreciation of nature and philosophical outlook. His 1978 best-seller, *Nihonjin no No: No no Hataraki to Tozai no Bunka* [The Japanese Brain: The Workings of the Brain and East-West Cultures], takes exactly this tack and was into its largely unrevised 34th printing the last time we looked. Although Tsunoda has mollified any overt claims, the whole research paradigm strongly implies that brain mechanisms for speech and non-speech perception uniquely differentiate Japanese speakers from speakers of almost all other languages. This includes the so-called Western and Northern languages, which also include speakers of all other Asian languages, including the typologically similar Korean and the historical benefactor of *kanji* orthography, Chinese. In fact, even the mechanisms for non-speech sounds in the brain are implied to differ from those exhibited by Western languages, resulting in alleged perceptual differences for input ranging from

[2] Tsunoda's dichotic listening technique had the subject tapping a key in rhythm with a vowel sound or a pure harmonic sound repeatedly presented to one ear, while the same sound is presented to the other ear in a slightly delayed sequence. An increase in the volume of the delayed sound was hypothesized as the determinant of the threshold at which key-tapping would be disturbed, thus demonstrating any hemispheric dominance for verbal vs. non-verbal stimuli.

insect sounds to Western vs. traditional Japanese music. Elaboration of such far-reaching ramifications, now far removed from the replicability required in the experimental method, have formed the basis of succeeding best-sellers (1984, 1985), all of which assert that native speakers of Japanese who learned their mother tongue before the age of nine or ten exhibit perceptual mechanisms for speech and non-speech sounds in the brain that differ from those exhibited by speakers of other languages.

2.1. Experimental Support for Tsunoda's Claims

As one can see, there are a number of claims regarding information processing which are made in such discussions and which are well-worth addressing because of their cultural ramifications in an "information society." The earliest work in this paradigm (Tsunoda, 1973) suggests that the brain in Japanese speakers is highly lateralized and processes both linguistic, logical input and natural non-logical input through the single hemisphere. In contrast, the brain in non-Japanese speakers is said to be functionally divided. On the basis of this alleged hemispheric difference, the world's languages can be divided into two groups, the Japanese type, which is unicerebral and the European type, which is bicerebral (Tsunoda, 1974). Such typological differences in lateralization are implied to be among the key factors which underlie their respective differences in mental attitude, appreciation of nature and philosophical outlook. In other words, the sound structure of languages influence lateralization which, in turn, affects the cultural and philosophical outlooks of the users of the language (Tsunoda, 1974). Unfortunately, this new version of Linguistic Relativity has suffered from the problems that any and all earlier versions of relativism have suffered from, namely, subjective interpretations of *ad hoc* experimentation which is characterized by a lack of replicability.

Despite such serious claims, Tsunoda wisely does not attribute such hemispheric differences to genetic factors. His later work, probably in response to the wide range of criticism it attracted, does accept that the structure of the brain is the same for all members of the human species. Rather the burden of explanation is shifted to the observation that cultural and environmental differences have an important effect, thus placing his work within the context of ethnology and linguistic relativity. From a linguistic viewpoint, of course, it is nevertheless specious to divide the world's languages into two types, simply based on their syllabic patterns, and to then suggest that these phonological patterns control the perception of pure vowel sounds, as well as the sounds of nature. To take the argument further, making it an explanation of how the Japanese view the world and think about it falls into the area of extreme speculation and really has nothing to do with either language or information processing questions.

In fact, Hatta and Diamond's (1981) replication of Tsunoda's experimental technique reports results which are exactly opposite to Tsunoda's general findings. In this study, Japanese and British subjects were dichotically presented with spoken speech and several types of environmental sounds. The environmental sounds interfered in a similar manner for both groups of subjects, but the study reports significant differences in the degree of ear advantage between the two groups of subjects. Japanese subjects exhibited superior performance for correctly recognized digit sequences in the left ear and the authors suggest that this finding can be

attributed to the fact that the right hemisphere may contribute more to the processing of spoken speech for Japanese speakers than for English speakers.

Later studies (Tsunoda, 1984, 1985) with *nisei* and returnee Japanese students went on to elaborate that the Japanese pattern of speech-sound perception is learned and not hereditary, and is fixed in place by the age of nine or ten. But Yoshizaki et al. (1994) undermines Tsunoda's claims regarding a critical period for such perceptual mechanisms to be fixed by age nine or ten. Yoshizaki et al. (1994) conduct three dichotic listening experiments which examined the effect of attention on right ear advantage for word recognition in 47 pre-schoolers. A younger group (between four and five years of age) and an older group (between five and six years of age) were dichotically presented with pairs of two- and three-mora animal words. A first experiment showed a right ear advantage for both groups, indicating a left hemisphere advantage in word recognition, but the second experiment found that the right ear advantage was lost for the older group with the addition of an attention condition. A third experiment conducted six months later with the younger group under the same attention condition found that this group also exhibited the loss of the right ear advantage at this time. The results from the second and third experiments lead the authors to propose that, as they grow older, children are able to employ fewer resources in the left hemisphere in recognizing and reporting words and become increasingly able to allocate more resources to the attention task. This allocation of linguistic resources then explains the loss of the right ear advantage under the attention condition. In sum, given Yoshizaki et al's (1994) claim that Japanese children shift from left unilateral to bilateral at the age of around six, Tsunoda's critical period hypothesis is also questionable.

Nor is there any support for such notions of laterality asymmetry from the clinical literature on aphasiology and brain damage. If Tsunoda's hypothesis were correct, we would find that aphasics, regardless of handedness, with lesions in the left hemisphere would exhibit processing difficulty with vowel sounds. No such study supports this possibility and in fact, this possibility is actually negated in a study by Monoi et al. (1983) which reports asymmetry in processing vowels and consonants by conduction aphasics and Broca's aphasics. Monoi et al. attempt to determine patterns of speech sound errors distinguishing Broca's and conduction aphasia, as well as whether repetition and spontaneous speech production tasks would have different effects on their performance. Their findings reveal that conduction aphasics showed as many errors on vowels as on consonants, while Broca's errors were mostly confined to consonants.[3] Given that their lesions are localized in the left hemisphere, Tsunoda's lateralization hypothesis cannot account for such differences in impairments. Tsunoda would wrongly predict that, regardless of aphasic type and regardless of handedness, aphasics who develop lesions in the left hemispheres will manifest processing difficulty with vowels and environmental sounds.

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[3] Conduction aphasics exhibited both substitution and transposition errors, while Broca's aphasics exhibited mostly substitution errors. Phonetic feature analysis of the consonantal substitution errors for Broca's aphasics were characterized by a high percentage of single-feature errors on both tasks, while this was only true for conduction aphasics' performance in the repetition task.

3. Laterality Preferences in *Kana* and *Kanji* Processing

Very simply, there are a variety of pervasive beliefs about the uniqueness of the Japanese language which extend into the area of language processing and Tsunoda is only an extreme recent example. Given this elaborate infrastructure of folklore regarding the Japanese language, the Japanese world view and now the Japanese brain, we attempt here to focus on one of the pervasive misconceptions regarding information processing and the Japanese brain. It is well-known that Japanese has one of the most elegant and, at the same time, one of the most complex writing systems among extant languages. Japanese employs a logographic system derived from Chinese characters, commonly known as *kanji*; it also uses two syllable-based *kana* systems based on simplifications of those Chinese characters, commonly known as *hiragana* and *katakana*; and recently, it also widely uses graphic symbols based on Roman alphabetic applications of what is commonly called *romaji*. Part of its intricacy comes from the fact that three of its four graphic subsystems focus on different aspects of language structure, namely, syllable structure for *kana* and words and morphemes for *kanji*. But this very dichotomy between *kana* and *kanji* as foci in language processing has given rise to several widely-held assumptions about laterality preferences and information processing of *kana* and *kanji* by the Japanese brain. Thus, we now review both the psychological literature and the medical literature on *kana* and *kanji* processing in Japanese, in an attempt to evaluate common interpretations about claims regarding lateralization and brain asymmetry in information processing involving language comprehension through reading tasks in the visual modality.

3.1. The Classical View of *Kana* and *Kanji* Processing

Results from the early pioneering studies by experimental psychologists gave rise to the widely-held assumptions that phonologically-encoded *kana* are processed exclusively in the left linguistic hemisphere, while semantically-encoded, visuospatially-oriented *kanji* are processed in the right hemisphere. Early tachistoscopic studies of visual half-field recognition for high- and low-familiarity *kanji* seemed to show left visual field (and thus right hemisphere) superiority for *kanji* and right visual field (and thus left hemisphere) superiority for *kana*. For example, Hatta's (1977a) experimental results demonstrated left visual field superiority for *kanji*, leading the author to suggest that Japanese orthography might therefore contrast with Latin scripts in respect to cerebral asymmetry of function. Sasanuma et al. (1977) also tested normal subjects for laterality differences in performance when *kana* and *kanji* are tachistoscopically presented in the left and right visual fields. The results showed *kana* and *kanji* to be processed differentially in the cerebral hemispheres, with performance on the *kana* task showing right visual field superiority and the *kanji* task a left field advantage. Such results were also supported by experimental manipulations of the Stroop test.[4]

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[4] The Stroop effect refers to an experimental technique which tests an individual's ability to separate word and color stimuli, and to react to them independently. Color words are printed in black ink, symbols are printed in colored inks, and words are printed in colors which do not match the color named by the word. Subjects are found to more quickly name colours when the stimuli presented are colour patches or X's in the specific color than when colours are presented as words written in alphabetic symbols which are colored differently than the color to be named. Very simply, imagine trying to verbalize the name for the color *red* when the word is presented in blue print.

For example, Hatta (1981) reports that Stroop test color stimuli produced greater interference in the left visual field when subjects were responding to *kanji* stimuli; such interference was not found for *kana* stimuli in the same visual field. These results were interpreted as indicative of the fact that the right hemisphere is specialized for processing *kanji*.

This classical view of left vs. right was also supported by several early clinical studies. Sasanuma (1977), for example, presents results for two *kanji* and *kana* processing tests given to 10 Broca's aphasics, 10 simple aphasics and 10 cerebrally damaged patients without aphasic symptoms. The most striking result of these tests was that the Broca's group showed a clear asymmetry in processing *kanji* and *kana*; their success rate in *kanji* processing was roughly around the 50% mark, whereas their success rate in *kana* processing was almost 0%.[5]

To account for this poor *kana* performance by Broca's patients, Sasanuma re-iterates a view of cerebral lateralization in which the right hemisphere, dominant for gestalt pattern-matching, is also responsible for *kanji* processing and in which the left hemisphere, dominant for sequential, analytical processing, is also responsible for *kana* processing.

Not surprisingly, such binary assumptions have filtered down into the popular literature, aligned with the constellation of free-floating assumptions about unique Japanese cognitive strategies, and now form part of the canon of belief about information processing by the Japanese brain in both Japan itself and abroad.

3.2. Evidence in Contrast to the Classical View

This classical view of lateralization is, however, not in keeping with the flood of evidence from more recent psychological and clinical studies. Since the late 1970s, a large number of studies have dealt with *kanji* processing and lateralization, and the results reported by many of these studies do not square with this classical view of lateralization. It is worth reviewing some of the more pertinent of these experimental or clinical studies for the insights they offer about universality vs. language-specific characteristics of information processing by language users.

3.2.1. Experimental Studies from the Psychological Literature

Experimental studies in this recent paradigm must be evaluated to examine the effect of two main experimental variables, the experimental stimuli involved and the specific tasks posed to the subjects. In general, studies which employ tachistoscopic tests with normal subjects report that those physical variables in *kanji* which have visuo-spatial implications, such as the number of characters, number of strokes, size and rotation angles, and duration of exposure, show no decisive effects on lateralization for *kanji* processing. In contrast, those features which can be construed as qualitative variables, such as concreteness, familiarity and part-of-speech classification, strongly influence lateralization (see Nagae, 1992). For example, abstract and/or unfamiliar *kanji* which are adjectives or verbs exhibit stronger left hemispheric superiority than do concrete and/or familiar *kanji* which are nouns. Furthermore, as we shall see in a later section,

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[5] Notably, all of their *kana* mistakes involved distinctive feature effects with preceding or following phonemes.

many subsequent studies also report that lateralization is not solely influenced by these qualitative variables but also by the depth of processing involved in a specific task.

3.2.1.1. Physical Stimuli

Most work reports that physical stimuli, such as the number of characters, number of strokes, size and rotation angles and duration of exposure, have no decisive effects on lateralization. For example, the number of strokes, or *figural complexity* in the production of the orthographic symbol in *kana* or *kanji* was examined as a potential factor inducing such potential asymmetry. Bussing et al. (1987) tested 115 German subjects with *kana*, simple *kanji* and complex *kanji*. The task consisted of indicating, as quickly as possible, whether two stimuli presented in sequence were the same or different. Visual field differences were not found for any of the script types and the expected left field advantage for higher figural complexity in complex *kanji* was not found. The results from this research paradigm generally suggest that figural complexity has no effect on the identification of *kanji* and *kana*.

In respect to *absolute size*, there is no evidence which directly links the effect of letter size in *kana* and *kanji* processing to laterality preferences (Nagae, 1992). In fact, work by Kanda (1984) on letter size suggests that the size of characters does not have any effect on the processing of *kana/kanji* symbols and thus has no effect on lateralization.

Rotation angles may affect lateralization and it is generally reported that rotated characters have left visual field advantage. For instance, Hayashi and Hatta (1978) examine laterality differences in levels of cognitive processing by using a mental rotation task in which subjects matched rotated *kanji* characters with upright *kanji*. Their finding was that not all mental rotation is processed in the right hemisphere, but that when a sizable mental rotation task requires the use of verbal mediators, the left hemisphere contributes more than the right hemisphere to task performance. In other words, although rotation may incur some lateralization differences in performance, these effects do not stem from rotation alone. This conclusion is further supported by Nishikawa and Niina (1981), who failed to find visual field differences due to rotation in their experimental investigation of this variable.

Duration of exposure is not a decisive factor either. Many previous tachistoscopic studies employed an exposure duration raging from 50 msec to 200 msec, demonstrating that duration of exposure does not have a significant effect on lateralization. Worth of note, however, is the fact that once the duration of exposure exceeds 200 msec, the visual field effect cannot be effectively measured because information has already begun flowing across the corpus callosum. When defective studies which do not control for this fact are excluded, one concludes that duration of exposure does not have an effect on lateralization (Nagae, 1992).

3.2.1.2. Qualitative Stimuli

In contrast to such physical stimuli, language-based qualitative stimuli, such as part-of-speech classification, familiarity and concreteness can have significant effects on lateralization. An early experiment by Elman et al. (1981a) on *part-of-speech classification* has subjects verbally report the grammatical category of each word, at the same time their reaction times to

tachistoscopic presentation of the word were taken as the response measure. The results suggest that lateral differences for processing *kanji* are less clear than previously claimed, with the expected right hemisphere superiority obtained only for nouns, but not for adjectives and verbs. Adjectives and verbs were in fact processed more rapidly in the right visual field, thus suggesting left hemisphere superiority. One reason why part-of-speech classification show such lateralization effect is that nouns tend to denote high imagery objects while adjectival and verbal items fail to provoke such imagery. A more linguistic explanation may be found in the fact that verbs and adjectives usually constitute predicates in propositional logic terms, thus constituting the basic framework upon which propositions are based and into which the noun-like arguments are embedded.

Many studies also report the significance of *familiarity* on lateralization (see Kess and Miyamoto, 1994). For instance, Kawakami (1993) examines the effect of script familiarity on lexical decision tasks in an experiment which created familiar/unfamiliar words, three to five *kana* in length, by writing half of the stimulus words in the *kana* script they are not usually written in. Subjects judged whether these stimuli, some of which were misspelled, were real words. Reaction times increased in proportion to word length for unfamiliar script words, but this increase was not found with familiar script words. Kawakami's conclusion is that visually familiar sequences of *kana* are treated as chunks in reading, but that visually unfamiliar sequences are not. In other words, familiar words have more left visual field (and hence right hemisphere) advantage than unfamiliar words due to their visual familiarity as holistic images. *Concreteness* also appears to have an effect. For instance, Ohnishi and Hatta (1980) report that when high concrete *kanji* are presented to the left visual field and low concrete *kanji* to the right visual field simultaneously, high concrete *kanji* are processed better than low concrete *kanji*, showing that concrete *kanji* have a left visual field (and hence right hemisphere) advantage. Hatta (1977b) also tested for processing differences for *kanji* with highly concrete meanings, as opposed to those with highly abstract meanings. His findings once again show that concrete *kanji* are more correctly recognized in the left visual field than abstract *kanji*. This finding was later replicated by Elman et al. (1981b) who report that there was a right hemisphere advantage for concrete *kanji* nouns, but that the left hemisphere was superior in identifying abstract *kanji*.

In sum, as far as the actual size, shape and dimension of the experimental stimuli are concerned, physical stimuli have no significant effect on lateralization. But, qualitative stimuli, such as familiarity and concreteness of orthography, can be seen to have significant effects on laterality preferences.

3.2.1.3. Experimental Tasks

Having examined the effects of experimental stimuli on lateralization in the majority of studies, we might also examine the effect of the types of experimental tasks which are asked of subjects. That is, do the cognitive manipulations posed by the differing requirements of the various graphemic, phonemic and semantic tasks employed with subjects have any effects on lateralization of *kana* and *kanji* processing?

Experimental studies which employ *graphemic processing tasks* generally have a pair of letters presented simultaneously to just one visual field for identification, in order to avoid any involvement of memory. Many previous studies (see Kess and Miyamoto, 1994) show that when there is an advantage, it is usually a left visual field (and hence right hemisphere) advantage. This generalization is hardly surprising, given that the right hemisphere is dominant for holistic gestalt interpretations and visuo-spatial pattern-matching, and thus must be responsible for the analysis of configurational aspects of *kana* and *kanji*. This generalization works for *kana* as well, as demonstrated by both Kawakami (1993) and Besner and Hildebrandt (1987). Familiar *kana* words can be treated as visual chunks (i.e., by recourse to a deep orthography) and can be processed without intervention by phonemic decoding procedures. When pure graphemic processing tasks are involved, even *kana* words show this left visual-field (and hence right hemisphere) advantage.

With *phonemic tasks*, the procedure is usually presentation of language stimuli, either in sequence or parallel, to one of the visual fields for identification. Not surprisingly, much previous work (see Kess and Miyamoto, 1994) demonstrates a right visual field advantage, not only for syllabary-based *kana* but for the morphemically-based logographic *kanji* as well. This finding is also not surprising, in that the left hemisphere is dominant in phonemic processing, given that *kana* are syllabic symbols which are endowed with phonemic properties and which must be mediated by a phonological processing route. And *kanji* are at times also endowed with phonemic properties, with one part of the character suggesting the reading (that is, the phonological interpretation) of the Chinese character. And ultimately, of course, for all *kanji* employed in lexical access and word recognition tasks in the reading modality, a phonological interpretation must be given to the *kanji* in question. Thus, if a task involves phonemic processing of either *kana* or *kanji*, there will be a laterality effect, with dominance preferences exhibited by the left hemisphere.

Lastly, *semantic tasks* reveal a similar pattern of laterality preferences for the left hemisphere. Such investigations have usually employed categorical grouping or identification tasks, as well as the more exotic technique involved in the Stroop task. Most experimental studies based on such semantic tasks report a right visual field (and hence left hemisphere) advantage for *kana* and *kanji* processing tasks when there are semantic overtones. For instance, Hayashi and Hatta (1982) examine the relationship between semantic processing and laterality effects by measuring response times in a categorial classification task with *kanji*. The results demonstrate right visual field superiority regardless of response hand for both concrete and abstract *kanji*, suggesting superiority for the left hemisphere in the semantic processing required for *kanji* categorization.

Finally, there are other less traditional approaches which examine the interactive effects of graphemic, phonemic and semantic tasks on lateralization. A recent study which illustrates this point is found in Sekiguchi and Abe (1992), which illustrates how laterality preferences are determined by the functional requirements posed by the processing task. Hemispheric differences in *kanji* processing are examined by a sophisticated apparatus for brain-wave measurement, wherein Event-Related Brain Potentials are measured at several points in the brain, as brain-wave activity is monitored in processing graphemic, phonemic and semantic aspects of

kanji compounds. The experimental stimuli were constructed in such a way as to be able to ask subjects whether the same *kanji* was found in a pair of compounds (graphemic task), whether a given pair of *kanji* compounds was pronounced the same (phonemic task) and whether a pair of *kanji* compounds belonged to a specific semantic category (semantic task). The authors then measured brain-waves corresponding to the subjects' activation of a micro-switch in responding to these questions. Brain wave activity was significant in the right hemisphere when graphemic aspects of *kanji* were being processed; in contrast, brain wave activity was significant in the left hemisphere when phonemic and semantic aspects of *kanji* compounds were being processed. The results demonstrate further support for considering the functional effects of lateralization, one which is directly tied to functional requirements of the task before the subject and not simply to the global fact that it is a task involving *kanji* processing. That is, the criterial point is not whether the input type is *kanji* or not, but the type of cognitive function being invoked in respect to that *kanji* stimuli. The processing requirements of all previous studies should in effect be re-evaluated with this criterion in mind and simple generalizations about *kanji* vs. *kana* processing must be re-interpreted with this fact in mind.

3.2.2. Conclusions regarding Psycholinguistic Experimental Studies

It is clear that we cannot maintain the classical view, largely derived from early psychological experiments, that *kana* is processed by the left hemisphere and *kanji* by the right hemisphere. Our examination of the effect of experimental variables on lateralization clearly shows that, regardless of script type, those which invite gestalt or pattern-matching decisions exhibit a right hemisphere advantage. Similarly, those tasks which invoke familiarity or imagery consideration also exhibit a right hemisphere advantage. Very simply, familiar and/or high imagery *kana* and *kanji* words tend to be processed by the right hemisphere. And *kana* and *kanji* words denoting concrete objects also tend to exhibit a right hemisphere advantage, though concreteness must be said to be inextricably linked to imagery. In sum, regardless of script type, the configurational aspects of both *kana* and *kanji* are predominantly processed by the right hemisphere.

In contrast, the linguistic aspects of various phonemic and semantic processing tasks with *kana* and *kanji* are predominantly handled by the left hemisphere. In conclusion, hemispheric shifts in laterality preferences are very much affected by the functional requirements of the processing task, rather than by the simple feature of script type. In this respect, we may expect that the exigencies of Japanese *kanji* processing is not different than similar cognitive tasks posed by the alphabetic, syllabic and logographic symbolic types employed by other language systems.

3.3. Clinical Studies in *Kana* and *Kanji* Processing

Clinical studies of aphasic patients with unilateral brain damage or who have undergone split-brain surgery also provide useful evidence germane to this simplistic view of *kana* and *kanji* processing (see Kess and Miyamoto, 1994). There is not much doubt here either that the linguistic aspects of both *kana* and *kanji* are essentially processed mainly by the left hemisphere. The issue for some clinical neuroscientists, then, has been how to assess the nature and degree of the contribution of the right hemisphere in information processing which involves *kana* and *kanji*

input. Clinical studies in the vast medical literature seem to two opposing views: one view advocates that the right hemisphere is not involved *kana/kanji* processing at all; the opposing view accedes that the contribution of the right hemisphere is limited, but maintains that it does indeed make some contribution. Morihiro Sugishita and his research group are prototypical of those medical practitioners who advocate the first view, while Atsushi Yamadori and his research group are representative of those who advocate the second view.

3.3.1. Contrasting Views from the Medical Literature

3.3.1.1. Sugishita's View

Sugishita (1980) reviews previous studies on split-brain (commissurotomy) patients' abilities to manipulate visual and tactile stimuli, and draws several conclusions regarding cerebral lateralization. He notes that while the left hemisphere can be said to be specialized for language processing, there is no other function in which the left hemisphere is superior to the right hemisphere. Secondly, the claim that the right hemisphere is involved in several aspects of language processing (e.g., object-naming, picture-word matching, copying) must be accepted with reservation; studies which drew such conclusions often employed split-brain subjects who had undergone commissurotomy several years prior to actual tests. Thirdly, the right hemisphere is superior to the left in visuo-spatial processing, given split-brain patients' performance in copying figures such as Necker cubes and tetrahedrons. Lastly, results with split-brain patients confirm that the left hemisphere processes linguistic aspects of both *kanji* and *kana*; while the right hemisphere is involved with certain aspects of *kanji* and *kana* processing, such abilities are limited and are only observed a few years after commissurotomy. In sum, Sugishita questions the view that both left and right hemispheres are involved in language processing and that the difference between the two hemispheres resides in their functional differences.

In his findings, as well as in his interpretation of other reports in the literature, patients who have undergone commissurotomy usually exhibit a total inability in processing both *kana* and *kanji* immediately after their operations. The right hemisphere begins to regain processing ability only a few years after such operations and this is what he criticizes a number of studies for overlooking in their reported findings. What is suggested by these facts is one of three possibilities: the un-transected part of the corpus callosum has started to function to send linguistic information from the left to the right hemisphere; or some of the fibers have been restored so that the transmission of the linguistic information becomes possible from the left to the right hemisphere; or the right hemisphere has developed some compensatory mechanism which allows the right hemisphere become able to process *kana* and *kanji*. But it is not the case that the right hemisphere is itself inherently capable of processing *kana* and *kanji*, at least not according to Sugishita's interpretation of the clinical evidence for patients immediately after commissurotomy.

3.3.1.2. Yamadori's View

Others are less prone to deny that the right hemisphere also has a role in information processing where *kana* and *kanji* are concerned. The opposing view argues that, although limited,

the right hemisphere shows some involvement when *kana* and *kanji* are processed. The results derived from split-brain patients' performance in copying tasks sheds some light on this limited involvement. For example, Yamadori et al. (1983) report a case of disconnection-type agraphia coupled with alexia, caused by lesions destroying the posterior half of the corpus callosum and the left medial occipital lobe. The result was a dissociated agraphia of the disconnection type for *kana* and *kanji*, suggesting that the neural substrate for both *kana* and *kanji* writing is stored bilaterally, while the neural substrate for ordering these graphemes into a meaningful sequence is confined to the left hemisphere.

Another instance is cited in Yamadori (1980), which discusses two case studies of right-handed Broca's patients whose symptoms support the above hypothesis. Both patients were able to copy *kanji* and some *kana* with their left hands. The author suggests that the right hemisphere is therefore associated with motoric representations for *kanji* and *kana*, allowing an explanation of how these aphasics are able to copy *kanji* and *kana*. Secondly, although these patients could write single *kana*, they could not sequence *kana* into words, suggesting that the right hemisphere critically lacks the ability to sequence phoneme-dependent linguistic units. This of course matches the wisdom that the right hemisphere is specialized in processing pattern matching problems, but is unable to sequence linguistic segments.

Other evidence comes from a *kanji* and picture matching task which requires semantic processing. Iwata (1977) found 100% performance in the left hemisphere for split-brain patients; but he also found a noteworthy 56% success rate in the right hemisphere, suggesting that the right hemisphere does have some involvement in processing *kanji*. A more recent experiment by Otsuka and Shimada (1988) with unilaterally brain-damaged patients shows that left unilaterally brain damaged patients show more severe damage with *kana* than with *kanji*, suggesting that *kanji* processing involves the right hemisphere to some unknown extent. What is not known is just how much of the phonological and semantic aspects of processing *kana* and *kanji* are participated in by the right hemisphere. So far as we know at this point, the phonemic and semantic processing capabilities of the right hemisphere appear to be minimal when compared to the left hemisphere, but so far no one has clearly demonstrated the extent of the right hemisphere's involvement in *kana* and *kanji* processing.

4. Evidence from Studies in Language Learning

In addition, some second language acquisition studies offer insights which have relevance to the evidence adduced from experimental and clinical studies. This evidence is from two types of language learning tasks: one type of evidence derives from acquisition settings where Japanese are posed with the task of learning non-Japanese scripts and another type of evidence is derived from acquisition setting where non-Japanese are posed with the task of learning Japanese scripts. The general conclusion we can draw from such studies is that the processing of foreign scripts is highly dependent on familiarity and is function- or strategy-dependent. For example, when Japanese subjects are posed with the task of learning the *hangul* script used in Korean, laterality preferences are linked to their familiarity with the script. Endo et al. (1981) report just such laterality differences in word recognition before and after learning the *hangul* script. In one experiment, 34 Japanese subjects with no knowledge of the *hangul* script showed a superiority

for the left visual field; but, in a second experiment, this superiority disappeared for 18 subjects who had previously learned the pronunciation and meaning of eight *hangul* stimuli. The 16 subjects who were not given the opportunity to master *hangul* during the interval between the experiments continued to exhibit the same left-field superiority in the second experiment. The study is indicative of laterality preferences which arise from familiarity with the script type, thereby changing the information processing task facing the subjects from one of pattern-matching to one of language processing. Essentially, this invokes a difference in the functional strategies employed.

Yoshizaki and Hatta (1987) also report congruent findings for Japanese subjects learning Hebrew. This study examined the laterality effects of familiarity through learning the pronunciation and/or meaning of Hebrew words by native speakers of Japanese. Four experimental groups learned the pronunciation for Hebrew words, the meaning only, both pronunciation and meaning, or nothing. Subjects had shown no visual field advantage when tested prior to the learning experience, but those who had learned pronunciation only or pronunciation plus meaning showed a right visual field advantage after learning the Hebrew words. This study also implies that laterality preferences reflect the role of familiarity with linguistic structure, thus changing the functional dimensions of the information processing task from a simple visuo-spatial pattern-match to a linguistic processing task.

Some support is also found in Hatta and Konda (1992), who note that less familiar scripts involve more processing involvement by the right hemisphere than the left hemisphere. Three experiments test claims for sequential changes in hemispheric advantage when there is an increase in familiarity for unfamiliar stimuli, by employing unfamiliar human faces, Korean *hangul* symbols and alphabetic letters in the ornate Palace font as stimuli. In the case of the unknown script stimuli, the visual field advantage does disappear with an increase in familiarity. Obviously, laterality preferences are not script-dependent, but varies according to factors as simple as the degree of familiarity to scripts, with the consequent shift in focus from non-linguistic to linguistic processing functions.

Similar conclusions can also be derived from Tamaoka's (1994) study of non-Japanese subjects learning the Japanese script. Tamaoka tested whether durational differences in training had any effect on the formation of a mental lexicon for the Japanese language, as well as whether the first language has any effect on lexical access to the newly-formed Japanese mental lexicon. To examine the first issue, 13 native-speaking Japanese controls were contrasted with one group of 16 Canadians who had received one year training of Japanese and a second group of Canadians who had received two years of training. In the first experiment, the subjects performed a simple arithmetic task, for which numbers were written either in *kanji*, *hiragana*, or *katakana*. Both groups of the Japanese learners processed *hiragana* and *katakana* slower than *kanji*; the advanced group performed far better than the beginners, reflecting the one year advantage in processing phonological aspects of the newly acquired Japanese lexicon. In the second experiment, 15 simple *kanji* and 15 complex 15 *kanji* were presented for verification tasks. In contrast to the Japanese controls, the learners were affected by the complexity of *kanji*, making more mistakes and taking more processing time for the complex *kanji*. One explanation is that the Japanese learners must invoke the phonetic correspondence which recodes each *kanji* radical; if

this is so, then *kanji* processing was negatively affected by the complexity of *kanji* and this was especially noticeable in performance by the beginners.

A third experiment examined the processing of English loan-words which are regularly written in *katakana* when they appear in Japanese. Such loan-words were presented in *katakana* as well as in *hiragana*. For the native Japanese controls, the *katakana* representation of the loan-words facilitated their lexical access; but the language learners showed no differences in processing time between *katakana* loan-words and *hiragana* loan-words, indicating that they are not able to take advantage of the visual representation of *katakana* for loan words.

To investigate the second issue, i.e., the effect of language background on lexical access, another series of experiments was conducted with 10 learners of Japanese whose native tongue was Chinese and 17 learners of Japanese whose native tongue was Canadian English. This series of experiments was analogous to the first series describe above and showed a strong influence from the first language. Chinese subjects exhibited better performance with *kanji* than English subjects, while the English subjects performed better with *kana*, especially with *hiragana*, than the Chinese subjects.

In sum, Tamaoka's results clearly demonstrate differences between the beginners and advanced students of Japanese in their ability to achieve lexical access. The results also demonstrate that the background of a first language also makes a difference in lexical access in the second language, as based on familiarity with the requirements of a specific script type. Thus, familiarity with the L1 script can affect the processing of the L2 script, but this effect is attenuated as one advances in the acquisition of L2. Very simply, one transfers familiar, habitualized strategies for dealing with the L1 scripts to the processing of the unfamiliar L2 script. However, as one advances in the L2, one starts acquiring the processing strategies which are best suited to the L2 script, approximating more and more closely those strategies used by L1-users. Obviously, there are no script-specific or sound-specific laterality preferences which are immutably fixed, but rather they are responsive to function- or strategy-dependent adoptions required by familiarity with the piece of language structure involved and the task involved.

5. Conclusion

This paper has briefly reviewed Tsunoda's research on dichotic listening and its implications that Japanese speakers exhibit different information processing patterns when it comes to laterality preferences. Any suggestion that the Japanese brain differs from others in the *Homo sapiens sapiens* continuum is unmotivated and his claims that Japanese is uniquely different from other languages and that such uniqueness is manifested even to the level of culture and underlying espistemology is simply insupportable.

More specifically, we have examined the vast psycholinguistic literature on *kana* and *kanji* processing and reject the implication that Japanese script types and *kana/kanji* differences per se require unique information processing mechanisms which arise from laterality differences tied to script type alone. A review of the available psychological, clinical and pedagogical studies suggests rather that any lateralization effects observed with different script type are the outcome

of differences in the specific cognitive tasks posed and the functional strategies employed to cope with these requirements.

At the very least, it is clear that we cannot maintain any view that the cognitive considerations in processing Japanese orthography are unique to the Japanese brain. Nor can we main the simplistic view that *kana* processed by the left hemisphere and *kanji* is processed by the right hemisphere. The issue has more to do with the types of processing tasks involved and the cognitive requirements they impose. It is, however, safe to assume that the configurational, or graphemic, aspects of *kana* and *kanji* identification and pattern-based interpretation are generally handled by the right hemisphere, while the phonemic and semantic aspects of *kana* and *kanji* processing are handled by the left hemisphere. Conversely, we neither know clearly if, or the extent to which, the left hemisphere is involved in processing graphemic information, nor the extent to which the right hemisphere is involved in processing phonological and semantic aspects of *kana* and *kanji*. Most importantly, we are severely limited in knowing how the left and right hemisphere are interact in processing and this will obviously be the challenge for future studies in psycholinguistics, neuropsychology and clinical aphasiology.

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THE ROLE OF THE MASS MEDIA IN THE CONSTRUCTION OF JAPAN'S CULTURAL LANDSCAPE

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Introduction

One of the most distinctive images associated with Japan is the soaring form of its feudal castles. This image, composed of white walls and staggered stories surmounted by the elegant curves of tiled roofs, expresses not only the uniqueness of the architectural achievement but also suggests an analogous uniqueness to the society and culture which created these structures. The pervasive use of the image in advertising the most diverse range of products and services only underscores its symbolic reach as an iconic representation of Japan.

For the enthusiast, there exists an extensive literature which deals with every conceivable historical and architectural facet of these castles. It includes numerous inexpensive single volumes and several series of softcover books that describe the castles of every region of the country and ranges up to such sumptuously produced and lavishly illustrated luxury sets of famous castles as the one published by Shogakan at 28,000 yen per volume. However, the medium that disseminates information about castles on the broadest mass level is doubtlessly the domestic guidebook literature. The presentation and contextual interpretation of castles in this literature forms the primary theme of this paper.

The analysis is organized into four sections. The first surveys briefly the conservation and reconstruction of castles and discusses their symbolic significance as tourist attractions. The second section presents an analysis of the cultural landscape and its castles as described in a sample of domestic guidebooks. The themes developed in this analysis are pursued in the third section through a comparative analysis of the touristic and semiotic significance of castles in the European cultural landscape. The final section concludes the analysis with some general observations about the theoretical relationship between heritage architecture and cultural nationalism.

The Japanese Castle as Tourist Attraction

According to the primary reference work on Japanese castle architecture, more than 25,000 castles are documented to have existed over the course of the country's history (Kotama and Tsuboi, 1979). Most of these castles perished during the earlier centuries of incessant conflict, many others were dismantled in compliance with the Tokugawa edict of 1615 restricting domains to a single residential castle and many more fell victim to the widespread demolition of castles in the years immediately after the Meiji Restoration. A final toll was exacted by the air raids of the Second World War. Today there remain but twelve castles with their *tenshukaku*, their keep or *donjon*, still standing, and among these there is only one, Himeji Castle, which is still surrounded by a substantial fortification system of original gates, towers and parapet walls.

All of these structures have been designated as *kokuhô* or *jûyô bunkazai*, as national treasures or important cultural properties in the country's inventory of architectural heritage.

Much more numerous, however, are partially reconstructed castles. As described more fully elsewhere (Ehrentraut, 1994; 1995), these reconstructions are frequently limited to minor gates and towers, but as of 1991, they have also included a total of 56 *donjons*, generally identified as *fukugen*, *fukkô* or *môgi tenshukaku* in reflection of their respective claims to architectural and historical authenticity. Four of these structures date to the prewar decades, but the remainder have been built over the postwar decades, with the first two waves of reconstruction, called the early and late "Shôwa booms," cresting in the 1960s and 1980s, and now a third wave, the "Heisei boom," well under way with the recent completion of Kakegawa Castle in Shizuoka Prefecture (*Asahi Shimbun*, 1994:8). Generally funded through community donations and corporate contributions (Ehrentraut, 1995), these castles serve as *kyôdo shiryôkan* or *rekishi hakubutsukan*, as museums of local history and culture. While their collections are characterized individually by an eclectic range of exhibits, their common thematic emphasis rests on the cultural achievements of the feudal domain elites. Ranging from armour and assorted weaponry to calligraphy scrolls, landscape screens, lacquerware boxes and other *object d'art*, these artifacts are often scheduled as prefectural or national cultural properties.

The increasingly imaginative resurrection of such castles has not been without its opponents, some of whom have quarrelled with the fakery perpetrated through these structures (Saitô, 1990), while others have been repulsed by the "distressing fact that the whole thing is motivated by commercial interests" (*This is Japan*, 1961:111). However, the balance of opinion among the various authorities and commentators probably remains reflected in Nagai's (1979:265) tactful observation that "irrespective of the relative merits of the issue, it is undeniable that it is generally desired." However, while the economic incentives are probably recognized by everyone, this continuous boom in castle reconstruction still raises an obvious question: what makes the structures so attractive?

A partial answer to this question doubtlessly lies in the connotative meaning assigned to castles in general by experts like architectural historians and heritage conservators. On one level, their writings define castles simply as local landmarks, which "in their silence tell of history" (Nanjô and Naramoto, 1989:2). On a deeper level, however, these landmarks are interpreted as indigenous "creative masterpieces" which "reflect the innate taste of the Japanese" (*The East*, 1974:23), a taste reflected both in the beauty of the architecture itself and in the integration of its structures with their immediate natural surroundings. This integration in turn expresses the "national characteristic of a love of nature" (Fujioka, 1968:170) where "the fabricated and the natural are in harmony" and where "the former skillfully helps and uses the latter and comes to life by sinking back into nature" (Takeyama, 1961:107). In the authoritative words of Sekino Masaru, the former director of the architectural division of *bunkachô*, the Agency for Cultural Affairs mandated with the conservation of national cultural properties:

Among the various types of historical Japanese architecture, the only ones that were not influenced by Chinese architecture are castle architecture and tearoom architecture, both of which came into being at the beginning of the early modern period. The fact that we see in Japanese

castles and tearooms not only a cultural inheritance of major proportions, but a type of beauty that appeals to the modern eye is due to the sound functional principles on which they are based (1961:99).

Conceptualized as an indigenous achievement that expresses not only a distinct phase in the country's history but also a set of aesthetic sensitivities characteristic of the country's population over time, castles are thus proclaimed to be *furusato no shinbori* (Inagaki, 1984:21) or *furusato no kokoro* (Zenkoku Jôkaku Kanrisha Kyôgikai, 1988:3), the "symbol of home" or the "heart of home." Original or reconstructed, they serve as emblems of both the Japanese landscape and the Japanese people. Given this conception of castle architecture, housing museums of local history in such structures becomes singularly appropriate: since their collections are primarily dedicated to the achievements of *daimyo* culture and present these achievements as the collective heritage of region and nation, the semiotic nature of architectural form and museum artifacts complement and reinforce each other perfectly.

Whether preserved or reconstructed, these castles are therefore "relics" in Giddens' (1994:102-104) sense of the term: as "exemplars of a transcended past," they are "signifiers of a past which has no development, or at least whose causal connections to the present are not part of what gives them their identity." From this perspective, castles are examples of the abstract symbol systems that in advanced industrial societies have replaced primary interaction and interpersonal contact as the basis of social integration and collective identity (Giddens, 1990; Wrong, 1994). As such, they function specifically as "mnemonic sites" (Fujitani, 1993:87-98) or as *lieux de mémoire*, as "sites of memory": they are "moments of history torn away from the movement of history, then returned: no longer quite life, not yet death, like shells on the shore when the sea of living memory has receded" (Nora, 1989:12).

Not monuments of history but creations of selective memory, they do not serve as critical expositions of feudal miseries or authoritarian expressions of their contemporary echoes. Instead, Japan's castles uniformly symbolize a collective past transcended and transfigured by subsequent events. The conflicts expressed by their denotative function were resolved first in the unification of the country and then in the restoration of imperial rule that precipitated Japan's emergence as a modern nation state, a course of events which ultimately entailed the transformation of a rigid feudal social order into the far more egalitarian and open democratic society of today. The castles are now collective property, no longer attached to the fortunes of particular lineages nor otherwise related to the contemporary system of social stratification. The cultural achievement which they represent, both architecturally and through the museum collections housed in the reconstructed *donjons*, can therefore be celebrated as collective heritage untainted by divisive antecedents persisting into the present.

This capacity to portray an uncontested and idealized past also makes castles semiotically useful in the resolution of a current societal problem: the persistent stigmatization of Japan's national identity. Defeat in the Second World War has left the paramount symbols of nationhood semiotically contaminated and thereby created what Befu (1992:42) has called a "symbolic void." The conservative response to this stigmatization includes the development and dissemination of *nihonron* or *nihonjinron*, the indigenous study of Japan and the Japanese, the

doctrines of which "purport to demonstrate the uniqueness of Japanese culture, society and national character" (Befu, 1984:66) and to provide thereby a foundation for a collective national identity unblemished by the embarrassments of recent history. As already argued elsewhere (Ehrentraut, 1994; 1995), castles can be seen as a quintessential visual expression of these doctrines: they are not only an uncontested symbol of Japanese uniqueness but, unlike imperial funerals and shrines to the war-dead, are additionally a symbol predicated on the period of the country's seclusion and therefore free from semiotic allusions to subsequent colonial adventures and unappreciated efforts to spread prosperity under a Japanese sun. Together with the other architectural and artistic achievements of the Edô period, the castles comprise a heritage category that is ideal for helping to fill the "symbolic void" of nationhood and that, moreover, can even be safely promoted abroad through cultural exchanges like the 1988 exhibition of "*daimyô* culture" in Washington, for example (Cf. Agency for Cultural Affairs, [1991]:65-67).

Seen in this light, it is not surprising that castles attract vast numbers of visitors throughout the country (Ehrentraut, 1994). Among the larger reconstructed castles, for example, Aizu Wakamatsu reported for 1990 a total of 873,000 visitors, Odawara 503,000, Nagoya 3,699,000, Fushimi 532,000, Kumamoto 1,301,000 and Shimabara 534,000. Even minor reconstructions in touristically peripheral regions managed to draw respectable numbers: thus Kururi in Chiba Prefecture recorded 18,000, Ono in Fukui Prefecture 21,000 and Kitsuki in Oita Prefecture 22,000. As measured by admissions alone, castles with *donjons* collectively have nowadays over 15 million visitors per year and this figure may well be doubled by the visitors who only wander about the baileys of these castles and by the visitors to the many other castles with minor standing fortifications or with extant palaces and landscape gardens, among which Nijô Castle in Kyoto is doubtlessly the most famous. The feudal castle is therefore unquestionably one of the premier attractions of the cultural landscape of Japan.

From a theoretical perspective based on MacCannell's (1976) general conceptualization of tourism as a secular pilgrimage and on Graburn's (1983) conceptualization of Japanese domestic tourism as the experiential validation of the cultural landscape, castles are demonstrably major waystations on the pilgrimage routes of Japanese tourists searching their native cultural landscape for the authenticated experiences which help to formulate and validate their symbolic conceptions of individual and collective identity. However, the existence of an authenticated attraction does not guarantee its visitation, nor do expert declarations of its cultural significance automatically become common currency. It is in this context that the tourist literature, the focus of the present analysis, assumes its importance.

The theoretical importance of tourist guidebooks arises from their function as markers in tourist attraction systems (Leiper, 1990:377-381; MacCannell, 1976:109-133). Considered objectively, the multipolar and polyvalent structure of the cultural landscape of advanced industrial societies consists of a surfeit of attractions far beyond the touristic capacities defined by the holidays and vacations that comprise mass tourism. By necessity, the touristic itinerary is selective rather than exhaustive and tourists must consequently rely on expert advice to ensure that their limited time and resources will be utilized to maximum effect. It is here that the guidebook literature performs a critical function: it constructs cultural landscapes as a configuration of touristic itineraries composed of sight markers. By identifying, evaluating and

interpreting the constituent sights of these itineraries, guidebooks provide authoritative assurance that the sights are indeed worth seeing, first by their very inclusion in the itinerary and then by the differential visual and textual treatment of the sight entries themselves, the criteria for which are likely to incorporate the official designation systems that classify select aspects of the natural and built environment into hierarchies of symbolic importance. Guidebooks are therefore a significant intervening variable between the cultural production and the touristic consumption of sights. As such, they function as a major mechanism in the social construction of a society's cultural landscape and the collective symbolism expressed by its characteristics.

Castles in the Japanese Guidebook Literature

Domestic guidebooks exist in Japan in remarkable profusion. Costing generally between 500 and 1500 yen, they are prominently displayed in the ubiquitous bookstores and newsstands and are periodically updated by the revised editions and new publications that saturate a highly competitive but patently lucrative market. Individual volumes are usually issued in the uniform format of a guidebook series that covers the entire country or at least brackets its major tourist regions. The former covers touristic sights on the prefectural level and tends to focus quite exhaustively on natural features and cultural antiquities, with little attention given to the practicalities of travel. The latter format does offer substantial information on such matters as accommodation, restaurants and shopping but conversely includes fewer sights and also tends to be geographically less comprehensive in its coverage, focusing on the touristically more multipolar and polyvalent districts and, in consequence, occasionally excluding not just obscure villages but even the odd town and city.

A glance through any guidebook series will reveal substantial differences in the sight configuration of its individual volumes. These differences do not express editorial idiosyncrasies but reflect the course of local and regional histories, which have inescapably generated different inventories of events, places and structures for designation as sights. The potential magnitude of these differences can be readily demonstrated by the distribution of architectural monuments scheduled nationally as *jûyô bunkazai*, or important cultural properties. Thus the heartland prefecture of Nara, for example, accounts by itself for eleven percent of the country's scheduled traditional secular and ecclesiastical buildings, while the six prefectures comprising the entire Tôhoku region of northern Japan collectively account only for a mere five percent of this inventory (Bunkachô, 1993, internal document). No single prefecture can therefore be considered touristically representative of the country as a whole.

Given the sheer number of entries, an analysis of all volumes in several guidebook series was considered impractical. However, the variability in geographical coverage also precluded any random sampling of regions or any bracketting of the extremes in their touristic centrality and marginality. In light of these considerations, the ideal compromise proved to be Shikoku, famous for its traditional pilgrimage route to 88 temples (Tanaka, 1981): the island is divided into four prefectures of varying polyvalence and multicentrality; its sights are consistently described either on the prefectural level or for the island as a whole; and these sights potentially include four original and six reconstructed *donjons*, amounting to 25 percent and 12 percent of the respective castle categories. For present purposes, the guidebook construction of Shikoku's cultural

landscape can therefore be considered reasonably representative of the construction of the country's cultural landscape in general.

A first impression of this landscape can be formed from the sight inventories of two guidebooks to Ehime Prefecture, published respectively by Jimbunsha (1988a) and Yama To Keikokusha (1990a). The Jimbun volumes are geographically comprehensive prefectural tourist and reference works which compile their sight inventories on the basis of every municipality within a given prefecture. Each volume provides an index that differentiates these prefectural sights into a set of categories which range from select natural features to the heritage structures of the built environment. These categories are retained here in modified form to convey the multipolar and polyvalent diversity of the resultant cultural landscape.

According to the Jimbun compilers, the natural sights of Ehime thus include 15 mountains and mountain passes, 13 gorges and waterfalls, 8 islands, beaches and promontories, 10 nature conservation areas, 15 parks, 2 gardens and 24 other assorted natural features, many of which are scheduled as *tennen kinembutsu*, or natural monuments, and range from distinctive geological formations to venerable specimens of various protected trees. The sights of the built environment in turn comprise 17 castles and castle ruins, 38 shrines, 78 temples, 21 grave sites, 8 other traditional buildings, and 16 sites of ruined temples and similar historical remains. Finally, there are also 29 museums, 16 hotsprings, 3 zoos, 3 amusement parks and diverse other attractions that range from dams and harbours to a children's centre, a bullfight arena and a lighthouse complex.

Yama To Keikokusha's Joy guidebook covers the four prefectures in a single volume and exemplifies the kind likely to be used by ordinary tourists not interested in every shrine and temple on the island. The guide's section on Ehime Prefecture consequently includes only 8 mountain peaks and passes, 4 gorges and waterfalls, and 8 conservation areas, parks and gardens. There are also 12 islands, beaches and promontories and 14 other natural features, which once again range from highland meadows to scenic driveways but include far fewer trees as natural monuments. The selection of sights from the built environment is less inclusive as well. The inventory thus comprises only 3 castles, 7 shrines and 13 temples and has not a single main entry for gravestones or graveyards. Its 12 other traditional structures, however, do include a fishing village and an old merchant quarter, both of which are mentioned by Jimbun but do not have their own entry headings as such. The Joy landscape is completed by 6 museums, 3 hotsprings, 2 zoos, an amusement park and the light house complex.

The landscapes constructed by these two guidebooks are clearly different, but as clearly this difference is only a matter of degree, not of kind. Both conceptualize sights in terms of the same set of categories and consequently generate landscapes that differ from each other only in the degree of their inclusiveness or exhaustiveness and not more fundamentally in their categorization of sights nor, as will be seen below, in the criteria of their inclusion. Nevertheless, the differences between them also show that no single guidebook can be considered representative of the entire mass medium. The subsequent analysis of Shikoku's cultural landscape is therefore based on a sample of ten guidebooks which bracket the variance in touristic interest levels and in the social background of classes and class fractions these theoretically express. The sample thus

ranges from scholarly publications that focus nearly exclusively on cultural antiquities and natural attractions to more popular guidebooks which additionally identify local foods and handicrafts and which also provide extensive practical information on hotels, restaurants and souvenir stores as well as such other travel matters as bridge tolls and ferry timetables.

Probably the most authoritative series in the former category is published by Yamakawa Shuppansha. Prefectural in scope like the Jimbun series, its individual volumes are compiled by prefectural cultural association whose contributors are predominantly highschool teachers and who otherwise consist of university professors and museum curators. The remaining eight guidebooks also belong to national guidebook series but cover the four prefectures of Shikoku in a single volume, as is indeed the standard practice. Differentiated in cost and format, and especially in the number of their entries, they are clearly targetted at different segments of the broader mass market, most obviously, of course, when published by the same company. The complete guidebook sample is given in a footnote to Table 1.

The table presents the entry frequencies of the three major categories of architectural heritage together with two entry ratios measuring, respectively, the relative importance of architectural sights as proportion of the total number of sight entries and of castles as proportion of the total number of architectural entries. Since there is no consistent usage, the castle category includes castles with extant superstructures and castle ruins where little more is left than crumbling foundation walls hidden in the underbrush. Other traditional structures, like *daimyo* residences, domain inns and ordinary farmhouses, are very few in number and have therefore been excluded from the tabulation.

The pattern of sight frequencies and ratios expresses the pronounced variance between individual volumes both in the absolute number of entries and in the relative emphasis placed on the different sight categories. Serving different market segments, no guidebook can thus be considered representative of the entire medium: the more authoritative and comprehensive the series, the greater becomes the proportion of architectural sights, which amount to about 30 percent of all entries in the Yamakawa, Jimbun and JTB Shin Nippon guides on the one hand, and to a mere 11 percent of the JTB's Esu entries on the other. However, this said, the table also makes evident that every guidebook advocates visits to at least some castles, shrines and temples. At the same time, however, there is no relationship between the comprehensiveness of a guidebook and the ratio for its castle entries: even where the architectural entry ratio itself is low, a core number of six to eight castles remains consistently featured and, in two of the least comprehensive budget guidebooks, these castles actually amount to a quarter of their architectural sights.

The same pattern can be observed in respect to the illustration of entries, reported in Table 2. Once again there are substantial differences between volumes in both the total number of illustrations and the number devoted specifically to architecture, the ratios for which range from .12 to .58, or from about a tenth to half of all the illustrations. In general, however, the illustration ratios are higher than the entry ratios, and this holds also for the castle category specifically, which garners a disproportionate number of illustrations in seven out of the ten guidebooks. In the case of the Shobun U and Mapple guides, for example, castle photographs comprise eight out

of 24 and six out 16 illustrations respectively. Considered together, Tables 1 and 2 show that across a wide range of guidebooks, castles are consistently identified as touristic sights in Shikoku's cultural landscape and that their touristic importance is visually highlighted by a disproportionate number of illustrations.

Table 3 attempts to measure more precisely the touristic significance of castles along several textual and visual dimensions. In the former domain, the most obvious measure is simply the identification of a castle as a sight in a specific locale. The table shows that the four castles with original *donjons* are invariably identified and so indeed are most of the reconstructed *donjons*. Already by this criterion alone, castles therefore form an important sight category in the cultural landscape.

The one clear exception to this pattern would seem to be Kawanoe Castle, but this is not a function of any devaluation of its heritage significance: not only was the *donjon* a very recent reconstruction but the city itself lies in one of those touristically dead zones created by most guidebooks through their selective mapping of the touristic landscape. In six of the guidebooks, there is thus simply no entry for Kawanoe City, which falls between the mapped regions of Takamatsu in the east and Matsuyama in the west. Nor is Kawanoe's situation unique. Also encountered at Fukuchiyama in Kyoto Prefecture and Ogaki in Gifu Prefecture, for example, the resultant touristic marginalization was doubtlessly a major reason behind local initiatives to reconstruct the respective castle *donjons* and thereby increase the cities' competitiveness in the regional tourism market.

The other textual dimensions attempt to measure the sight prominence expressed by the basic entry pattern with greater precision. The first measure is predicated on the general tendency of Japanese guidebooks to rank the sights in a given locale by describing the most important ones first. By that criterion, the original castles once again are the most prominent, obtaining ratios between .80 and .90, but even among the reconstructed castles, Imabari, Nakamura and Okasaki are cited in about half the guidebooks as the premier attraction of their respective locales.

The same pattern holds for the amount of space allotted to an entry: four of the castles have nearly always the longest entries and even when that is not the case, as with Marugame, the castle is likely to be the second longest entry. Among the ten castles, only Hiwasa is consistently demoted to short entries ranked behind the town's other attractions, which are generally identified as a temple, a turtle museum, a beach and a stretch of coastal cliffs. This low touristic status presumably is a due reflection of Hiwasa's marginal architectural and historical significance (Cf. Nanjô, 1989:397).

The final textual measure of touristic prominence is the entry ratio, which controls for the variance in the multipolarity of different locations. The predominantly low entry ratios show that most castles are situated in highly multipolar areas. By the Jimbun listings, for example, Matsuyama has 49 sights, Kôchi 50 and both Marugame and Uwajima 14, while Hiwasa and Kawanoe have only five and two attractions respectively. Thus the lower the entry ratio, the more striking the relative prominence bestowed by the rank and length of the castle entry: all original castles as well as the larger reconstructed *donjons* are thus unquestionably among the premier sights of their areas.

The second general domain of prominence refers to the visual presentation of sights in the guidebooks, which is measured first by the illustration of an entry through photographs, sketches or site plans. As the picture rates of .70 to 1.00 indicate, original *donjons* are nearly invariably illustrated and even Imabari's impressive reconstructions are considered worthy of a photograph in seven of the ten guidebooks. Hiwasa Castle, on the other hand, was so favoured in only a single instance.

The final measure is the picture ratio, which complements the entry ratio by expressing the relative visual importance of a castle illustration in relation to the number of illustrations devoted to the other sights in its locale. The ratios for the original *donjons* show that they account for a fifth to a third of the respective illustration totals and similar ratios obtain for most of the reconstructed *donjons* as well. Only Hiwasa Castle once again fares rather poorly, warranting only a single photograph out of the twenty which the guidebooks collectively expended on the town's attractions. In most cases, therefore, the illustrations highlight visually the textual prominence of the castle entries.

In summation, the guidebook treatment of castles is highly differentiated in terms of their historical importance, the heritage status of their structures and the touristic polyvalence and multipolarity of their immediate location and general region. In the present context, however, the most significant fact is that most guidebooks list even minor reconstructions in touristically marginal areas: indeed, there is not a single castle which has been entirely excluded by the guidebook sample.

While these measures establish the touristic importance of original and reconstructed *donjons* in quantitative terms, they do not, of course, convey any sense of the qualitative characteristics of the entry content itself. This content is characterized by three basic themes: the identity of the lineages holding the castle, the history of its construction and as appropriate, the heritage status and aesthetic merits of extant structures or the contemporary function of the reconstructed *donjon*. In the longer entries characteristic of the Jimbun and Yamakawa guides, these themes can be developed into quite detailed stylistic analyses of the entire fortification system and into cameo histories that focus on *daimyo* lineages, domain transfers and the intricacies of *bakufu* politics. Most guidebooks, however, provide only a basic outline. A representative example of this format is the JTB entry for Matsuyama Castle, which reads in its entirety:

Located on the top of Mount Katsu in the centre area of the city. A castle built in 1602 (Keichô 7) by Katô Yoshiaki, one of the seven lances at Shizugatake, it had originally a *donjon* of five floors but Matsudaira Sadayuki converted it to three floors. After that time, there repeatedly were fires, so that surviving from around the foundation period are merely the northwest tower, field tower, hidden gate, stone walls and ramparts. The *donjon* was reconstructed in 1854 (Ansei 1), the minor *donjon*, *tamon* tower, south and northern corner towers in Shôwa 43. With the further rebuilding of the gate of the heavenly gods in Shôwa 54, the northwest gate in Shôwa 58 and the northeastern gate and second eastern tower in Shôwa 59, the grandeur of the original period has become recaptured. The entire area has been turned into a park and is a famous place for cherry blossoms (Nihon Kôtsû Kôsha, 1988:267-268).

The entry concludes with a listing of the 20 structures scheduled as national cultural properties, a wealth of cultural heritage which presumably renders any further exposition of the site's cultural importance redundant. The other guidebooks in turn describe Matsuyama Castle in much the same terms, from allusions to Yoshiaki's heroics at Shizugatake to the inclusion of further architectural nuances. Thus the Jimbun (1988a:17) entry, for instance, reads in part: "Scheduled as a national historic site, and with Himeji Castle and Wakayama Castle one of the three large hill castles in our country, it has become the symbol of Matsuyama's tourist attractions." In addition, most guidebooks also emphasize the castle's aesthetic virtues, commenting on the "elegance of the *donjon*" (Shobunsha, 1992:84), on the "splendid form" (Jitusgyo No Nihonsha, 1990a:152) and "magnificent composition of the hill castle" (Yama To Keikokusha, 1990b:95) and on the "unaffected magnificence of the Momoyama period's style of castle architecture" (Yama To Keikokusha, 1990a:20).

Except for this aesthetic aspect, the treatment of reconstructed *donjons* is not much different. In the case of Nakamura Castle, for example, one of the budget guidebooks gives the following succinct entry:

Castle ruin from the time of the Ichijô clan, now turned into a park, a famous place for cherry blossoms. In its centre is a *donjon* patterned after Inuyama Castle, the interior of which has been made into the Hata [region] local history museum (Yama To Keikokusha, 1990b:122).

The existence of Nakamura castle is acknowledged by eight of the other guidebooks and these essentially repeat the same basic information. All thus state that the reconstructed *donjon* houses a local history museum; six mention the cherry trees, with four actually claiming that they number three thousand; and five guidebooks also identify Inuyama Castle as the *donjon's* model, with the Jitsugyo guidebook even explaining that, since the original castle had been razed in compliance with the Tokugawa castle edict, "there was no documentation from the ancient period of Nakayama Castle" (Jitsugyo No Nihonsha, 1990a:147) - more information, incidentally, than provided by the encyclopedia entry, which only notes that the museum was built to "imitate" the original castle (Kotama and Tsuboi, 1979b:364).

This pattern of identifying castles is repeated throughout Japan. The eight other extant *donjons* are identified as cultural properties or national treasures and are described in appropriately elevated language: thus Matsumoto Castle is praised for its "artless beauty" (Jimbunsha, 1982:121) and Inuyama Castle for its "beautiful shape" (Jitsugyo No Nihonsha, 1990b:56), while Himeji Castle, of course, is the subject of superlatives. Supposedly resembling a white heron taking wing, it is celebrated for its "graceful form" (Hoikusha, 1981:28) and "refined shape" (Jimbunsha, 1989a:115), its "exquisite architectural beauty" (Yamakawa Shuppansha, 1990:82), its "elegantly refined structure" (Nihon Kôtsû Kôsha, 1984:44), its "unequalled beauty" and "sublime construction" (Shobunsha, 1990a:110) and "the beauty of its external appearance, for which it is counted as one of the most famous castles of the world" (Shobunsha, 1990b:288).

As for reconstructions, the existence of major *donjons* like Wakamatsu, Nagoya, Osaka, Hiroshima and Kokura is invariably noted and even very small *donjons* like Kururi in Chiba Prefecture, Tenshinyama in Saitama Prefecture and Kamioka in Gifu Prefecture are quite

consistently included in the guidebook itineraries. On occasion such castles are even considered praiseworthy on their own merits. Thus Shobun's *Nihon Bunko* guide (1991:190) to southern Kyushu first advises the reader that Aiya Castle, dismantled in the 17th century and therefore of unknown appearance, is not a reconstruction but only the recreation of an ideal castle from the Warring States period, but then observes that the thickness and heaviness of its timber construction is nevertheless *subarashii*, or wonderful. Duly illustrated, Aiya castle is thus presented as a premier sight in the outskirts of Miyazaki City.

In summation, Japanese domestic guidebooks collectively present castles as authentic "sites of memory." Their interpretation of these sites echoes expert opinion in the case of original structures but sets expert reservations aside in the case of reconstructed castles, which are not dismissed as objectionable instances of architectural fakery but identified and illustrated as legitimate sights in their own right. The pattern of sight inclusion and interpretation is therefore consonant with those tenets of *nihonjinron* that emphasize the uniqueness of Japanese cultural achievements and the uniqueness of the aesthetic sensibilities these achievements express. It is in this general sense that guidebooks contribute not only to the popularization of castles as tourist attractions but also to the dissemination of their heritage image as an untainted symbol of collective regional and national identity.

Castles and the European Cultural Landscape

A broader perspective on the semiotic function of Japanese castles as national symbols can be gained by a comparison with their counterparts in Europe. Here numerous castles have survived the vicissitudes of centuries either as substantial ruins or as residential buildings altered according to the changing tastes of their aristocratic owners, and many others are imaginative reconstructions or fanciful imitations erected during the romantic revival of the 19th century. Whatever their claims to authenticity, they constitute significant sights in the national cultural landscapes.

In the case of Britain, for example, a nation famous for its castles, the authoritative Cambridge Guide to the Historic Places of Britain and Ireland lists among its more than 2000 entries also 150 castles (Hudson and Nichols, 1989); a guide to the historic monuments in England and Wales under state care gives castles even considerable prominence by including 95 in its total of 300 entries (Sturdy and Sturdy, 1977); and popular travel magazines like British Heritage regularly feature articles on castles as touristic attractions, as did, for example, a recent issue on the "100 Best Castles" in the country (Saunders, 1995). From a touristic perspective, perhaps the most striking difference between these castles and the castles of Japan lies in the fact that in Britain a substantial number has remained in private hands. These include not just the obscure manors of minor gentry but famous castles still occupied by the very same aristocratic lineages that had held them over the centuries: thus Alnwick, Inverary and Thirlestane, for example, which are the seats of the Dukes of Northumberland, of Argyll and of Lauderdale respectively. As the guidebooks advise, public access to such castles is frequently denied completely or restricted to guided tours through select quarters, where ordinary mortals may appreciate the cultural sophistication of their betters. As such, these castles continue to serve as architectural expressions of the feudal antecedents of the British stratification system and

therefore constitute cultural reproductions of contemporary class relations. Occasionally, of course, when an ancient lineage falls upon hard times and must relinquish the ancestral seat, they also symbolize social change: thus the sale in 1978 of Warwick Castle by the Grenvilles to Madame Toussaud's (Furtado et al., 1987:144) and more recently, the case of Beaufort Castle, the residence of the Lords of Lovat, which has been placed upon the market "in one of the most dramatic sales of the late 20th century" (Financial Times, 1995:x). In either instance, however, the castle clearly symbolizes not the resolution of historical forms of social inequality but their persistence into the present.

Similarly without parallel in Japan is the commodification of castles as tourist hotels, either by their aristocratic owners or by entrepreneurial interests which acquired the property for such development. A case in point is Bothwick Castle, dating to 1420 and described in a reference work as "the highest tower house in Scotland and in many respects one of the best preserved and most impressive of our medieval buildings" (Lindsay, 1986:87). It is now advertised as a hotel with due attention to its association with the tragically romantic figures of Bothwell and Mary, Queen of Scots: apparently the "State Room, where she danced with the Earl of Bothwell, and the small chapel where she prayed are today the guests' drawing room, while the bedrooms they used are favourites, featuring four poster beds" (Chester, 1989:176).

Another country famed for its castles is Spain. Here too the persistence of social inequalities rooted in feudal antecedents is symbolized by castles still retained by ancient aristocratic lineages, and so is the commodification of castles through their conversion into national *paradors*, the castle hotels officially established to encourage regional tourism throughout the country. Yet arguably the most distinctive feature of the Iberian touristic landscape are the innumerable Arabic castles, many stark ruins, others preserved or reconstructed, which commemorate the centuries of conflict between Islam and Christianity. Guidebooks and touristic reference works are thus replete with entries for castles like Gormaz on the Duero, "the most important of the Caliphates's fortifications in the central north of Spain," which "was able to delay for a century the reconquest begun at Osma at the beginning of the millennium" (Ridruejo, 1974:177), or Córdoba, "the alcázar in which was imprisoned Boabdil, the last Moorish king of Granada" (Hierro, 1979:20) and, of course, the Alhambra itself, paramount symbol of the completion of the Reconquest in 1492, "burdened with tragic legends" (Lucena Parades, 1979:8). Popularized as monuments of liberation and, indeed, of the very formation of the Spanish nation, these castles once again have no parallel in Japan, where not even Shimabara, the premier monument to the Insurrection of 1637-1638, symbolizes such a fundamental and protracted conflict, nor the profound sociocultural and political differences that fuelled its passions.

Conversely, castles can also serve as symbols of the ethnic consciousness and ethnonationalism of a country's subordinate groups. This connotative function is exemplified by Castle Tirol in South Tyrol, or the Alto Adige, the part of the historical region of Tyrol ceded by Austria to Italy after World War I. Despite a policy of italianization, which during the fascist era involved the suppression of the indigenous language and the settlement of Italian migrants on expropriated lands, the majority of the population has remained German-speaking and continues to cultivate cultural, social and economic ties with the Austrian Tyrol. In this context, guidebooks

proclaim Castle Tirol to be "the ancestral castle of the country" (Südtiroler Burgeninstitut, 1995:69), "the symbol of the entire Tyrol since always" (De Concini, n.d.:148) and "the architectural symbol of the tyrolean consciousness of homeland (*Heimatsbewusstsein*)" (Klugmann, 1993:55). Housing a provincial museum and repeatedly the venue for special exhibitions emphasizing the region's historical distinctiveness, the castle serves as a symbol for transnational political efforts to create a "Europa Region Tirol" within which its northern, eastern and southern parts might once again be united in some manner and the guidebook literature clearly presents the castle in this light. Obviously, there exists not even the remotest semiotic parallel in Japan.

Probably nowhere in Europe, however, are the potential complexities of castle symbolism better illustrated than in Germany. Despite important differences in the postwar situation of the two countries (Gluck, 1991), in the present context Germany represents the ideal comparative case. Like Japan, the country is characterized by a stigmatized national identity, or is a "wounded nation," in Nolle-Neumann and Köcher's (1988) more emotive phrase, and like Japan is consequently confronted with the problem of identifying, presenting and interpreting its cultural heritage in a manner domestically and internationally acceptable (Cf. Buruma, 1994; Füredi, 1992; Kuby, 1988). Castles form a substantial part of this heritage and the categories of their conservation embrace nearly every conceivable permutation, from the gaunt ruins of strongholds razed centuries ago or simply fallen into desuetude to extensively altered residential palaces and neogothic exercises in medieval romanticism. Equally diverse is their functional range, which includes not only conversion into the standard museums of local history or aristocratic lifestyle but also service as city halls, government offices, youth hostels, apartment complexes, conference centres, private residences and luxury hotels. A few are even used as mews, outdoor theatres and orchestra halls, and at least one castle has been turned into a brewery.

A major mechanism of their popularization is once again the tourist literature: as measured by the criterion of visual prominence, the index for which ranges around .10, it consistently identifies castles as significant sights on every level of the touristic itinerary. Castles thus constitute, for example, nine percent of the 219 illustrations in the Baedeker guide to Germany as a whole (Nahm and Beck, 1992); 15 percent of the 380 illustrations of the Knaur guide to the state of Rheinland-Pfalz (Mehling, 1994); nine percent of the 240 illustrations of the Knaur guide to the region of Franconia (Mehling, 1982); eleven percent of the 177 illustrations in the HB guide to the Mosel Valley (Klugmann, 1984a); and eight percent of the 151 illustrations of the HB guide to the city of Regensburg and the surrounding Oberpfalz (Klugmann, 1984b). With due allowances for local variations in the concentration of historic monuments and for differences in editorial approaches to their popularization, castles are defined as an important sight category for every region of the country.

As their functional range suggests, the semiotic significance of these castles proves to be rather complex. Since no other area has as high a concentration of castles as the Rhineland, where they constitute one of the major attractions of a multipolar and polyvalent tourist region, it is instructive to examine their collective heritage image more closely in this setting.

A special volume on Rhine castles, issued by the HB Verlag, a major publisher of tourist guidebooks, illustrates and describes in some detail a total of 78 castles. From a touristic perspective, perhaps most striking is the information that 24 of these castles are private properties to which the public is explicitly denied access, including one castle, Katz, that has been purchased by a Japanese national, purportedly "to fulfil his dream" of living near the Loreley of folksong fame (Knoll, 1991:68). Another eight are owned by local authorities who use them for administrative purposes and thus allow only limited access at best, while the nine castles which have been converted into exclusive hotels restrict access on a commercial basis. In short, more than half of these Rhine castles are not unconditionally open to the general public.

A semiotically similarly differentiated image of Rhine castles is conveyed by another popular guidebook with English and Japanese editions (Ottendorff-Simrock, 1989). The guidebook lists 40 castles and once again more than a quarter of these are identified as private properties without public access and another four as government properties with restricted access. Privately owned castles open to the public are either substantially ruined or have been commodified as lineage museums or castle hotels, among the latter of which Lahnstein, Liebensstein and Reichenstein are actually still in the hands of titled families.

The element of commodification characterizes in some measure also the 14 accessible castles in the public domain. Thus Klopp, for example, houses not only Bingen's municipal offices and local history museum but also a large café restaurant, while the Godesburg and the Schonburg are fully developed castle hotels. Even Ehrenfels, perhaps the quintessential romantic ruin on the Rhine, now closed because of its structural instability, nevertheless still offers "barbecue facilities in the former castle garden" (Ottendorff-Simrock, 1989:44). This commodification holds not only for municipalities eager to maximize the economic return on their cultural assets but also for the ministerial department responsible for the historic monuments owned by the state. Thus the "gastronomic development" of castle ruins in its care has included, for example, the siting of restaurants into the keep of Kobern, into the reconstructed residence of Altenburg and into the reconstructed great hall of Burgschwalbach, all duly noted in the official guidebook (Backes, 1993:98,20,40).

The heritage image of the Rhine castles conveyed by this literature is thus strongly differentiated by the continued salience of social inequality and by a pronounced touristic commodification in which coffee and cake, consumed in a scenic setting, are an integral part of the site's attraction. This pattern is far from unique to the region.

Privately owned and inaccessible castles are a general feature of the German cultural landscape. Concerning the moated watercastles of the Münster region in northern Germany, for example, a foreign guidebook advises its readers: "the vast majority of the castles remain private dwellings, generally still in the hands of old aristocratic families who are alive, well, and managing very nicely without the need for extra cash from prying outsiders" (McLachlan, 1992:517). While the situation in the eastern states of the German federation remains unclear, with legal challenges seeking the restitution of expropriated properties still unresolved, this observation applies to some extent to all the western states, where guidebooks repeatedly caution that a given castle can only be admired at a distance (Cf. Fischer & Witte, 1991).

Similarly pervasive is the commodification of castles. Thus the directory of an international association of castle hotels, which for Germany lists 17 castles in addition to its many stately homes, identifies six as still in the hands of aristocratic lineages which manage them either directly or through their estate administrations (Gast im Schloss, 1992). Nor is this commodification only an expression of private enterprise: in the same brochure, the state of Hessia advertises the castles of Hirschhorn, Staufenberg and Sababurg as upscale hotels and so does the foundation in charge of the Wartburg in Thuringia, a castle described as "full of history" and "a German national monument," which in 1992 celebrated "its 925th anniversary" (Gast im Schloss, 1992:51). Given the Wartburg's significance in German history, this is somewhat akin to turning one of Himeji's minor *donjons* into a hotel.

This heritage image of variable ownership and pronounced commodification is semiotically further complicated by political themes. The Rhineland may once again serve as example, since for centuries it has been the battleground not only for the internecine squabbles of German princelings but also for the more extensive clashes of royal and national ambitions. The architectural histories of many of its castles thus record, with monotonous regularity, their destruction during Louis XIV's *Raubkriege*, the wars of plunder and pillage conducted by the French monarch in the late 17th century, or during the invasions spawned by the French Revolution a century later. In consequence, the rebuilding of many castles during the 19th century was motivated not only by the romantic flights of fancy fashionable during that era but also by the nationalist passions of the emergent Second Reich, which architecturally expressed themselves particularly through the completion of cathedrals and the reconstruction of castles (Cf. Miller Lane, 1991).

The paradigm case for this pattern is Stolzenfels. Founded around 1250, captured repeatedly by Swedish and French troops during the Thirty Years War (1618-1648), it was thoroughly destroyed by the French in 1689 during their siege of Koblenz and then rebuilt between 1836 and 1842 by Schinkel, one of the premier architects of the day, for the crown prince and later king of Prussia. The guidebook coverage of the political implications of this reconstruction, as well as the other reconstructions undertaken by royal families, aristocrats and wealthy commoners, varies considerably. Thus Baedeker grants the castle a very minor entry of two lines, in which it is dismissed as a neogothic structure that is "now a museum" (Nahm and Beck, 1992:315). The Stollfuss guide acknowledges that "since the French invasion of 1689 it had been in ruins" (Ottendorff-Simrock, 1989:73) but otherwise avoids any reference to the political implications of its reconstruction, as does the regional Knaur guide, which only identifies Stolzenfels as "a primary monument of German romantic architecture on the Rhine" (Mehling, 1994:200). On the other hand, the entry in the general official guide to castles under state care refers explicitly to "Prussian culture politics" and explains that the reconstruction of Rhine castles was intended to symbolize "the 'Watch on the Rhine' and the renewal of the [medieval] empire" (Backes, 1993:172), a contextualization which makes the studious silence of the castle's official guidebook, issued by the same state authorities, all the more remarkable (Cf. Bornheim, 1991). The reconstruction is most clearly contextualized by the popular HB guidebook in a passage in keeping with its generally ironic view of aristocratic grandeur, romantic illusions and nationalistic passions:

The fairy tale of the "good old times" of the medieval ages, when the world supposedly was still in good order and Germany above all a major empire, attracted the solid citizenry to the Rhine...Also people who were of a particularly patriotic mind travelled to the Rhine to demonstrate thereby their love of the fatherland and to show the French that the Rhine was Germany's river and not its border (Knoll, 1991:23).

The heritage image of the Rhine castles constructed through the tourist literature is thus semiotically far more complex than is the case with Japanese castles. Quite apart from expressing the themes of feudal domination, contemporary social inequality and the commodification of culture, these castles are also symbols of the perfidy of Germany's archenemy in the West, the French, and a sort of architectural *entracte* before the unpleasantries that were to follow in the modern century. As the recent celebrations of VE day have made abundantly clear, this political facet of the past is still far from transcended by the evolving supranational European community. The symbolic significance of historical monuments like border castles consequently remains rather ambiguous.

To summarize: for Japan, as argued above, castles are a cultural form with an homogenous semiotic content that is convincingly presentable as collective heritage because it is relatively free from potentially divisive echoes of traditional inequality and from politically controversial allusions to the national rivalries of the past. For Germany, however, castles constitute a cultural form with a highly heterogeneous semiotic content. As private residences they symbolize continuities in the structure of social inequality and as tourist hotels the devaluation of heritage into a mere commodity. As public monuments they remain generically burdened with allusions to imperial ambitions, foreign invasions, lost wars and discredited political ideologies. Their very inclusion as sights in the cultural landscape popularized by guidebooks therefore raises the problem of sight interpretation in a manner not faced by Japanese publishers. Instead of being readily celebrated as monuments "at the heart" of the country, German castles present a rather ambiguous and ambivalent source of collective symbolism on any level and thereby reflect the general societal uncertainty about the past and the appropriate forms of its commemoration. In its treatment of such sights, the guidebook literature consequently restricts itself to a dispassionate outline of the historical context, focuses on the architectural details of the structure and assiduously eschews any inferences to national characteristics. The symbolic use of castles for the propaganda of the Second and Third Reich is simply too recent.

Conclusion

The tourist guidebooks of advanced industrial societies perform a major role in the social construction of their cultural landscapes. They are the primary mechanism that transforms a feature of the natural or built environment into a recognized sight on the touristic itineraries through these landscapes. Moreover, the mapping process is not limited to the mere identification of sights but includes their interpretation as well, which in the case of historic monuments inescapably entails a contextual interpretation of the past. This interpretation may echo the official rationale for their designation as heritage but may also assume a more critical position that devalues and marginalizes such sights. An analysis of a country's guidebook literature therefore provides insight into the degree of conceptual congruence between the

production and the popularization of its heritage. Insofar as the cultural landscape provides the basis for symbols of collective identity, the degree of congruence also becomes a measure of the cohesiveness and pervasiveness of the political ideology embedded in its configuration.

In the case of Japan, the preceding analysis suggests that this congruence is nearly seamless, with officially designated heritage incorporated uncritically in the guidebook sight itineraries and with the tenets of *nihonjinron* indeed exercising, as Befu (1993:117-119) has argued, a noticeable measure of ideological hegemony over the interpretation of the past and its symbolic relevance for the present. This pattern is not unique to Japan, however, but is encountered in other countries as well, where castles can be popularized as unapologetic monuments to nationalism and even militarism. Thus Stirling Castle, for example, houses a regimental museum replete with memorabilia from Britain's colonial wars, the presentation and interpretation of which are bound to offend various parties (Cf. Edensor and Kothari, 1994). It nevertheless is uncritically popularized as such in the domestic tourist literature.

In this context, the issue here becomes the comparative nature of Japanese cultural nationalism. In Yoshino's (1992:1) conceptualization, this form of nationalism in general "regards the nation as the product of its unique history and culture and as a collective solidarity endowed with unique attributes"; it "aims to regenerate the national community by creating, preserving or strengthening a people's cultural identity when it is felt to be lacking, inadequate or threatened." The thrust of the analysis has been to interpret Japanese castles very much in this light without, however, considering the fundamental nature of heritage itself.

As argued elsewhere (Ehrentraut, 1994), the production of heritage is intrinsically ethnocentric: it addresses not the universals of human existence but their particularistic permutations. The resultant "sites of memory" are therefore inescapably exclusive rather than inclusive. This tendency is reinforced by the current process of cultural globalization, wherein the increasing homogeneity of the forms of expression simultaneously crystallizes the heterogeneity of their content, including the symbolic burden placed upon this content. While the designation of Himeji Castle and the Wartburg as historic monuments is predicated on identical conservation principles that are even enshrined in international conventions, their specific semiotic significance is predicated on unique historical premises that serve to differentiate the respective nationalities from each other. A measure of cultural nationalism, manifested through the designation and dissemination of particularistic heritage productions, is consequently to be expected in all advanced societies. It follows, as Yoshino's (1992:226) has suggested, that cultural nationalism is not necessarily stronger in Japan than in other countries.

In conclusion, it seems prudent to recall that cultural nationalism is not simply the product of internal social dynamics but an adaptation to external forces as well. Hopeful platitudes notwithstanding, international relations are still more a matter of competition than of cooperation, with conflict across a number of dimensions an ever-present possibility. In this competition, the continued devaluation or stigmatization of a competing nation can be considered simply as a matter of sound *realpolitik*. In this connection, the observation of Werner Fink (1966:47), a German humorist, poet and social critic, is relevant. Writing in 1945, he noted: "What stands most in the way of a lasting peace in Europe is narrow-minded German

nationalism; one should ruthlessly block off its source: the chauvinism of some of its neighbours." The frequently moralistic posturing of Japan's neighbours and trade partners, particularly evident upon the death of the Shôwa Emperor and during the recent VJ quinquagenary, suggests that, with the appropriate substitution of protagonists, this observation holds in some measure for Japan as well.

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Table 1. The Architectural Sights of Shikoku[1]

		Architectural Category				
Guidebook	N entries	Castles	Shrines	Temples	Architecture entry ratio	Castle entry ratio
Yamakawa	1876	95	193	274	.30	.17
Jimbun	1188	50	143	269	.39	.11
JTB *Shin Nippon*	556	11	26	152	.34	.06
JTB *Esu*	476	8	24	51	.11	.10
Jitsugyo *Furi*	400	9	14	36	.15	.15
Jitsugyo *New*	390	9	9	42	.15	.15
Shobun *Mapple*	306	8	10	32	.16	.16
Shobun *U*	234	8	5	20	.14	.24
Yama *Tabing*	206	8	6	21	.17	.23
Yama *Joy*	202	6	10	22	.19	.16

1. The guidebooks are as follows:

Yamakawa Shuppansha, Tokushimaken no rekishi sanpo, 1982; Kagawaken no rekishi sanpo, 1983; Ehimeken no rekishi sanpo, 1982; and Kôchiken no rekishi sanpo, 1982.

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Shobunsha, Mapple guide 30: Shikoku, 1992; and U guido 36: Shikoku, 1990.

Yama to Keikokusha, Tabing series 18: Shikoku, 1990; and Toraberu Joy 26: Shikoku, 1990.

Table 2: The Illustration of the Architectural Sights of Shikoku

		Architectural Category				
Guidebook	N illustrations	Castles	Shrines	Temples	Architecture illustration ratio	Castle illustration ratio
Yamakawa	497	42	42	89	.34	.24
Jimbun	282	14	51	108	.61	.08
JTB *Shin Nippon*	86	3	2	8	.15	.23
JTB Esu	145	6	9	17	.22	.19
Jitsugyo *Furi*	167	6	5	5	.15	.38
Jitsugyo *New*	90	11	5	17	.37	.33
Shobun *Mapple*	215	11	11	25	.22	.23
Shobun *U*	193	8	5	11	.12	.33
Yama *Tabing*	36	3	2	3	.22	.22
Yama *Joy*	65	6	10	22	.58	.16

Table 3: The Touristic Significance of Castles in Shikoku Guidebooks

	Dimensions of Significance					
Castle	entry	entry order	entry length	entry ratio	picture	picture ratio
Uwajima	1.00	.80	.80	.11	.80	.21
Matsuyama	1.00	.90	.90	.07	.90	.19
Marugame	1.00	.80	.40	.14	.70	.35
Kôchi	1.00	.90	.80	.08	1.00	.28
Nakamura	.90	.50	.80	.15	.40	.17
Okasaki	.80	.40	.20	.12	.30	.14
Sumoto	.80	.20	.25	.16	.30	.23
Imabari	.70	.40	.60	.10	.70	.29
Hiwasa	.70	---	.10	.21	.10	.05
Kawanoe	.40	---	---	.25	.30	.44

THE RISE OF THE YEN AND JAPAN'S TROUBLED INDUSTRIES INDUSTRIAL RESTRUCTURING IN JAPAN: SECTORAL AND SPATIAL OUTCOMES

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1. INTRODUCTION

This paper addresses the issue of how Japan is managing the transition from a production to a information and service sector economy. It is based on a literature review of government assistance to its "troubled industries" (such as steel and shipbuilding), as well as interviews with government officials and business executives carried out in Japan during 1992 and 1994. The study covers the period following the Plaza Accord in 1985 and the sharp revaluation of the yen. At the time of writing (mid-1995) the yen stood at around 85 yen to the US dollar, whereas in mid-1993 it stood at 120 yen to the US dollar and at 250 yen to the US dollar in early 1985 (Bank of Japan, unpublished data). The yen's persistent appreciation against major foreign currencies over the last ten years (known as *endaka*) dramatically changed Japan's competitive position vis-à-vis other Pacific countries, both in terms of comparative production costs as well as the price gap between domestic and imported goods. For example, Japanese labour was roughly 30 per cent less expensive than that in the USA before 1985, yet it finished up about 30 per cent more expensive than US labour during the early 1990s. As a result, manufacturers found their exports from Japan more expensive and harder to sell, while imports increased and found new markets (Economic Planning Agency, 1992).

These new conditions forced Japanese companies to fundamentally re-examine their production and marketing strategies. One outcome of the high yen regime has been that Japanese manufacturers have found it more advantageous to engage in international specialization through an increase in offshore production and procurement, as well as the globalization of entire corporate management and research activities (Ozawa, 1991; Edgington, 1993; Florida and Kenney, 1994).

With this background, the paper examines some of the policies and programs which have assisted industrial adjustments in Japan between 1985 and 1994 - a period which saw the adaptation of the economy from largely smokestack and assembly industries to high technology, from export led manufacturing towards a more balanced economic base favoring the domestic economy and from production to services. While there has been much research into Japanese industrial policy at a national level (see for example, Komiya et. al., 1988; Nobel, 1989; Okimoto, 1989; Wilks and Wright, 1991, and Vestal, 1993), very little has been covered at a regional level (for exceptions see Hill, 1990; Wiltshire, 1991; Fujita and Hill, 1993). This is surprising considering that much of Japanese industry has been rooted in traditional industrial communities of small firms (Yamazaki, 1980). Accordingly, special attention in this review will be paid to interpreting the geographic outcomes of Japanese corporate strategies towards *endaka* and their implications for labour markets. A related issue concerns the role of the Japanese government

policy moving Japan's comparative advantage to a more advanced industrial structure. The research draws mainly from existing studies of government restructuring programs designed to address the challenges posed by "hollowing out" (often called "de-industrialization" in North America) and provides examples of how corporate responses and government policies have intersected to produce different regional outcomes. The paper concludes by evaluating this material and reflecting on the challenges Japan will experience through further "hollowing out" in the 1990s and beyond.

2. GOVERNMENT POLICIES TO ASSIST INDUSTRIAL RESTRUCTURING

Endaka and the fear of "hollowing out" opened up a great debate about the future of the Japanese economy, its major institutions and the implications for Japan's traditional social cohesion (MacMillan, 1991). Well aware of the potential frictions, the Japanese national government took a number of actions to assist the smooth transformation of the country's industrial structure. Its overall stance toward overseas manufacturing investment and the problem of troubled, older domestic industries was set down in the Maekawa Report of 1986. This called for Japan to be more active in overseas investment in order to promote closer economic interdependence with other countries through a horizontal division of labour.

Since then, the attitude of the government and its main bureaucratic agencies has not changed. The Ministry for International Trade and Industry (MITI), for example, while acknowledging that a continued growth of direct overseas investment places pressure on domestic manufacturing jobs, feels that these problems can be overcome. It places emphasis on achieving economic growth centered on the development of new industrial frontiers and exploiting opportunities created by the shift toward a service-oriented industrial structure as Japan advances towards the "information society" (interview with M. Ogawa, Deputy Director, Industrial Structure Division, Ministry of International Trade and Industry, Tokyo, July, 1992).

Nonetheless, faced with the deterioration of the employment market situation after 1986, the Japanese government developed specific measures to support employment adjustment, particularly for structurally depressed industries and regions. Although these policies took many forms they can be divided into two major categories: those programs that encouraged employers to keep unoccupied workers within their firms in the case of a temporary business downturn and those that attempted to provide adequate assistance for job leavers from structurally depressed industries and regions. The most typical measure of the former type was the Employment Adjustment Subsidy, first put into effect in 1975 following the first oil shock. Under this measure, employers in industries designated as experiencing a depression are entitled to receive subsidies equal to half (for large firms over 300 employees) or two-thirds (for medium and small firms less than 300 employees) of the wages paid to idle workers who participate in retraining programs, transfers to affiliated companies, or who are put on temporary leave (Peck et. al., 1987).

Similar measures were taken in the case of industries where the problem was seen as structural rather than temporary and where something far short of complete recovery could be expected (examples are the declining textiles, petrochemicals and shipbuilding industries). In these

cases, legislation (also introduced at the time of the 1970s "oil shocks") enabled industries which were suffering from a long-term downturn in activity to be designated as "depressed industries," especially where overcapacity in the industry was severe. These cases were targeted to assist the restructuring of large corporations to promote smooth and permanent downsizing, disposal of excess plant and equipment and conversion, where required, to new businesses. In addition, firms in these designated industries were eligible for help with temporary layoffs and transfers, as well as MITI's assistance through tax, fiscal and monetary incentives for technological improvement and other restructuring measures (the Ministry of Transport gave similar assistance for shipbuilding) (for details of these programs see Seike, 1985; Uekusa and Ide, 1986; Peck et al, 1987; Ng et al, 1987; and Young, 1991).

Relief was also provided by MITI to small and medium enterprises in depressed industries and regions. Small and medium enterprises were found to provide a buffer which helped to absorb dramatic restructuring by playing an important role in job creation and in employing the surplus workforce released from declining industries (Ministry of International Trade and Industry, 1987). In order to aid this sector, especially small exporters teetering on the brink of bankruptcy, MITI enacted two special measures in 1986 - the Temporary Measures Law for Business in Specific Small Enterprises and the Temporary Measures Law for Small Businesses in Specified Regions (the legislation was updated in 1992). The locations comprise local communities where designated depressed industries (such as steel and shipbuilding) contributed 40 per cent of the total value of production or the total unemployment in the district. As can be seen, the affected communities tend to cluster in peripheral areas and include the cities of Muroran and Kushiro in Hokkaido, Kamaishi in Northern Tohoku, Shimonoseki in the Seto Inland Sea area of southern Honshu, and Hakata (Kita Kyushu) and Nagasaki in Kyushu. Rather than the approach adopted for the large firms in capital-intensive sectors, which mainly concentrated on planning industry-wide capacity reductions, the approach of these programs was to assist labour-intensive small and medium-sized companies provide continued employment for their workers. This was done by encouraging firms to upgrade and switch into more promising activities through low interest financing and exemption from credit status restrictions. In the current recession, however, it has been agreed generally that this type of action resulted in far fewer jobs being retained than in the past (interview with T. Konno, Small and Medium Enterprise Agency, Ministry of International Trade and Industry, Tokyo, July, 1992).

Where industries were engaged in the process of restructuring, Japan's Ministry of Labour implemented parallel legislation in an attempt to minimize the extent of the resulting dislocation. Thus the 1987 Law for Employment Security for Workers in Specified Industries and Areas provides for various subsidies for large firms in designated industries and areas of high unemployment. It promotes retraining, or employment adjustment such as *shukko*, as well as the exchange or movements of workers to more favorable locations. A second category of subsidy covers special allowances related to early retirement. As noted above, permanent discharges tend to be concentrated among older employees, so companies who wished to downsize through retiring their senior staff had to negotiate with their unions both a regular retirement bonus and an extra bonus for early discharge. Consequently, the Ministry of Labour financed part of the costs of the early retirement bonus, although not the regular retirement bonus. The Ministry also set

up additional services to help displaced workers through special efforts of job search and training by public employment offices. Moreover, in depressed areas public works programmes were encouraged to hire at least 40 per cent of the total number of workers required from among those who had lost their jobs in the process of restructuring (personal communication with Y. Tagata, International Department, The Japan Institute of Labour, October, 1994).

While detailed and up-to-date evaluations of these government programs are lacking, a number of reviews have attested to the effectiveness and significance of Japan's industrial restructuring schemes and point to the following characteristics (see Dore, 1986; Peck et al, 1987; Sekiguchi and Horiguchi, 1988; Young, 1991; and Sekiguchi, 1994). First, MITI and the Japanese government have tried to achieve a balance towards tacitly allowing currency revaluations and overseas investments to occur yet cushioning the impact on affected industries. This attention to compensating the victims may well have contributed to the relative weakness in Japan of political demands for tariff or quota protection, or subsidies to prevent declining industries from downsizing.

Second, a distinctive feature of the programs reviewed above is that employment support payments have been made to firms, not directly to workers. The effect of Japanese government support generates a bias towards labour hoarding by large firms and smoothes out the process of inter-firm mobility. This reflects the sentiment that large firms in Japan should bear responsibility for providing permanent employment until retirement age; and so the declining industries, rather than the government, have carried most of the burdens of financing and administering the adjustment process. By contrast, governments in the United States and many countries of Western Europe have tended to take exclusive responsibility for unemployment compensation programs as well as training and relocation schemes.

Third, special government support was available to assist companies and workers affected by restructuring, but only on condition that industries reduced surplus capacity and attempt to shift into more productive areas, as well as workers agreeing to participate in retraining and placement programs. This results-oriented approach has given the government a certain influence over corporate resources and the labour force, allowing it to direct firms and workers into more competitive sectors of the economy.

Fourth, the government's adjustment policy has certainly not been neglectful of small firm and regional interests. It realized that there was a close relationship between fundamentally ailing industries and geographical areas with particular employment problems. In this regard, mention must also be made of the ongoing programs of the national government to achieve greater regional balance in Japan. The Fourth National Comprehensive Land Development Plan (*Yonzenso*), for instance, has as its goal the breaking down of Tokyo's dominance and achieving decentralized development through a multipolar spatial structure (National Land Agency, 1987). This is to be implemented through a number of nationally sponsored programs and infrastructure projects - such as the new Kansai International Airport and Kansai Science City, located near to Osaka in western Japan. In addition, there are many locally based programs conducted jointly by local government and the central ministries (e.g. technopolis, new media community and teletopia),

designed to promote small and medium-scale technology-based enterprises in regions outside of the major metropolitan areas (see Edgington, 1994a).

Despite these comprehensive measures, perhaps the best contribution the Japanese government made to the process of structural adjustment and in the labour field throughout the period under review has been its overall management of the economy. Thus, following the fall in manufacturing production and investment and the rise in unemployment after 1986, the government adopted forceful macro economic policy intervention to stimulate domestic demand, such as cuts in bank interest rate and an increases in public works (Okumura, 1987). These policies invigorated the home consumer and investment markets and helped generate alternative products to those shifted overseas. In turn, they helped Japanese companies maintain profits in the face of the high yen and so softened the impact on domestic employment. In April, 1993, the government adopted a package of economic measures totaling Y13.2 trillion, the largest in Japan's history, with the aim of revitalizing the depressed economy (Makino, 1993).

Beyond mere fiscal and monetary stimulation, the government was also active in promoting more technological focussed development. While most R and D was carried out in private industry, MITI's Industry, Science and Technology Agency supported basic science and technology and made positive contributions to private R and D efforts (interview with Ogawa, op.cit.). Government bureaucracies played the important role of mediator between industry and public research institutions, such as universities, to promote cooperation in research. The government also tried to improve data, statistics and standards concerning science and technology and to promote basic research and development in specific areas such as advanced electronics, new materials, biotechnology, space and marine development. MITI also developed programs to help the promotion of new service sectors such as leisure and resort developments (see Patrick and Meissner, 1986; Okimoto, 1989; Howells and Neary, 1991; and Rimmer, 1992).

3. IMPACTS ON LABOUR AND COMMUNITY: FOUR CASE STUDIES

The four case studies described below exemplify the broad-scale review presented above and show the interplay between government, business and local employment outcomes.

3.1 Steel

Japan's steel industry, which had once been its leading industry since Meiji times had been in decline since the oil crises of the 1970s. Nonetheless, *endaka* left its own particular mark. In the two years following 1985, the yen's appreciation diminished the industry's international competitiveness and the profitability of steel exports continued to deteriorate while imports of foreign steel products soared (Kishine, 1987). The rationalization plans of Japan's largest and most spatially scattered steel maker - Nippon Steel Corporation (NSC) - may be used to represent corporate strategies in this sector. In 1986, NSC was already experiencing difficulties resulting from the oil shocks and had nine steel plants - six of which were losing money and just three of which were breaking even. In early 1987 the company instituted its "Medium and Long-term Plan" through which it intended to scale down production capacity by 30 per cent by 1990 while promoting new business in electronics, biochemistry and information services (Nippon Steel, 1987). As part of these measures NSC planned a complete restructuring and downsizing of

its work force by 20,000 employees -- a full 30 per cent of the total -- and the closing down of three blast furnaces. Two of those to be closed comprised its earliest and therefore least productive facilities; these were located in peripheral towns (Muroran in Hokkaido and Kamaishi in Iwate prefecture) where in 1985 they accounted for about half of the local economy. The other was at Sakae, part of metropolitan Osaka. In addition, pig iron production was cut back at another of its original production centers - the Yawata plant at Kitakyushu. By comparison, the newer more efficient plants at Kimitsu (near Tokyo), Nagoya and Oita (in Kyushu) gained employment following *endaka*.

In the case of Kamaishi - located in the Tohoku region, about 600 kms north of Tokyo - the wire rod mill remaining in the town after the steel plant closure only needed around 800 workers, leaving 1,500 of the 1985 work force in NSC's Kamaishi steel operations to be dealt with by transfer to Kimitsu and Nagoya, natural attrition, retirement, *shukko*, or the creation of jobs in new business fields. While Nippon Steel took great pains to look after its own workers who were made redundant, the "knock-on" effect among local subcontractors and suppliers made several thousand local people register for unemployment benefits. NSC later established some of its new diversified industries at Kamaishi and Muroran, but so far they have been very small. Philips Electronics of Holland was invited to Kamaishi in the early 1990s to engage in a joint venture; NSC transferred some of its own land to them in return for Philips taking a certain number of NSC's workers. Other NSC sponsored projects include a grain warehouse, a marine research center (sponsored by a local semi government or "third sector" agency) and a precision machinery company (interview with T. Yamamoto, Senior Manager, Corporate and Economic Research Division, Nippon Steel Corporation, Tokyo, July, 1992). The prospects of creating substantial new jobs in Kamaishi to make up for the losses in the traditional steel sector appear far from promising, due mainly to its remote location and shortage of industrial sites. Consequently it is likely that the population of Kamaishi will continue to fall in the years ahead (Wiltshire, 1991, 1992).

At Muroran, in Hokkaido, NSC was poised to close its remaining blast furnace there during 1990, but after realizing the negative impact on the community it changed its mind. Moreover, in 1992 it arranged for Mitsubishi Specialty Steel Company to come to Muroran from Tokyo, to engage in a joint venture and share both staff and steel making facilities with NSC. In a further attempt to reallocate its full-time staff, NSC set up in Muroran what has become the third largest software company in Hokkaido. Besides these corporate moves, the Hokkaido Development Agency (a national government agency) directed substantial resources into Muroran (population roughly 60,000 persons) in the form of public works schemes such as a harbor bridge, waterside redevelopment and downtown revitalization (Shingo, 1987; Edgington, 1994b). At Kitakyushu, in the southern part of Japan, NSC similarly felt it had an obligation and responsibility to continue its involvement in the local community and so kept one blast furnace. In addition, it opened a "Space World" theme park on part of its former Yawata plant, hoping that this would form the core of Kitakyushu's regional development plans to transform the steel city into one more focused on service sector growth. It is likely that both of NSC's facilities at Muroran and Kitakyushu are loss making, yet upper management appears to be resigned to this (interview with Yamamoto, op.cit.). Kitakyushu, as with Muroran, has received substantial

national government funding from both the Ministry of Construction and MITI to assist its revitalization strategies based around jobs in convention halls and hotels (Shapira, 1993, 1994).

3.2 Shipbuilding

Shipbuilding in Japan has been faced with a general overcapacity problem since the collapse of the world tanker market in the 1970s. Nevertheless, as most contracts were drawn up in U.S. dollars, the revaluation of the yen brought increased competition from South Korea in the mid-to-late 1980s. Faced with a long-term fall in the number of new orders and the realization that a reduction in the number of docks was urgently required, Japan's Ministry of Transport took concrete measures to reduce shipbuilding capacity 1978 following the first oil crisis by setting up a production cartel (Vogel, 1985). After *endaka*, the Ministry of Transport introduced similar legislation in 1987 with the intention of again reducing excess plant and encouraging business regroupings. Production facility disposal plans were drawn up collectively by the government and the industry and implemented - as in the 1970s - through the joint cooperation of the major shipbuilders concerned, with the government giving financial support and loan guarantees for the acquisition of scrapped plant and equipment. The new law mandated that shipbuilding capacity be reduced by 20 per cent by 1988. In the event, around 24 per cent of shipbuilding facilities were disposed of - thereby reducing the nation's total dockyard capacity from 6.0 million to 4.6 gross tons - and at the same time 44 major shipbuilders in twenty-one business groups were amalgamated into 26 firms in eight groups (Maritime Technology and Safety Bureau, Ministry of Transport, 1990).

As the number of docks and new production decreased so the workforce fell sharply, by 40 per cent to 55,000 employees over the 1985-1988 period. Major companies such as Ishikawajima-Harima Heavy Industries (IHI) cut back 7,000 employees, mainly through early retirements and transfers to other subsidiaries. In addition, many small firms went bankrupt. Consequently, the total number of workers engaged in Japan's shipbuilding, including subcontractors and associated industries, declined to 121,000 at the end of 1988, almost one-third of the peak activity recorded in 1974 (Maritime Technology and Safety Bureau, Ministry of Transport, 1990). During the 1980s, displaced staff had several options open to them including retirement, moving to a different dockyard within the same industrial group or shifting into a different industry within the same corporate group (e.g. engineering). Only the large shipbuilding companies had the capacity to send their employees to other affiliated firms or to their non-shipbuilding activities. Many workers were reported to have left Japan to find technical or engineering jobs in the growing shipyards of the Republic of Korea; other found work in the auto industry as well as industries linked to the rise in domestic demand or new public works contracts (e.g. the Seto Inland Sea bridge construction project completed in 1988) (interview with K. Matsui, Manager, Operations Department Japan Ship Exporters Association, Tokyo, June 1992).

Employment decline in the shipbuilding industry caused particular problems for certain communities during 1987-88. Thus IHI shut its shipyards in Chita in Aichi prefecture and at Aioi in Hyogo prefecture (which was the birthplace of the Harima Shipyard and the world's largest in terms of launchings from 1962 through 1964). Mitsubishi shut its yards in Shimoneseki and

Hiroshima in Honshu and Hitachi shut its yard in Enoshima in Shikoku. At a regional level, the most affected areas during the 1980s were the Seto Nankai region, especially the northern coastline (Chugoku), although the period since 1989 has seen employment gains in this area and in Kyushu. At a lower scale of spatial aggregation, the round of shipyard closings since *endaka* caused particularly serious problems in certain outlying company towns, such as Hakkodate in Hokkaido and Sasebo in Kyushu, as many of these communities were without other industries and the effects of their contraction on employment were reflected in increased bankruptcies of local service firms and population decline. Now these towns are trying to develop new industries to overcome their difficulties, often with the assistance of government programs. Aioi City, for example, developed a major resort zone (Imanishi, 1987).

The government's production cartel was lifted in 1992 as orders finally began to rise (Maritime Technology and Safety Bureau, Ministry of Transport, 1993). Yet with the shipbuilding business competing with South Korea and in the midst of another downturn, many shipbuilding firms have recently turned their attention to industrial diversification. Thus for Hitachi Zosen Corporation, construction of ships, once the firm's mainstay, now makes up only a quarter of sales. Corporate personnel, facilities and capital were directed toward businesses that show good prospects for future growth such as waste disposal and garbage incinerator technology. Hitachi Zosen hoped to obtain 15 per cent of all revenue from these new businesses by fiscal 1996. At the same time, it is revamping its traditional shipbuilding capabilities in Kumamoto Prefecture in Kyushu, through computer-aided manufacturing systems (*Nikkei Weekly*, 19 September, 1994).

3.3. Automobiles

The announcement in 1993 by Nissan Motor Company that it would halt production of passenger cars at its highly automated Zama Plant near Tokyo, while increasing production overseas, revealed the severity of the current recession and the problems facing the automobile industry (Kato, 1994). The yen's upward shift dealt a particularly harsh blow to auto manufacturers, which still have relatively high export rations. However, in this industry too, there are mediating geographic factors at work. In contrast to the relatively dispersed investment strategy of Nissan, its major rival - Toyota Motor Corporation - had long adopted a concentrated network of production facilities and associated suppliers in Chukyo Japan, centered on Aichi prefecture (Cusumano, 1985; Hill, 1990). The development of a strong regional auto production system, along with the tight integration of subcontractor operations with just-in-time assembly, gave Toyota a decisive lead over Nissan during the post-war period. By the late 1980s, however, the Chukyo region was also under threat from "hollowing out." This was both due to *endaka*, which cut into export competitiveness, as well as the rapid speed of overseas investment brought on by trade conflict with the United States and Europe (Fujita and Hill, 1989). Yet, any substantial hollowing out was deferred by the domestic economic boom of the late 1980s. This was characterized by high production runs, the introduction of Toyota's prestigious "Lexus" model, developed in 1990 and a severe labour shortage in Aichi prefecture.

By the end of the study period the industry confronted another threat in the form of the bursting of Japan's "bubble economy" in 1991 (Wood, 1992) and the slowdown in both domestic

and export markets. Toyota responded to this, together with the latest round of yen appreciation, by rigorously cutting costs and by expanding its production overseas both at its plants in North America and at new ones planned in China and Southeast Asia. In the past, such production shifts did not cause cuts in its Japanese production because domestic sales remained strong. But the current recession on Japan has impacted on domestic sales, forcing Toyota to reduce its employees by around 2,350 through attrition (in the year up to mid-1994). Toyota also won the compliance of regional auto-parts suppliers to in changing specifications and materials to reduce production costs. This cost cutting strategy led also to cuts in new recruitment by both Toyota and its suppliers due to a perceived surplus of its existing assembly workers (*Nikkei Weekly*, 12 September, 1994).

Clearly, the Chukyo region cannot rely upon the exports of automobiles for its continued growth and must now define other domains of competition. In contrast with the steel and shipbuilding sectors, automobile producers such as Toyota have been rather reluctant to move significantly into new businesses. Still, the new pressures have brought about a change in attitude. Toyota, normally a very conservative company, began plans in the early 1990s to develop aluminum motor-boats with Mitsui Engineering. Toyota also acquired interests in the machine tools, aerospace and telecommunications sectors, as well as finance. Significantly, Toyota planned to locate certain of these new lines of business close to major markets (such as Tokyo) or in production bases where there were related and existing technologies and facilities (e.g. motor boat production in Nagasaki) - in other words, not all are likely to replace production losses in Aichi Prefecture. Moreover, despite these new ventures, it is unlikely that Toyota's new business sectors would account for more than 5 per cent of total sales in the foreseeable future, due mainly to the present dominance of auto production (Edgington, 1994c).

The response of Chukyo's public officials to the hollowing out threat has been to strive for regional rejuvenation based on new industries such as aerospace, new ceramics, textile designs and bio-technology (Edgington, 1992a). Governments in Chukyo are also absorbed in providing new forms of regional economic infrastructure with an emphasis on "mega" transport projects to reinforce the centrality of their location within Japan. These include the second Shinkansen (the proposed Tokaido "maglev" linear rail line) and the second Tomei national expressway (Edgington, 1992b). No doubt these and other new infrastructure will benefit local industry; for example, newly proposed research institutes have been planned to address the negative blue-collar "image" of the region and bring in new private investment. One problem with this strategy is that it may not address the needs of local small-scale supply firms, many of whom will have less work from Toyota in the future as it expands into the Pacific Rim.

3.4 Jiba Sangyo

Finally, apart from large industries, community-based industries comprised mainly of small entrepreneurs (*jiba sangyo*), have also faced pressure to restructure. Due to the rise in the yen, they have been challenged by South Korea, Taiwan, Hong Kong and Singapore, which have become formidable competitors vying for both foreign and domestic markets. Over the late 1980s and early 1990s industries such as textiles and ceramics have also been confronted with other problems such as labour shortage and the difficulty in finding successors to the present owner-

managers. However, because of their strong commitment to the regional economy in which they are located, there has been a strong desire to reorganize and overcome these problems. As noted above, MITI has long recognized that community-based industries have strong linkage effects in regional economies and so help prevent the economic and social collapse of local municipalities (Yamazaki, 1980, 1980). As noted earlier, to assist their restructuring MITI set up legislation for Temporary Measures for Business Conversion by Specified Medium and Small-Sized Enterprises in 1986 and 1992. The intent of this program has been not to encourage small-medium sized companies to export, but rather to help them move into lines of production for which domestic demand in strong (interview with T. Konno, op.cit.).

The case of the Tsubame cutlery industry in Niigata Prefecture is fairly representative of the *jiba sangyo* sector and provides an illustration of their adaptability and resilience to date. Due to the onset of *endaka* in 1985, exports of from this industrial region declined substantially. In particular, the export sales ratio of traditional "flatware" (knives and other cutlery), declined from 73 per cent in 1985 to just 60 per cent in 1983. One successful adjustment strategy was to move production away from cutlery, which faced severe competition from cheaper locations in South Korea and Taiwan, into higher value-added "hollow ware" (stainless steel cooking pots and thermos flasks) and, increasingly, non-cutlery related items. Yet another was to produce novel designs for the high quality domestic market and sell cutlery directly to department stores. These entrepreneurial initiatives were assisted by MITI's designation of Tsubame for small and medium firm assistance as well as by programs of the Tsubame Development Association, set up in 1985 to provide research and development facilities to help firms experiment in new uses for stainless steel (Patchell and Hayter, 1992; Kiyonari, 1993; Small and Medium Enterprise Agency, 1994: 93).

4. CONCLUSIONS

Several themes have shaped this paper: the debate over the shift of production overseas and hollowing out; corporate investment and disinvestment strategies; the relative geographical dimensions of *endaka*; and public policy responses. The principal findings of this review may be summarized as follows.

First, the government appears to have so far been able to manage the conflicts associated with rapid restructuring. This has been achieved through a comprehensive array of measures to promote rationalization or adjustment in declining sectors and judicious promotion of new technologies. Despite another round of production moving overseas since 1993, the unemployment rate in Japan has stayed remarkably low compared with other industrialized countries. In part this is due to the role played by large firms where - in contrast to Western Europe and the United States - they augment government programs to assist declining industries. To preserve their corporate image they play a leading role in absorbing the costs of keeping employees in times of economic downturn and relocating workers, as well as in phasing out excess capacity where necessary. Nonetheless, it is often the smaller firms who take the full brunt of this pressure by being forced to release labour to reduce costs, shift into new business lines or go bankrupt. Accordingly, government assistance has been directed mainly towards smaller firms, depressed regions and displaced workers.

Second, the effect of hollowing out to date has been mediated by sectoral and regional differences. Heavy industry and smaller companies, ill-equipped to shift production abroad, have been particularly vulnerable. Consequently, persistent unemployment has occurred in shipyard regions as well as other small industrial towns and steel cities, such as Muroran. These will continue to lose population. In the current recession even large metropolitan areas have been hard hit. The bottom line, however, is that Japan's "developmental state" (Johnson, 1982) has a strong regional dimension through committing resources to peripheral areas and harmonizing regional policy more closely with industrial adjustment strategies (Hill, 1990). By contrast, mainstream approaches to manufacturing in most Western countries typically encourage workers and community residents to bid down the costs of industry in their area under the rubric of "creating a good business climate." National governments have largely supported this position and have been generally unwilling to intervene further (Clavel and Kleniewski, 1990).

Finally, an important question - and one not directly answerable by this review - involves the continuing evolution of the Japanese economy. Because of the persisting strength of Japanese exports, companies have to make plans to cope with a strong yen at least through the rest of this decade and the current apprehension over the high yen induced recession (*endaka fukyo*) gives a taste of the difficulties that the Japanese economy will face as it goes into the next century. To pay for employment generation in the more unproductive domestic service sector (e.g. transport, distribution and commerce) Japan has no option but to reduce its regulatory role to make both manufacturing and service businesses more competitive and to generate added value production and technologies.

One particular vision of Japan's industrial and business future emerged in 1994 from a subcommittee of the Industrial Structure Council, a consultative agency of Japan's MITI. This committee responded to an inquiry on how Japan's business and industrial future should be improved in the long range looking toward the 21st century. The recommendations focused on a dozen areas of growth based on building up a wide variety of domestic sectors, rather than a small number of export oriented ones. The 12 new areas were: housing, medical care and social welfare, life style services such as education and personal services, urban environmental improvement, new energy systems, information and communications, distribution services, contract employment services, international services, business support services and new production technology. Coupled with these new growth services, the report called for the steady trimming and downsizing of four traditional industries. Specifically these were electronic machinery, transportation equipment including automobiles, steel and non-ferrous materials (*Japan Economic Review*, 15 June, 1994).

Another issue centers around the likely increase in employment "mismatches" as Japan shifts further to an "information-based" society. Thus, where once a shipbuilder could be readily retrained to make cars and a car maker to make aircraft, it is now harder to retrain say a steel maker to write a software program. Yet a recent government labour white paper sounded confident that the economy could cope smoothly with a forecasted need to transfer about 2 million jobs from manufacturing to services by the end of this century (Ministry of Labour, 1994). It will be a challenge and, as indicated in this paper, there is a geography attached to this challenge. The jobs of middle-aged generalist white-collar workers and skilled blue-collar workers

in the sea-coast heavy industries are likely to disappear and even the jobs of mainstream mass production electronics factories in peripheral regions such as Tohoku and Kyushu will be under threat. By contrast, the jobs for young specialists in new technologies and information service industries will likely cluster in the big cities such as Tokyo, Osaka and Nagoya, as well as certain provincial centers. Even though Japan has been more enthusiastic than most industrial countries when it comes to retraining it will not easy to bridge that sort of spatial gap. There may be an uncomfortable 15 year transitional period ahead. The vital task for public policy over that time will be to care for Japan's technologically obsolete middle-aged workers - just the sort of people who created "Japan Inc." in the high-growth years of the 1970s. They are likely to become big consumers of social welfare and leisure, which will probably mean that there will be political pressures in Japan for a higher priority to be given to the issues of consumption than has been the case in the past.

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COUNTRY COMPETITIVENESS IN THE INFORMATION AGE: A CONTENT COMPARISON OF CANADIAN AND JAPANESE DAILY NEWSPAPERS

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Introduction

This paper presents a comparison of Japanese and Canadian daily newspapers. The purpose of the comparison was twofold. First, I felt that comparing newspapers from the two countries would be intrinsically interesting and that it might suggest or reflect some significant differences between the two countries and their people. Second, I was curious to know whether or not such a comparison would support an untested belief I have that Japan is more of an "information society" than Canada (or the United States) is. By "information society," I mean a society characterized by a relatively high level of information availability, possession and use. The degree to which a country is an "information society" is an important factor, I argue, in determining national success in international economic competition in an "information age" marked by rapid advances in information technology.

My belief that Japan is, and has long been, an information society is based on personal observations and experiences during over twelve years of living, working and studying in Japan. "Evidence" in support of this belief is largely impressionistic—not empirically measured. It includes the following:

1. Test results. Surveys and reports are frequently reported which show Japanese students to outperform North American students on tests.
2. High knowledge/learning content of Japanese television programs. There are numerous quiz-type programs on TV which test and provide knowledge, as well as entertainment programs which include quiz or learning segments. In fact, the border between "serious" and "entertainment" is more blurred than in North America, with many TV programs, for example, having heavy doses of both.
3. Quality and popularity of TV news programs. *News Station*, *NHK News* and *NHK Specials* are example of information-providing TV programs which are high in quality, both broad and deep in topic coverage, and which have high viewer ratings.
4. Traditional respect for learning and for teachers.
5. Book stores. There are many, large and small, and they seem to be always crowded.
6. Reading on trains. Everyone does it!
7. *Manga* (Japanese comic books). All kinds of *manga* exist and are widely read. Though often disparaged as trash by non-Japanese familiar only with the violence and sex in some *manga*,

many are of very high quality in both humor and knowledge provision. Textbook-type *manga* on "serious" topics such as business and economics have become popular in recent years and popular kids' *manga* like *Doraemon* and *Dragonball* qualify as decent literature which not only entertains but teaches a lot. The lack of comparable, attractive-to-kids reading material in North America contributes to the more negative view of reading and the lesser time spent reading that children exhibit in Canada and the US.

The above observations and assertions, as I have said, are impressionistic; surely, not everyone will agree with all of them. The newspaper comparison I carried out is an attempt to "test" my argument, to provide somewhat more solid evidence that information availability, possession and use is higher in Japan than in Canada. This is certainly not a strong test; the degree to which the newspapers compared are representative of all Japanese and Canadian newspapers might be questioned, as well as the validity of the link between newspaper content on the one hand and information availability, possession and use by the general public on the other. Nevertheless, I believe that the study is of interest and that it suggests some differences which might later be tested more rigorously.

Comparative country data on newspaper readership exists which indicates that per capita newspaper circulation in Japan is nearly double that of Canada or the United States:

Country	No. of daily newspapers	Total circulation	Circulation/1,000 people
Canada	**110**	**5,800,000**	**221**
Japan	**125**	**51,908,000**	**429**
US	**1,626**	**63,000,000**	**251**

Source: *Britannica World Data*, 1993.

This study looks inside daily newspapers from Canada and Japan, comparing the contents in terms of article type, topic coverage and geographical focus. The immediate question the study seeks to answer is: Are there differences in information richness—volume and variety—or other aspects of Canadian and Japanese daily newspapers? Implications of differences found are discussed in the paper's final section and related to issue of country competitiveness in the "information age."

Newspaper comparison

The July 11, 1995 issues of four daily newspapers were compared, two from Japan and two from Canada. The Japanese papers were the *Asahi Shimbun*, a national paper, and the *Kahoku Shimpo*, a regional (*Tohoku*) newspaper published in Sendai (population: 918,000). The Canadian papers were the national *Globe and Mail* and the regional *Vancouver Sun* (population of Vancouver metropolitan area: 1.6 million). There was no particular reason this day was chosen, other than the fact that I had access to all four papers for this day.

For all four papers, a count was made of the number of articles, series, photographs, maps and graphs, cartoons and drawings, and uses of color. A more in-depth comparison was

made between the two regional newspapers, with articles being classified according to category, topic and domestic vs. foreign news. The results of these comparisons are presented in Exhibits 1 and 2. In addition, other differences between the Canadian and Japanese papers were noted, including letter-to-the-editor content and headline design. The main differences found between the Canadian and Japanese newspapers are listed below:

(1) Article volume. Both the national and regional papers from Japan contained far more articles than their Canadian counterparts: The *Asahi* had 219 and the *Kahoku* 233 compared with 146 for the *Globe & Mail* 106 for the *Sun*. On top of this, the Japanese papers both have evening editions which are sold at all newsstands and delivered to most subscribers; the Canadian papers do not. The July 11 evening edition of the *Kahoku Shimpo* had 10 pages containing 99 articles.

(2) Series. The Japanese papers contained many series, 10 in the *Asahi* and 11 in the *Kahoku*, while the Canadian papers had none. This suggests that the Japanese papers provide more in-depth coverage of news stories and issues.

(3) Use of photographs, maps, graphs and drawings. The Japanese papers contained far more news photographs than the Canadian papers. On the other hand, the Canadian papers contained several photographs of columnists, while the Japanese papers had none. Concerning the amount of maps and graphs used in articles, the *Asahi* and *Globe & Mail* were about the same while the *Kahoku* had far more than the *Sun*. The Japanese papers contained more cartoons and drawings (excluding comics) than the Canadian papers

(4) Comics. The *Sun* had a full page of comics and the *Globe &Mail a half page*. In contrast, the Japanese papers each contained only one four-panel strip.

(5) Number of pages. The Canadian papers had more pages than the Japanese papers (although if the evening editions of the Japanese papers are included, the numbers even out). The reason for this does not seem to be a greater amount of advertising in the Canadian papers, but rather a difference in the information-per-space characteristics of written Japanese and English; thanks primarily to *kanji* (Chinese characters), a given amount of information takes up less space in written Japanese than it does in English.

(6) Article category. The article category comparison between the two regional papers found that more print space was devoted to opinion—editorials, columns, essays and letters to the editor—in the *Sun* than in the *Kahoku* (17% vs. 11.3% of total print space). On the other hand, the *Kahoku* gave more space than the *Sun* did to news analysis and background (4.6% vs. 1.6%) and special news reports (26.6% vs. 22.9%). Also, the Japanese papers (including the *Kahoku* evening edition) all carried a fiction series, while the Canadian papers contained no fiction.

(7) Topics. The most notable difference in topic coverage found in the *Sun-Kahoku* comparison was that arts and entertainment took up more print space in the *Sun* (23.2% vs. 16.8%) while miscellaneous society articles took up more print space in the *Kahoku* (22.8% vs. 10.9%). A generally heavier dose of arts and entertainment features in Japanese evening editions partially explains the relatively lower amount in the morning *Kahoku*.

(8) Geographic focus. The *Sun* had more space devoted to foreign news (23.9% vs. 11.2% of print space), although the number of foreign news articles was almost the same. Of the *Sun's* 28 foreign news articles, 18 were on the US; if US news is not counted as "foreign," in view of the proximity and commonality of interests between Canadians and Americans (i.e., if we view the US as Canada's 11th province), then the per cent of foreign news space in the *Sun* falls to 9.4%, not much different from the *Kahoku*.

(9) Letters to the editor. A specific content comparison was made of the letters to the editor in all four papers. The Canadian papers together contained a total of 17 letters, while the Japanese papers had nine. Although letter topics varied, the purpose of the letters was similar in that around two thirds (11 of 17 Canadian letters, 6 of 9 Japanese letters) complained about or criticized something or someone. A noticeable difference in tone was detected, however. The Canadian letters were more often written in a harsh or sarcastic voice and contained quite personal attacks. Some examples:

> I find Ms. X's flat criticism of Vancouver insulting. ... Pack up and move to Edmonton, Winnipeg or wherever your heart desires. We will have no trouble finding someone there who will willingly trade places with you.
>
> It disgusts me.
>
> Surely the case is serious enough to call for a better response than the string of platitudes contained in the letter by Mr. X. But sadly, perhaps Mr. X thinks the way he writes.

The Japanese letters, by contrast, while often containing strongly-felt protest, tended to be more polite and even in tone, and did not contain sarcasm or personal attacks. The following example is fairly representative:

> (Haien ni naru youchien o) Nantoka sonzoku dekinai mono deshouka? Watakushi wo hajime chichihaha no minasan-gata no setsunaru onegai desu.
>
> Translation: (Concerning a kindergarten that is scheduled to be closed) Might there not be some way to keep the kindergarten open? This is the heart-felt request of myself and other mothers and fathers.

The Canadian letters also showed a tendency toward continuing, interactive argument and debate. 12 of the 17 Canadian letters were responses to articles or other letters that had previously appeared in the paper. By contrast, just two Japanese letters were responses to articles and none were responses to another person's letter.

A final difference noted was in information provided about the letter writer. The Japanese papers print the name, city, age and occupation of the letter writer, while the Canadian papers print only the writer's name and city.

(10) Headline design. A remarkable amount of artistic creativity and variety in headline size, style and background can be seen in the Japanese newspapers. By contrast, the headlines of the Canadian papers were overwhelmingly simple black print on white background, with size and

boldness the main variables. Examples of headlines from the *Kahoku Shimpo* are presented in Exhibit 3.

Discussion

Assuming for the sake of discussion that the differences found between Japanese and Canadian newspapers in this small study are not unrepresentative of the differences that exist between Japanese and Canadian newspapers in general, what implications or conclusions might we draw? First, in the various specific differences noted above, three broader themes shine through.

The first is that the Japanese papers significantly surpass the Canadian papers in sheer information volume (as indicated by article number) and depth (as indicated by series). This appears to be true across virtually every article category and topic area.

Second, the deliverance of the news seems to be somewhat more "personalized" in Canada than in Japan. By this I mean that in Canada there is more attention on the provider of the information, more scope for the writer to shape the information provided and more of a feeling on the reader's part that the news, or much of it, is being presented by a specific individual rather than by a more faceless, neutral information source. Specific differences which suggest this are the greater number of opinion articles in the Canadian papers, the many photographs of columnists in the Canadian papers (and the lack thereof in the Japanese papers) and the more interactive (continuing debate) and personal attack aspects of Canadian letters to the editor. A similar difference, incidentally, can be seen in the deliverance of television news in the two countries. When visiting or returning to North America after a period of immersion in Japan, it always takes time to adjust to the style of TV announcers and anchors, who make efforts to put their individual stamp on the news through rather exaggerated phrasing and intonation, and a strong personality presence. In Japan, with rare exceptions such as *News Station's* Kume Hiroshi, news announcers are not and do not try to be stars. They deliver the news in a professional but neutral manner, never overshadowing it with a self-promotional individual style or presence. This "personalized" vs. "non-personalized" difference may spring from the often-noted North America emphasis on individualism versus Japanese emphasis on collectivism. At the risk of *kangae-sugi* (over-interpretation), I would further suggest that it is indicative of a greater respect for information itself in Japan; it is the news that counts, not the person who delivers it.

The third broad difference is that the Japanese newspapers make more extensive use of the communicative possibilities of the newspaper medium: more photographs, more maps, more graphs, more drawings and more creative headline design.

Discussion of these differences between Japanese and Canadian newspapers could take any number of directions. What I would like to consider briefly here is the question of what implications these differences might have for the competitiveness of Japanese and North American companies in what has been called the "information age." The "information age," by which is meant an era in which access to information is far greater than it was in the past, is a result of advances in information technology that have given us new information and

communication tools—computers, communications satellites, e-mail, the Internet. As with any tool, the benefits gained from the new information tools are not distributed equally; some people and organizations get more out of them, while others get less. In international economic competition, to the extent that the new information tools are potentially applicable in business activities, nations and companies that make the best use of them are more likely to succeed. I suggest that Japan and Japanese enterprises may benefit more from the new information and communication tools given us by information technology advances than North America and North American companies. The reasoning is as follows.

First, it is widely accepted that information is a key resource in business success. In Japan, it is common to speak of human, physical, financial and information resources as the fundamental inputs of business activities. (For example, see Hiroyuki Itami and Tadao Kagono, *Zeminaaru Keieigaku Nyuumon (Seminar: Introduction to Management)*, Tokyo: Nihon Keizai Shimbunsha, 1989, p. 65). Information availability and use is also closely linked to Michael Porter's "Diamond of National Competitive Advantage" (*The Competitive Advantage of Nations*, New York: Free Press, 1990), an analytical tool which explains why some countries succeed in international economic competition and others do not. All four "points" of a nation's diamond are clearly strengthened when there are high levels of information availability, possession and use: (1) factor endowments (information is a key factor of production); (2) demand conditions (informed, knowledgeable customers demand more of firms, pressuring them to upgrade and innovate; (3) firm strategy, structure and rivalry (competitive and free-market business environments feature greater information flows from markets and rivals than less competitive, more controlled environments); and (4) related and supported industries (high information availability and its use benefit local suppliers and related companies too).

Given the importance of information in business success, I argue that Japanese companies are likely to have an edge because Japan, as I have suggested at the beginning of this paper, is and has long been more of an "information society" than North America. This study's newspaper comparison provides one example of this. Japan, we have seen, has made different use of the possibilities of one particular information tool—the daily newspaper. I would further argue that Japan has made more effective use of the newspaper medium in terms of maximizing its information provision possibilities; Japanese papers are more widely read, contain more information, present information in a more straightforward, non-personalized manner and make more extensive use of the various communicative possibilities of the printed newspaper page. If Japan has made particularly effective use of one common information medium, it seems reasonable to believe that this springs from deep-rooted factors which will similarly help Japan make particularly effective use of other information media as well. Such factors may include a strong national inquisitiveness, respect for knowledge and creativity in maximizing the expressive, communicative and learning possibilities an information tool provides. It is reasonable to expect those factors to find expression and use in the new information tools of the "information age," as they have in the older tool of the newspaper. This should provide Japanese people and companies with continuing above-average levels of the critical competitive resource—information.

I am aware that this argument flies in the face of studies which show that computer, e-mail and Internet use are presently at relatively low levels in Japan in comparison to North America. I offer these thoughts not with the high level of confidence that stronger supporting evidence would permit, but rather in the hope that they will stimulate thinking and debate concerning the effective use of new information technology in Japan and elsewhere.

Exhibit 1. Four-newspaper comparison.

	Globe & Mail	*Vancouver Sun*	*Asahi Shimbun*	*Kahoku Shimpo*
Articles	146	106	219	233
Series	0	0	10	11
News photos	12	37	63	77
Photos of columnists	4	10	0	0
Maps & graphs accompanying article	7	3	6	17
Cartoons & drawings (excluding comics)	8	2	14	7
Color photos & graphics	0	11	11	11
Pages	38	44	28	28

Exhibit 2. Content Comparison between *Vancouver Sun* and *Kahoku Shimpo*.

	Vancouver Sun		*Kahoku Shimpo*	
	number	% of space	number	% of space
TYPE OF ARTICLE				
news articles				
news reports	58	48.2%	147	47.9%
analysis/background	3	1.6%	9	4.6%
special reports	18	22.9%	35	26.6%
opinion	19	17.0%	18	11.3%
information	7	9.4%	20	6.7%
reviews	1	0.9%	3	2.0%
fiction	0	0.0%	1	0.8%
TOPIC				
government / politics	32	28.0%	45	24.2%
business / economics	15	14.4%	35	13.1%
accident / crime	10	8.0%	17	7.0%
miscellaneous society	12	10.9%	61	22.8%
arts / entertainment	21	23.2%	29	16.8%
sports	14	14.5%	40	13.0%
science / technology	2	1.1%	2	0.9%
fiction	0	0.0%	1	0.8%
light / human interest	0	0.0%	3	1.3%
WHERE				
domestic news	58	52.9%	180	78.1%
foreign news	28	23.9%	27	11.2%
domestic+foreign	11	11.3%	22	9.4%
general	9	11.9%	4	1.3%

半導体の表面洗浄

超音波とオゾン活用

インサイド東北

いんさいど東北

くらし

第2次補正予算が焦点

IC新工場を建設

技術、既に陳腐化

文化都市再生へスタート

稲森いずみ

世界の音楽室

12日ぶり女性店員救出

とうほく

農地明け渡しを命令

人類ただ今57億5000万人

ゴルフ

談話室

ティータイム

ポケット情報

大相撲名古屋場所

10日目

芸能

企業指針

ヒトの周辺

広島1.5差

文化

オープン懸賞に応募殺到

とうほく経済

手探りの復興

①

選挙区の断面

ルポ'95参院選 東北


大満足
南の島で自分探し
背広捨てた日本人「サキ」
比セブ島沖で第二の人生
新型転換炉
ATR建設中止を
伊良部オリックスを手玉
日大統領、心臓病で入院
「脱開発」が前面に
地方の期待とズレ
判決までが"猫の目"
大波にもまれる農民
「携帯電話で
出玉が狂う」

INFORMATION TECHNOLOGY AND JAPAN'S FOREIGN INVESTMENT SYSTEMS

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Introduction

The oil shock of 1973 and the Plaza Accord of 1985 have both sharply reinforced the perception of Japan's vulnerability to global economic changes. More recently, Japan's international trade disputes with the United States and the European Union have convinced Japanese political and business leaders of the need to rethink their role in the borderless global information society.

Unlike natural disasters that devastate Japan at unpredictable times, man-made disasters tend to follow well established trends. By the mid-1970s, Japan's economy had more or less matured and as Tokunaga (1992b:5) has observed, the rate of business income to compensation to employees continued to decline since 1973. Tokunaga also noted that the growth rates and productivity for the period 1980-1985 were "much lower than in previous years." Nevertheless, Japan has been able to maintain her relative prosperity through her propensity to accumulate excess savings and foreign direct investment (hereinafter FDI).

The economic frictions with the United States which stemmed from the mid-1980s gained further momentum with the passage of the Omnibus Trade and Competitiveness Act of 1988. This Act, which is commonly known as the "Super 301," compelled Japan to exercise considerable export restraints. In addition to this, two other factors, the continued appreciation of the Japanese yen and the concomitant increase in Japanese labour costs, forced Japan to restructure her traditional trading practices. Modifications to established trade practices, organizational behaviour and human resources allocation cannot be accomplished overnight. However, the role played by Japanese information technology industries and various research institutes were significant. Export restraints imposed by the United States required Japan to increase her domestic demand. Tokunaga (1992b:10) notes that this conversion from an export-led economy to a domestic demand-led economy implies the following three issues: 1) reduction of massive external imbalances, especially with the U.S.A.; 2) creation of diverse lifestyles for a better quality of life; and 3) promotion of social overhead capital improvement for the smooth facilitation of industrial restructuring. The net result of addressing these implications was that Japanese industries were forced to diversify and rationalize their business operations through information technology.

The rationalization of business operations and the major requirement for lowering production costs in the manufacturing sector of the economy meant greater emphasis on manufacturing abroad. Tokunaga (1992b:11) argues that FDI was not in conflict with a domestic-led economy as FDI created new value-added products. This, in turn, resulted in the creation of

NOTE: Of the *Sun*'s foreign news articles, 18 of 28 were US news; of the *Sun*'s domestic-foreign articles, 7 of 11 were Canada-US news.

Key for Exhibit 2 Comparison:

TYPE OF ARTICLE

- news report: report of recent (usually yesterday's) happening
- analysis/background: analysis or background explanation of news report
- special reports: special news report, other than reporting yesterday's happening
- information: announcements, TV, weather, statistics, recipes, etc.
- opinion: editorials, columns, essays, letters to the editor
- reviews: review of books, music, movies, etc.
- fiction

TOPIC

- government / politics: includes elections, legal issues, conflict, war
- business & economics
- accident / crime: includes mishaps, natural disasters, scandals, trials
- miscellaneous society: includes environment, social, biographical, religion
- arts / entertainment: includes art, music, hobbies, celebrities, books, etc.
- sports
- science / technology
- fiction
- light / human interest

WHERE

- domestic news: Canada or Japan news, respectively
- foreign news
- domestic+foreign: news involving both the home and a foreign country
- general: not place specific

Exhibit 3. The next four pages present headline design samples from the *Asahi Shimbun* and *Kahoku Shimpo*.

better social and economic infrastructures in Japan. This paper identifies the role of information technology in facilitating Japanese foreign direct investments in Southeast Asia. It will examine the relationship between information technology networks and sociocultural factors that will assist or hinder effective FDI partnerships. Salient examples from several Southeast Asian countries will be provided.

Information Technology and Network Formation

Branscomb (1993:3) defines technology as "the aggregation of capabilities, facilities, skills, knowledge, and organization required to successfully create a useful service or product." Information technology, as it is most commonly understood today, is the integration of computers, telecommunications and multimedia systems to facilitate the dissemination of information over a wide area. Therefore, the importance of the role for information technology in the decision making process associated with foreign direct investments is quite obvious. Prior to any investment decision, vast quantities of relevant data must be secured from the region for potential investment. This data must then be transmitted rapidly to the research institutes or corporate headquarters for analyses. Teams of experts must have access to the data base and subsequently, video conferences must be held for appropriate discussions prior to making the final FDI decision.

According to Tokunaga (1992c:153), the popular understanding by the Japanese of foreign direct investment was the investment of funds in various foreign business activities. Today, FDI requires a far greater understanding of global economics. Tokunaga (1992c:155) argues that in order to combat comparative production cost disadvantages at home, Japanese firms must take advantage of their technological superiority by establishing offshore production facilities. The clever utilization of surplus savings in Japan for offshore research and development has resulted in improved as well as cost efficient production processes.

Another important lesson in overseas investments learned by the Japanese business leaders was that they were able to accept the fact that foreign investments must be conducted for the purpose of long-term economics benefits. Japanese foreign exchange and foreign trade control laws reflected the need for effective long-term investment abroad.

Information technologies were utilized extensively in securing data for the eventual development of production facilities abroad. Tokunaga (1992c:14) noted that the key variables associated with the FDI decision making process was "whether or not the facility abroad supported the research and development objectives, production, marketing and physical distribution system of a Japanese firm." Interlinkage of various sectors of the firm necessitated the effective utilization of available information technology. The close linkage of the production facility in foreign countries with the Japanese corporate R&D objectives, production, marketing and distribution system is now known as the "borderless" production process. Ohmae (1995a:4) credits developments in information technology which enabled companies to operate in various regions of the world without having to build entire business systems in each of the countries where they operate.

Another important role for information technology is in the co-ordination of production and distribution systems. In a global information economy, parts and other supplies required for the production system must be instantaneously available from all over the world. This requires the integration of various air, land and sea transportation elements. Cargo tracking systems today are mostly computerized and utilize sophisticated information management systems. Similarly, product distribution systems also require information management systems. Through improvement in information technology, electronic data interchange (EDI) between suppliers, producers and distributors are greatly enhanced. In other words, both vertical and horizontal integration of both *keiretsu* related and non-*keiretsu* firms are now possible.

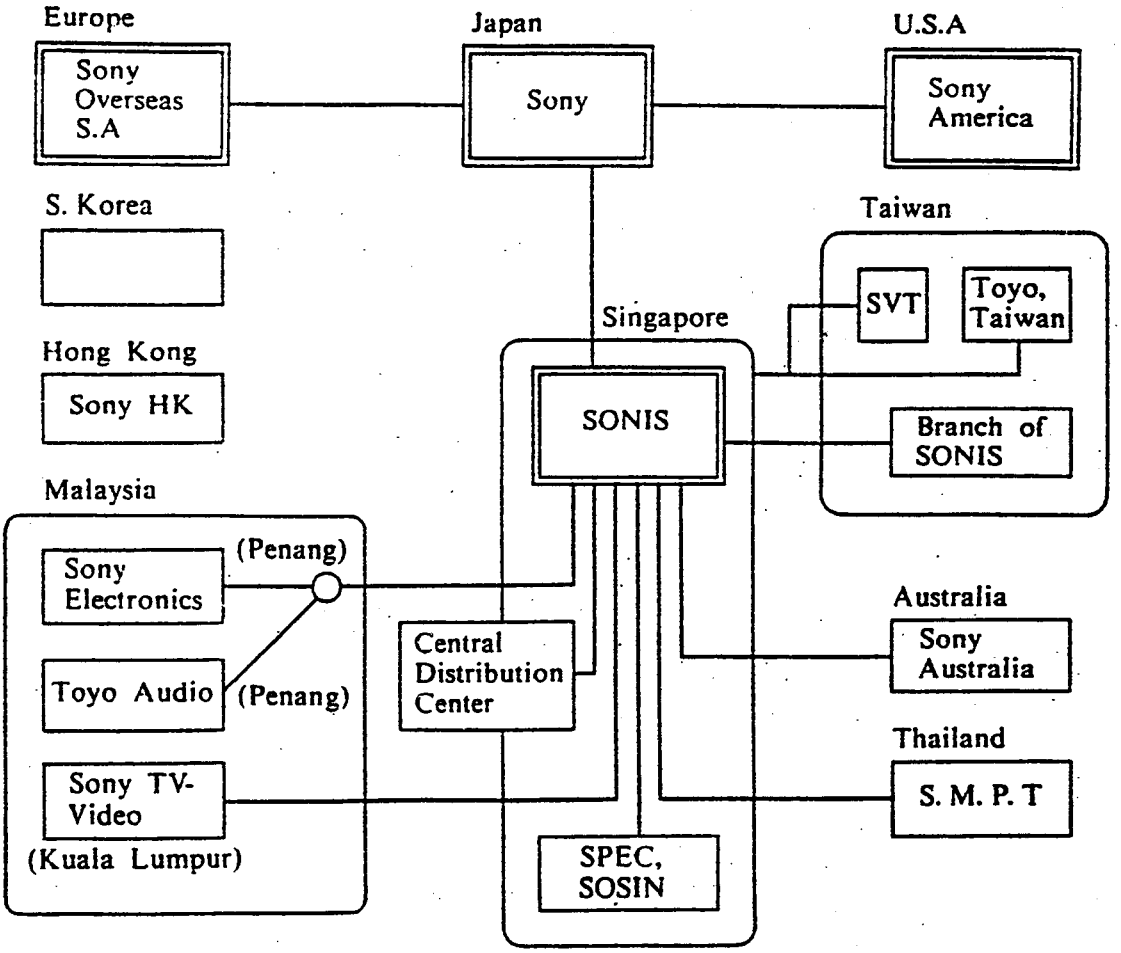
An excellent example of an information technology system utilized by a multinational corporation is that developed by SONY International of Singapore (SONIS). Singapore is SONY's general headquarters for Southeast Asia and the communications networks that evolved for the region is illustrated in Figure 1. It will be noted that the SONIS network is also connected world-wide to Australia, Europe, North America and South America.

According to Tokunaga (1992b:38), SONY's information communication system is linked to 39 domestic companies, 9 U.S. companies, 18 European companies and 5 Southeast Asian companies. Recent developments in information technology facilities will now enable world-wide monthly staff meetings to take place on a weekly basis. Specialized applications of information technology will also impose efficient inventory control, provide quicker response to new orders, as well as facilitating *kanban* or just-in-time production requirements. SONY's Singapore headquarters serve as the international procurement office (IPO) for the region.

As illustrated in Figure 1, smooth functioning of a multinational corporation will depend on an effective information communications system. The flow of both goods and capital across economic regions regardless of political boundaries has resulted in truly borderless, natural economic zones as described by Ohmae (1995a:81). In particular, information technology has enabled capital to be shifted instantaneously anywhere in the world and this no longer needs to be tied to the physical movement of goods as in the past.

An important implication of this relative free flow of money across economic regions is the concept described by Tokunaga (1992b:40) as a system of "account settlements without exchange." Through systems such as SONIS, parts and material are purchased throughout an Asian economic region or zone, but the accounts are paid using local currency. In addition to SONY, other global Japanese corporations such as Matsushita and Mitsui Singapore International provide excellent examples of effective utilization of computerized international information communications systems.

Figure 1
SONIS, SONY's Integrated Information Network



Source: Shojiro Tokunaga, "Japan's FDI-Promoting systems and Intra-Asia Networks: New Investment and Trade Systems Created by the Borderless Economy." In Shojiro Tokunaga (ed.), *Japan's Foreign Investment and Asian Economic Interdependence.* Tokyo: University of Tokyo Press, p. 38.

FDI and the Newly Industrialized Economies

As Japan experienced continuing economic problems associated with the yen appreciation, trade friction with the United States and continuing shortage of blue-collar workers, more and more Japanese manufacturers turned their attention to the newly industrializing economies (hereinafter NIEs). The NIEs were composed of South Korea, Taiwan, Singapore and Hong Kong and many Japanese companies turned to these countries as a lucrative area for foreign direct investments.

The NIEs as a powerful economic magnet for Japanese investments is provided by Hanazaki (1992:51) who compares the annual growth rate between the NIEs and the major developed countries. This comparative data are shown in Table 1.

It can be seen from Table 1 that the NIEs had the highest growth rates since the late 1970s to 1988. Examining the period 1980-1988 alone reveals that the growth rates for the NIEs were considerably higher than for the advanced OECD countries. The annual real economic growth rate was 8.9% for South Korea, 7.5% for Taiwan, 6.6% for Singapore and 7.1% for Hong Kong. In contrast, the annual real economic growth rate for Japan between 1980 and 1988 was 4.1%, a slight decline from 4.6% for the previous period between 1970-1980.

Although Japan is an advanced industrial country, she has no natural resources and is highly dependent on importing raw materials. With the aging of the population, continuing labour shortage and yen appreciation, Japanese foreign direct investments have been directed not only to the NIEs but also to those rapidly emerging countries such as Malaysia, Thailand and China.

Malaysia has been a beneficiary of Japanese capital inflow not only because of Japanese domestic problems, but also due to the farsighted economic policies developed by Prime Minister Mahathir Mohamad. The relaxation of restrictions on foreign capital investments enabled Japan to invest heavily in Malaysia in terms of technology transfer, human resources training and infrastructure developments, all key variables for rapid industrialization.

A significant aspect of Japanese FDI is that it is not limited to capital infusion only, but it also addresses the issue of human resources training in the investment recipient country. With internationalized division of labour associated with the global economy, cultural diversity in the labour force must be faced by human resource planners.

Table 1

Trends in Economic Regions' Real Economic Growth Rates

(Annual Average Growth Rates, %)

	1960-1970	1970-1980	1980-1988
Advanced Countries (OECD members)	4.9	3.4	2.9
USA	3.8	2.8	3.1
Japan	10.5	4.6	4.1
EC	4.8	2.9	2.1
Developing Countries	5.0	5.6	3.3
Southeast Asia	4.5	5.4	7.3
NIEs	9.0	9.1	8.0
South Korea	9.5	8.4	8.9
Taiwan	9.6	9.7	7.5
Singapore	9.2	9.1	6.6
Hong Kong	6.5	9.4	7.1
Middle East	8.0	6.1	0.9
Western Hemisphere	5.7	5.9	1.2
Africa	5.0	3.8	1.2
World Total	**4.9**	**3.9**	**3.0**

Source: Masaharu Hanazaki, "Industrial Trade Structures of Asian Newly Industrialized Economies." In Shojiro Tokunaga (ed.), *Japan's Foreign Investment and Asian Economic Interdependence.* Tokyo: University of Tokyo Press, p.51.

The rapidity with which information flows today requires particular emphasis on human resources training in order to avoid feelings of exploitation and dependency. In this regard, the Japanese model developed by Kitaya (1986:47) based on holistic (holonic) management appears to be most appropriate.

The Kitaya model provides several reasons why the holistic (holonic) management model is suited for technology transfer to developing economies. First, it must be recognized that information technology, mainly high speed computers and telecommunications, has made the transmission of information, knowledge and multi-media pictures of contemporary lifestyles in developed countries instantly accessible around the globe. This has resulted in the gradual increase in individual lifestyle expectations and psychological needs. Organizations that are rigid and bureaucratic will not be able to adjust effectively to changes in the global social, political and economic environments. In contrast, a diversified and flexible organization utilizing holistic (holonic) management may be able to do so.

A second reason why the holistic (holonic) management model is the most appropriate for techno-globalism and human resources development stems from its ability to respond to the psychological needs of culturally diverse individuals. Kitaya (1986:49) argues that responding to

individual psychological needs requires constant changes to the likes and dislikes of the consumer. Thus, the key elements of holistic (holonic) management, namely flexibility and efficiency, are crucial for rapid adjustment to consumer demands.

The final reason for the efficacy of holistic (holonic) management is that it lends itself to systemic thinking rather than the traditional linear ways of thinking. As Kitaya (1986:50) and Ohmae (1995a:80) observe, the information society has eradicated traditional boundaries between various levels of corporate structures as well as national boundaries between nations. This has forced various multi-national organizations to be non-linear in developing future marketing plans for their products. The same principles apply to human resources development in a global economy.

Holistic (Holonic) Management and Human Resources Development

The main objective of holistic (holonic) management is to achieve harmony between the individual and the organization or company to which the individual belongs. On initial observation, it may appear that holistic (holonic) management can perhaps only succeed in Japan where the relationship between the individual and the group are prescribed according to well established traditional norms, values, attitudes and behaviour. Concepts such as *oyabun-kobun*, *sempai-kohai* and a system of natural obligations based on *on* and *giri* come to mind. The strength of holistic (holonic) management is the recognition of individual abilities and strengths which can be effectively integrated into the whole group, company or corporation.

Specific examples of holistic (holonic) management as applied to technology transfer and human resources development (HRD) are provided by Uenohara (1990) and Yoshimi (1992). Japanese technology transfer and human resource management can be described as consisting of three distinct phases (Uenohara, 1990:16). In the first phase, technological co-operation with the recipient country takes place through personnel exchange and individual training at training centres in Japan. Included in this group are exchange students and researchers. The second phase involves local manufacturing and continued training of personnel. The third phase consists of new product development which can only take place after well educated and trained personnel are available.

Yoshimi (1992:141) describes NEC's approaches to human resources development. He notes that holistic (holonic) management stresses the importance of recognition and respect of local history and traditional culture inherent in each country. NEC's goal is "to provide the technology to contribute to realizing a holistic (holonic) society where individual creativity can flourish in the context of economic prosperity, environmental diversity and social cohesion." Each subsidiary of NEC's international group maintains its own business goals "while enabling the entire organization to function as a harmonious unit." NEC has 175,000 employees world-wide and has several human resources programs to put their educational and management philosophies into practice.

Conclusion

Since the Plaza Accord of September 1985, Japanese investments in ASEAN countries have increased sharply. Two reasons were advanced for this phenomenon. First, various ASEAN nations were anxious at this time to attract foreign investment and to develop export-oriented businesses. Second, Japanese businesses were looking for export bases abroad where the twin advantages of low labour cost and local government incentives were available. Yamashita (1991:16) observes that ASEAN countries were aware of the fact that an export-oriented industrialization policy required a relatively high technology absorption capacity. It was this requirement that Japanese business were able to fulfil through Japanese management practices. Japanese joint ventures provided on-the-job training (OJT) and on-the-job development (OJD) and this resulted in increased productivity levels as well as in quality control.

The impact of Japanese direct investment in ASEAN countries has been studied quite extensively by Yamashita (1991:12), Phongpaichit (1991:23), Lim (1991:85) and others. They provide examples of foreign investment that have met local government expectations for foreign companies to "create employment; to earn foreign exchange through export; to foster technology transfer and personnel development; and to develop related industries." (Yamashita (1991:12). Yamashita gives the example of Toyota in Thailand and National Gobel in Indonesia as providing training for local employees through Japanese-style management as OJT, OC circles and job rotation.

Although the significant role performed by Japanese companies in developing human resources in selected sectors of the ASEAN economy has been widely recognized, Yamashita (1991:13) notes that Japanese investors are faced with many controversial issues and not all aspects of Japanese-style management have been accepted at the local level. Anti-Japanese sentiment is still widespread in Southeast Asia and this stems partly from the fear of Japanese capital becoming the dominant power in the region.

One issue that merits attention is the role of Japanese technical advisors assigned to affiliated companies. In contrast to U.S. and European technical advisors who are sent home soon after the initial set-up period, Japanese advisors stay for a much longer duration, or are replaced by other Japanese advisors. One perception of this is that the Japanese are unwilling to transfer either the appropriate training or are reluctant at best to assign full responsibility to local personnel. In examining this issue further, Yamashita (1991:18) observes that differences in Japanese, American and European attitudes toward technology transfer must first be understood.

According to Yamashita (1991:18), there is no difference between the practice of Japanese and Euro-Americans during the first stage of operational technology transfer, but differences appear in the second stage. For example, in the case of factory operations, Euro-Americans withdraw their technical advisors soon after the factory is operating and local employees are expected to troubleshoot on their own using manuals. In contrast, Yamashita notes that Japanese technical advisors continue "to train the workers step by step in maintenance and repair, quality control, introduction of new production methods and new technology, and so forth." In other words, *kaizen* (Imai, 1986) principles are applied.

The main advantage in training local workers beyond the basic level of operations is that they are able to respond quickly to later changes in design, production methods and new product development. Yamashita argues that Japanese and Euro-American enterprises are established on different premises and this is reflected in their attitudes toward human resource development. As manifested in various spheres of activities, the Japanese tend to take the long-term perspective in their practices and attitudes.

While there are positive benefits associated with Japanese-style human resources development, it is important to recognize at the outset, the cultural diversity of the region in which it will be applied. Japanese-style management was developed in a country which is culturally homogeneous. Traditional customs based on loyalty and moral obligations made it possible to establish a lifetime employment system that had a wage system based on seniority and an enterprise or in-house union. These traditional elements which served as a firm foundation for Japanese human resources development are often lacking in many ASEAN countries.

In the case of Singapore, for example, the government made a comprehensive study on the feasibility of introducing Japanese-style management, but concluded that it was not applicable to Singaporean enterprises without first making some modifications. Lim (1991:112) provides the following reasons for this conclusion. First, he notes that Singapore society is strongly influenced by Western culture. The individualistic nature of Singaporeans provides a stark contrast to the group oriented Japanese. Individualism translates into job mobility from firm to firm in Singapore and life-time loyalty to the firm is unthinkable. Second, Singaporean society consists of diverse races, religions and cultures which further renders the introduction of life-time employment and the seniority wage system extremely difficult. Third, Singapore has many multinational enterprises and not all of them would be attracted to the Japanese management style. For example, on-the-job training provided by Japanese enterprises may not be acceptable to Western companies given the relatively high inter-firm mobility rate. Investment in human capital formation would be considered as a loss when an employee moves to another firm for better wages or other fringe benefits.

An interesting contrast to Lim's racial and cultural multiplicity explanation for the inapplicability of Japanese-style management in Singapore is provided by Mori (1991:118). Mori argues that the economic policy and philosophy adopted and implemented by the Singapore government and subsequent labour market characteristics are more appropriate reasons for the inapplicability of life-time employment and seniority wage system in Singapore. Mori's argument requires further research and analysis, but it should be noted that Japanese enterprises have made modifications to their management practices to accommodate the culture of the local environment.

Another ASEAN country in which Japanese resources management techniques have been successfully introduced, albeit with modifications, is Malaysia. Thong (1991:144) makes several interesting observations regarding Malaysian culture and society. Loyalty to the family takes precedence over loyalty to the company. Thus, employees prefer to devote more time to their families rather than spending over-time on company work. The concept of loyalty to the

company is similarly subordinated and is not as strong as it is in large Japanese companies. Although the "Islamic way of life" may present certain management challenges, Thong argues that the multiracial and multicultural nature of Malaysian society provides the added advantage of tolerance and sensitivity to different religious values and customs. His studies support the view that Japanese human resource management practices can be transferred to Malaysia with modifications, patience and understanding.

Techno-globalism (Eto, 1993:22) based on information technology and human resources development must be viewed from the perspectives of both recipient and donor countries. Recipient countries are often anxious to promote export-oriented industrialization, however, local social, political and cultural environments must be considered. Furthermore, a clear understanding of the meaning of what constitutes technology transfer must be clearly stated at the outset of the technology transfer process. Otherwise, human resources development may not be viewed as meeting the expectations of the recipient country.

In human resources development, one of the key concepts for the continuous improvements is *kaizen* (Imai, 1986). *Kaizen* involves group discussions and most often accompanied by loyalty, commitment and long-term planning, not short term results. For this reason, the stages of Japanese human resources development that accompany technology transfer must be understood at the outset. Appropriate human resources training must then be gradually sequenced in before the recipient country is able to advance towards export-oriented new product developments.

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MULTIMEDIA AND BIG BUSINESS IN JAPAN

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Is Japan hopelessly behind the U.S. with respect to the construction of a nation-wide multimedia[1] system? Or is Japan likely to catch up with the U.S. within a fairly short period of time even though now Japan apparently lags behind the U.S considerably in this particular field? Is it also possible that the U.S. and Japan may play a complementary role to each other with respect to different aspects of this relatively large emerging field of multimedia which will be a major component of a more general area called new information technologies? What will be the role of the Japanese government in this field? How important are Japan's large business corporations in the global race to develop multimedia? How about the role of Japan's *zaikai*[2] or big business in this respect?

One can think of a large variety of reasons to convince oneself that Japan may or may not become one of the international leaders in terms of a set of rapidly advancing information technologies which include multimedia as one of its principal components. We can also evaluate in that context the roles of Japan's large electronics, computer, industrial materials, trading and even financial corporations as well as trade associations representing such corporations, and more particularly the Japan Federation of Economic Organizations or *Keidanren.*[3] Finally, we may also review the role of the Japanese government in multimedia. When we examine these questions in any national context, it is important for us not to underestimate the role of government in the development of any basic nation-wide communications and information network in that nation. We are aware that some North American Asia specialists tend to make a sharp contrast between Japan and the West with respect to the role of government in industrial development.[4] In the case of the telecommunications field, it is fair to state that government has often played a considerable role even in the West. Few of us doubt the fact that the development

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1 One of the most widely used definitions of multimedia is an information network system where numerical data, characters, images (possibly including moving images), and sound are instantly transmitted through electronic and/or optical systems.

2 The literal meaning of zaikai is "financial world": zai stands for "wealth" or "finance," kai stands for "world." However, the usual meaning of the term zaikai as it is currently used in Japan's business world or mass media is more specific than just the meaning of wealthy society or financial sector; it loosely means "big business" or the leading or main component of Japan's manufacturing, commercial, and financial world.

3 Its official Japanese name is Keizai Dantai Rengo Kai. Keidanren includes among its members all of Japan's largest corporations, as well as all of Japan's large trade organizations. Its chairman is often called zaikai's "Prime Minister." The current occupant of this position is Shoichiro Toyoda, Chairman of the Board for the Toyota Motor Corporation.

4 The most outspoken example of this type is Chalmers Johnson, *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925-1975* (Stanford, California: Stanford University Press, 1982).

of the U.S.-dominated Internet network has been greatly facilitated by the U.S. government, especially by its defense segments. If so, one of the questions which needs to be answered is whether or not Japan's big business in co-operation with the Japanese government can significantly accelerate the present tempo of Japan's development in the world multimedia race.

It is not difficult to find a few strong reasons to support the supposition that Japan's global role in multimedia is relatively minor. Some Japanese business executives themselves seem convinced that Japan will have no more than a modest role in the development of multimedia in the world in the coming decades.[5] While I was in Japan, I generally felt that the consultant support system which is needed, both in kind and magnitude, to make it practical for a large proportion of researchers to rely on electronic information technologies was significantly less developed in Japan's academia than in North America's academia.

The computing problems this has led to were further compounded by the fact that a large proportion of Japan's electronic hardware and software has been built on the basis of the Japanese language. I tended to conclude that the extent to which Japan's social scientists rely on electronic information technologies might be at least three, four or probably as much as five years behind their counterparts in North America. While in Japan, I maintained very close contacts with many Japanese scholars in carrying out my research work there and not much contact with scholars who are located in North America. However, in terms of the use of the Internet, I was able to find no more than a few Japanese scholars who maintained access to it or to any other instant communications networks. At the same time, I communicated with a large number of scholars in North America, Oceania and Europe through the Internet.[6]

How does Japan currently stand in the world in terms of multimedia development or electronic information technologies in general? In which specific areas is Japan behind the U.S. and in which other areas does Japan remain ahead of the U.S.? One area where Japan clearly lags significantly behind the U.S. is the extent to which cable TV has been accepted by the general public. It is much more expensive in Japan than in North America to begin subscribing to a cable TV arrangement. One of the reasons for this is the substantially higher costs of laying an underground cable in Japan because of the great difficulty in finding land space which can be employed for such purposes. In addition, there may be other reasons for weaker demand for cable TV in Japan which are peculiar to the country. Probably one such reason is the fact that the amount of space available for private recreational purposes in a typical Japanese home is minuscule in comparison to a typical North American home.

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5 "Opinions of Japanese Executives in America Surveyed," *Hokubei Mainichi*, Wednesday, July 12, 1995, p. 1.

6 The relative slowness with which Japanese social scientists approach computers and computer-like equipment may be more fully appreciated if we take in the fact that until the last decade or two, most Japanese had never operated English typewriter-like equipment whereas in North America and Europe, typewriters have been a staple of most white collar working environments for probably over one hundred years. Although the tempo of development in Japan is exceptionally fast, it still takes some time for Japan to fully catch up with North America with respect to the kind of environment where social scientists usually conduct their research work.

There are several other areas where Japan lags behind the U.S. in the emerging globalized form of multi-faceted electronic mass information system. There are at least five major categories: (1) personal international instant communications systems, such as the Internet; (2) world-wide mass media news and entertainment systems, such as CNN and BBC; (3) computer software in general, such as DOS, FORTRAN, PL, UNIX, WINDOWS and others; (4) microprocessors; and (5) communication satellites. In many of the individual specific subfields within these areas, the U.S. is clearly a pioneer and has been single-handedly setting up many of the critical standards and requirements needed to sustain, maintain and expand these emerging technical fields. Also, in many of the highly technical sub-areas pertaining to weapons systems, war simulation games and other military operations, intelligence gathering, encoding, decoding, code-breaking, surveillance and spying, the U.S. obviously has a quantum lead over Japan. In one of the international conferences focusing on electronic mass communications systems held in Kyoto, Japan in 1994, the U.S. strongly opposed the general stand taken by both Western Europe and Japan to set up ahead of their full development those basic common standards which are needed in any global or widely used communications system (e.g., digital vs. analogue, ASCII vs. others, serial vs. parallel, the speed of transmission, sizes and capacities of various memory devices, etc.). Instead, what we have now is a situation where the U.S. is virtually given a free hand to dispose of decisions pertaining to these basic technical standards, provided that the U.S. continues to remain the unchallenged leader in developing new information technologies.[7]

How about the specific technical fields where Japan seems to have moved ahead of the U.S. or remains competitive in the emerging globalized form of electronic mass communications and related fields? At least in terms of hardware, Japan seems to be doing relatively well. Japan is probably doing much better than a man-in-the-street in North America is likely to assume. Examples of such areas where Japan excels are: (1) fax-related technology; (2) telephone cards and their related equipment; (3) telephone-card-like train cards (or magnetic cards which serve as cash for some specific transportation cost payment purposes); (4) automated banking service; (5) computer games like Nintendo and Sega; (6) RAM chips and semiconductors; (7) computer-related special printing technologies (e.g., the bubble-jet technology); (8) duplication (especially colour copying); (9) high-definition TV; (10) flat panel display; (11) portable entertainment (e.g., the Walkman); (12) video cassette recorders; (13) compact discs; (14) optic fibre; (15) supercomputers; and (16) limited types of special radar used for electronically guided weapons systems.

In the area of supercomputers, publications in Japan tend to suggest that Japan can now produce machines which are faster than those being manufactured and marketed by Cray Research, a leading American supercomputer maker which now controls an overwhelming share of the world supercomputer market. However, with respect to a set of software needed to operate such machines, the U.S. seems to have a clear lead. Moreover, many similar sources

7 In the field of electronic information technologies, serious international competition mainly takes place between the U.S. and Japan. Conversely, Europe has not posed a serious challenge in this field since 1945. The U.S. has not always been a successful standard setter, however. In the case of common basic standards pertaining to video cassettes, Japan and, secondarily, Europe (Philips) have succeeded in setting them up.

often report that many of the key components of the American supercomputers are currently manufactured in Japan and made available to U.S. and other computer manufacturers. A recent press report from Japan reveals that the Mitsubishi group has now succeeded in perfecting a plastic optic fibre which would replace the existing quartz optic fibre with a dramatic improvement in efficiency.[8] Although it will probably take some time before it can be mass-produced and widely marketed, this product is expected to reduce the cost of optic fibre to one-fifth of what it is now and to increase the capacity of transmission thirty-fold.

Japan may be behind the U.S. in originating entirely new technology and may largely excel in significantly improving existing technology. However, insofar as the matter of manufacturing and marketing many multimedia-related consumer products throughout the world is concerned, Japan seems to be doing incomparably better than the U.S. Those items which are directly or remotely related to multimedia (such as radios, TV sets, VCRs, camcorders, stereo systems, tape recorders, CDs and CD players, copiers and cordless telephones) have been effectively either manufactured or sold not just in North America and Europe but also in Asia, Africa, the Middle East and Latin America. The United States is apparently going to make massive efforts to break into the rapidly growing Chinese market. Even now the kind of products which appear to be most popular among ordinary Chinese citizens are those carrying Japanese brand names, not those products manufactured in North America, once we choose to exclude such items as movies, music, TV programs, blue jeans and a few others.

Although Japan is currently not the leading producer or exporter of personal computers, it produces a very large proportion of some of their key components such as RAM chips, flat panel displays and some of the accessories needed to operate personal computers, such as printers.

Some of the electronic and other parts which are used as key components of multimedia type end-products are frequently largely produced in Japan and exported abroad, partly because they are preferred by not just Japanese final product assembly plants but also by non-Japanese final product assembly plants. For example, when an American company sought government protection with respect to flat panel display, IBM supported the option of continuing to rely on Japanese suppliers as long as the latter were economically and technologically superior to the former. When IBM threatened to move most of its production facilities out of North America because the U.S. government was considering imposing heavy duties on crystal displays produced in Japan and exported to North America, the U.S. government had no other option but to drop the idea of protecting those American manufacturers of the same products which were widely considered to be significantly inferior in price and quality.

In fact, it now appears that the U.S. officially recognizes the fact that Japan has made significant advancements across a wide range of multimedia-related fields, such that the U.S. defense establishment presently wishes to adopt most of these Japanese advancements as it upgrades the general level of its defense technology. One of the specific formulae through which

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8 "Koseino purasuchikku hikari faiba," *Nihon Keizai Shimbun*, American Edition, Saturday, April 29, 1995, 13th Edition, p. 1.

such a broad technological transfer has been envisioned is the Theatre Missile Defense (TMD) program. TMD is regarded as a reduced-scale but updated version of the Star Wars weapons program, which the Reagan Administration once pursued but abandoned. One of the most primitive versions of this kind of program is the Patriot Missile system, which was employed during the Gulf War. The outstanding feature of the Patriot Missile system is its promised capability of being able to shoot down incoming enemy missiles. Assessments as to how effective this system was during the Gulf War vary a great deal from critic to critic and of course the Pentagon sees a logical need to upgrade this kind of weapons system regularly and continuously. From the standpoint of the U.S. defense establishment, it would be ideal to receive a large package of technologies from Japan more or less free of charge for the purpose of perfecting this Patriot Missile system and/or developing a large and more sophisticated system of regional missile defense for deployment in Japan and elsewhere.[9]

Japan's official responses to this U.S. proposal have been slow but by and large positive. This has been particularly true with respect to Japan's ruling party, the Liberal-Democratic Party, and some of Japan's leading weapons manufacturers, such as the Mitsubishi Heavy Industries, along with organizations of Japan's big business, such as *Keidanren* or the Japan Federation of Economic Organizations.[10] There are, however, a number of major obstacles which need to be overcome before this program is fully and definitively agreed upon and implemented. Two major problems are: (1) while the U.S. insists on free transfers of all the Japanese technologies needed for the TMD project via the Japanese government, the Japanese government has been resisting this condition on the grounds that most of the technologies involved are owned by private corporations and therefore the Japanese government has no legal authority to expropriate private intellectual property from Japanese corporations for such a purpose and (2) the U.S. preference to ultimately sell the weapons thus produced to third nations undoubtedly conflicts with Japan's long-standing policy of not exporting any military weapons to any nation.[11] There is little doubt that the U.S. wishes to remain a major international supplier of advanced military weapons. In any event, the relative international status of Japan's technological development is such that the U.S. is currently making this kind of effort mainly vis-à-vis Japan and not very much vis-à-vis the EC as a whole or any of its individual members.

By reviewing Japan's technological development history, one cannot overlook the significant probability that Japan will prove to be a formidable player in the on-going international competition to develop multimedia. On the one hand, in modern world history, Japan has not necessarily been a leader in pioneering or originating any of the major technological

9 At the U.S. request, Japan has now modified its patent system so that it is now possible to register a patent in Japan without publicly disclosing what has been patented if it is deemed necessary for national security reasons.

10 It is widely speculated in Japan that one reason why the U.S. is strongly interested in concluding TMD with Japan is that it wishes to acquire the high quality radar developed by the Mitsubishi Electric Corporation to guide a ground-to-ground missile system.

11 Acquiring patented technologies free of charge of course directly contradicts with the basic international negotiating position assumed by the U.S. to vigorously protect and guard private intellectual properties.

fields. On the other hand, Japan has proven to be a major improver of many of the fairly well established product lines and has become a dominant leader in many such fields, including the manufacture of steel, ships, cameras, radios, TV sets, VCRs, motor-cycles, automobiles, computers and some of their components, optic fibre, carbon fibre,[12] and crystal displays. Japan began to produce these commodities relatively late, but has introduced many important technical improvements, has greatly uplifted production efficiency and has ultimately become either the largest or one of the largest producers in the world in each of these fields. Some technological improvements have been quite significant. For example, the Sony Corporation was the first manufacturer which succeeded in commercially applying the transistor technology to portable radios, although the transistor itself was first invented in the Bell Telephone Laboratories in the U.S.

How can the Japanese do this? Is this because they tend to resort to unfair trade practices as Japan has often been accused of in international trade disputes? One of the most spectacular bi-national trade conflicts with respect to automobiles and automobile parts took place in the early summer of 1995, where the term "unfair" was liberally employed. Cheap wages in Japan prior to and immediately after World War II have often been cited as a principal cause of Japan's subsequent success in making significant inroads into what once appeared to be unpenetratable markets. Of course, it is true that no nation is 100% free of any violations whatsoever of the existing international trade rules any more than most young male drivers are 100% free of speeding violations. It is also true that Japan's wage structure was once considerably lower than those which existed in the West and that this fact gave Japan a major advantage in international trade.

There are possibly many other reasons for Japan's exceptional performance in international trade competition. Space does not allow us to deal with each of these in any depth. However, one of the general causes which has not been adequately investigated and analyzed in the Western literature focusing on Japan's economic competitiveness is the organizational characteristics of Japan's big business. Because of the exceptional degree of closeness with which even enormously large Japanese electronics, industrial materials, trading and banking corporations can and do co-operate and co-ordinate with each other, the scale of Japan's business undertakings tend to be significantly larger than comparable undertakings in North America, although large individual North American corporations may not compare unfavourably with their Japanese counterparts. In addition, Japanese businessmen tend to be meticulous in conducting feasibility and other background and preparatory studies so that once they move into the implementation phase of their projects, they are more than adequately prepared and can move very quickly.

Educational differences seem to play a role in international business competition. More Japanese can read English materials than Americans can read Japanese materials. For linguistic and many other reasons, it is easier for the Japanese to study how an American firm has created,

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12 One of the Japanese-developed technologies which the U.S. was apparently very eager to acquire during the FSX negotiation process was that of a particular type of carbon fibre which can be used in constructing high-performance airplane wings. Although carbon fibre itself was first invented and produced in the U.S., Japan is now the single largest producer of carbon fibre in the world.

perfected, or marketed a product than it is for Americans to study how a Japanese firm has taken over a field which an American company had once firmly dominated.[13]

Why are Japanese businessmen so successful in building large business organizations? Japanese business corporations often construct large co-operative business arrangements on a more or less permanent basis, as in the case of Japan's *keiretsu*, as well as on a short-term basis, as in the cases of many individual business joint-ventures, such as giant steel or automobile manufacturing facilities and oil and gas exploration projects abroad. In some such overseas projects, Japanese firms which belong to different *keiretsu* sometimes work together and in many giant natural resource projects, many large Japanese companies tend to work very closely with some of the biggest Western energy corporations of the world such as Shell, Exxon and Gulf. Some technological research projects do not necessarily require an overseas basis, such as the case of developing a new generation of semiconductors, where Toshiba has now established a joint project with Siemens of Germany and Motorola and IBM of the U.S.A.[14]

In addition, Japan has managed to create reasonably effective organizations representing many of the biggest corporations in many diverse fields, including *Keidanren* (*Keizai Dantai Rengo Kai* or the Japan Federation of Economic Organizations) and *Nikkeiren* (*Nihon Keieisha Renmei* or the Japan Federation of Employers). Japan has also developed a vigorous study group of leading individual business executives dealing with a wide variety of topics directly affecting business as well as other broader and more general topics, known as *Doyukai* (*Keizai Doyukai* or the Japan Committee of Economic Development).[15] It should be noted that all these *zaikai* organizations have regularly set up special committees chiefly focusing on new information technologies, including multimedia. Most of these committees consist largely of leading executives from Japan's biggest corporations, including giant electronics corporations, distinguished scholars, noted journalists and others. The committees regularly release numerous reports summarizing their views on the emerging global field of multimedia.

Two major reasons can be cited to explain this strong collaborative feature of Japanese business. First, the Japanese apparently possess an unusually strong tendency to develop a firm bond among those who perform quite different social or economic functions. A large bank may create a special relationship with a manufacturer and serve as a *mein banku* (or main bank). An automotive parts supplier may cultivate a special business tie with an automobile assembly plant which results in a continuously and mutually profitably relationship for many decades or more.

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13 Almost all of the important American business books have been translated into Japanese and have been widely read in Japan. Conversely, even now only a few Japanese business books have been translated into English and even fewer have been widely read in North America.

14 "Nichi bei doku de kyodo kaihatsu," *Nihon Keizai Shimbun*, Thursday, October 19, 1995, 13th Edition, p. 1.

15 Unlike *Keidanren*, *Nikkeiren* and *Nissho* (*Nihon Shoko Kaigisho* or the Japan Chamber of Commerce and Industry), whose memberships are restricted to corporations and not individuals, *Doyukai*'s membership is technically confined to individual executives. This membership characteristic of *Doyukai* tends to make its policy recommendations more imaginative and bolder, if not more radical.

In the West, on the other hand, such a close relationship between corporations is perceived to be or in fact is collusive, likely to become a liability instead of an asset with respect to overall societal economic efficiency or the best interest of the society as a whole. As of now, there exists no *mein banku* system in North America, although at one time the suggestion of "learning from Japan" was widely talked about in North American business.

Another reason for the corporate nature of Japanese business is a strong preference among Japanese, including Japan's elites, to develop close inter-personal relationships with those who are in a comparable social position, well beyond their immediate colleagues, school friends, relatives and others. A peculiarly Japanese social habit representing this kind of characteristic is *benkyokai* or study groups which are organized not just among young Japanese or middle-level business executives but also at the highest levels of Japanese society such as presidents of multi-billion dollar corporations, Diet members, elite civil servants, leading scholars and researchers.[16] Although the immediate objective of a typical *benkyokai* in Japan is to conduct a group study on a specified subject of mutual interest, the long-term benefits of the *benkyokai* are more comprehensive and diverse. One such objective is to build a strong inter-personal bond, which sometimes serves a critical role in, for example, organizing a considerable number of large corporations to undertake a common business project.

As we see in the case of the general status of women in Japan, Japan is in many ways a very tradition-bound conservative society. The Japanese do not attempt bold social experiments as easily as North Americans do in many basic matters pertaining to daily life. But in investing and setting up large manufacturing facilities, the Japanese are neither timid nor slow. They act quite quickly. This is one of the reasons why Japan has swiftly moved into such fields as industrial robots, semiconductors, VCRs, CDs, flat panel display, optic fibre and the like, soon becoming leading producers of such commodities. Operating on the basis of an effective team of many giant corporations such as *keiretsu*, it is relatively easy for the Japanese to raise the necessary capital funds, to acquire necessary land, to construct buildings, to purchase appropriate equipment, to complete the production facilities and to smoothly market the commodities thus produced. By contrast, many North American corporations tend to be solitary players. As a result, they therefore tend to face greater obstacles with respect to financing their manufacturing facilities and marketing their products.

In general, North Americans tend to boast that their economic system is largely capitalist and tend to assume that most of their industrial achievements have been based on private initiatives and not on government subsidies and the like. But it is nevertheless true that many of the U.S. technological achievements have in fact depended considerably upon government expenditures, such as in the cases of railroads, agriculture, the weapons industry, the aerospace industry, telecommunications and computers. We all know that, for example, the Internet system was originally created for the purpose of national defense and was not primarily intended for private use. Semiconductors in the U.S. were first primarily intended for ballistic missile

16 Akira Kubota, "Elite Learning in Japan," *Current Politics and Economics of Japan*, Vol. 1, No. 3/4 (1991), pp. 275-286.

guidance systems, later becoming a critical component for civilian personal computers and other industrial products.

The international multimedia race is hardly over. For one thing, leading nations such as Japan and the U.S. are yet to complete the process of developing a digital TV transmission system, as well as the digital TV cameras and TV sets which are needed to operate it, although it is widely assumed that digitalization is one of the most basic elements in the development of the globalized system of electronic communications technologies. Moreover, it is generally assumed that it will take at least a few years before the U.S. government makes up its mind about the set of basic industrial standards pertaining to the fundamental mechanisms involved in the digitalization of electronic information as it is being transmitted or processed. Since, a few years ago, the U.S. decided to reject the analogue-based Japanese-developed high definition TV and instead adopted the general course of digitalized information, Japan has suffered a major setback. Nonetheless, the fact that the U.S. preferred digital to analogue does not necessarily mean that the U.S. is bound to be ahead of Japan with respect to the private use of digital technologies at the level of widespread use among the general public, as opposed to the more limited military and space uses of digital technologies.[17]

It is also highly conceivable that the U.S. and Japan will end up occupying complementary positions in the production and supply of many of the key technical components of the emerging global multimedia information system. As of now, the U.S. seems to be quite strong in such items as microprocessors, computer software, computer hard drives and communication satellites, while Japan seems to be leading in such items as RAM chips, ceramic packages for RAM, crystal displays, VCRs, CDs and camcorders.

There is little question that a certain amount of techno-nationalism is bound to surface as we proceed into the main round of the international contest of the multimedia technologies. A spectacular battle of this nature took place relatively recently with respect to the development of the fighter support X (FSX), a new generation of military aircraft which Japan wanted to custom design and develop, given the facts that Japan's island geography is relatively unique and that only short distances separate Japan from its main potential adversaries.[18]

There are some scholars who try to compare the present U.S.-Japanese technological and economic race with the U.S.-Japanese arms build-up following World War I. There are some similarities between the two. There are also major differences and above all, an essentially

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17 Currently, a very large number of books on the Internet and multimedia are being published in Japan. There are also a very large number of government, public or quasi-public reports on multimedia, some of which have been listed in the bibliography of this paper. All these published and unpublished materials on multimedia strongly suggest how well the Japanese are prepared to enter the fully competitive phase of the international race on multimedia.

18 After protracted negotiations which lasted for four or five years, in March 1989, the U.S. and Japan finally and formally agreed to proceed with the FSX project. As for the details of this negotiation process, including nationalistic reactions to this project both in Japan and the U.S., see, for example, Ryuichi Tejima, *Nippon FSX o ute* (Tokyo: Shincho Sha, 1994).

economic or technological race is usually quite different from a purely military race, certainly in the sense that the present phase of such a contest is still essentially non-military and that it usually does not lead into a major military conflict as easily as a strictly military-oriented or purely national-security-oriented conflict. There is still a considerable way to go before we lose control over the present U.S.-Japanese tension and let it develop into such an unfortunate confrontation. As of now, Japan clearly concedes that it is behind the U.S. in terms of military capability. The present official policy of the Government of Japan is to rely primarily on the U.S. for its national security. It is thus clear that Japan is no military match against the U.S. However, this does not necessarily prevent both nations from drifting into a series of bitter political disputes with respect to the development of multimedia or other matters. It is not entirely out of the question that such political disputes may foster potent nationalism in Japan and that Japan may one day abandon its present timid position on rearmament and choose instead a course which would ultimately make it a military super-power. Such a scenario is nearly unthinkable now though, given the enormously strong tendency towards pacifism that we find throughout Japan today.

At the present moment, however, it is more likely that some sort of a division of labour on multimedia will develop between the U.S. and Japan, although this particular *modus operandi* may not prove to be as stable as we wish it should be. In other words, while it may prove to be largely stable in terms of technological advancement, it may prove to be quite fragile with respect to the economic balance between the two nations.

Moreover, such a balance of payments advantage that Japan enjoys today is due largely to the fact that Japan has been considerably stronger than the U.S. in the manufacture and export of consumer electronics and other consumer products, the very products which will be largely involved in the development of multimedia technology. If we rephrase this explanation, the kind of basic economic factors which have created Japan's superiority in the balance of payments internationally may largely continue to work even after we fully enter the age of multimedia and may enable Japan to continue to earn a great deal of foreign exchange, mainly in American dollars. At least it seems unlikely that with the coming of the multimedia age, Japan's position on the balance of payments will drop as low as the miserable position that the U.S. finds itself in at the present moment. It is more likely that Japan will continue to remain at least slightly above the break-even point in its international balance of payments for some time to come. In any event, from the standpoint of the U.S., Japan is likely to remain the single most formidable competitor in the global development of the new information society.

More than two decades ago, Daniel Bell wrote a book called *The Coming of Post-Industrial Society* where he predicted that the tertiary or service sector, which includes telecommunications and computers, will soon replace the secondary or manufacturing sector.[19] In a way, he was correct in the sense that a field such as multimedia will soon become an extremely important segment of our lives. But he was also incorrect in underestimating the

19 Daniel Bell, *The Coming of Post-Industrial Society: A Venture in Social Forecasting* (New York: Basic Books, 1973).

continuously important role of the manufacturing sector. As of now and for some time to come, a given nation's competitive economic strength continues to depend on the ordinary traditional manufacturing process, or the secondary sector, to a much greater degree than Bell had anticipated. At the same time, economic strength depends on the rapidly growing tertiary sector to a much smaller degree than Bell had predicted. Besides, in order to sustain the Bell-type post-industrial society, we need a very large amount of service-oriented hardware equipment, which must be produced and supplied by a newly added segment of the manufacturing sector. In that sense, therefore, the economic role of the secondary sector may not continue to be completely replaced by the rapidly increasing tertiary sector, or an increase in the tertiary sector may not be accompanied by an equal amount of loss in the secondary sector, as Bell appears to have predicted. Moreover, it seems that the simple straight-forward manufacturing process adds more value to merchandise than whatever is generated in the tertiary sector, even when the service sector of the nation involved is extremely advanced.[20] If so, the early lead in multimedia that the U.S. obtained may easily be surpassed by a nation such as Japan. Because of the chronic deficit in its balance of payments, the U.S. and U.S.-based corporations will find it increasingly difficult to finance either the research and development or the construction of facilities needed to manufacture state-of-the-art multimedia products. A healthy orderly growth of a nation's multimedia over an extended period of time also largely presupposes as its foundation a steadily expanding dynamic overall national economy.

Japan's entry into the age of multimedia is further accelerated by a critical role being played by Japan's elite civil service. In addition to the numerous private committees on multimedia and related fields in Japan, there are several important advisory government committees on these areas. One such committee is the Electronic Communications Technology Council (*Denki Tsushin Gijutsu Shingikai*) of the Ministry of Postal Affairs and Telecommunications (*Yuseisho*).[21] The membership of this council is almost like the Who's Who of Japan's electronics industry, prominent scholars and leading citizens. All these committees have been producing a very large number of reports dealing with multimedia in general, as well as many of its specific subfields in particular. In other words, this kind of membership list suggests a very close working relationship between the government bureaucracy and giant electronics and telecommunications industries in Japan in many specific technical fields, certainly including that of multimedia. Although I am not certain that the role that Japan's elite bureaucrats play in the

20 It is true that deindustrialization first occurred in North America. Through this process, many of North America's manufacturing facilities were moved out of North America, where wages were high, to those nations, mostly developing nations, where wages were low. Similarly, "hollowing-out" is now taking place in Japan. However, with respect to the impact of such processes, Japan's case apparently differs from that of the U.S. The rate at which "hollowing-out" takes place in Japan is approximately a half of what it was in the U.S. At the same time, the space created by the "hollowing-out" in Japan is being more rapidly filled by new Japanese high technology and other industries than is the case in the U.S.

21 Although some North Americans might assume that the famed MITI (Ministry of International Trade and Industry) has been in charge of multimedia and new information technologies, it is not so. Historically, telecommunications in Japan have been treated as a matter duly within the jurisdiction of the Ministry of Postal Affairs and Telecommunications, part of whose function is of course to take care of Japan's mail service.

Japan of the 1990's is as great as some North American Japan specialists claim or as great as during Meiji Japan, there is little question that they work very closely with top executives of Japan's electronics industry as well as *zaikai* leaders and others on such critical matters as multimedia. Japanese society is, as I argued elsewhere, structured like a large family, and a family which includes not only some of the leading electronics giants in the world, but also the government whose GNP is second only to the U.S. seems fully ready to take on the global project of multimedia.[22] There is little question that Japan will be a formidable challenger in the field in which the U.S. currently seems to have a clear lead.

22 The Japanese government is currently preparing the fiscal 1996-1997 budget in which it is expected that approximately U.S. $631 million will be earmarked for the project which would launch the ambitious task of laying an elaborate nationwide optic fibre cable system throughout Japan. See "Joho tsushin kankei nobi [taihen yorokobashii] Yusei jimu jikan," *Asahi Shimbun*, Tuesday, December 26, 1995, 12 Edition (Economy), p. 11.

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LEGAL ISSUES CONCERNING COMPUTER USE IN JAPAN: INTELLECTUAL PROPERTY LAW, CRIMINAL LAW AND LABOUR LAW

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I. PREFACE

This paper describes the legal issues arising out of computer technology development in contemporary Japan. Even though the legal issues in the fields of the Copyright Act and the Personal Data Protection Act are closely related to the subjects of high technology and present day Japan, I begin with those in the field of labour law. This is not simply because I am a labour law professor, but because I want to discuss legal issues from a somewhat unusual point of view.

II. LABOUR LAW

A. THE INFLUENCE ON EMPLOYMENT

1. The Creation of Jobs and the Unemployment of Workers

It is reasonable to assume that the number of employees in the communication service industry has increased as a result of the expansion of its economic activities in Japan. This trend can be seen from government statistics, which show a 1.16% increase in the 22 years after 1970 and a 1.67% increase in the 32 years after 1960.[1] This figure is not surprising, when we consider the speed of computerization in Japan from 1970 to 1988. For instance, there has been a 580.17% increase in the number of computers throughout Japan over the last 18 years.[2] The gap between these two figures arises because the introduction of computerization into the workplace is aimed at the rationalization of the working process, which inevitably brings lay-offs and cutbacks in the number of workers.

However, the degree of cutbacks to the number of workers in Japan is presumably low compared to other industrial countries. Statistics demonstrate that Japanese factories as a whole own 664 times as many industrial robots as factories in the U.S., 971times as many as in Germany and 1840 times as many as in Australia.[3] In other words, the computerization of the workplace has not dramatically affected the gross number of people working in the communication industry.

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[1] The figures are 2,370,000 employees in 1960; 2,960,000 employee in 1970; 3,400,000 in 1992 in the Communication and Transport, and Electricity and Gas-Water Supply Industry. Management and Co-ordination Agency, LABOUR FORCE SURVEY: 1992, cited in the Japan Institute of Labour ed. *JAPANESE WORKING LIFE PROFILE:1993-94* (hereinafter *JAPANESE PROFILE*), p.22.

[2] 6,718 computers, worth 617 billion yen, were used in 1970, versus 390,831 computers, worth 10,200 billion yen in 1988. Japan electric Computer Co. JECC COMPUTER NOTES, 1992, cited in Keizai Kohou Centre, *JAPAN 1994: AN INTERNATIONAL COMPARISON* (hereinafter *INTERNATIONAL COMPARISON*), p.26.

[3] Japan Industrial Robot Association, cited in *INTERNATIONAL COMPARISON*, p. 26.

The reasons are manifold. The speed of computerization of the workplace has created many new jobs, such as those needed at the production sites of hardware parts for computers, those at services or maintenance sectors of the computer industry and so on.

2. Japanese Management Style and Court Precedents on Mass Discharge Cases

By restricting our search for reasons to the field of labour law, we can point out that Japanese employers in general will not be so harsh as to fire workers on the simple grounds of rationalization of business operations. It is true that employers in the computer industry are keen to rejuvenate their workers because computer technology necessitates it. These employers need younger workers to design new computer software and hardware. Therefore, life-time employment practices are not fostered among establishments in this industry. However, it is presumed that even employers in this industry are used to following the general tendency of the Japanese management style when discharging their workers and to living up to the legal framework in relation to the restriction on firing their workers.

The rules set up by the court precedents concerning the mass discharge of workers are as follows and need to be demonstrated before the courts when litigated.

1) The reasonableness of plant closures, either partially or wholly.

2) The rationale of discharging certain numbers of workers.

3) The legal grounds for discharging workers, such as specific provisions applicable to the workers under a company's working rule.

4) Reasonable standards for discharging the workers.

5) The appropriateness of applying such standards to the workers nominated when being discharged.

6) Employers' reasonable efforts to move the workers to other jobs either in the same establishments or in related establishments.

B. OCCUPATIONAL HEALTH AND WORKERS' COMPENSATION

1. Occupational Diseases

Some labour hygienists maintain that work at video display terminals (VDTs) or video terminal units (VTUs) has been harmful to workers' health. According to their research, this type of work is related to failing or declining eyesight, including eyestrain, and in some cases *kennshouen* or shoulder pain culpa syndrome.

Even though not many cases have been reported for which workers' compensation benefits were awarded, numerous workers have been recognized as suffering from an occupational disease and have been awarded workers' compensation benefits on the grounds that they had been engaged in VDT/VTU work for long periods of time without being given suitable breaks during their normal working hours.

2. The Department of Labour Regulations on VDT/VTU Work

In 1978 the Industrial Hygiene Association, which is one of the annexed organizations to the Department of Labour, issued guidelines dealing with the protection of VDT/VTU workers. These guidelines were modeled after the Department of Labour's regulation which set the standards for the protection of workers working at punch card systems attached to the old type of large computers. After many comments were submitted to the Department of Labour on these guideline, the Department of Labour amended standards for new types of computers and issued the regulation in 1983. It provides many precautions which should be taken by employers, including the following four special regulations:

1) 10 minutes breaks for every 60 minutes of VDT/VTU work;

2) the adjustment of lights in work places (illumination);

3) the flexible height adjustment of desks; and

4) the colour of computers screens.

The problem is that the legal nature of this special regulation cannot be enforced by penalties provided under the Labour Standards Act (LSA), but only by administrative guidance to employers who violate it. Therefore, the regulation has no teeth.

3. The Labour Standards Act on VDT/VTU Work

Other problems in terms of protecting VDT/VTU workers include moonlighting or overtime which is required by employers close to the delivery date of a product. The LSA provides that an employer shall agree in writing to the hours and kinds of overtime work with the representative of the majority of workers working in the same workplace and the employer shall submit the agreements to the Labour Inspection Officers. However, in reality it is reported that many employers in the computer software industry have violated this provision, but few have been prosecuted in the past[4].

C. THE SURVEILLANCE OF WORKERS BY VDT/VTU AND THEIR PRIVACY

When VDT/VTU workers are required to record their beginning and finishing work times everyday, including break times, they are under surveillance by the employer. This is because the VDT/VTU can record the actual working times, so that the VDT/VTU will tell the employer at what time and how long the worker left the VDT/VTU, regardless of the reason. Therefore, the worker will become very cautious about the time taken to leave the desk, even to go to the wash room. Workers will feel that they are always being watched by the VDT/VTU. This situation results in many workers experiencing constant tension during working hours as a result of not taking a rest while sitting at the VDT/VTU desk.

To my knowledge, no trade union in Japan has ever raised these working environment issues as an infringement on workers' privacy, but there is the possibility of this occurring in the future. Every worker should have a right to yawn or take a break without being watched by a

[4] The Department of Labour Regulation.

VDT/VTU while working. The humanization of the work process, including the ability to respond to the call of nature, is an important issue.

D. THE PROTECTION OF TEL-WORKERS

1. Definition

Tel-workers are people working at computers installed in their homes who communicate with their companies on job assignments or as necessary for their work.

The legal issues in this regard are whether they are protected under the LSA or other laws in order to secure their working hour standards, minimum wage standards and other rights under the safeguard of governmental labour inspection.

2. "Worker" or Self-employed

The first legal issue is whether they are "workers," covered under the LSA, or self-employed. Under court precedents in relation to the definition of workers covered by the LSA, they could be considered "workers."

This is because "the worker," under Article 8 of the LSA, is interpreted by the court precedent. The courts wrote in their judgement that he/she should be a "worker" if the following conditions were met:

1) An employer had the power to order him or her to fulfil certain duties and the employer retains discretionary power to use sanctions if the duties were not followed.

2) Payment for work done was paid as compensation for his/her work, etc.[5]

3. The Labour Law Applied

If tel-workers are interpreted as " workers" under the LSA, they are covered by the LSA. However, if they are not interpreted as "workers" per se, they are covered by the *Kanai Roudou Hou* [Workers Working at Home Protection Law], the legislative intent of which is to look after hazardous work and minimum wage aspects.

E. NON-COMPETITION ARRANGEMENT

1. The Issues Raised

The next legal issue concerns whether a worker can inaugurate his/her own business, or be hired by another company, where the line of work is similar to the former company, for the purpose of making use of industrial knowledge and skill which he/she obtained from the former company.

2. The Criteria Under the Court Precedents

According to the court precedents, a former employer cannot prohibit a worker from inaugurating or being hired by another competitive employer. However, the former employer can make an arrangement with the worker where the worker promises the employer not to make use

[5] Otsuka Insatsu (printing company) case, Tokyo Dist. Ct., Feb.6, 1973, 179 *ROUDOU HANREI* 74 and others.

of knowledge or skills for a certain number of years after he/she leaves the company (for example, a 3-year period). The criteria for these arrangements are presumed from the Supreme Court decision.[6] They are:

1) The term or years of prohibition shall be established.

2) The geographical area over which business operates shall be restricted.

3) The type of business prohibited shall be clarified.

Arriving at a balance between the competing interests of worker's protection and business protection shall be considered. Any worker shall have the right to choose his/her job or profession, a right guaranteed under the Constitution. Therefore, he/she can quit the job and inaugurate a new business or be hired by any other company. On the other hand, the former company or employer who invested money and time for the innovation or creation of the computer software should have the right to protect its market share from unfair competition by prohibiting the use of knowledge and skills which the worker acquired while working for the company, for a certain number of years and in a certain geographical area.

In practice, many computer companies require their workers to sign agreements protecting the knowledge and skills which the workers have acquired before they can leave that company. However, the agreements, which provide more stringent requirements than the aforementioned criteria, might be decided by the court to be null and void under the application of the public and good moral clause under Article 90 of the Civil Code. This is because the worker is granted not only the right to choose a job of profession, but also the moral right over the product or creation which he/she has devoted effort to creating and by which he/she will contribute to the development of culture or the innovation of new technology.

III. LABOUR LAW, THE COPYRIGHT ACT AND THE CRIMINAL CODE

A. THE WORKER'S MORAL RIGHT OR COMPANY'S PROPERTY RIGHT

The issue is whether a creative work performed by a worker using a computer or a computer network installed at their company belongs to the worker or the company. The answer is not simple because it is arguable that a worker may have his/her moral right over the creation of such products.

Under traditional labour law theories, any product produced by a worker belongs to the employer. This is because a product created by a worker was produced from materials provided by the employer under the supervision of a supervisor who is ultimately under the hierarchical direction given by the employer.

However, a product created by a computer or a computer network is different because it is the product of a worker who devoted him/herself by using their own ideas and skills which are the expression of his/her own creativity. Therefore, the fruit of individual effort should, in the first place, exclusively belong to the worker, fruits which are later shared, through co-operation

[6] The Osaka Koushou Yoku Jou or Public Bath case.

with colleagues in some cases, to bring it forth as a completed work. Therefore, it can be argued that a worker has a moral right over the product created by a computer or a computer network even if the computer used was under the ownership of the employer. This means that the worker should have his/her copyright over the product.

On the other hand, it can also be argued that the employer or the company has the property right over the product created by the employee, though it is the expression of the employee's creativity, because the computer used was under the ownership of the employer. The worker and other colleagues shared their ideas and skills to complete the product. In other words, even a single product produced by using a computer or a computer network represents a tremendous economic investment by the employer or company.

The solution in legal logic is that the worker has the moral right over his/her product, though it was created by making use of the employer's computer under the direction of the employer, because it is nothing but the expression of his/her idea, thought or feeling which is protected under the Copyright Act, Art.2, Sec.1, Subsect.1. However, the worker is deemed to have waived his/her right vis-à-vis the employer because the worker created the product under the direction of the employer, using the employer's computer and during working hours for which wages or salaries were paid. Therefore, the worker can claim to exercise his/her moral right and demand a certain amount of compensation for it by signing a special agreement with the employer.

B. THE LEADING CASE RULED PRIOR TO THE COPYRIGHT ACT AMENDMENT: THE NIIGATA STEEL COMPANY CASE

Before the amendment to the Copyright Act in 1985 was made in relation to the ownership of electromagnetic devices and its products, a person who copied a computer program which he had created on the job was found guilty under the provision of the charge of embezzlement.

The leading case was the Niigata Steel Company case. A worker created a computer-assisted design program, in collaboration with colleagues, by making use of his company's computer under the direction of the supervisor of the company, but he copied this computer program from a diskette and took it, together with other related written materials from his desk, off the company premises, without the consent of the company, in order to be able to sell it through a new company he was planning to set up. He did so because the company had decided that the computer program should not be sold as a merchandised item, because it contained industrial secrets which could have been traced back by reverse engineering the computer-assisted design program.

The company accused him and he was prosecuted and convicted under a charge of embezzlement provided under Article 252 of the Criminal Code. This was because he had abused his position at the company by stealing the program and other related materials.

This case became famous for its legal ground because the old provisions under the Copyright Act stipulated that any product created by any person belongs to the person who created it unless products were publicized under the name of or as a property of the company to

which the worker belonged. The Tokyo High Court interpreted this provision as covering this case, since the computer program and related documents had not been publicized yet under the name of or as a property of the company. The Court ruled that this provision should be applied to the cases of a computer program "which would be publicized under the name of or as the property of the company in the future if it would be done so".[7] The court had the choice of interpreting the provision (namely, that the worker should have his/her moral right to the product which he/she had created), but it did not.. Therefore, the computer-assisted design program in this case would belong to the worker, so that he should not be found guilty.

C. THE LEGISLATIVE SOLUTION

This legal issue was resolved after the Niigata Steel Co. case was settled by an amendment to the Copyright Act in 1985. Article 15 provides that any creative product produced shall belong to the legal person or to any other employer, if the following conditions are met:

1) It was produced under the initiative of a legal person or any other employer;

2) It was produced by a person who was ordered to produce it and was on duty;

3) Except when there was any special arrangement under a contract, a work rule or any other provision.

This clause providing exceptions is important because the moral right of the worker to the product created by a computer or computer network at his or her company is confirmed to such extent. In practice, many workers who have created new computer software which brought a greater market share to the company receive a special bonus.

IV. THE COPYRIGHT ACT

A. THE LEADING CASE RULED PRIOR TO THE AMENDMENT OF THE ACT: THE SPACE INVADER PART II COMPUTER GAME CASE

Prior to the amendment to the Copyright Act in 1985, which will be explained later in this section, the Act did not have any provision to protect a computer program. The relevant provision said that "the creative expression of an idea or feeling, which belongs to the field of literature, academic product, or music shall be the object of or protected under the copyright" (Art.2, Sec.1, Subsect.1).

In 1982, the Tokyo District Court ruled that a computer program should be protected under the Copyright Act, which became the leading case before the amendment to the Act. In this case, the source program of a computer game, known as Space Invader Part II, was interpreted as being protected by the Act. The legal reasoning was that this program was created under a logical process of thought which was unique to the creator. Therefore, it was one of "the creative expressions of an academic product," the wording of which was stipulated as meeting the requirement of protection under the Act, Art.2, Sec.1, Subsect.1. Through this court decision, regardless of the wording of the provisions under the Copyright Act, it was decided that a

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[7] Tokyo High Court, 4 Dec., 1985, *HANREI JIHOU (Timely Reported Court Cases)*, No.1190 at 143. (10) Tokyo Dist. Ct.,6 Dec., 1982, *HANREI JIHOU* No.1060, at 18.

computer program including, a source code and the objective program, was to be covered under the Act. However, unless a special settlement was agreed upon, any person who wanted to be protected under the Act had to litigate individual cases.

B. THE LEGISLATIVE SOLUTION

In 1985, the Act was amended and the legal issue clarified by inserting the explicit provision that the Act covers computer programs (Art.10, Sec.3, Subsect. 3.)

1. The Exception Provisions

However, the provision excludes the following from the copyright protection:

1) Program language;

2) An arrangement for usage of certain programming language; and

3) Algorithms: a logical process for resolving questions set up in a computer which becomes possible by the combination of directions to a computer.

The reason for this amendment is because the cost of creating or developing a computer program or software had skyrocketed. The levels of software had increased and the structure became complex. Thus, the maintenance cost also increased. Thwarting computer viruses and the constant updating to keep market shares up needed many workers and much investment. One estimate is that 70% of all monies invested in the computer industry were used by the software part of the industry.[8] There was another reason for the amendment of the Act; nobody could ignore the fact that the U.S. exercised its political power over the Japanese Government for the amendment of the Act in order to protect its own copyright.

2. Reproduction of Programs

The reproduction of programs is not prohibited as long as the reproduced program are to be used for the reproducer's own use (Art.47-2). However, if the user operates the reproduced program knowing that it was a pirate edition, he/she shall be deemed to be in violation of the Act (Art.113, Sec.2).

This provision providing exceptions was inserted because users need to make back-up copies for their own protection or to adjust programs for their own computer use.

3. Databases

Because databases are protected under the amended Act, papers, figures, maps or any other collections of information which are systematically organized, and which have creativity embodied in their elaboration from computer information, are covered (Art.12-2).

The reason is that databases have become important for industrial and academic activities in the computer age, so that many kinds of databases have sprung up, ultimately making it necessary to protect them under the Act.

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[8] Nobuhiro Nakayama, *SOFUTO UEAH NO HOUTEKI HOGO* (The Legal Protection for Soft Ware) at 2, 1993.

C. THE REVERSE ENGINEERING AND THE SHUHWA SYSTEM TRADING CO. CASE

Under the development of high technology, a source program can be reproduced by reassembling an object program. This type of reproduction, by making use of reverse engineering, was ruled as violating the Copyright Act.

In the Shuhwa System Trading Co. Case the Shuhwa Co. reproduced the source program of a basic interpreter of NEC PC-8001 by making use of a technique called reassembling and sold it by publishing it. The Tokyo District Court ruled that this was a violation of the Copyright Act.[9]

Judging from this case decision, the courts have to follow up on the development of high technology dealing with computers and enlarge their interpretation of the provisions of the Copyright Act for its coverage.

V. THE CRIMINAL CODE

A. THE LEGISLATIVE SOLUTION: THE AMENDMENT TO THE CRIMINAL CODE IN GENERAL

In 1987, the Criminal Code of Japan was amended to insert specific provisions relating to persons who misused or abused computer electric devices. The first was related to the definition of "electromagnetic record" (Art.7-2).

B. THE PROVISIONS ON THE OFFENSES TO PUBLIC DOCUMENTS AND THE COURT DECISIONS

1. The forgery of public documents (Art.157, Sec.1) or private records (Art. 161, Sec.1), punishable by a penalty of 5 years imprisonment or a 500,000 yen fine. For example, a forgery of public registry record of automobile owners and magnetic parts of a betting ticket.[10]

2. Damaging public documents, punishable by a penalty of 3 months to 7 years (Art.258). Examples are rewriting an examination paper after an entrance examination to a public school and rewriting a document issued by an employer to an employee at the time of a labour dispute.[11]

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[9] 30 Jan. 1987, *HANREI JIHOU*, No.1219, at 48.

[10] Sup. Ct. Decision, Nov. 24, 1933, *SAIKOU SAIBANSHO KEIJI HANREI SHUH* (*Supreme Court Case Reporter*), Vol.37 No.9 at 1538, and Koufu Dist. Ct. 31 Mar., 1989, *HANRE JIHOU* No. 1311, at 160.

[11] Tokyo Dist. Ct. 22 Feb.,1989 *HANREI JIHOU* No. 1308, at 162, though this case was ruled as guilty under a forgery offence.

C. THE PROVISIONS ON THE OFFENSES TO PRIVATE DOCUMENTS AND THE COURT DECISIONS

1. Damaging a private document, and to a private document concerning right and duty issue, punishable by a penalty of up to 5 years imprisonment (Art. 259).
2. A disturbance of business operations, punishable by a penalty of up to 5 years imprisonment or 1,000,000 yen fine (Art.234-2). An example is making use of a forged electronic bank card.[12]
3. A swindle involving using a computer to record false information, punishable by a penalty of 10 years imprisonment (246-2). An example is a bank employee who deposited 700,000 yen to his bank account by inputting false data to the ATM of his bank.[13]

VI. THE CONSTITUTION AND THE PERSONAL DATA PROTECTION ACT

A. LEGISLATION AND THE LEADING CASE: TV FILM CASE

Article 21 of the Constitution, dealing with freedom of expression, is interpreted as guaranteeing a person the right to know. The Supreme Court of Japan ruled that Article 21 should be interpreted to include the right to know. It stated that, "in our democratic society, reports disseminated by the news media provide the people of the nation with important materials by which they judge and therefore they serve to facilitate their 'right to know.'"[14]

This right is understood to include not only the right to know his/her personal information stored in computer-processed personal data files held by both administrative agencies and private agencies, but also the right to access, correct, delete, refuse to use or disclose the contents of these files. Another relevant provision under the Constitution is Article 12 which provides that all persons are respected as individuals.

B. THE PERSONAL DATA PROTECTION ACT APPLIED TO THE PUBLIC AGENCIES

In 1988, the Act was promulgated under the development of the information society in Japan and international influence on this sort of law. A brief summary of the Act is as follows:

1) The main objective of the Act is to protect the rights and interests of individuals from the abuse of computer-processed personal data stored at computer systems installed in administrative agencies. To ensure the proper and smooth function of public administration is another objective (Art.1).

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[12] Kobe Dist. Ct., 19 Sep.,1991, *HANREI TIMES* (*Court Cases Times*), No. 797, at 269 and Osaka Dist. Ct. 13 July, 1967. Though these cases are not directly related to electric devises similar cases where they are used will be ruled as violating the provisions.

[13] Osaka Dist. Ct.,7 Oct., 1988, *HANREI JIHOU*, No. 1295, at 151.

[14] Supreme Court, 15 Feb. 1961, *SAIKOU SAIBAN SHO KEIJI HANNREI SHUH*, Vol. 15, No. at 347.

2) "Computer processing" data is the key requirement for personal data protected under the Act. It covers input, storage, edition, working, modifying, updating, retrieval, erasing, output and any other processing similar to these (Art.2).

3) The Act protects "personal data," by which it means data related to an individual, such as one's name, one's date of birth and other descriptions contained in the data, numbers, symbols or other marks assigned to the individual (Art.2).

4) Computer-processed personal data shall not be used or furnished for any purpose other than to hold data.

5) As for accountability, the head of an administrative agency shall make his/her best effort to prevent the leakage, loss, or destruction of computer processed personal data (Art.6)

6) Any individual has "the right to know" the content of personal data processed by computers and stored at any public agency. Any individual may request the disclosure of his or her data in writing to the head of the holding agency of personal data.

However, the Act provides exception, such as school records, diagnosis and treatment at hospitals, criminal records and the like.

C. THE MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY NOTIFICATION APPLIED TO ESTABLISHMENTS IN THE PRIVATE SECTOR

In 1990, the Ministry of International Trade and Industry (MITI) issued a guideline on the Policy of the Protection of Computer-Processed Personal Data. This was a guideline which urged entrepreneurs in the private sector to take self-motivated measures. The basic view was "how to establish a balance between the protection of consumer-related data, such as consumer data and credit transactions data and the freedom of business activities and maintenance of competitive opportunities of entrepreneurs."[15] A summary follows:

1) The use of data shall be within the scope of the purpose of its collection, in consideration of not infringing on the interests of the person concerned and with consent of the person to use the data when exceeding the scope of the objectives of collection.

2) The personal data shall be kept accurate and up-to-date and reasonable security measures shall be taken to prevent the data from being accessed by an unauthorized person, lost, destroyed, altered, or leaked.

3) Requests for access, correction, deletion, refusal of use and disclosure of personal data shall be accepted.

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[15] Ministry of Trade and International Trade and Industry, March 1990, at 4.

4) A person competent to decide the handling of the personal data shall be accountable to comply with the principle stated under the guideline.[16]

VII. SUMMARY

Under the computerization of Japanese society, the recent changes seen in the court rulings and the legislative amendments in the past 15 years or so are highlighted.

In 1982 a computer game software program case in which a company copied a source computer program created by another company, was ruled on by the Tokyo District Court. This judgement became the leading case in the area, insofar as a computer program was protected even under the traditional provision of the Copyright Act. This was the Space Invader Part II Computer Game case. Two years later in 1985 another leading case was given a verdict by the Tokyo District Court, namely the Niigata Steel Company case. In this case a worker who copied a computer program which he created under his employer's direction was found guilty under the charge of traditional embezzlement as given in the Criminal Code.

Under the comments on these cases, the Legislature moved to amend the Copyright Act. The important amendments were two-fold. The first was related to the computer game case mentioned above. Namely, the Copyright Act was revised to explicitly protect computer programs with certain exceptions. The second was related to the Niigata Steel Co. case. That is, the Copyright Act was amended so as to clarify that the property rights of computer programs which had been created by workers under the direction of the company should belong to the company unless special arrangements between the workers, who created them, and the company, who directed them, were made.

In 1987, the Criminal Code was amended in order to criminalize the offenses which would appear on the scene by making use of computer technology, in consideration of the Niigata Steel Company case. A year later in 1988 the Personal Data Protection Act was promulgated for the purpose of protecting people's privacy in consideration of efficient management of administrative matters, following similar pattern of numerous prefectural ordinances which had been promulgated under the wave of computerization of administrative works.

Although the court rulings and the legislative actions are not so clear cut as those mentioned above, legal issues in the Labour Law field have been developing. Before new court decisions and legislative solutions concerning computer programs had been promulgated, guidelines for protecting computer workers from their health hazard had come to the forefront already in 1970s. The 1978 guideline of this sort approved by the Department of Labour and the 1983 regulation issued by the Department of Labour were worth observing.

Occupational health issues related to computers are serious, though the number of recognized occupational ailments eligible for workers compensation benefits were reported as small: eyestrain, shoulder pain and other chronic symptoms are continuously complained about by workers. In the computer industry, overtime work has become normal, without extra payment in some cases, against the Labour Standards Act.

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[16] Notification of the Ministry of International Trade and Industry, No. 348, July 7, 1989.

There is a high turn-over of workers in the computer industry because the industry needs younger workers to design new computer technology. However, the unemployment rate in the industry as a whole did not rise because the expansion of the industry required more additions to the labour force.

New labour problems in relation to computer workers have come to the fore. How to protect home-based or tel-workers will be solved by deciding upon the applicable labour law, either the Labour Standards Act or some other. However, the problem of labour inspection over them is still unsolved. How to protect computer workers from being supervised by their computer terminals will be resolved by the prior notice and limiting terms upon the surveillance by computers, because these surveillance techniques will infringe workers' privacy at the workplace.

The last important issue is the worker's moral right over computer programs, because they are the creative product of ideas and thoughts which are now protected only when workers have special arrangements with their employers which say that the products belong to them and not to the company.

In sum, high tech areas, such as computer technology, have given birth to many challenging legal issues in Japan.

COMMENTS FOR PANEL: JAPANESE INDUSTRIAL POLICIES

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Industrial policy can be defined in a variety of ways. I would regard industrial policy as a set of policies designed to encourage production and employment in selected industries, regions or functions and discourage other categories. On the other hand, other public policies can influence economic activity, but not on a selective basis. Broad monetary, fiscal and exchange policies can have economic effects but are not designed to be selective. In practice, monetary restraint can have a bigger impact on the housing industry than on current consumption. An exchange appreciation has a bigger direct impact on tradable commodity producing industries than on services, but the policies were not designed to be selective but are a differential response in the market to the same policies.

There are three different attitudes in the U.S. and Canada to industrial policies in Japan. One is that industrial policies are very important and they should be implemented in the United States and Canada. Authors in this group would include Johnson, James Fallows, Robert Reich, Sylvia Tyson, John Zysman and others in the Berkeley Round Table, etc. A second group would say that industrial policies are important and that U.S. and Canada should adopt policies to product producers from such competition. Management in Caterpillar Tractor would be included in that group. A third group would say that industrial policies are not important, or at least not any longer. Authors in that group would include Richard Beason, Hugh Patrick, Charles Schultz, Phil Trezise, David Weinstein, etc. Participants at this conference in this category would include Bill Rapp, Paul Parker, Frank Langdon and D.J. Daly.

I would agree that Japan did have the tools to have differential tariffs, taxes and subsidies on different industries in earlier post-war years and did use them. However an important paper by Dick Beason and David Weinstein assembled data on effective tariff and tax-subsidy rates by product and growth rates over time. They found different tariff and tax rates between industries, but they also found no correlation those rates of tariffs and subsidies and the growth of industries. Coal and textile had been heavily subsidized and protected but were slow growth industries.

Another important development is that there has been a significant shift policies within Japan since about 1975. Japan began to move towards significant reductions in tariffs and non-tariff barriers, especially in manufactured products. Even before the implementation of the Uruguay Round, Japanese tariff rates on manufactured products were less than the U.S., Canada and the E.E.C. Furthermore, Bob Lawrence has shown that the U.S. (and Canada) have non-tariff barriers that cover a larger share of imports than in Japan. Japanese observers are very upset at how frequently observers from North America do not recognize how much Japanese policies have changed over the last two decades.

This shift in policies reflect a shift in power and influence within the Japanese government-to reduce the power and influence of MITI (who tended to favour selective policies at the industry level) and to reflect an increase in the power and influence of the Department of Finance and Bank of Japan (who favoured more macro policies). A number of observers in the first category have not adequately allowed for the shift that has taken place over the last two decades in Japanese policies.

Turning to specific papers, David Edgington has a comprehensive paper with more than 75 references. It contains data on employment changes by industry (Table 1) and discusses four industries (steel, shipbuilding, automobiles and small business), regional concentration and Japanese foreign investment.

The paper is primarily descriptive. The title refers to the yen appreciation, but after brief factual references to the yen - U.S. dollar exchange rate changes in the introduction, this topic was not tied in to the later parts of the paper.

A key effect of the exchange rate change was on relative costs in manufacturing in different countries. On compensation per hour, this shifted Japanese compensation per hour from about half the U.S. in 1985 to about 25 percent above by 1993. Similarly, unit labor costs in Japan had averaged 35 percent below the U.S. for more than three decades after 1950, but by 1993 they had moved to about 30 percent above the U.S. This is key in the employment declines in some key industries that David discusses and the increased FDI investment by Japan in manufacturing to other countries in Asia shown in Figure 1.

On the basis of these papers, should we be optimistic about Japan's future competitive position? One caution I would suggest is on financing in Japan. The Japanese financial system is constrained by the drop in real estate prices and stock prices (when such assets had been used as security for loans) and the increase in the money supply (which is key in growth of deposits and business loans) has been slower in recent years than during earlier decades.

Many of the positive factors relate to the production side of the multimedia industry. This need not lead to rapid growth within Japan unless it is matched on the demand side. On both the business and personal side, the demand for multimedia has been lagging that in North America. This was not present in cars and other areas of manufacturing in earlier decades when Japan also had the advantage of a low value of the yen.

Tim Craig has an interesting paper and is interested in relating the role of information to the relative performance of the Japanese economy, especially to Canada. He clearly has manufacturing in mind and it is clear that large plants in Japan have been doing very well in relation to North America.

One question for future work is why smaller scale plants operate so much bellow large plants and so much below similar sized plants in North America. In addition, white collar occupations and the service industries rare less productive in Japan than in North America. Why is this so when these are knowledge intensive industries? Can some parts of Porter's diamond throw light on such differences?

These comments relate to new questions raised by the study rather than commenting on the interesting questions he provides evidence on in his paper.

PRIVACY PROTECTION ON THE GLOBAL INFORMATION HIGHWAY: IMPLICATIONS FOR THE JAPANESE POLITICAL ECONOMY

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The protection of personal privacy has become one of the most significant social issues within the national and international debates about the building of national and global information infrastructures. Some countries (especially in Europe) already have well-developed legal regimes and institutional capacities to address this problem. Others (including Canada, the United States and Japan) do not.

The common explanation for the absence of comprehensive data protection rules in certain non-European countries is a cultural one. In North America we supposedly rely on the more individualistic assertion of rights and interests, which, some argue, renders unnecessary an oversight regime to regulate the collection, processing and dissemination of personal data. In Japan the explanation is somewhat different. Japan is commonly regarded as a "group-oriented society" in which a notion of harmony extends to every institution in Japanese life.[1] Japanese social relationships are formulated for the most part not on the basis of respect for individual liberties, but on the basis of orderly human relations. Hence, the Japanese are supposedly not so sensitive to the right to privacy as their counterparts in other Western societies. This is reflected in a relatively late entry of the concept of the right to privacy into Japanese law.[2]

This paper does not question this conventional profile of the Japanese political culture. It does contend, however, that cultural differences can no longer offer valid reasons for avoiding a comprehensive and effective approach to personal privacy protection in any country. The economic and technological forces that drive the development of national and global "information infrastructures" will ensure that if privacy is protected anywhere, it has to be protected everywhere.

This paper briefly traces the history of regulatory efforts to protect personal data and thus promote higher levels of personal privacy. It demonstrates how economic interests have gradually become as important as human rights considerations in this area of public policy. It shows how data protection law may be used to block the international flows of personal data to countries that do not have adequate protections. These developments have implications for countries such as Japan that do not yet have effective and comprehensive rules for the protection of personal data.

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1 See Srinija Srinivasan, "Privacy and Data Protection in Japan," *Government Information Quarterly* 9: 121-133 (1992).

2 See Masao Horibe, "Access to Information and Privacy Legislation in Japan," *Transnational Data and Communications Report* (November/December 1991), p. 37.

The International Regulation of Personal Data

Information privacy or data protection (the European nomenclature) appeared on the agenda of most advanced democratic states throughout the 1960s and 1970s. The problem arose when public and private organizations employing the latest information technologies began to process vast quantities of information about individuals. The legislative response throughout these countries has been to enact data protection or information privacy laws to grant the "data subject" a greater control over his or her information. This right to "informational self-determination" normally translates into a basic set of *fair information principles*:

1. That the existence of personal record-keeping systems should be publicly known.
2. That individuals should have rights of access and correction to their own data.
3. That personal data should only be collected for legitimate and openly stated purposes.
4. That personal data should only be used internally for those stated purposes (unless the individual consents).
5. That personal data should only be disclosed (externally) in ways that are consistent with those purposes (unless the individual consents).
6. That there should be adequate and appropriate security safeguards.[3]

The definition of these principles varies from jurisdiction to jurisdiction. So does the way they are enforced: many countries (with the notable exception of the United States) have set up small privacy or data protection boards or commissions with varying oversight, advisory or regulatory powers.[4] In most countries, whether the organization that processes personal data is in the public or the private sector is of little consequence. All European legislation has a comprehensive scope, as does that in New Zealand. Canada, the US and Japan, however, have only established comprehensive protections for the organs of the public sector.

Those countries that legislated in the 1960s and 1970s did so principally for domestic reasons. Influenced by memories and experiences of totalitarian forms of rule, states like West Germany, France and Denmark saw data protection as an essential bulwark against excessive surveillance by powerful public and private institutions employing the latest information technology. The threat was perceived to be from the omniscient "Big Brother" and the large centralized "data bank" that holds vast quantities of data about individuals' many transactions and contacts with those institutions. The early data protection laws were largely the product of a intense debate and lobbying from a fairly small community of legal experts with interest and expertise in human rights.

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3 See Colin J. Bennett, *Regulating Privacy: Data Protection and Public Policy in Europe and the United States*, (Ithaca: Cornell University Press, 1992, Japanese translation 1995). This is my interpretation from reading different national and international regulations.

4 See David H. Flaherty, *Protecting Privacy in Surveillance Societies: The Federal Republic of Germany, Sweden, France, Canada, and the United States*, Chapel Hill: University of North Carolina Press, 1989.

This regulatory activity gave way in the early 1980s to a series of agreements that attempted to codify the emerging consensus at the international level. The 1981 *Guidelines* from the Organization for Economic Cooperation and Development[5] was prompted by the recognition that personal data could not be entirely secure within one country unless it was secure over the entire complexity of international networks over which personal information might flow. These voluntary guidelines (adopted by Canada and the United States in the early 1980s) were followed by a more legally binding Convention from the Council of Europe that provided explicit authority for European data protection authorities to block flows of personal information to countries that could not ensure levels of protection commensurate with those in Europe.[6]

Subsequent regulation was then motivated as much by economic considerations as those of human rights and civil liberties. Privacy advocates began to exploit the possibility of data protection being used as a non-tariff trade barrier as a way to convince their respective governments to pass data protection legislation. These motivations were particularly strong in Britain, the Netherlands and in other European countries that had been relatively slow to legislate.[7] The more harmonization of legislation, the greater the fear of being left out of the "data protection club."

These early international agreements were, however, rarely used in the way envisaged; to date there have been few attempts to block data flows in the interests of protecting personal privacy. Moreover, the attempts at harmonization through the OECD and the Council of Europe were designed to address the problems inherent in an earlier generation of information technology. The more recent decentralization of computing capacity and the development of integrated and open networks has rendered the privacy problem more complicated. The difficulties stem now, not from the centralized and omniscient "databank," but from the fact that personal data can now be transmitted over open networks and accessed from multiple remote locations at far greater speed than occurred in the past.

The European Union Directive on Data Protection: The New Standard for Privacy Protection

In the 1990s, the international regulation of personal data processing entered a new phase. On July 20, 1995, the Council of Ministers and European Parliament of the European Union formally and finally adopted a "Directive on the Protection of Personal Data with Regard to the Processing of Personal data and on the Free Movement of such Data."[8] This approval was the culmination of five years of drafting and redrafting as the document passed through the complicated and lengthy EU decision-making process.

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5 Organization for Economic Cooperation and Development, *Guidelines on the Protection of Privacy and Transborder Flows of Personal Data*, Paris: OECD, 1981.

6 Council of Europe, *Convention for the Protection of Individuals with Regard to the Automatic Processing of Personal Data*, Strasbourg: Council of Europe, 1981.

7 See Bennett, *Regulating Privacy*, pp. 140-3.

8 European Union, *Directive of the European Parliament and of the Council on the Protection of Individuals with regard to the Processing of Personal Data and on the Free Movement of Such Data.* Brussels: 20 July 1995 (hereafter the "EU Data Protection Directive").

"Directives" are one of three forms of rule-making in the EU.[9] The goals expressed in directives are supposed to be binding. But Member States are granted some latitude in deciding the actual form of implementation and the more detailed content of national legislation. The aim of the Data Protection Directive is to "ensure a high level of protection for the privacy of individuals in all member states...and also to help ensure the free flow of information society services in the Single Market by fostering consumer confidence and minimizing differences between the Member States' rules."[10] This reflects the belief that the single European market relies not only on the free flow of capital, goods and labour, but also of information, and that harmonized data protection legislation and the free flow of information are complementary rather than conflicting values. The hope is that "any person whose data are processed in the Community will be afforded an equivalent level of protection of his (sic) rights, in particular his right to privacy, irrespective of the Member State where the processing is carried out."[11]

The formal adoption puts to rest speculation about whether or not this Directive would actually emerge. It gives the world's privacy advocates and experts a sense of relief that they no longer have to try to follow the intricate twists and turns of the European policy process. It gives data users (in both public and private) sectors a somewhat clearer sense of what personal data processing practices will be impermissible in the years ahead. And it gives European governments three years to bring their laws up to the new European standard.

For countries such as Japan, however, the adoption of this Directive raises more questions than it answers. The implications of a harmonized European data protection regime for third countries have always seemed hypothetical while the Directive was still in draft form. Now begins a period of speculation about what the provisions in the Directive actually mean for other countries and about whether those provisions will be, or can be, enforced.

The EU Data Protection Directive is not a "user-friendly" document that individuals might use to ascertain and exercise their data protection rights. It is exactly the kind of document that one would expect if a large and fluctuating number of European bureaucrats tried to cobble together the German and the French law, add on a few provisions from the British, spend five years taking it through the European legislative process and subject it to analysis and lobbying from almost every conceivable interest. The complexity and vagaries of the process have produced a complicated and legalistic document with many derogations and qualifications, a number of "lowest common denominator" provisions and much incoherence.

Nevertheless, the standards for personal data processing are quite compatible with those outlined in national laws and previous international guidelines. For enterprises in the service sector that generally rely on the unimpeded flow of customer and client data, the major worry is the "finality principle" -- that personal data may not be processed for purposes other than those

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9 The others are *regulations*, which are directly binding on national governments and other actors and pass into law without further action; and *decisions*, which are more specifically targeted to individual governments, groups, or individuals. Directives are by far the most important and least common type of rule.

10 Mario Monti (Single Market Commissioner), *Council Definitively Adopts Directive on Protection of Personal Data,* European Commission Press Release, IP/95/822, July 25, 1995.

11 Ibid.

identified at the time of collection, unless the individual consents or unless there is a legitimate public interest. The direct-marketing, credit-reporting and financial sectors spent much time and effort attempting to weaken these provisions and in particular to establish a lower and more ambiguous definition of "consent."[12]

The big differences in the EU Directive from previous are in the mechanisms for implementation. Thus, the Directive requires the data user to "notify the supervisory authority...before carrying out any wholly or partly automatic processing operation or set of such operations."[13] "Notification" seems to contemplate a "register of processing operations" maintained by the supervisory authority similar to that operated in Britain.[14] The Directive is also more forceful in specifying the functions and powers of a Member State's "supervisory authority." These authorities shall act with "complete independence" and shall be endowed with: investigative powers; effective powers of intervention (especially before processing operations begin);[15] powers to engage in legal proceedings; and powers to "hear claims" concerning the protection of rights and freedoms and regarding the "lawfulness of data processing" under the Directive.

While this Directive undoubtedly represents progress for the cause of personal privacy protection in Europe, it does not in itself mean the achievement of a "high and common level of protection," as so much will be left to subsequent interpretation and implementation by Member States. Nevertheless it does represent the new international standard for personal privacy on the information highway against which personal data processing practices in non-European states will be measured.

An "Adequate" Level of Protection in Third Countries

Article 25 of the EU Data Protection Directive stipulates that "Member States shall provide that the transfer to a third country of personal data which are undergoing processing or are intended for processing after transfer may take place only if...the third country in question ensures an adequate level of protection." The "adequacy" of protection shall be assessed "in the light of all the circumstances surrounding a data transfer operation or set of data transfer operations." Particular consideration is to be given to the nature and purpose of the data and the "rules of law, both general and sectoral" and the "professional rules and security measures that are complied with."

Article 26 lists a number of derogations from this provision. Personal data may be transferred to a country with "inadequate" protection when: the data subject has given his consent "unambiguously"; the transfer is necessary to fulfil a contract between the data subject

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12 In practical terms this meant the move from a standards that mandates an "opt-in" provision for individuals to consent to have their information used for other purposes, to an "opt-out" provision. See, Spiros Simitis, "From the Market to the Polis: The EU Directive on the Protection of Personal Data," *Iowa Law Review* 80: 445-69 (June 1995).

13 EU Data Protection Directive, Article 18 (1)

14 Article 21

15 Article 28 (3). In addition Article 20 contemplates a form of "risk analysis" through prior checking by the supervisory authority of new processing operations that might be especially harmful.

and the controller, or between the controller and a third party; the transfer is necessary on "important public interest grounds, or for the establishment, exercise or defence of legal claims"; the transfer is necessary to protect the "vital interests of the data subject"; and the transfer is of data that are already in a public register.[16]

Member states can also authorize transfer to a country with "inadequate" protection if the data controller enters into a contract that "adduces sufficient guarantees with respect to the protection of the privacy and fundamental rights and freedoms of individuals."[17] In such cases, the country concerned shall inform the Commission and the other Member States of such authorizations, to allow for objections. The Commission may also decide, through its "Committee" (Article 31) that certain "standard contractual clauses offer sufficient guarantees."[18]

Where a national data protection authority decides that a third country does not ensure adequate protection, Member States are "to take the measures necessary to prevent the transfer of data of the same type to the third country in question."[19] The Commission "shall then enter into negotiations with a view to remedying the situation."[20]

The implementation of Articles 25 and 26 poses a number of problems for international business that relies on the transborder flows of personal data. It has major implications for credit-granting and financial institutions,[21] for hotel and airline reservations systems, for the direct-marketing sector (including the list rental business) and for life and property insurance. There are four interrelated concerns.

First, the Europeans are clearly not going to tolerate the existence of "data havens" -- jurisdictions in which data processing may take place because of the absence of data protection safeguards. The EU Directive would be doomed to failure if multinationals could instantaneously transmit their processing offshore in order to avoid the transaction costs of having to abide by the stronger measures in force in Europe.[22] European data users will be justifiably aggrieved if they have to abide by strong data protection measures in Europe, whilst overseas competitors can act with impunity. European citizens, and the public interest and consumer groups that represent them, will also not look kindly on the continual flouting of their privacy rights by overseas interests. On the implementation of Articles 25 and 26, at least, the interests of European data users, data subjects and regulators may be coincident.

Second, the initial determination of "adequacy" will remain with the national data protection agencies who will still be implementing national laws that may diverge in some important respects. Thus different standards for "adequacy" could still exist within the

16 Article 26 (1)

17 Article 26 (2)

18 Article 26 (4)

19 Article 25 (4)

20 Article 25 (5)

21 American Express engaged in intensive lobbying on the EU Directive.

22 See Paul M. Schwartz, "European Data Protection Law and Restrictions on International Data Flows," *Iowa Law Review* 80: 471-96 (June 1995).

community, creating confusion and unpredictability for multinationals and the need to be constantly aware of the differing regulatory systems and political interests of the different European states.

Third, the Directive does provide for the Commission to enter into negotiations with countries deemed to have "inadequate protection" with a "view to remedying the situation." Nobody really knows what this means. But there is at least the danger that once these issues enter the Commission they are likely to be influenced by wider political and economic concerns. Judgements about adequacy will therefore be susceptible to the vagaries of the European policy process and are likely to be confused with the resolution of issues that have nothing to do with information privacy. Logrolling may therefore override the more predictable and rational pursuit of a data protection standard.[23]

The final concern with the regulation of transborder data flows is that neither the supervisory authority nor the data controller has the power to scrutinize the processing of personal data in another jurisdiction nor be satisfied that data subjects can exercise their privacy rights. The Directive establishes a more coherent and institutionalized process to make judgements about "adequacy." Yet those determinations will continue to be made on the assumption that the wordings of contracts, laws and professional codes are reflected in practice. The Directive does not get around the central dilemma inherent in the former attempts to regulate international data transmissions by the Council of Europe Convention, or through "model contracts."[24] In the absence of a mechanism to guarantee that personal data is actually processed fairly and legally in a third country, judgements about adequacy will probably continue to made according to the analysis of the "black letter of the law."

One suggested way to tackle the problem of enforcement is to make the "data exporter" directly, continually and completely liable under domestic law for the processing of data overseas. Contracts would establish the exporter's right to enforce and supervise the importer's data protection obligations.[25] Then, and only then, can the interests of the exporter and those of the data subject be coincident. One possible mechanism to achieve this supervision would be to require the data exporter to oblige the recipient of the data to undertake regular and independent privacy audits of its operations.[26] The development of the Canadian Standards Association's *Model Privacy Code* offers some hope that certain independent verification procedures may be established in Canada and used (among other things) to satisfy European standards.[27] This

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23 As Pounder and Kosten put it: "if you support our tomato initiative, we shall in turn support you in defining the Republic of Munchkin land as offering an adequate level of protection." *Data Protection News,* Issue No. 25, p. 33.

24 See "Model Clauses for Inclusion in a Model TBDF Contract," *Privacy Laws and Business*, December 1992.

25 See Joel R. Reidenberg, "Setting Standards for Fair Information Practice in the U.S. Private Sector," *Iowa Law Review* 80 (Spring 1995).

26 See Colin J. Bennett *Implementing Privacy Codes of Practice: A Report to the Canadian Standards Association.* (Rexdale: CSA, 1995), p. 108.

27 Canadian Standards Association, *Model Code for the Protection of Personal Information*, CAN/CSA-Q830-1994.

instrument would of course carry greater international weight if it were elevated to the status of a full ISO standard in the years ahead.

So it is impossible to predict whether the European Directive will presage the blockage of data flows to third countries. Clearly there is sufficient latitude in the Directive for data users in third countries to convince their European counterparts that a combination of contracts and "professional rules" (i.e. codes of practice) and security measures afford "adequate" data protection. But this does anticipate a series of case-by-case battles and the possibility of favoured treatment for the larger multinationals that can afford to fight for their interests.

Perhaps the most important implication of this Directive, however, is not economic but psychological. An embarrassing aspect of this initiative is that some countries (such as Spain and Greece) that in recent memory were governed by dictatorships now have, or will get, better privacy standards than the United States, Canada and Japan. Even some of the former states of Eastern Europe have or are in the process of passing legislation. There are, therefore, only a handful of democratic countries that has not developed a comprehensive privacy protection policy. The motivation to emulate legislation elsewhere in order to "keep up with the Joneses" has always been a significant force within this policy domain.[28]

Personal Data Protection Policy in Japan

So how does data protection policy in Japan measure up to this new international standard? If the test is the "black letter of the law" the Japanese system is clearly inadequate.

The privacy issue reached the political agenda in Japan in the early 1980s as a result of the promulgation of the OECD Guidelines. Policy development was centered in the Management and Coordination Agency (MCA) within the Prime Minister's Office which established a Study Committee on the Protection of Personal Data in 1981.[29] This committee's report (issued in 1982) advocated data protection legislation for the public sector.

Although fears about surveillance were gradually permeating the Japanese consciousness, the government's incentives at that time were clearly motivated by international pressures.[30] The Government response to this report reflects a minimalist approach that would not interfere with administrative efficiency, as well as a certain skepticism about the hypothetical nature of many of the anxieties.[31] After several years of debate, the ultimate report from the Prime Ministers' Office stated that "as almost no case of concrete infringement of human rights through computerization of personal data was found at the national level, the necessity of legislation is to take measures to cope with the feeling of people's apprehension and also with the danger of infringement of human rights." Moreover, the purpose of the legislation was deemed to be the

28 See Bennett, *Regulating Privacy*, pp. 123-7.

29 p. 125.

30 "Critics see Japan's Data Protection Law as Inadequate," *Privacy Journal* (October 1989), p. 6.

31 Ibid.

"protection of rights and interest of individuals and also the maintenance of proper and smooth management of administration."[32]

The *Act for the Protection of Computer Professed Personal Data Held by Administrative Organs* was passed in 1988 and came fully into effect in October 1990. The legislation is weak by international standards. It only applies to the administrative organs of government and does not establish an independent oversight or regulatory authority on the European model. It covers only computerized files, leaving vast quantities of personal data held in manual record-keeping systems unprotected. The Act provides for access to records by data subjects and mandates security and confidentiality measures. However, there are many exemptions, especially with regard to files relating to national security and law enforcement.[33]

There is no strict limitation on the collection of personal data. The Act only requires that an agency holding personal data "confine itself to the extent necessary to perform the competent function provided for by law, and specify the purpose of such a holding as far as possible."[34] Administrative agencies are obliged to notify the Director-General of the MCA of their personal-data holdings and of the nature and purpose of the information holdings. These notifications are published in the official government gazette at least once a year.

In summary, this legislation is vague in intent and replete with exemptions. There is no independent mechanism for arbitration of complaints. There is no mention of penalties for agencies that fail to comply with regulations. The Act provides a right of access to data, but not a right to correct data that may be inaccurate, obsolete or incomplete. As Srinivisan concludes: "The expressed purpose of the Act, however, is not only to protect the interests of the individual, but also to balance individual interests against the smooth, efficient running of the administration. This Act fails to strike an equitable balance; as is often the case in Japanese culture, the needs of the group come before the interests of the individual."[35]

If the public sector is poorly regulated, the private sector is virtually unregulated. The Japanese have consciously chosen to follow the North American approach to self-regulation rather than to adopt comprehensive data protection legislation on the European model. It is formally the responsibility of each of the relevant government ministries to promote data protection in the private sector. Thus, in 1989 the Ministry of International Trade and Industry (MITI) issued a "Policy on the Protection of Computer Processed Personal Data in the Private Sector" and established a registration scheme whereby organizations could notify MITI of the organizational measures taken (including codes of practice) and of the person or persons in each enterprise to whom inquiries should be directed.

This system is voluntary and there is little evidence that it has promoted much self-regulatory effort in Japan. Nevertheless, the MITI statement was followed by guidelines in the protection of personal data in telecommunications, the financial sector and in the database

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32 Ibid., p. 126.

33 OECD, *Privacy and Data Protection: Issues and Challenges*, Paris: OECD, 1994.

34 Chapter 2, Article 4.

35 Srinivasan, "Privacy and Data Protection in Japan, pp. 130-131.

industry.[36] Further rules were proposed for the credit industry in 1993. As Greg Tucker notes in his report to the OECD on international data protection, the most notable feature of the MITI policy statement is its recognition that these voluntary guidelines would be ineffective and that they should serve as a precursor to legislation.[37]

By any measure, the overall protection for personal data in Japan is inadequate. Like Canada and the United States, Japan has produced legislation for its public sector and relies on a weak system of self-regulation in the private. Unlike Canada and the United States, the public sector regulation only covers computerized files; the North American approach and indeed the standard within the EU Directive is to include "manual" files as well.

At the beginning of 1995 a government review of the Japanese system of data protection concluded that no legislative reforms were necessary at this time.[38] However, as the international pressures mount, the Japanese will be faced with the same challenges as North America in establishing a higher level of privacy protection on its "information highway."

Privacy, the Global Information Infrastructure and the Japanese Political Economy

The recent national and international debates over the information highway have brought a number of information policy issues to the fore. So far, questions of censorship, hate speech, intellectual property rights and network security have so far been more prominent than privacy protection in national and international debate.

There are already indications, however, that the character of the privacy problem is changing. The volume of personal information that will be transmitted across the information highway will increase exponentially in the years ahead. Consumers will become increasingly remote from the organizations that process their data. The information highway technologies will hold enormous potential for the compilation of profiles of an individual's lifestyle habits and purchasing choices, facilitating more sophisticated direct-marketing and affecting the conditions under which individuals may access a variety of products, services and opportunities. The much-vaunted "set-top" box will control the communication of voice, text, video and graphic data to and from the average household. It will also be a valuable repository of data about our private lives -- our entertainment preferences, our financial transactions, our shopping habits, our private communications and so on.[39]

A further trend will be shifting institutional responsibilities and especially the erosion of the distinction between the public and the private sectors.

Where the "public" sector ends and the "private" sector begins is becoming increasingly difficult to determine. The distinction is being eroded by efforts to privatize or hive-off

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36 Akira Kodaka, "The Situation of Personal Data Protection in Japan," Paper presented to the 1992 International Data Commissioners Conference, Sydney, October 1992.

37 OECD, *Privacy and Data Protection*, p. 14.

38 "The Situation of Personal Data Protection in Japan." Country report to the 17th International Conference of Data Protection Commissioners, Copenhagen, September 1995.

39 See Industry Canada, *Privacy and the Canadian Information Highway*, Ottawa: Industry Canada, 1994.

government functions. Thus "private" organizations are increasingly performing "public" functions and often require the use of "public" data to fulfill those obligations. Illustrations include: the use of smart cards and ATM machines for the dispensing of government benefits; the matching of data on welfare recipients with bank or financial records to ascertain eligibility; the trading of government information to enhance revenue; the use of consumer credit reports for security checks and so on. The pervasiveness and flexibility of the new technologies will make it increasingly difficult to determine which "data" are "in" the public sector and which "in" the private, producing a range of new regulatory dilemmas for countries such as Japan that have one set of rules for public agencies and another for the private sector.

Technological and institutional changes have also coincided with a universal desire among Western governments to promote the more efficient delivery of government services as well as to combat crime. A neo-conservative agenda has dominated governments of both left and right and has translated into a variety of new surveillance techniques: computer matching and profiling; "smart" identification cards; intelligent vehicle highway systems; new call-management services within telecommunications networks; video surveillance; and many more. These technologies are widespread and rapidly-evolving and each entail subtly different implications for personal privacy. They are rendering the privacy protection problem increasingly complex. Those countries with privacy or data protection authorities are in a better position to analyse these implications and advance the privacy interest within their respective societies, than is a country such as Japan.

There is some evidence that Japanese policy makers are aware of the economic costs of poor privacy standards. Japanese officials at recent meetings of the OECD have stressed the importance of privacy protection. However, the solutions suggested only seem to extend to enhanced network security through encryption measures, security standards and strong laws against computer hacking.[40] Thus, it is probable that if further privacy protection measures are to be introduced in Japan, they will be motivated by the interests of business and government in the security of the international networks and in the unimpeded international flow of personal data. The belief that individuals should have stronger rights to control the circulation of their information in the interests of personal privacy is still not prominent within Japanese political debate.

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40 See Risaborou Nezu (MITI), "The Information Infrastructure: The Economic Impact," Address to the OECD *Symposium on the Information Infrastructure* Vancouver, 20-21 February 1995.

TOWARD AN INFORMATION SOCIETY: DEVELOPMENT PROSPECTS OF JAPAN AND CANADA

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Introduction

In the social sciences we have long made a distinction between "developed" and "underdeveloped" countries. Development here refers to economic development. Economically developed countries are distinguished by complex infrastructures which attend to societal needs, thus distributing more equitably the rewards of development. As measured by GNP per capita, only 22 countries representing just 15 percent of the world's population are fully developed in this sense (World Bank 1993:238-9).

Japan and Canada are both among the developed countries of the world, being also members of the rich and elite G-7 consortium of nations. Of the ten richest countries in the world, Japan is first with a per capita GDP of $34,300, while Canada is eighth ($20,600) (*Forbes* 1995:228-56). However, the development trajectories of the two countries have been quite different. Perhaps the easiest way to distinguish these development paths is to provide some basic statistics. For example, the land area of Canada, rich in natural resources, is almost 27 times that of Japan (Collins 1984:132-3); however, there are nearly five Japanese for every Canadian (*Forbes* 1995:233, 240). This translates into fewer than three Canadians per square kilometer compared to more than 300 Japanese; the population density of Japan is 120 times greater than that of Canada.

These basic facts figure prominently in the economic development of the two countries. In Canada, sheer space, comprising many of the world's natural resources, has been primary in its development; in Japan, human resources combined with technological ingenuity have contributed most significantly to its economic fortune. The major exports of each country reflect these facts: whereas nearly half of Canada's total exports are unprocessed and semi-processed, resource-based goods (Crane 1992:24), over three-quarters of Japan's exports are fully manufactured machinery and equipment, including automobiles and parts, electronics, computers, and scientific and optical equipment (*Asahi Shimbun* 1993:109). Consequently, although both countries have achieved high levels of economic prosperity, Canada has relied more extensively on its abundant natural resources.

"Historically," according to MIT economist, Lester Thurow (1993:39):

> ... countries became ... [developed] if they possessed more natural resources, were born rich and enjoyed the advantages of having more capital (plant and equipment) per person, employed superior technologies, or had more skills than their competitors. Putting some combination of these four factors together with reasonable management was the route to success.

The most common and sure path to economic development has been industrialization. By combining some or all of these four components (natural resources, capital, technology and human skills), countries moved from economies based on harvesting natural resources to ones engaged in the transformation of raw materials into manufactured goods, thus increasing their productivity, and thereby their wealth.

Industrialization represented a technological and revolutionary solution to economic development. Beginning in England some two hundred years ago, the industrial revolution harnessed inanimate energy and changed the nature of the work we do, the skills we employ and the kinds of organizations we establish. In the process, it also changed the structure of the societies in which it occurred: industrialized countries are qualitatively different from nonindustrialized countries.

The relationship between industrialization and economic development has always been strong and undeniable. For example, in an analysis of all nations in the world for which I could find data, I rank ordered 49 countries on four different measures of industrialization and then correlated this multidimensional ranking with GNP per capita. The outcome was a correlation coefficient of .91 (Hedley 1992:127-58). In the years since the industrial revolution, industrialization has had more impact in the world than any other complex set of forces. An inescapable conclusion is that it has produced socio-economic disparities among nations and among people on a scale never before experienced.

Currently, we are undergoing another technological revolution which is reputed to be every bit as intense and as full of consequences for development as the industrial revolution was in its time. Based on scientific breakthroughs in computers, microelectronics and telecommunications, the information revolution is expanding our mental capacities in ways that defy traditional descriptions of time and space. However, according to many observers (e.g., Gilder 1989; Thurow 1993; Reich 1992), this revolution will necessitate another massive restructuring of society and how we function in it. Traditional rules for achieving economic prosperity will no longer apply. Yet, similar to the relationship between industrialization and development, countries that are not informationally integrated will be indefinitely destined for underdeveloped status.

It is in the context of these new revolutionary changes that I would like to examine the development prospects of Japan and Canada. First, I identify significant features of the information era from which I develop guidelines for a successful transition from an industrial to information society. Then I compare the two countries with respect to how well they fit these guidelines and thus how prepared they are to function in the new information age. Specifically, I examine the business activities of leading corporations and the occupational composition of the two labor forces.

This is a working paper. Consequently, the results I report should be interpreted with caution. In order to draw conclusions about the development prospects of a country, it is necessary to observe trends rather than rely on cross-sectional data. Here I offer only a comparative snapshot of Japan relative to Canada, leaving for subsequent analysis a more systematic comparison of each country's development over time. However, given the likely

features of an information society and the nature of my findings, I believe that tentative conclusions are warranted, even at this preliminary stage of analysis.

Features of the information era

In the early 1970s, with the formation of OPEC, industrially developed countries experienced a series of 'shocks.' The doubling and quadrupling of oil prices and the restriction of supply ushered in a new reality as corporations and countries alike scrambled to fuel the global industrial machine. They responded with strategies such as 'Operation Independence,' seeking out new sources and suppliers, and developing alternate energy sources for oil which had come to represent their life blood.

On March 6th, 1992, once again the developed world was poised on the brink of disaster. A computer 'virus' named Michelangelo was programmed to activate itself as all the computers in the world automatically recorded the date. The objective quite simply was to erase permanently all data in all systems it had 'infiltrated.' Fortunately, this time, partially because of 'anti-virus vaccine' programs, Michelangelo did not wreak the total havoc that some experts had predicted.

These two events epitomize the essential difference between the industrial and information eras. The former is material, tangible, concrete; the latter conceptual, elusive, abstract. While the industrial revolution, founded on Newtonian physics, augmented our physical capacities, the information revolution, based on the laws of quantum physics, is expanding our mental capabilities. According to George Gilder of the Hudson Institute (1989:12), the soul of the information revolution can be located in the microchip:

> In the microchip, combining millions of components operating in billionths of seconds in a space the size of the wing of a fly, human beings built a machine that overcame all the conventional limits of mechanical time and space. Made essentially of the silicon in sand -- one of the most common substances in earth -- microchips find their value not in their substance but in their intellectual content: their design or software.

Ideas, knowledge and information thus constitute the basis of the unfolding era, not material things. This development in turn prompts a reconsideration of the four factors contributing to economic development, as identified by Thurow: natural resources, capital, technology and human skills. According to Thurow (1993:40):

> Natural resources essentially drop out of the competitive equation. Being born rich becomes much less of an advantage than it used to be. Technology gets turned upside down. New product technologies become secondary; new process technologies become primary. And in the twenty-first century, the education and skills of the work force will end up being the dominant competitive weapon.

Natural resources are 'things' which are diminishing in value. While it is true that we cannot survive on 'ideas,' raw materials are declining in importance largely because of the pre-eminence of knowledge in today's world. For example, Thurow (1993:40-2) notes that as a result of developments in materials-science, fewer raw materials per unit of production are now being

used and there are an increasing number of alternative materials from which to select. Also, because of technological improvements in transportation, physical distance from raw materials is not as important as it once was. These factors together have resulted in a depreciation of raw materials and primary products relative to knowledge-based, high value-added goods and services.

Similarly, although capital is not 'material,' Thurow (1993:42-5) describes how technological developments in computers and telecommunications have resulted in the establishment of a world capital market, thereby reducing the need to seek financing at local, regional or national levels. Consequently, proposals are evaluated more on their merit rather than on how well connected entrepreneurs are to local money markets.

Concerning technology, Thurow (1993:45-51) outlines how new process technologies are replacing new product technologies in terms of winning competitive advantage. Whereas new products may be easily cloned, new technological processes can result in huge quality and productivity gains for an enterprise. Here again, the emphasis is on how well ideas, knowledge and information can add to the value of existing goods and services. Flexible manufacturing, computer-assisted design and manufacturing (CAD-CAM), just-in-time inventories and statistical quality control are examples of new process technologies.

Of the four traditional factors contributing to economic development, Thurow (1993:51-5) states that human skills will gain primacy in the next century. Consequently, according to both Gilder and Thurow, brainpower, i.e., the application of ideas, knowledge and information at all levels of the labor force, will become the driving force of the new technological revolution. Those workers (again at all levels) who do not employ marketable skills will suffer a drop in income. A country's competitive stance in the new era will be gauged by the proportion of workers who are required to use their human capital in the performance of their jobs.

Robert Reich, currently U.S. Secretary of Labor, agrees. In a reclassification of the American labor force, Reich attempts to calculate the percentage of what he calls "symbolic analysts," i.e., workers who are engaged in "problem-solving, problem-identifying, and strategic-brokering activities" (1992:177). According to Reich, symbolic analysts possess, or should possess, "four basic skills: abstraction, system thinking, experimentation, and collaboration" (1992:229). Competence in these skills equips workers with "the capacity to effectively and creatively use ... knowledge" (1992:182), the effective currency in the coming era.

From this brief outline of what we may expect to characterize an information society, it is possible to provide a number of guidelines for a successful transition from an industrial economy. It is important to note that all industrial activities do not cease with the onset of an information society, just as agricultural enterprises did not disappear with the coming of the industrial revolution. What will change is the emphasis placed on information in the provision of goods and services. Increasingly, information in and of itself is becoming a valuable, marketable commodity.

Guideline 1. From the above analysis, information-based, 'modern' industries should become more prominent as a focus of economic activity. Three obvious examples include the computer, microelectronics and telecommunications industries, but others also are in ascendancy. In addition to the three that represent the core of the information revolution, Thurow (1993:45)

identifies four other key "brainpower" industries -- biotechnology, the new materials industries, civilian aviation and robots plus machine tools. Similarly, in an analysis of the 27 industry groups that *Fortune* used to classify its 1989 "Global 500" corporations, I defined the following six as 'modern' in that most of the products now manufactured in these industries did not exist prior to World War II: computers, electronics, aerospace, pharmaceuticals, chemicals, and scientific, photographic and control equipment (Hedley 1992: 230-1). These industries in turn are consistent with a definition of "high technology industry" based on proportional counts of scientific and technical workers and R&D expenditures (Riche et al. 1983). While these key industries will not completely replace industries of previous eras, we may certainly expect them to become more dominant.

One empirical consequence flowing from this guideline is that leading corporations should reflect this changed focus in economic activity, such that 'modern,' information-based corporations, both in terms of number of firms and annual revenues, will represent a significant proportion of the total.

Guideline 2. The above analysis also suggests that less importance is being attached to resource-based industries (e.g., mining, oil and gas production, and forestry products). To the extent that these industries produce diminishing returns vis-à-vis knowledge-based industries, they are less significant as sources of revenue. Consequently, any analysis of leading corporations should also reveal a decrease in the proportion of firms (number and sales) that derive most of their revenue from natural resources.

Guideline 3. Finally, given the growing relevance of knowledge in the provision of goods and services, the skill composition of the workforce in an information society should be considerably higher than in an industrial economy.

To the extent that many aspects of the information society are already in evidence throughout the world, and these guidelines are indicative of what we may expect to characterize an information-based economy, it is an interesting empirical exercise to compare Japan and Canada on the composition of their corporations and labor forces. In this way, we can gauge the relative ability of each country to participate in the emergent era.

Industry and Labor in Japan and Canada

Table 1 addresses the empirical consequences of Guideline 1. Based on the *Fortune* "Global 500" (1995) and *Canadian Business* "Performance 500" (1995), it indicates the percentage of 1994 corporate revenue leaders in Japan and Canada that are in information-based, 'modern' industries. In order to provide a comparative standard or benchmark, the Japanese and Canadian data are arrayed alongside a similar listing of the entire Global 500, i.e., industrial and service businesses (including financial institutions) from twenty-five countries whose total revenues in 1994 were $10.2 trillion (approximately 1.5 times the GDP of the United States) (*Fortune* 1995:130). Of these 500 corporations, 60 (12%) are in information core industries (computers, electronics and telecommunications), accounting for 13.8% of 1994 sales. When 41 other corporations, also defined as being in 'modern' industries, are added to this core group, together they represent almost one-fifth of the total revenues of the Global 500.

Table 1. "Information Age" Corporations as a Proportion of Total Leading World, Japanese and Canadian Corporations (1994)

Industry Group	World[1]		Japan[1]		Canada[2]	
	%N	%Sales	%N	%Sales	%N	%Sales
Information core industries						
Computers	1.6	1.8	2.0	1.6	1.3	1.6
Electronics	6.2	7.6	6.7	9.4	0.7	0.3
Telecommunications	4.2	4.4	0.7	1.9	4.7	8.0
Total information core	12.0	13.8	9.4	12.9	6.7	9.9
					(3.3)[3]	(7.2)[3]
Other 'modern' industries						
Aerospace	1.8	1.2	---	---	1.3	1.2
Chemicals	3.4	2.7	2.7	1.1	0.7	0.3
Pharmaceuticals	2.0	1.1	---	---	0.7	0.3
Scientific, photo, control equip.	1.0	0.7	0.7	0.3	---	---
Total information age corporations	20.2	19.5	12.8	14.3	9.4	11.7
					(4.0)[3]	(8.2)[3]
Total corporations	500	10,245,346[4]	149	3,805,744[4]	150	621,910[5]

1. World and Japanese corporate data from *Fortune*, 1995.
2. Canadian corporate data from *Canadian Business*, 1995.
3. Excluding corporations at least 50% foreign-owned.
4. Millions of US dollars.
5. Millions of Canadian dollars

Japanese corporations are the second most predominant (N=149) in the Global 500 after the US (N=151). Strong in the electronics industry, but relatively weak in telecommunications, Japanese information core sales comprise 12.9% of total Japanese revenues. This figure is similar to the Global 500 as a whole, but less than the percentage of revenues (16.7%) accounted for by American information core companies which dominate the telecommunications industry and are very solid in computers. In other 'modern' industries, Japanese corporations are not a forceful presence.

Because only five Canadian corporations appear in the *Fortune* "Global 500," it was necessary to secure a comparable national ranking of Canadian firms. Although *Canadian Business* lists financial institutions separately from other business corporations, it is possible to combine these rankings based on their reported sales and revenues. Thus, in order to analyze the same number of Canadian firms as Japanese, I selected the first 119 industrial and service companies from the "Top 500 Listing" (1995:104-9) and the 31 revenue leaders from the "Finance 100 Listing" (1995:129-30). Then, using the descriptions provided of the principal

revenue-producing activities of these corporations, I created a classification scheme similar to the 39 industry groups that *Fortune* uses.

Leading Canadian corporations, except for their solid base in telecommunications, are not significant players in information core and other 'modern' industries compared to the Global 500 and Japanese pacesetters. Furthermore, when foreign-owned corporations are excluded from the figures, Canadian sales in this sector are reduced to just half of what the world's leading information-based corporations have achieved. Among the top 150 Canadian corporations, only telecommunications is truly a national 'knowledge' industry.

Table 2 provides part of the explanation of why leading Canadian corporations are underrepresented in the information sector; nearly one-fifth of them are in resource-based industry. Among the top 150 Canadian corporations, resources provide significantly more revenue than information industries do. This contrasts sharply with the Global 500 and Japanese data in which resource-based industry accounts for fewer than two percent of corporations and less than one percent of sales. In addition, while foreign-owned firms are responsible for 30 percent of Canadian sales in the information sector, they constitute only 22 percent of revenues in the resource sector. This means that the presence of an information sector in Canada is inflated relative to resource-based industry. Consequently, contrary to Guideline 2, great importance is still being placed on resources by leading Canadian corporations.

Table 2. Resource-Based Corporations as a Proportion of Total Leading World, Japanese and Canadian Corporations (1994)

Industry Group	World[1]		Japan[1]		Canada[2]	
	%N	%Sales	%N	%Sales	%N	%Sales
Mining	---	---	---	---	3.3	4.3
Oil and gas production	0.4	0.3	---	---	8.0	6.6
Forest and paper products	1.0	0.5	1.3	0.5	6.0	3.0
Agriculture	---	---	---	---	2.0	1.2
Total resource-based corporations	1.4	0.8	1.3	0.5	19.3 (16.7)[3]	15.1 (11.8)[3]
Total corporations	500	10,245,346[4]	149	3,805,744[4]	150	621,910[5]

1. World and Japanese corporate data from Fortune, 1995.
2. Canadian corporate data from Canadian Business, 1995.
3. Excluding corporations at least 50% foreign-owned.
4. Millions of US dollars.
5. Millions of Canadian dollars

With regard to Guideline 3, it is difficult to provide comparative data on changes in overall skill composition. However, concerning the tertiary sector which employs approximately 60 to 70 percent of workers in all developed countries (Castells and Aoyama 1994:12-3), a Canadian

study found that employment in relatively highly skilled social and business services has grown at a faster rate than it has in lower skilled wholesale and retail trade and consumer services (Myles 1988:346-7). This result is consistent with an American study which discovered "a continuing above-average growth rate for jobs that require relatively higher levels of education or training," especially in the following three categories: technicians and related support occupations; professional specialty occupations; and executive, administrative and managerial workers (Silvestri and Lukasiewicz 1991: 65-6).

Table 3. Percentage Distribution of Japanese and Canadian Employment by Industrial Sector, 1970-1992

Industry Sector	Japan			Canada		
	1970	1980	1990	1971	1981	1992
Extractive	19.8	11.2	7.2	9.1	7.1	5.7
Transformative	34.1	33.7	33.7	30.0	26.8	22.3
Services[1]						
Distributive	22.4	25.1	24.3	23.0	22.9	24.0
Producer	4.8	7.5	9.6	7.3	9.7	11.3
Social	10.3	12.9	14.3	21.1	24.0	22.6
Personal	8.5	9.6	10.2	9.6	9.5	13.5
Total[2]	99.9	100.0	99.3	100.1	100.0	99.4

1. **Distributive services** refer both to communication and to transportation activities, as well as to commercial distribution networks (wholesale and retail).
   Producer services refer more to those services that appear to be more direct inputs, although they also include auxiliary services to business that are not necessarily highly skilled.
   Social services include a whole realm of government activities, as well as collective consumption-related jobs.
   Personal services are those related to individual consumption, from entertainment to eating and drinking places" (Castells and Aoyama 1994:10).
2. Columns may not add to 100 due to rounding.

Source: Castells and Aoyama 1994:12-3.

Table 3 presents the partial results of a trend analysis of the G-7 nations in which the researchers attempted to differentiate between "what is peculiar to the structure of the informational society and what is specific to the history of a given country" (Castells and Aoyama 1994:9). While the investigators acknowledge "a tendency towards greater informational content in the occupational structure of advanced societies" (1994:22), they also note "very strong differences between the occupational structures of societies all equally entitled to the label informational" (1994:21). These differences are particularly apparent with respect to Japan and Canada.

For example, while all G-7 countries experienced declining employment in the extractive (primary) sector, only Japan (and Germany) have maintained a strong and continuing presence in the transformative (manufacturing) sector. This distinguishes it from Canada (and the U.S.) which have expanded more into services, especially social service occupations. According to

Castells and Aoyama, these difference between the two sets of countries is more a reflection of "the fundamental variegation of social structures according to differences in economic policies and firms' strategies" (1994:11) than it is an identification of "their advance on the informational scale" (1994:28). In Canada, for example, the large increase in social service occupations during the 1960s was more a result of government policy to expand the provision of health, education and welfare than it was any deliberate move to create an information society (Myles 1988). Thus, contrary to previous research based largely on American experience, Castells and Aoyama (1994) conclude that there is no one particular type of occupational structure and composition that is indicative of an informational society.

However, based on their examination of each of the G-7 countries, these researchers propose "a number of common fundamental features [that] do seem to characterize informational societies" (1994:26). Among these, most relevant is "the overall upgrading of the occupational structure over time, with an increasing share going to occupations that require higher skills and advanced education" (1994:26). In other words, while structure and composition may vary, a highly trained workforce is absolutely essential in gaining a secure position in the information era.

Discussion

What sense can we make of these data on corporations and workers concerning the socio-economic development of Japan and Canada in the information age? Unfortunately, less than we would wish. For example, while Hitachi, the top electronics corporation in the Global 500, manufactures leading-edge, technologically advanced products, it is also a traditional electrical products firm, founded in 1910 as an offshoot of a mining company (Dore 1973:21-30). Consequently, not all of its products nor its factories are integral to the information revolution. Conversely, Alcan Aluminium, the largest Canadian mining and processing corporation (and #471 on the Global 500), does not just mine bauxite and produce aluminum ingots as it has done since it incorporated in 1902. Through intensive research and development, it has also produced a strong, light aluminum-lithium alloy for the aerospace industry and has created a composite aluminum and optical-fiber cable for telecommunications use (Alcan 1990).

The classification of huge corporations engaged in a wide variety of activities into either a "traditional" or "modern" category does not begin to identify the various facets of their operations. But, on the other hand, computers, microelectronics and telecommunications do represent new industries and developments in these industries are having deep and far-ranging impact on the larger society. Consequently, while admittedly crude, this classification does offer initial insight at a broad level of comparative analysis; tentative conclusions can be drawn. For example, it is useful to know the relative position of Japanese and Canadian corporations in information core industries, particularly when each country can be compared to the world as a whole. However, before policy is drafted and plans implemented, more detailed, textured studies at a lower level of analysis must be undertaken.

Similarly, problems arise in broad cross-national analyses of workers. Often categories are not comparable from one country to another and consequently different categories are combined. This can result in different types of workers (e.g., skill and length of training) being

included within the same category. Also, in that researchers are dealing with secondary data, they sometimes find that "occupational categories ... mix occupational positions with types of activities" and "confuse sectoral activities with skill levels" (Castells and Aoyama 1994:10, 31). However, once again, even at this broadest level of analysis, useful and important conclusions are possible. For example, the research design employed by Castells and Aoyama, a "crude" longitudinal study of the employment structure in G-7 countries, permits these researchers to address a most significant question, a question that can be answered only with this type of design: "What is peculiar to the structure of the informational society and what is specific to the history of a given country?" (1994:9).

With these important caveats stated, let me now summarize the main points of my paper and assess the development prospects of Japan and Canada in the information society.

Information core industries. With regard to Japan, the data in Table 1 indicate that while Japanese corporations are firmly ensconced in information core industries, especially electronics, their representation in telecommunications and other 'modern' industries is relatively weak. Given that Japanese and American corporations together constitute 60 percent of the Global 500 in terms of number of firms and 66 percent in annual revenues, it is useful to directly compare these world economic superpowers.

In "head to head" competition, Table 4 reveals that the leading American corporations dominate in every information age industry except electronics. While this fact does not deny Japanese representation in these industries, it does indicate the comparative advantage of American companies, if indeed these industries embody the wave of the future, and Global 500 corporations are illustrative of the general corporate population in both countries. Note also that while all Japanese corporations in the Global 500 (N=149) enjoy an overall advantage of $866 billion over all American firms (N=151) in terms of total annual revenues, this advantage disappears when only revenues in information age industries are considered. In these seven industries, sales of American corporations exceeded Japanese companies by $248 billion. With regard to the three information core industries, the figures are more even ($488 billion versus $490 billion respectively).

Table 4. "Information Age" Corporations as a Proportion of Total Leading World, Japanese and American Corporations (1994)

Industry Group	World		Japan		America	
	%N	%Sales	%N	%Sales	%N	%Sales
Information core industries						
Computers	1.6	1.8	2.0	1.6	3.3	4.2
Electronics	6.2	7.6	6.7	9.4	6.0	5.3
Telecommunications	4.2	4.4	0.7	1.9	7.3	7.2
Total information core	12.0	13.8	9.4	12.9	16.6	16.7
Other 'modern' industries						
Aerospace	1.8	1.2	---	---	4.6	3.5
Chemicals	3.4	2.7	2.7	1.1	2.6	2.5
Pharmaceuticals	2.0	1.1	---	---	4.0	2.4
Scientific, photo, control equip.	1.0	0.7	0.7	0.3	2.6	2.0
Total information age corporations	20.2	19.5	12.8	14.3	30.4	27.1
Total corporations	500	10,245,346[1]	149	3,805,744[1]	151	2,939,427[1]

1. Millions of US dollars.
Source: *Fortune*, 1995.

We may conclude that while Japan is well positioned to prosper economically in the information society as measured by its proportional representation of leading corporations in information age industries, it would appear that the United States is even more strongly placed. Therefore, to the extent that Lester Thurow (1993) is correct in his prediction that Japan, Europe and America will engage in head to head economic battle in the next century, then the United States presently enjoys a significant strategic advantage.

With regard to Canada, I noted that its only strong suit in information age industries is telecommunications. This is especially true if foreign-owned corporations are removed from consideration. But perhaps for a 'middle' economic power, it is not necessary to have strong representation in each information core industry in order to enjoy the benefits of what the information society has to offer. When one considers, as in the case of Alcan Aluminium, that corporations in so called traditional industries are also engaged in information age activities, then the modern-traditional **industry** ratio is not as important as the modern-traditional ratio **throughout** industry. However, in order to calculate this ratio, a more detailed empirical study is required.

Workers and information technology. Twenty-five years ago, Martin Meissner (1969) conducted a detailed empirical investigation of the relationship between workers and their

tools and machinery under different technological conditions. At the least technologically developed, "almost preindustrial" level, Meissner found that work is performed directly and solely by workers who are sometimes aided by tools and equipment, which by themselves are not active agents in the work process. In contrast, at the most advanced technological level ("automation"), machinery, without human intervention, accomplishes a defined set of tasks within set tolerance limits. At this level, the human operator acts as a monitor, a secondary fail-safe mechanism. Between these two levels lie various varieties of assembly-line technology in which "workers perform partial operations [to expedite special-purpose machinery and equipment,] ... stopgaps, as it were, to an imperfect technical design" (1969:239).

Given the technological developments that have occurred since Meissner published his results, we can now ask how information technology fits in the worker-machine relationship. For purposes of illustration, let us use airline travel agents and their computers.[1] For example, when a customer asks an agent for "the best flight" from Ottawa to Tokyo on a particular day, what does that mean and how does the agent respond? For the customer, the criteria for establishing "best flight" are often vague and unstated. Cost (there are both "wholesale" and "retail" fares) is usually always stated, but other considerations include: total flying time, departure and arrival times, routing, number of stopovers, stopover privileges, quality of airline and "preferred" airline. In addition, seat selection, special meal requests and whether smoking is permitted may figure into the ultimate decision of which flight is "best." The agent must take all these factors and more into consideration and then fit them to individual customer requirements when booking the "best flight" out of the many options available. (For example, a "best flight" for one customer meant having as many stops as possible over North America so that he could smoke at airports along the way.)

In selecting "best flights," travel agents are aided enormously by their computers which in turn are connected to world-wide networks of computers which have all the required information stored in preparation for flight requests. Computers dispense rank-ordered options of all flights available based on agents' instructions. Together, agents and computers provide "better" flights than either could furnish alone.

This example illustrates well the worker-machine relationship that is descriptive of information technology. Information workers, in this case travel agents, must be able "to effectively and creatively **use** the knowledge" they have in their heads, as well as the information they have in their computers (Reich 1992:182). They are the **active agents** in the worker-machine relationship.

Figure 1 depicts the worker-machine relationship under each of the four technological conditions described above. Note that only in the cases of preindustrial and information technology are workers **active agents** in relation to their tools, equipment and machinery. However, under preindustrial technology, more often than not workers are engaged in "backbreaking" work as they use various tools to ease their physical burden (Meissner

[1] I am indebted to Elizabeth Smith, President of Athlone Travel, for information on the airline travel industry.

1969:239). In fact, unskilled laborers are the prototype under this technological condition, although skilled craftworkers also fit into this classification (Blauner 1969:245-6). By contrast, information workers at all occupational levels actively engage with equipment and machines in order to identify and solve problems. In this work, they exercise brain, not brawn.

Figure 1. Role of Worker in Relation to Machinery Under Four Prototypical Technological Conditions

Role of Worker & Machine	**Technology**			
	Preindustrial	**Assembly-line**	**Automation**	**Information**
Worker	**Active Agent**	Active Aide	Active Monitor	**Active Agent**
Machine	Nonactive Aid	**Active Agent**	**Active Agent**	Interactive Aid

Figure 1 plus the description of the responsibilities of typical information workers emphasize the importance of human skills and resources in the information era. Unfortunately, the data provided in Table 3 on the distribution of Japanese and Canadian employment by industrial sector do not permit us to quantify the proportion of "symbolic analysts" in each labor force, other than to say "there is indeed a tendency towards greater informational content in the occupational structure of [all] advanced societies" (Castells and Aoyama 1994:22). However, given the superior economic growth of Japan relative to Canada in recent decades (*Economist* 1990:44), there must exist some clues that permit us to differentiate between the two countries. David Crane, economics editor of the *Toronto Star*, suggests that an examination of national educational systems provides insight:

> In the 1991 World Competitiveness Report, Canada ranked eleventh out of 23 nations in assessing whether the compulsory educational system met the demands of a competitive economy. The front runners, not surprisingly, were Japan, Germany, and Switzerland. The same report indicated that Canada ranked fifteenth in the availability of skilled labour and ninth in the availability of skilled engineers. We spend more than $40 billion a year on our schools, colleges, and universities, and devote 6.2 per cent of our gross domestic product (GDP) to education, ranking fifth among OECD countries, behind the Scandinavian countries. On a per-student basis, we rank ninth. But our spending is not reflected in the quality of our workforce, in our ability to develop new industries, or in our productivity performance (1992:148-9).

These data indicate that while there is a synergistic relation between Japan's educational system and its economy, the same cannot be said for Canada. Consequently, although both

nations have experienced upgrading in the skill composition of their labor forces, Canada's **relative** progress lags behind other countries. This is also true with respect to what Canada spends on research and development (*Forbes* 1995:228-56). It is Crane's conviction, based on mountains of data, that "what is needed now is nothing less than a transformation of Canada from the old economy of resource extraction and big chimney industries to a new economy based on knowledge and ideas" (1992: xiii). Only through such a transformation can Canada expect to enjoy the same standard of living that it experienced during the now receding industrial era.

We may conclude this comparative analysis of the development prospects of Japan and Canada by restating the overriding importance of a general population that is relatively highly educated and conversant in the skills and capabilities associated with an information economy. In turn, such a population will be conducive to developing an economy in which information-based corporations and industries can flourish. Through these means, both Japan **and** Canada can look forward to good development prospects in the next century.

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JAPAN'S COMMUNICATION AND CONTROL PROBLEMS

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The Problems

Japan has achieved an enviable record in its technological and economic capabilities. It is a leader in production of advanced communication equipment and has a fairly well-developed communications system. Nevertheless, the highly regulated government administration system which was a source of strength in building a strong economy since the Pacific War may turn out to be Japan's Achilles Heel through over-regulation in facing some of today's challenges. A dramatic case was the Great Osaka-Kobe Earthquake of January 1995. It was a severe challenge to Japan's well developed communication system as well as to crisis management by both national and local government leadership. The slow response to such a huge disaster in the midst of a heavily populated area highlighted the lack of a more flexible and pre-positioned emergency means of communication, but even more, it highlighted the deplorable lack of political leadership and adequate bureaucratic action.

In the earthquake the first communications problem was to get information about the extent of the damage to government leaders so they could mobilize the needed services. As expected normal electrical communications were cut. It was the TV and press which provided the most widespread and available coverage although it tended to be concentrated on the most seriously damaged places to the neglect of the wider area of less destruction but of continuing need. Unlike the government agencies which were slow to provide needed food and relief supplies, private organizations often acted promptly. The chairman of the Daiei supermarket chain headquartered in Kobe, Isao Nakauchi, began mobilizing helicopters and ferries to bring food and supplies to the location of the quake shortly after it happened.[1] Before any other help was provided, some local gangster groups even provided food to local residents.

After the initial emergency a major communications problem, especially acute for individuals, was contacting family members. Where phones were operating, the lines were overwhelmed so it was hard to get through. The newspapers provided some useful information such as printing lists of the dead and injured. Still, families and individuals were hard put to find communication sources which were still functioning and which they could use. Electronic mail via on-line computer services where available was very useful. One service, Nifty Serve, posted 6000 messages in the first ten days without charge.[2] For those who could use a radio, information on location of medical help, food, water and baths was provided. But, it still remained difficult to get needed information and locate essential services by local people whose normal communications services were no longer available.

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1 Mihoko Iida, "Tokyo Response Shackled by Bureaucratic Roadblocks," *The Nikkei Weekly*, February 6, 1995, p. 12.
2 Yukio Noguchi, "Kobe Disaster Shows Need for Better Communications Setup," *The Nikkei Weekly*, February 20, 1995, p. 7.

A New Improved Communication System

Professor Yukio Noguchi of Hitotsubashi University has proposed a high-speed, large-capacity network connecting public institutions via special ground, microwave and satellite links.[3] It would solve the problem of individuals who cannot use e-mail or damaged telephone lines and are lacking in home power sources. Post offices, schools and banks could have network stations which people could access to send emergency information to their relatives. It would enable people to bypass phone lines that were knocked out. Such facilities could be made capable enough to permit non-emergency use as well.

The central government's Headquarters for an Advanced Information Society, chaired by the prime minister, has now decided on a basic policy to use computer networks much more extensively in the public service and extend them throughout the country.[4] This objective was explained by Japan at the ministerial meeting of the G-7 countries: US, Japan, Germany, France, Britain, Italy and Canada at the international meeting in Brussels on February 25th and 26th, 1995. There the countries were urged by business leaders to open up their telecommunications services to international competition to encourage the widespread availability of the "information" society to all their people through open competition.

The problems of better emergency communications or improved communications more generally are essentially a question of better use of currently developed communication technology to make it more widely available and easier to use by everyone. Japan itself has been a bad example where slowness in the local utilization of the output of its technology characterized an industry in which it is a leader. Personal computers which it makes and sells worldwide have only slowly been penetrating its own domestic market. Only 23% of white collar workers in Japan had personal computers at the end of 1994.[5] At the same time, over half of all American office workers had them. Japan is now catching up as the current recession is forcing firms to more thoroughly computerize their operations to cut costs. The penetration of the Japanese market by Compaq Computer and Dell Computer Corporations three years ago, offering their PCs at half the high Japanese prices, set off sharp price declines and vigorous competition as both American and Japanese producers raced to supply the resulting booming new demand despite the adverse economic conditions.

Crisis Management

There is almost universal agreement that crisis management requires improvement. As Akio Watanabe has pointed out, "To overcome the weak point of the crisis management system, which was revealed again in the recent Great Osaka-Kobe Earthquake, we basically have a huge 'homework' task of reforming the function of the Cabinet."[6] Criticism of slowness or ineptness in

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3 Ibid.
4 *Daily Yomiuri*, "Govt Finalizes Policy on Information Work," February 22, 1995, p. 8.
5 Andrew Pollack, "'Compaq Shock' Sends Japan into the Information Age," *Globe and Mail*, September 5, 1995, p. B13.
6 Akio Watanabe, "Is Japan's Security Policy the way to Eliminate the Japan-American Alliance?," *Defence*, No. 26, Spring 1995, p. 21. Tomohisa Sakanaka makes the same point in reference to criticism of the government's crisis

government response to the quake essentially involved communication and control. The slowness of the Hyogo prefectural officials and particularly the Kobe municipal officials where the worst death and damage occurred is understandable because they themselves were victims of the quake. In the case of the central government the information gathering agencies were said to be too slow in communicating information to the prime minister.

The National Land Agency was responsible for disasters and might have been expected to quickly supply the information needed by the *Kantei* or the Prime Minister's Official Residence (the Japanese equivalent of the Privy Council and Prime Minister's Offices under recent Canadian prime ministers). But, no central government minister or committee took charge to direct operations. The Home Affairs Ministry was in charge of local government with ready access to police and fire departments which presumably had facilities needed to gather information and to act quickly rather than the National Land Agency.

The Self-Defence Forces which are often relied upon in emergencies only sent 254 personnel at the request of the Hyogo governor the morning of the quake but several hours after the first devastating shocks when people needed to be rescued.[7] The Forces were also criticized for not pumping sea water to put out fires because they feared it would damage the pumps. Naturally water mains were ruptured, but the harbor was only a mile away and real preparation could have pre-positioned tanks and pumping equipment. Now that seems an obvious need for the well-known quake danger of uncontrollable fires. Still, large sectors in the city burned a day later without water to prevent fire when the winds came up. Larger numbers of defence personnel were soon mobilized from nearby defence force bases to aid in rescue and damage clearance.

An earthquake in a major population concentration is something like a wartime attack at least in the first crisis management phase when good communications are needed. Existing means need to be fully mobilized to deal with it. For a less extensive emergency or disaster, or when sufficient time is available to plan and organize a more appropriate response, the immediate need is less severe and more manageable for a capable society like that of Japan. But, the Osaka-Kobe Earthquake did emphasize the need for change and improvement which has long been evident to many. Part of the communication and control problem points to the need of legislative reform if not constitutional change to strengthen the authority of the prime minister.

Government Disaster Control

As pointed out by Atsuyuki Sasa, former head of the Cabinet Security Affairs Office, under article four of the Cabinet Law passed in 1947 under the occupation, the prime minister does not have the power of unitary command (*ichigen-teki-na shiki-meirei-ken o ataete orazu*) which is a weak point.[8] The highest administrative decision-making power is that of the Cabinet by a unanimous decision (Article 66 of the Constitution). A more democratic procedure would

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management by the prime minister's Defence Problems Advisory Panel (Boei Mondai Kondankai) and the handling of the earthquake. Ibid., pp. 30-31.

7 Iida, "Tokyo Response."

8 Atsuyuki Sasa, "Kiki Kanri e Shusho Kengen Kyoka" (Strengthen Prime Minister's Authority for Crisis Management), *Yomiuri Shimbun*, March 18, 1995, p. 12.

be to permit the cabinet to make decisions by majority vote. Professor Sasa advocates an amendment to permit the prime minister to take administrative command and control when it is difficult for cabinet to reach decisions and limited to handling extraordinary emergencies with subsequent Diet approval. He also proposed that the cabinet set up an *ad hoc* committee modeled on that of the Highjack Countermeasures Headquarters composed of the high-powered bureau chiefs of the relevant ministries as well as to improve the regulatory functions of the Chief Cabinet secretary and strengthen the Prime Minister's power of command.

In the earthquake the lack of an official in command resulted in no political decisions to mobilize the Self-Defence Forces on a large scale to rescue people buried alive, to prevent destructive fires and to use chemical fire-retardants dropped from the air. The political and administrative actions not carried out increased the number of victims. The Self-Defence Forces Law needs amendment to improve emergency capabilities of the forces. Fire prevention and police laws should be amended to permit local governments to perform functions restricted to prefectural fire and police personnel.[9] The urgency of improvement in the power of the executive branch of government to deal with disasters is also underlined by the terrorist attack in Tokyo on March 20, 1995 when about 5200 people on the way to work at the central government offices at Kasumigaseki were injured by sarin nerve gas of whom ten died. The *Aum Shinri* Sect's stockpiling of chemicals sufficient to produce sarin able to kill over 4,000,000 people is a sobering reminder of the kind of long-feared terrorism threat by weapons of mass destruction even in the present peacetime conditions that may require immediate response.

Chief Cabinet Secretary Kozo Igarashi said the Kobe quake will prompt strengthening of the *Kantei* functions and the establishment of a national disaster-response organization on the line of the Federal Emergency Management Agency in the United States.[10] The American Agency is credited with prompt and efficient response to the Northridge Earthquake in California. However, it benefitted from an energetic director with direct backing from the President. The director not only activated a moribund organization but had organized well for emergencies, holding drills in various parts of the country. Therefore, the American agency turned out to be well-prepared to take action after having earned an earlier reputation as a place for ineffective time-serving political hacks.

The California quake was not so extensive or so deadly to a highly concentrated population as the Kobe disaster which called for a much broader and immediate effort than Northridge. Japan is likely to have more of the Kobe-type quakes. Tokyo is better prepared than Osaka and Kobe and does hold periodic earthquake drills, but the improvement of command and control functions is clearly needed. Unfortunately, no immediate steps for new legislation were undertaken when public opinion and many political leaders felt so strongly dissatisfied with the way the Kobe earthquake was handled.[11] At the time of the quake delay in bureaucratic action seems difficult to understand. The Japan International Cooperation Agency has 177

9 Ibid.
10 Mihoko Iida, "Crisis Shows Danger ofHobbled Premier, *The Nikkei Weekly*, January 30, 1995, p. 4.
11 *The Nikkei Weekly*, "Most Want Government to Improve Disaster Response, Survey Finds," February 27, 1995, p. 6.

doctors, 199 nurses and 118 logistic personnel on its register.[12] Yet, it was two weeks before they were sent to help in Kobe. Meanwhile, some forty of their doctors and nurses went as individual volunteers when their agency failed to act. It took six days before the Ministry of Health and Welfare permitted foreign doctors to provide help to patients in Kobe.

The Ministry of Posts and Telecommunications acted more promptly than other agencies. It approved the action of International Telecommunications and Telephone Company to provide portable antennas for satellite communication within two days of the Kobe quake. It took six days for the agricultural ministry to loosen land restrictions to permit its use for other purposes as did private railways and gas companies in order to carry on construction of temporary housing.

Bureaucratic Obstruction to Deregulation

Excessive regulation by government is an enormous obstacle to both good communications and effective political control. Japan is notorious for its "vertical" (*tatewari*) administration by innumerable departments and agencies whose intricately divided authority makes responsibility to act often difficult to determine. Three new coalition cabinets came "to power" in 1993 and 1994 all pledged to free the Japanese economy and society from the heavy hand of central government regulation which earlier governments had pledged to do but signally failed to achieve. Elected officials have proved unable to take the initiative in this endeavor. They wait in vain for their bureaucrats to come up with the detailed steps to reduce their own power and where appropriate to eliminate themselves which they are naturally reluctant to do. Therefore, it does seem that the Japanese Cabinet executive and the governing parties in the parliament are too heavily dependent on their officials for changes and reforms. The top civil servants, the administrative vice ministers, normally meet prior to regular meetings of the cabinet ministers to prepare the agenda. The responsible ministers in their meeting apparently approve of what has been prepared for them by the bureaucrats with the minimum of change or modification.

The Murayama Cabinet earlier pledged to reduce the 92 government corporations in order to cut public spending, but this initiative seems doomed to failure as the March 1995 deadline came and went with almost none likely to be privatized or combined. Makiko Tanaka, the director general of the Science and Technology Agency and daughter of one of the strongest prime ministers[13] Japan has ever had, asked her officials to propose affiliated corporations to be restructured. Her chief cabinet secretary expressed the bureaucrats' opposition to any deregulatory steps by asking her not to specify any government corporation as a target. In a desperate effort to assert some control over her officials, she dismissed him from his post, but he was still only reassigned to another position.[14]

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12 Toshio Shinmura, "Red Tape Put Medical Relief on Hold," *The Nikkei Weekly*, February 6, 19995, p. 2.
13 Makiko's father, Prime Minister Kakuei Tanaka, had access to enormous political funds as well as patronage with which to bribe officials and businessmen to cooperate before he himself was tried and found guilty of receiving a million dollar bribe from the Lockheed Aircraft Company. His trial took twenty years to drag through the courts.
14 Hiroshi Nakamae, "Bid to Streamline Government Doubted," *The Nikkei Weekly*, January 9, 1995, p. 3.

The Murayama Cabinet came up with a plan on February 11, 1995 to abolish 11 of the 92 corporations but ran into resistance of the Finance Ministry and other officials. On March 14th the political leaders weakly settled for merging the Export-Import Bank and the Overseas Economic Cooperation Fund which had only been separated from each other in 1961. The "change" would take four years, but the finance minister said he doubted the merger would even reduce any personnel and would continue all previous functions. Such a bureaucratic victory over the weak and ineffective politicians can scarcely be imagined. The old Raw Silk and Sugar Price Stabilization Agency functions to subsidize the few remaining inefficient producers of raw silk, but even it will survive the ineffective reform effort.[15]

The advisory groups to the government ministries (*shingikai*) include academics, businessmen and media representatives but are kept under tight leash by their bureaucratic members. The Import Promotion and Market Access Improvement Group of the so-called Administrative Reform Promotion Council included Nakauchi, head of Daiei. The bureaucrats on the secretariat had prepared themes for discussion like liberalization of entry into tobacco retailing, setting up self-service filling stations and lifting the ban on establishment of holding companies. But, the business members of the Group erupted in criticism that none of those were controversial. They said the officials spent all the advisory group's time explaining how difficult it was to deregulate anything. The following day Nakauchi complained to the prime minister that the officials were sabotaging efforts of their panel to increase imports and improve access to the Japanese market.[16]

The chief big business organization in Japan, the Federation of Economic Organizations (*Keizai Dantai Rengokai* or *Keidanren*), has led in the effort to deregulate the Japanese economy and even to opening the market to foreign competition. It has made many proposals to the government to eliminate unnecessary regulations in the current drive to permit greater competition and lower costs in Japan. Its efforts are badly undercut by the strong industry associations among its members who frequently combine with bureaucratic regulators to keep out both domestic and foreign competitors in their industries. The Fair Trade Commission's weakness is legendary in preventing cartels or other schemes to avoid competition such as construction companies' secret agreements to share equally in bids for government contracts (*dango*).

Stifling Regulation of Japan's Communication System

Despite the need for improvement in emergency communications in cases of large-scale disaster, Japan's present communications system performed well enough after the initial crisis period in the Kobe quake. However, the persistent tendency toward government over-regulation prevents flexible change and innovation which is needed now more and more. Probably, the development of the Internet and e-mail by its users in the United States illustrates with unusual clarity the coming challenge for Japan in communications competition. The exponential increase in use of the network was not planned or foreseen by anyone and is continuing. The net itself is

15 James Stemgold, "Japan's Silk Bureau Defies Obsolesecence," *Globe and Mail*, January 5, 1995, p. A1.
16 *Daily Yomiuri*, "Daiei Chairman Raps Bureaucratic Delays," May 19, 1994, p. 16.

the result of spontaneous cooperation and creativity of its users. In North America there is not even a cost for its use, once a user has established connection with the net, which is an unheard-of innovation. The Internet "occurred in the United States thanks largely to the absence of the kind of stifling regulatory web found in Japan."[17] The strong American political and ideological movement favoring deregulation and the support of private initiative no doubt was also relevant. As Kenichi Imai points out, users of communications networks need, not only to act freely within existing structures, but the freedom to modify those structures easily---something especially difficult in Japan which is smothered in detailed regulations.

Any kind of new service usually requires all kinds of negotiations with officials and changes of the ubiquitous regulations. Telephone long-distance and local services, broadcasting and satellite use are all segregated by regulations which ought to be abolished so users could create the combination which best suits them without resorting to constant negotiations with officials to change the laws and regulations.[18] In the sphere of software, innovations should not be jeopardized or prevented by the laborious task of educating and obtaining cooperation of bureaucrats. Imai paints a rather grim future for an over-regulated Japan, saying, "Innovative business people will ultimately become discouraged in an environment where excellent products fail to win recognition, the freedom to restructure systems is extremely limited by opaque-controls, and business plans must be vetted in time-consuming screening council meetings. Only enterprises that seek government protection can survive."[19]

Recent Attempts to Benefit from Recent Disasters

Despite the lack of initial political or bureaucratic action on command and control needs after the Osaka-Kobe Earthquake and other lesser disasters, the lessons learned are not forgotten. During the annual September 1, 1995 Disaster Prevention Day 13,000,000 people took part in earthquake drills.[20] More realistic drills were carried out in which the prime minister and cabinet participated. Tremors were assumed to have begun in the Tokyo region at 6:30, the time of the Kobe quake, with a big quake of six or seven magnitude at 9:30. The cabinet gathered at the prime minister's office (*kantei*) early in the morning. A large quake was assumed to hit Chiba just east of Tokyo at noon followed by the declaration of a state of emergency at 12:45 by Prime Minister Murayama. Helicopters at the site of the disaster transmitted video pictures directly to the *kantei*. The prime minister himself visited the drill site at Urayasu in Chiba.

While Murayama told the press the drill was a success, the chief cabinet secretary allowed it was a tentative success. The very efficiency of execution of the planned drill also suggests the limits to its realism. The cabinet ministers were all present with over 100 officials from various ministries at the *kantei* for the first such "command post" drill and direct satellite communication was established with the disaster site. But, if a Kobe-type earthquake had hit Tokyo, the likelihood of all the ministers and staff personnel even getting to the *kantei* through

17 Imai Ken'ichi, "Clearing the Roadblocks on Japan's Information Highway," *Japan Echo*, Vol. 21, No. 3 (Autumn 1994), p. 66. Translated from Shukan Toyo Keizai, June 18, 1994, pp. 102-129.
18 Ibid., p. 68.
19 Ibid.
20 *Daily Yomiuri*, "Preparing for Another Big One," September 2, 1995, p. 1.

collapsed structures and obstructed traffic is almost nil. Nor, would the prime minister be able to assert more than moral authority to issue emergency orders without full cabinet approval. The beautiful *kantei* building designed by Frank Lloyd Wright in 1929 is obsolescent and might have been damaged so it might not be usable as a command and control base.

Obtaining sufficient information rapidly on disaster damage to permit direction and assistance from the central government will be crucial in future disasters. Broadcast messages and images with the help of helicopters might be prevented by damage to planes on the ground. Poor visibility might rule out transmission of video images from them. Slowness in reporting damage from the various ministries in the Kobe quake was due to the incompleteness of initial information which they were reluctant to send to the *kantei*. However, in September the national land agency which played the key role in the drill encouraged even fragmentary reports to be sent in to the *kantei* to be collated in the effort to understand the conditions and needs at the disaster site.[21]

Despite the agency's optimism whether such piecemeal reports will even be forthcoming or sufficient on which to form reasonable judgements may require much greater development of emergency means of communication and their wider dispersal than is yet feasible, let alone coordination across divided administrative jurisdictions, the bane of present emergency crisis management. Hence, the urgency of greater concentration of emergency authority in the *kantei* and prime minister.

Pressure is building up in the parties and government for reform in the prime minister's authority and improvement of the *kantei* for crisis management. The need for it has been highlighted by both the shocks of the Kobe quake and the attempts at mass poisoning by the *Aum Shinri* Sect and other recent crises such as highjackings. Legislative action is quite likely in 1996 to improve the system for obtaining and processing emergency information as well as reducing restrictions on authority to take action.

After years of abortive attempts to build a new *kantei* building it seems likely to go ahead. It will take until about the year 2000 to get it fully operational, but the present building cannot hold more than 100 staff. On the government side, at the end of July the advisory group on preparations for the new *kantei* under the Assistant Chief Cabinet Secretary Furukawa Sadajiro reported its recommendations to the government political parties' Administrative Reform Project Team. It wants it to be able to process communications on a twenty-four hour basis. The new Nippon Telegraph and Telephone Corporation has launched a new satellite which will facilitate communication with remote areas in disasters. It will also enable portable telephone service in mountains or at sea where conventional cellular phones are out of range. In 1996 NTT Mobile Communications Network Inc. will operate the new service.[22]

The emergency operations room should be able to issue instructions to the various ministries. The *kantei* will have a heliport and dormitory for personnel as well as its own in-house electric generating system. The parties' Project Team wants article 6 of the Cabinet Law

21 *Yomiuri Shimbun*, "Seifu no Bosai Kunren" (Government Disaster Prevention Drill), September 2, 1995, p. 3.
22 *Nikkei Weekly*, "Satellite to Aid in Natural Disasters," September 4, 1995, p. 9.

changed to clearly enlarge the limits on the prime minister's authority in emergencies so he has command and control without everything going through the full cabinet first. The bureaucratic side wants to limit the scope of the prime minister's new advisors (*shusho hosakan*) to economic and foreign policy in specific areas. The parties, including the chief opposition party, want the prime minister to clearly have command and control authority over the ministries in emergencies.[23] Therefore, they want the heads of the five cabinet divisions to have vice-ministerial rank equal to the career administrative heads of the ministries.[24] In February the officials began to set up a new route for information to the *kantei* in emergencies in addition to the present formal route via the National Land Agency. The 1996 budget will provide for new staff for the Investigation Room (*chosa shitsu*), a move toward a twenty-four hour functioning of the prime ministerial emergency information service.

The prime minister's private advisory group on disaster prevention (*Bosai Mondai Kondankai* or *Bosai Rincho*) wants the Disaster Countermeasures Law modified to permit setting up the emergency headquarters under the prime minister even if there is no serious social or economic disorder (in the Kobe quake there was no looting or rioting). Economic control and direction is needed in a large-scale emergency. It also urged strengthening prime ministerial emergency authority over the administration.[25]

Despite the enthusiasm for concentrating emergency authority in the *kantei* and giving the prime minister command and control, there are constitutional difficulties. What cabinet law revisions or other legal steps can be taken is not altogether clear in view of the restrictive nature of the constitution's treatment of executive power which in the old constitution permitted serious abuse of power by various executive agencies. Now, essentially, the prime minister is intended to be only one among the other cabinet ministers, not a strong executive like the American president or prime minister in Commonwealth countries.

Conclusions

The Kobe Quake has brought the present inadequacies of emergency communication and crisis management more forcefully to public attention than ever before and provides a strong incentive to act. The Quake brought forth an enormous public response in the form of volunteers from all over Japan who pitched in to help in any way they could, especially with their personal labor, to help during the crisis period. If politicians provide leadership they will have strong popular support in making significant improvements. The provision of more adequate emergency communication equipment and systems for future disasters is relatively easily accomplished. The value of new systems like the Internet that were used by university students to obtain vital information for quake victims has not escaped notice of bureaucrats and other leaders even in Japan where the use of personal commuters for private communications is less

23 *Yomiuri Shimbun*, "Shinshin ga 'Kiki Kanri Ho' Teisho" (The New Frontier Party Advocates the Crisis Management Law), June 28, 1995, p. 2.
24 *Yomiuri Shimbun*, "Shusho Kantei Kino Kyoka" (Strengthening the Functions of the Prime Minister's Official Residence), August 28, 1995, p. 3. Also, Daily Yomiuri, "Advisers to Premier Planned to Improve Crisis Management," August 24, 1995, p. 1.
25 *Yomiuri Shimbun*, "Kinkyu Saigai Taisaku Honbu Shichi Kijun o Kanwa e" (Toward Modifying the Standards for Setting up an Emergency Disaster Countermeasures Headquarters), September 1, 1995, p. 2.

developed than in North America. Private business communication networks might also be adapted to more general emergency use as well.

More realistic and frequent earthquake and disaster drills are urgently needed, especially in large population centres like the Kanto and Kansai. In such drills the effects of large-scale breakdown of conventional communications, obstruction of roadways and the injury or absence of key personnel must be assumed and provided for. Emergency backup communication and control centres should be established. Pre-positioning of urgently needed emergency supplies, even by private households, just as in wartime, is essential.

Bureaucratic slowness, lack of government coordination, inadequate collection of information and lack of command authority are difficult to remedy in emergencies and even in normal operations. In a culture of consensus and elaborate regulation those weaknesses are especially hard to overcome. The legal restrictions on executive authority seem to have gone too far in Japan and probably need modification, at lease in time of emergency. Constitutional change, even my interpretation, is difficult. However, there clearly is much that can be done simply by good planning and ordinary political actions on the part of the bureaucracy, the parties and especially by businesses, families and private individuals and associations. The new communications systems now appearing, often in the hands of individuals and small organizations, greatly increase the opportunity for action and preparation. For example, twenty-four emergency operation of information gathering and evaluation by the *kantei* is already being provided and a new *kantei* building and equipment seems to finally going ahead. Perhaps, in the new "information age" new systems and facilities will encourage a more flexible and more capable kind of society better able to cope with disasters as well as normal operations.

COMMENTS FOR PANEL: TECHNICAL AND SOCIAL FACTORS IN INFORMATION INTERNATIONALIZATION

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The three papers in this panel have much in common. All of them evidence good scholarship and thoughtful consideration of complex subjects. All deal directly with some aspect of information availability, use and dispersal in Japan. However, in perspective and focus, the three differ considerably. Colin Bennett's main concern is with privacy protection for the individual during and following information transferal as seen from a European perspective; Alan Hedley looks at Japan's burgeoning technical development in comparison to Canada; while Frank Langdon narrows the focus still, by raising questions about the way in which the Japanese government failed to adequately respond to its own concerns in a time of disaster and crisis. The three concentric circles these papers represent do much toward informing us about the information society in Japan.

To begin with the outermost sphere, Professor Bennett cogently asserts that in international communications the protection of personal privacy has become one of the most significant social issues facing countries wishing to build national and global information infrastructures. He notes that Japan, Canada and the U.S. are countries with inadequate safeguards in place and warns that the lack of privacy protections may eventually impede the international flow of personal data by EU countries reluctant to transmit to those with diminished systems of protection. He maintains that cultural explanations are insufficient to account for their lack of protection policies.

He then gives us a detailed history of the European regulatory efforts for data protection which culminated in the EU Data Protection Directive. Bennett notes that early European concerns were "influenced by memories and experiences of totalitarian forms of rule" (p. 3) which fueled fears of infringement of human rights and civil liberties. These factors were the incipient reasons for bringing together nations with dissimilar cultural backgrounds. Later regulations were more motivated by economic considerations. Because of the inherent disparities, he describes the Directive as "not a 'user friendly' document... complicated and legalistic (with) much incoherence" (p. 5). In fact, the major portion of Bennett's paper is concerned with describing the manner in which the European community was able to "cobble together" a piece of legislation with which they could all live. He uses this document as one example to aim for in implementing international regulations of personal data transfer.

In regard to Japan, Bennett says that its personal protection policy is "weak by international standards" and applies only to the administrative organs of the government, while leaving the private sector to police itself. Further, there are no penalties for agencies which fail to comply with the regulations. Does this not sound familiar? The Equal Employment Opportunity Act, (effective April 1, 1986) struggles under the same kinds of handicaps. It would almost seem to have been written with the same vague intentions, full of exceptions and with no arbitration or penalties.

Although he mentions that Japan favors the "American model," nowhere does he tell us just what that model is. It would have strengthened the paper had he addressed the question of why Japanese public policies lack "legalistic" methods to deal with non-compliance and why they tend to avoid arbitration. Clearly, cultural aspects do count. These are the main weaknesses of the paper. The reader needs to know more about what kinds of data protection Japan favors and why.

Despite these criticisms, Professor Bennett has given a clear and precise picture of what kinds of problems Japan, Canada and the U. S. may face if they do not implement higher levels of privacy protection on the information highway. His complete understanding of European requirements regarding the establishment of an unimpeded but well protected flow of personal data does much to contribute toward lowering global boundaries.

Alan Hedley begins by giving a definition of the distinction between "developed" and "underdeveloped" countries couched in terms of economic well being. Using the criteria of GNP per capita, he finds Japan as number one and Canada coming in eighth out of a field of 22, representing just 15% of the world's population (p. 1). He then goes on to elaborate the differences between the two countries in terms of population density, country size and the ability to exploit natural/human resources. He notes that there are more than 300 Japanese per square kilometer; a space occupied by fewer than three Canadians and that "these facts figure prominently in the economic development of the two countries" (p. 2).

Hedley gives a brief history of world economic development, tracing the progress from the harvesting of natural resources to the transformation of raw materials into manufactured goods. He argues that the industrial revolution in England fundamentally changed the nature of the way we do things and that the resulting "qualitative difference" from that of the nonindustrialized countries includes profound socioeconomic disparities. Further, he claims that the revolution is not yet over because new technological breakthroughs "will necessitate another massive restructuring of society and how we function in it" (pp. 4-5). The new revolution will be fought along the information highway and Hedley's preferred method of analysis involves looking at the business activities of leading corporations as well as the "occupational composition of the two (Japanese and Canadian) labor forces" (p. 5).

The main thrust of Hedley's argument is that as natural resources diminish in value over time, the education and skills of the work force will become the dominant competitive weapon. Primary among these skills will be facility for "abstract and system thinking (with abilities in) experimentation and collaboration... (which)... characterize an information society" (p. 9). Using a set of guidelines he identifies possible industries requiring these skills and defines them as high tech or modern industries which can be used as indicators of further economic growth.

Somewhat predictably, he finds Japan on the leading edge in certain information core industries such as computers and electronics, while Canadian corporations excel only in telecommunications and "are not significant players in the 5 information core and other 'modern' industries" (p. 13). After some discussion of other factors as important precursors to success in information technology, Hedley looks briefly at the national education systems of each country

and finds a "synergistic relationship between Japan's educational system and its economy!" not present in Canada (p. 23). On this tantalizing note, the paper ends.

Because education appears to play such a vital role in forming an information economy, I would have liked to have seen some discussion of the relative differences between the aims of the two educational systems, as well as a comparison of the composition of the two labor forces. There is a profound distinction to be made between an underpopulated country which encourages immigration and makes citizenship available to those who meet its requirements and a crowded one which allows foreign workers to enter but which actively excludes them from citizenship or permanent residency.

In Canada's case, the positive/negative aspects of active immigration are difficult to assess. Vancouver's school system has long been burdened with a large population who use English as a second language, yet the recent increase in the number of "economic immigrants" with high skills and good educational achievement are expected to boost BC's economy (Vancouver Sun, Nov. 2, 1995).

In regard to the composition of Japan's labor force at the present time, the "economic downturn" in Japan brings into question the "synergistic relationship" between education and economy where only 61% of university female graduates and 73.9% of male graduates can find jobs in the market place (Japan Times, Nov. 8, 1995). The situation is even more difficult for those permanent residents who are well educated but who lack Japanese citizenship (Japan Times, Oct. 14, 1995).

Professor Hedley's chief concern has been to show what kind of indicators might be used to predict the way in which a developed economy can continue to produce and maintain the "complex infrastructures which attend to societal needs" (p. 1). His paper is rich in data sources, well referenced and presents a good historical overview of the path from industrialization to an information society.

The big question Frank Langdon asks is: "Why was there such a deplorable lack of political leadership and adequate bureaucratic action during the crisis following the Great Osaka-Kobe Earthquake?" (p. 1). It is a question that is still being asked here in Japan nearly a year later.

Perhaps one of the reasons the question persists is because the residual effects of the *Hanshin Daishin* have exposed more than the fissures in the subsoil around Kobe, it also uncovered fractures in those very "infrastructures which are supposed to attend to societal needs."

In his paper, Langdon catalogues some of the problems faced by a country hit by such a devastating event, compounded by the lack of a flexible and prepositioned emergency means of communication" (p. 1), shorn of normal electrical power and apparently unable to decide what to do next.

He points out that in an emergency, one of the first problems is that of communication. That is, to get information concerning the extent of damage to the government leaders. The second problem, then, is to mobilize some kind of relief for those most seriously affected. Considerable

criticism has been voiced regarding the "slowness or ineptness in government response" in regard to communication and control of emergency resources (p. 5). Much of the blame can be laid at the door of overregulation and bureaucracy in that no one person is in charge. Under article four of the Cabinet Law, the prime minister of Japan does not have the power of unitary command and the highest administrative decision-making power resides with the Cabinet by a unanimous decision (p. 7).

Langdon declares that the lack of an official in command resulted in no political decisions being made to mobilize the Self-Defense Forces on a large scale in order to rescue people buried alive, prevent destructive fires and give assistance where necessary. He further asserts that this lack increased the number of victims (p. 8) and that badly needed help from other sources both in Japan and abroad was often delayed or rejected by bureaucratic action and red tape.

Part of the problem stemmed from poor crisis management. In The National Land Agency, (responsible for disasters) The Home Affairs Ministry (in charge of local government) no one minister or committee came forward. The information collected by various agencies was partial and incomplete and those collecting it were reluctant to send it to the kantei. In the early days of the tragedy, most of the communication throughout the country was carried out by television and press and was limited to what the media felt to be newsworthy, sometimes to the detriment of places with less destruction but continuing need.

Some of the most effective aid was performed by private individuals or organizations such as the chairman of the Daiei supermarket chain who ordered helicopters and ferries to bring food and supplies to the stricken area. Langdon maintains that even local gangster groups provided food to local residents before any other help was provided.

In the central part of his paper, Langdon details what he calls bureaucratic obstructions where elected officials wait for bureaucrats to tell them what to do. He gives several examples of "failed plans" and notes that the "excessive regulation by government agencies is an enormous obstacle to both good communications and effective political control." He notes that "Japan, notorious for its "vertical" (tatewari) administration and intricately divided authority ..." makes it difficult to determine who is responsible for what.

Langdon offers no "quick fix" answers; his paper is aimed more at presenting the problems as they occurred than in offering solutions. He does note two areas which need improvement. One is that although Japan is a leader in the output of computer technology, "local utilization" is quite low. Only about 23 % of white collar workers in Japan had personal computers by the end of 1994 compared with over half of all Americans in the same field. He also mentions several "after the fact" suggestions such as implementing a high-speed large-capacity network connecting public institutions, or much more use of computer networks but the main problem still remains one of responsibility.

As I read his paper my feelings resonated with what he had written. Here, in Hiroshima, we were awakened by the initial shock followed by a period of undulating, rolling movements. We knew that it was not a "local" quake by the kind of motion but it was not until I got to work that I realized the extent of the damage. All day the lists of dead kept scrolling on the television

screen: just names and ages. It was immediately clear that whole families had perished. I did not see any lists of injured, one was either a survivor or dead. There was also the ominous category of "missing", but that did not appear until later when relatives' queries flooded in. I mention these things because what followed this heightened state of tension was a complete paralysis of government action.

One of the aforementioned residual effects of the earthquake not mentioned by Professor Langdon is the continuing plight of the elderly and that of "illegals," immigrants who were living in the area at the time of the quake. Life for the elderly poor has grown even more difficult due to displacement and neglect. Of the 60,000 Kobe residents still living in temporary housing, 17,000 are over 65, with many of them living alone. At least 16 have died a solitary death (Japan Times, Nov. 10,1995).

As early as late January it was clear that government-operated services would not be able to help "illegals" who have overstayed their visas. Many of these displaced people face deportation if they ask for help. (Japan Times, Jan. 27 and Z9,'95).

The three papers presented in this panel offer vastly differing views of Japan. Part of the difference is proximity, part is due to perspective and a great deal is because of the interest of the writer. All of them are informed and critical but well researched and written. It was a pleasure to read them.

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FIFTY YEARS AFTER THE PACIFIC WAR

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This year is the 50th Anniversary of the end of World War II, which also means the end of the Pacific War which the Japanese chose to call "Dai Toa Senso" or the "Great(er) East Asia War." I believe that the *Japan Studies Association of Canada* should take note of this fact and that I, as one of the few members of this Association who lived through that war in Japan -- I spent the entire war period and part of the pre- and post-war period as well (1939-1946) in Tokyo -- might make a few informal comments at this point.

My somewhat younger colleague, Professor Jacob Kovalio of Carleton University, will follow with comments of his own. I will restrict myself to a limited number of aspects of the subject that seem important to me in the context both of what happened 50 and 60 years ago and of the events which have occurred since then -- and let me emphasize that these are my personal views, in the light of my life experience, and that I make no claim to being a unique source of truth or being able to propound eternal verities or historically valid propositions. So this will be a conversation rather than an academic dissertation.

In thinking back 50 years, the first thing that occurs to me is that tremendous changes have been wrought in these five decades. In August 1945 and the months that followed, the people of Japan were starving to the point of desperation -- there was not much food to be had unless you had large amounts of money to buy black market goods. As the winter approached, the Japanese people were also freezing. There was little fuel, coal, oil or warm clothing to be had and the winter was a severe one. There were also few jobs, since the armed forces were demobilized and millions of Japanese soldiers, administrators, merchants and civilians were streaming back to the home islands from all over continental China South Asia and Southeast Asia. Many factories and businesses had been destroyed in the air raids or had been forced to close due to the unavailability of basic material resources. Without jobs, the people did not have money to buy even the few available goods. Street gangs of starving children roamed the thoroughfares and around railroad stations such as Ueno, Shinjuku and Ikebukuro, begging and stealing what they could and sleeping in the archways under the railroad tracks. As the occupation soldiers passed by, the children stretched out their hands, yelling: "No papa, no mama, no chow," hoping for a stick of chewing gum or a piece of a chocolate bar. In Hibiya park, right next to the Imperial Palace, the American occupation soldiers who were quartered in Japanese government buildings not far from there could purchase the temporary favours of young Japanese girls frequenting the park for a chocolate bar, a pair of silk stockings or half a dozen cigarettes. Since the yen was worth very little at the time (365 yen to $1.00) packs of American cigarettes -- Lucky Strikes, Camels or Chesterfields -- became a kind of unofficial currency with which people bartered for their daily needs. I witnessed this disgusting spectacle day after day, since I was quartered in the Finance Ministry (*Okura-sho*) and worked in the NHK (JOAK) building and therefore passed Hibiya Park on my way to and from work. When I commented on

this to one of my fellow employees -- he had been a professor of Japanese literature -- he cautioned me not to think too harshly of the girls involved. "It may not be immorality that causes them to do this," he said, "It is perhaps the only way that they can get food for their parents or other members of their family." I found this thought so painful that I decided never to go near that park again and detoured around it from then on.

The mood -- the faces of the populace -- reflected their hunger, their despair, their chagrin at the ignominious defeat that Japan had suffered and their deeply wounded pride. And I, who for four years had prayed for an early Allied victory, felt strangely ambivalent about the suffering of the Japanese that I now observed. It was never in my heart to foist collective guilt for the war upon the broad masses of the Japanese people and yet I knew about the arrogant and cruel behaviour of many of them, including the political, bureaucratic and military elites -- there were even intellectuals and artists whose behaviour had been abominable during the war. Yet most of my Japanese friends, many of them students and associates of my father, a conductor and music pedagogue, had not been enthusiastic supporters of the war and they were as glad as I was that it was all over now. Nevertheless, as proud citizens of Japan they found the indignity of a foreign occupation hard to bear. To this day, I admire their forbearance in suffering and their uncomplaining persistence in rebuilding their lives and their country in the aftermath of one of the most stunning defeats any country, any people, has ever suffered. I tried to help my Japanese friends by giving them food, clothing or other daily necessities which I could purchase at the U.S. Army Post Exchange Store (PX), since I was a civilian employee of the U.S. occupation authorities from September 1945 to October 1946. This was undoubtedly the worst period for the people of Japan, since they had no money, no food, no jobs, inadequate clothing and perhaps not even a house or an apartment to live in.

I left Japan in the fall of 1946, when this kind of suffering had begun to ease somewhat, mainly due to the efforts of the MacArthur occupation authorities who persisted in shipping food, clothes and other necessities to Japan at the time of the greatest need. MacArthur is said to have advised Truman" "Send me food or send me bullets." I recall that there was much appreciation in Japan in those days for the very understanding attitude of MacArthur, who was perceived as a friendly father figure who cared about what happened to the people of Japan. There were even rumours that MacArthur was so kind because he was a secret Buddhist and some even contended that he had a Japanese mistress -- a *geisha* -- and that this was the reason he was being so kind to Japan. Of course I did not believe these myths, knowing that Mrs. MacArthur would have killed the General had he looked at any other woman.

I did not return to Japan until 14 years later and the changes from 1946 to 1959 were already tremendous. No one was hungry, cold or homeless any more. The American soldiers were mostly gone and so were the girls in Hibiya Park; the Japanese people were smiling again.

Among the great improvements I detected in this new society was a willingness to accept new ways and practices, not necessarily because they were foisted upon Japan by the MacArthur Constitution, but rather because the Japanese people themselves were ready for such changes and chose to adopt them for their own reasons. The vote for women, a gentler kinder police force, more tolerance for political and cultural diversity, the political emasculation of the

military, a somewhat freer press, a thirst for all things foreign and particularly American, an increasing interest in travel abroad and a very slight advance in the status of women were among the incremental changes I sensed. But there were also a great many things which had not changed, and which would not change, whatever the occupation might have decreed at the time. Corruption in high places continued unabated and Japanese politicians as well as business people soon discovered that occupation administrators could be bought with feminine wiles, money or other inducements and that Americans were quite as corruptible as the Japanese had ever been. There was still little understanding by the people of the real meaning of democracy. There was now formal democracy, a parliamentary system, regular free elections and fairly open criticism of the government in the press -- there was even a fairly high rate of political participation (better than 65 per cent) -- but the cynicism about political corruption was already quite high, with one political graft scandal after the other and the first signs of disillusionment with the American ally were already emerging.

The war, what had led to the war and who was responsible for those developments were not being discussed. The Greater East Asia Co-Prosperity Sphere and all its paranoid manifestations seemed to be blissfully forgotten. Children were not being taught what had happened other than in euphemistic phrases -- the war had been an unfortunate circumstance and the defeat was the fault of a few wicked persons, most of whom were dead anyway. There was, in other words, no real effort to come to terms honestly with the events of the twenties and thirties. I found this disappointing, a "cop out" I would call it, which might lead to future troubles.

The sixties and seventies brought about the Japanese miracle, the incredible upturn of industrial production, the modernization of Japan's manufacturing economy, the tremendous rise in the standard of living and the rise in exports which produced the gigantic surpluses in exports to the U.S., Europe and virtually everywhere else. Incomes doubled and tripled, consumer goods of every variety became available in great profusion and Elvis Presley imitators flourished alongside sold-out performances of "Tristan and Isolde" by the Bavarian State Opera Company from Munich. Japan was on a great roll to prosperity and there was talk of the "rich Japanese" washing with Givenchy soap, wearing the latest Paris fashions, buying up the Seventeen Mile Drive Golf Course in Carmel and Rockefeller Centre in New York. Herman Kahn spoke of the "Emerging Japanese Superstate" and Ezra Vogel of "Japan as Number One." To me, the most positive developments of the Yoshida-Kishi-Ikeda-Sato era (1948-72) were the rejection by Yoshida and all his successors of remilitarization and rearmament of Japan, the decision to go for economic development instead and the decision to support the U.S. in the Cold War without getting directly involved in the Korean or Vietnam conflicts, while at the same time profiting hugely from the economic contracts which these wars generated. Japan was able to build its modern economy under the protection of the American nuclear umbrella and remain at peace with its neighbours in Asia. At the same time her military forces remained small and defensive and her commitment not to develop nuclear weapons remained credible. Meanwhile, the international image of Japan was developing quite favourably, helped along by such events as the Olympic Games in 1964, the International Exhibition *Expo 70* in Osaka and the ever increasing flow of economic aid to developing countries, coupled with a foreign policy posture which stressed

peaceful co-operation among nations and support for the United Nations in its major activities. In the years between 1955 and 1988, this happened within a context of long-term political stability (essentially one party rule by the LDP) and in a continuation of economic stability and ever increasing prosperity, only briefly interrupted by the oil crisis of 1973. Domestically, Japan boasted the world's lowest crime rate, the world's greatest longevity for both men and women, relative social peace (in spite of the United Red Army Faction and its violent outbursts) and an ever improving reputation that Japanese manufactured products -- from passenger cars to VCRs -- were the best in the world, unsurpassed anywhere in both quality and design. However, these essentially positive developments were accompanied by a rise in Japanese pride and self-confidence, a renewed psychological nationalism and a variety of *Nihonjinron* notions which some people perceived as arrogance reminiscent of pre-war Japanese attitudes.

Thus, the Japanese of the middle eighties and early nineties are indeed a far cry from the impoverished, humbled people of the late forties and they are indeed entitled to feel pride in their undoubted accomplishments over the last half century. I greatly admire their hard work, their tenacity, their willingness to forego short term profit for long-term gain and their co-operative system in which government, industry and the bureaucracy work in long-term mutual co-operation for the common good. But I believe we should also think about what Japan has not accomplished, what she has failed to do, what she has neglected, in my view, possibly to her long-term disadvantage. I worry about these chickens coming home to roost sooner or later and possibly landing Japan in a new sequence of serious troubles, both politically and economically.

Let me briefly list here what I conceive these problems to be.

1) My basic view is that the war was wrong, though some Japanese insist that they were provoked and driven into a corner and had to fight. I believe the war could have been avoided.

2) Many of my Japanese friends at the time did not want the war and disliked General Tojo, General Araki and radicals like Tokutomi Soho as much as I did. Others were enthusiastically in favour of ousting U.S.-British imperialism from Asia and thought that this was the opportunity for Japan to show the haughty foreigners that Japanese were equal, if not superior, to the white colonialists who had come to dominate the world during the 18th, 19th and early 20th centuries. Here was the chance for Japan to demonstrate her equality with the Westerners, who had heretofore refused to acknowledge it. As much as I sympathize with the condemnation of U.S. and British imperialism, I do not believe that substituting Japanese imperialism for what had gone before represented an improvement in the situation.

3) Japanese behaviour during this war -- particularly of her soldiers in China and Southeast Asia -- cannot be condoned. I condemn it unequivocally and note that in China, Korea, Taiwan, Burma, Vietnam, Indonesia and the rest of Southeast Asia, Japan has not been forgiven for her wartime excesses. Fifty years have passed but these things have not been forgotten and will continue to be remembered.

4) I think it is a serious mistake of Japanese policy today and yesterday to fail to acknowledge responsibility for these events and to refuse to take measures to indicate genuine remorse and offer compensation to the surviving victims of her actions.

5) The abused POWs and the so-called comfort women, as well as other victims of Japanese destructive behaviour, should be offered compensation and expressions of apology for the behaviour which then prevailed.

6) Until this is done in a forthright and generous manner, the Japanese will not be accepted with true friendship and co-operation in the countries which she victimized.

7) Japanese schools must begin to teach the truth about "Dai Toa Senso" and not continue to perpetuate the propaganda myths which fuelled the Greater East Asia War in the first place.

8) Japanese politicians in particular, and above all cabinet ministers, must stop making public statements which demonstrate that they have learned nothing in the last fifty years and still cling to the shibboleths which got them started on their juggernaut through China and Southeast Asia. The fiftieth anniversary of the end of the Pacific War might be a good time to consider and implement some positive initiatives along these lines.

Virtually all of the countries with whom Japan maintains diplomatic relations today are eager to maintain good trade relations with her, to receive Japanese investment or to benefit from Japanese technological or financial aid. Any actions the Japanese government might take to improve the diplomatic atmosphere would therefore be much welcomed so that genuine friendship and co-operation with these countries can be resumed. This year of the 50th anniversary of the cessation of hostilities in the great war is the right time to think about rebuilding peace and friendship between Japan and her neighbours. Prime Minister Murayama's statement of apology was a step in the right direction. One can only hope that the next Prime Minister of Japan will be equally sensitive to these issues.

When General Hayashi Senjuro's Kwantung Army invaded Manchuria in 1931 (this really marks the beginning of World War II), some 85 per cent of today's population of Japan had not been born. Fourteen years later, when the Pacific War ended in 1945, Hashimoto Ryutaro was eight years old and Toshiki Kaifu was fourteen. I cannot see why the Japanese people of the present post-war generations should forever be burdened by events they neither shaped nor participated in. What happened in the past cannot be erased by endless apologies by descendants who had no part in the events. Today's Japanese cannot be expected to live forever on their knees. But today's leaders must refrain from reigniting the resentments of the past in China, Korea, Southeast Asia and even in North America. And in cases where compensation can be made for past wrongs, the Japanese government should act swiftly and generously to make amends. The German government has set a good example in this regard. It is time we put the

events of World War II behind us so that Japan and her former enemies can live in peace and friendship as we enter the 21st Century.

A FEW THOUGHTS ON JAPAN'S PAST, PRESENT AND FUTURE FIFTY YEARS AFTER THE PACIFIC WAR

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1995 [*Heisei* 7] will probably go down in history as an *annus terribilis* for Japan: the devastating Hanshin earthquake; the *Aum Shinrikyo* public poisoning incident and the ensuing trial of Shoko Asahara and his extremely well-educated underlings; the election of comedian-politicians to the governorships of Tokyo and Osaka; the stunning decision of Kono Yohei not to be a candidate for a second term as president of the Liberal Democratic Party [LDP]; the insolvency of Hyogo Bank and the fraudulent transactions discovered at the New York branch of Daiwa Bank; the lowering of the official discount rate to almost "underground" levels to revitalize the economy; and the rape incident of an elementary school pupil by three American GIs in Okinawa with its potentially devastating consequences for Japanese-American security relations. On the positive side, the pickings seem quite limited. The one major development in politics is the election of Hashimoto Ryutaro as president of the LDP, most probably one more stage on the party's return to renewed primacy in the country's politics. On a lighter note, worthy of attention were the affirmation of Takanohana as "the" *yokozuna* in sumo and Nomo Hideo's great success in American baseball. However, on the whole, it has been the commemoration of the fiftieth anniversary of the end of the Pacific War which has dominated the national agenda. Even the celebration of Oe Kenzaburo as Japan's second laureate of the Nobel Prize for literature (1994)was strongly affected by the *sengo gojunen* debate.

Two major, related questions have attracted national and international attention regarding the commemoration of the end of the war: Japan's responsibility for the start of the conflict and the extent, if any, to which the country is to apologize particularly to its Asian neighbours for atrocities committed by the imperial army during the war. Concerning the first issue, a straight line leads from the April 1934 Amo Declaration, through the November 1938 statement on the establishment of the New Order in East Asia, to Pearl Harbor. Had Japan not attacked the United States, the geo-strategic situation in Asia Pacific would most probably be very different today. To go beyond this educated guess would be to plunge into "what if" speculations, books about which have inundated Tokyo bookstores all through the year.

As to the imperial responsibility for the war, the 1889 Meiji Constitution gave the Showa emperor ample tools -- particularly the so-called *Right of Supreme Command*-- to interfere in actions of the military as he saw fit. Hirohito did indeed employ his imperial prerogatives twice, in February 1936 and in August 1945 -- in both cases, successfully -- despite having to grapple with the flagrant indiscipline of his subordinates at various levels. Although functioning in a political environment very different from that of the fascist or communist dictatorships, the Showa emperor did have a viable chance to steer Japan's policies in a direction other than that taken after 1931, had he acted accordingly. As to the military, they were the dominant element in a *de facto* oligarchy that also included bureaucrats, business leaders, party politicians and

aristocrats like Konoe Fumimaro. The great majority of the nation, as a result of rabidly nationalistic propaganda -- at the centre of which was the imperial image -- and great military successes after 1931, was sincerely ready for endless sacrifices for the sake of ultimate victory. By 1941, Japan had joined the camp it thought would be the winner. The Soviet Union might have joined that same camp had it not been attacked in June 1941.

Regarding the end of the war, the tragic suffering of the *hibakusha* is heart-wrenching, indeed unimaginable in its human and individual dimension. In retrospect, in Japan, Hiroshima and Nagasaki have contributed much toward the country's remarkable continuing commitment to pacifism (though also to the dubious victim syndrome some nationalists have come to espouse). Globally the two cities became an eternal reminder of the need to prevent a future nuclear war (for a diametrically opposed position see Martin J. Sherwin, *Hiroshima at Fifty, The Politics of History and Memory*, IHJ Bulletin Vol. 15, No. 4 Autumn 1995, p. 8). In the political sense, the ultimate responsibility for August 6 and 9, 1945 rests with the Japanese leadership, military and civilian. It was that leadership which, after whipping up the fears of the people to the extent that thousands of mothers holding their children committed suicide rather than surrender on Saipan and elsewhere, preferred to see the nation decimated while their central concern in the negotiations with the Allies was the continuing existence of the imperial institution. This, despite the fact that they had respected that institution only when it suited their interests or as a symbol of Japan's racial "superiority." Nevertheless, one takes strong exception to Beijing's *People's Daily* and its ghastly reference in August 1995 to the atomic bombing of Hiroshima and Nagasaki as "Japan's just deserts."

Japan did not start the Pacific War in order to liberate its Asian brethren from the Western yoke. Had that been the case it would have treated differently the Taiwanese, Koreans and Chinese who had come under its rule since 1895. Even the laudable stance regarding racial equality at the 1919 Paris Peace Conference does not totally counterbalance the impression of unscrupulous, aggressive imperialism so obvious in the Twenty-One Demands that Tokyo secretly tried to force Beijing to accept during the Great War (Hayashi Kentaro, *Rekishi kara no keikoku [History's Warnings], Chuo Koronsha*, 1995, p. 101). Japan did encourage Asian territories under its rule to gain independence beginning in late 1944. By then, however, the war situation was totally different from January 1942 when the secret Draft of Basic Plan for the Establishment of the Greater East Asia Co-Prosperity Sphere was written. The document clearly stipulated that "the independence of various peoples of East Asia should be based upon the idea of constructing East Asia as 'independent countries existing within the new order of East Asia.'.. this conception differs from an independence based on... liberalism and self-determination... and has the (Japanese) empire as its center" (de Bary, W. T. and R. Tsunoda, ed. *Sources of Japanese Tradition*, Columbia University Press, 1958, Vol. 2, p. 297).

As to the apology question, Prime Minister Murayama's August statement had to be (embarrassingly) convoluted and personal due to the inescapable political need to satisfy both a sincerely apologetic Socialist Party and the opposing pressure of its nationalistic coalition partner, the LDP:

> During a certain period in the not too distant past, Japan followed a mistaken national policy, advancing along the road to war only to ensnare the Japanese people in a fateful crisis and, through its colonial rule and aggression, caused tremendous damage and suffering to the people of many countries, particularly to those of Asian nations. I regard, in a spirit of humility, those irrefutable facts of history and express here once again my feelings of deep remorse and state my heartfelt apology.

More direct communiqués were issued by the New Frontier Party (*Shinshinto*) and the New Party (*Sakigake*). However, it was most probably the wide-ranging analysis and blunt advice of Oe Kenzaburo that Japan could gain from, politically and otherwise:

> The basic attitude of the Japanese government that China hated what the Japanese military had done, but not the Japanese people, is a gigantic fiction. The Chinese remember their brutal experiences, which they are told from generation to generation and will not fade away. Similar things happened in Korea and Taiwan, the Philippines and the rest of Asia, [including] the hardships of Europeans like the Dutch [that have]to be reckoned with. And all this is superimposed on what happened to the Americans in the surprise attack on Pearl Harbor. How can the forgetfulness that the Japanese government wants be possible?

Oe's suggestion:

> For the Japanese to be able to regard 21st century Asia not as a new economic power rivaling the West but as a region in which Japan can be a true partner, they must first set up a basis that would enable them to criticize their neighbors and be criticized in turn. For this Japan must apologize for its aggression and offer compensation. This is the basic condition and most Japanese with a conscience have been for it. But a coalition of conservative parties, bureaucrats and business leaders opposes it (*NYT Magazine*, August 1995).

The refusal of the Nobel laureate to accept his country's Medal of Culture because of his opposition to Japan's politics has had a limiting impact on his potential political effectiveness on the national arena, beyond the criticism it incurred from conservative academics like Sato Seizaburo and others.

In August 1993, with the formation of the Hosokawa coalition, the widely accepted opinion in Japan and abroad was that the first step toward the imminent demise of the LDP had been taken. A little over two years later, however, the Japanese political scene is firmly dominated by the conservatives and "baby-LDPs." A "95 system" is in the making which is potentially as strong as the "55 system" ever was, with even the socialists undergoing a liberal reincarnation. The JCP is but a negligible exception. The Japanese electorate seems to be attracted by Hashimoto's image as a strong nationalistic leader and he has insisted that the LDP strive to return to the helm alone (his recent book is titled *Dakkairon [Regaining Power]*). Hashimoto's personality and leadership style coupled with the expected implementation of the new electoral/political laws may, at last, give Japan prime ministers who both reign and rule.

Incidentally, it would not be a total surprise if a future Hashimoto administration would begin the tortuous process of amending (or abrogating) the 1946 Constitution, thus realizing the top clause on the original LDP platform 40 years ago.

After an LDP-JSDP-Sakigake coalition can one be far behind between a revamped LDP and any or both of the two "baby-LDP" parties as a first step toward unification? Even a unifying alliance of convenience between the LDP and the liberal reincarnation of the JSDP should not be totally excluded. Eda Saburo is probably turning happily in his urn.

Japan has been an economic superpower for about twenty years. Yet in international politics it has so far opted for a relatively low political profile. Fifty years after the end of the war, however, Tokyo is less and less able to continue playing "checkbook diplomacy." *Kokusai Koken*, even after the end of the Cold War, will have to be more connected to standing up and being counted on political questions. Indeed, most issues have political connotations. Besides, Japan likes to be shown respect on the international arena and it wants to be influential.

It has always been Japan's capacity to quickly identify what Tokutomi Soho in his 1886 bestseller *Shorai no Nippon [The Future Japan]* called the world's trends [*sekai no taisei*] and follow them for its benefit. The country's international behaviour since 1868 is testimony to that. In the past thirty years, a (limited) level of residue of the trauma of defeat and even more the deliberate decision to avoid major international responsibility as detrimental to its national interests account for Tokyo's relatively low political stature. The post-Cold War atmosphere and, no less importantly, the implementation of political reform and the advent of a Hashimoto administration will likely see a significantly more activist foreign policy. In fact, even today Japan's foreign policy seems to reflect a growing sense of self assurance. The tough positions in the automotive negotiations with the US, the sharp criticism of nuclear tests by France and China, the decision to invite an official representative of Taiwan to the November 1995 gathering of APEC in Osaka, despite the PRC's negative reaction -- all these are telling examples of Japan's increasing and justified confidence, despite the economic and social problems it has been grappling with for the past five years. The inevitable ascendance to permanent membership of the Security Council of the United Nations is bound to strengthen that tendency. Even now Akashi and Ogata are familiar names to global audiences.

Asia Pacific, Japan's immediate economic backyard and the globe's most dynamic growth region, is bound to attract Tokyo's political attention even more than in the past. It was the late Prime Minister Ohira Masayoshi who coined the expression Pacific Rim -- one of the euphemisms for Asia Pacific -- some fifteen years ago. Forever alert to the great potential of the still politically nebulous Asia Pacific where some (most notably Malaysia's Mahathir Mohammed) are looking for its leadership, Japan is presently considering the cultural pan-Asian card carefully so as not to upset other Asians and the United States. Indeed the present Asia Pacific context, which is unprecedented -- a large number of truly independent, economically prosperous and politically proud nations-- requires innovative policies on Japan's part. There already are public opinion leaders in Japan advising it to "leave continental Asia and enter Pacific Asia"[*Datsu A Nyu Yo*] so as to facilitate the emergence of an *Asia-Pacific Civilization* in which it could play a leading role (See Sato Seizaburo and Yamazaki Masakazu, "'Ajia Taiheiyo Bunmei'

Seiritsu E No Joken" [The Conditions for the Establishment of an "Asia-Pacific Civilization"] in *Gaiko Fuoramu*, No. 85, October 1995, pp. 16-26). Will Japan be able to resist the lure of the (illusory) "common Asia-Pacific home"?

In its modern history, Japan has had to start anew twice, in 1868 and in 1945. In both cases, foreign relations, particularly with the United Stated, have played a paramount role. 1995 is the 50th anniversary of the second fresh start. On the commemoration of the first new beginning, the Meiji Restoration, in 1908, liberal statesman Okuma Shigenobu, former prime minister and founder of Waseda University, depicted his nation's modernization and fundamental cultural characteristics in terms which are as relevant to Japan's road since 1945 as they were in the context of ninety years ago:

> [Japan's] general progress, during the space of half a century has been.... a spectacle rare in the history of the world. This leap has been... a boon conferred by foreign intercourse.... Japan, however, is also gifted with a strong retentive power which enables her to preserve and retain all that is good in and about herself. [The Japanese] have made a point of choosing the middle course in everything.... We are conservative while simultaneously being progressive; we are aristocratic and at the same time democratic; we are individualistic while being also socialistic... we may be said to somewhat resemble the Anglo-Saxon race (deBary/Tsunoda, pp. 192-193).

The initial historical circumstances of Japan's second beginning were dramatically different from those of the first. And yet, fifty years after the agony of ignominious defeat, Japan has risen, phoenix-like, from its own ashes to the pinnacle of global significance, by skillfully using its considerable human resources, favourable economic circumstances and particularly its special relationship with the United States. In today's international environment the like of which has never existed in history and in which it is called upon to exert growing degrees of participation and leadership, the vital question facing Japan is: will it find the right formula to translate economic, technological and cultural might into acceptable and lasting political weight?

THE CULTURE OF THE WWW IN JAPAN

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I. INTRODUCTION

During the last two years, universities, companies and various organizations in Japan have been positively and actively joining the Internet by putting up home pages on the World Wide Web (WWW). Today it is almost impossible to correctly estimate how many "home pages" from Japan in Japanese are on the Internet. A rough number, however, may help us to get a sense in this regard. From the day that the most popular "What's new in Japan" from NTT (Figure 1) started to be published in Dec. 1993, 160 servers were listed during 1994 (there are no records for Feb. 1994) and 424 servers appeared just in the first half of 1995. This number is increasing every day. One hundred and eighty two new names were present as of September 26, 1995.

On the other hand, with the latest computer technology, it has become much easier to bring information from Japan presented in Japanese through the Internet. In the case of the computer environment in the English world, we used to be requested to switch our computer system as a whole into Japanese mode, using programs such as DOS/V and Japanese Windows. On the top of all of those, more patch programs were needed in order to read Japanese on-line. Now, however, with the latest version of Netscape, people can minimize the task and fulfil all of their needs with a small-scale program such as "Twin Bridge." A connection with a single phone line can make the transferring quite smooth, compared with some "real" network settings such as those using an "ethernet card," where communication with a phone line loses only a little speed, but still offers quite positive results and reasonable performance.[1]

[1] It is a popular topic to discuss how to read Japanese on-line. Refer to "How to Use Japanese on Internet for PC" from Hideki's Home Page (http://www.jweb.com/~hirayama/howto01.htm) for a good overview in this regard.

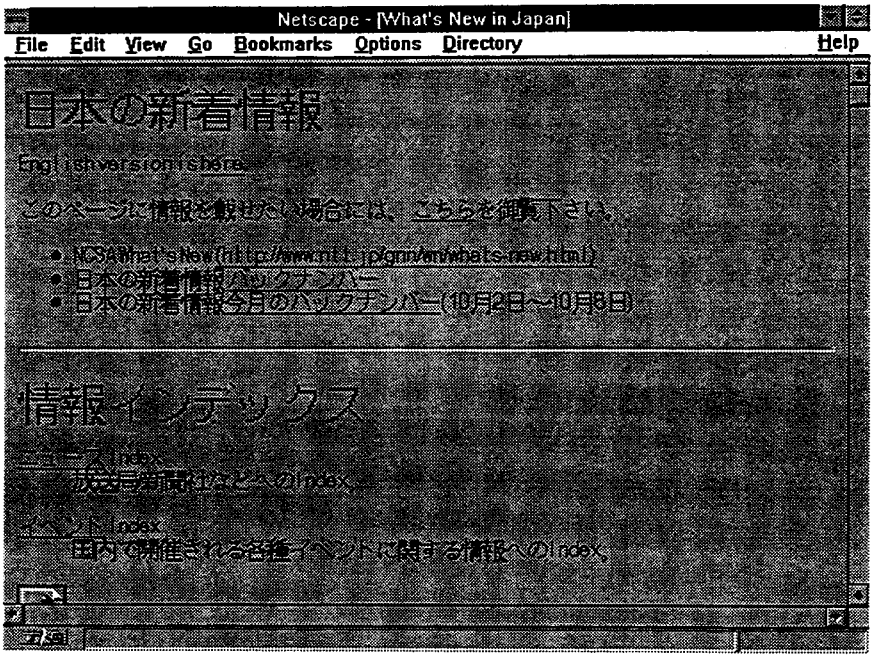

FIGURE 1. http://www.ntt.jp/WHATSNEW/index-j.html

However, as we establish closer links to Japan through the Internet, the more obviously the information from this shared communication media is strongly Japanese in flavour. Once we are on-line, what is spread out in front of us is not only information in a different language, but also a different culture.

First of all, we should examine the environment for accessing the WWW inside Japan. The fact is, as long as the most primary and reliable means of communication for the WWW is still a phone line for the majority of users, the transfer of information will involve a high cost for end users. In this sense, the very central concept of the "information highway" should be translated in Japanese as *joho kosoku doro* but not *info haiuei*, simply because the transfer of information is not yet a free highway system but rather an information road riddled with toll-booths. Considering that local phone calls can easily result in a costly monthly bill, we should realize that a normal Japanese user hooked up by his/her Mac, NEC, or IBM PC machine to WWW servers is actually much more serious than most of us in this part of the world. This fact certainly also largely affects the information providers. This communication environment is already indicating the possibility that the information presented in Japanese for users in Japan has come with a different nuance and style.

Translation also gives a second hint. It is also clear that no one ever wants to try to use the word *joho kosoku doro* for this new and exciting concept. No matter how close this word is to the original term for communication purposes, or how this suggested translation will lead to a better understanding of the current situation, there is simply another rule to regulate this process. In this case, that is to use a new *katakana* word to bring a brand new concept and to quite literally remove the "local" colour. The Japanese can simply use *katakana* to express this idea efficiently and without imposing on it any native nuance.

Therefore, the above translation process presents a meaningful example for us regarding the issue of language vs. culture. While we are talking about the WWW in Japan in Japanese, there is not only a simple replacement of languages, but a different cultural background and style behind the particular language and that is the part we should pay more attention to if we want to better understand the information conveyed to us. To look at the Japanese culture by means of the WWW is the primary topic for the following short discussion.

Let us start our small journey through the scenery of the culture of the WWW in Japan as presented by Japanese people and, by and large, still mainly for Japanese users. The WWW is one of the few fields related to high-technology where the Japanese have now realized they are behind. People do not like this and are trying to catch up in an very serious manner. This very fact will then make these current observations even more valuable and exciting.

II. THE CULTURE OF THE WWW IN JAPAN

In spite of the very short history of the WWW in Japan, there are already a few significant discussions on the culture, as well as the character and the future of the WWW by Japanese people. I will limit my discussion here to those articles published (there may be a need to find a new term to indicate the concept of publication on the Internet from the traditional hard-copy style) on the Internet and introduce here three representative opinions.

The first article is written by Toshihiro Takada at NTT Basic Research Laboratories, titled "The Status of Japanization and Internationalization of the WWW."[2] This article is primarily a review of the technical side of the WWW and the writer's main concern is Japanization as "localization," leading to a discussion of the future of "internationalization" which will allow the WWW to handle various languages on the same level. However, Takada ends his review with the following lines which are rather strong and new for most of us:

> People often point out that "the situation that Japanese can be used on the Internet will, eventually, mean that Japan will start its '*sakoku*' (closed country) again in the field of information."
>
> and the writer is largely in agreement with this quote, as he continues:
>
> We should make an effort to provide information in English, in order to avoid people saying, "It is no FUN to interact with Japanese people only." Don't forget that the [Web] is called "World-Wide"!

It is difficult for people outside of Japan to be aware of the fact that the new technology for communication could bring about a "closed country." However, Takada's argument alarms us with one possible scenario for this new means of communication in the near future. Although we now have little problem accessing information in Japan from the outside and the significance of national borders is thus diminishing, for the information providers, it is natural to assume that the language itself is still a big obstacle which is separating people in the world.

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2 http://www.ntt.jp/people/takada/docs/www-j10n. This article was first published in *IAJ News* (Vol. 1 No. 2, July 1994) and placed on the Net thereafter with modifications.

In exactly the same way that *kanji* has been closing the Japanese computer market from the world, the majority of the information providers still assume that only people inside Japan are their targets and those who are accessing the Internet from inside Japan will only be interested in information produced or selected by somebody who is also living in Japan. Under this assumption, more pages are being established in a sense to largely challenge the common style of the existing WWW servers, to provide information in an overtly Japanese manner. We will see a number of examples later in this regard.

There are several sharp criticisms to be found of the ways people in Japan exchange information within this "wall." In the opening article of the 2nd issue of *Media Front*, entitled "Expectations for the Internet on the Vague Japan," Toshihiro Takagi, the chief editor of the first on-line magazine in Japan (it also has a traditional publication format), tried to analyze why Japanese people, to use Takagi's words, "[who] are known as working well in the field of group-work," cannot grasp the idea of "cooperation within network computing."(Figure 2)

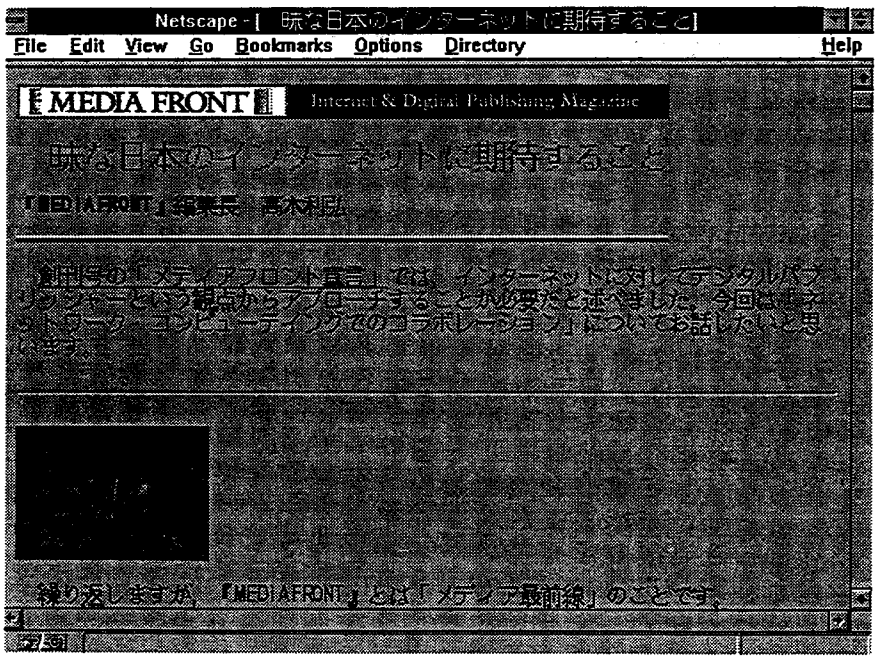

FIGURE 2. http://www.bnn.co.jp/MEDIAFRONT/9508/First.html

Takagi listed one reason: a Japanese finds it difficult to be "independent." He states:

> The concept of independence, or thinking in a horizontal manner, is very new for the traditional Japanese Group-Work. As long as business styles such as family-ism, *nana-ism* (indirect-ism), vertical organization, sect-ism, etc. are not changed, there is no use for a system like e-mail.

I am quoting Takagi's statement to show how some people are now considering the WWW as a cultural phenomenon and also how strongly people are attempting to understand this newly established high technology from a cultural approach. However, I have no intention of bringing in the traditional "Japanese are unique" opinion for this discussion here, as I think there is little sense in using the topic of the WWW to examine or to prove such a repeatedly discussed

view point; simply adding yet another commentary to it. This would actually limit our observations on this newly established social phenomenon.

The last example relates to the effect of the WWW in Japan on the social environment. This document, entitled "The Third Media" by Takeshi Tsutsui,[3] has approximately 140,000 characters, a good size for a normal published book; it is packed with sharp, severe criticisms on how the new technology may affect and also be affected by the social system. Tsutsui is particularly concerned with the problematic character of governmental rules, company practices and traditional systems, and warns that the new media will eventually cause a revolution, irregardless of the will of the people in positions of power.

One of the important opinions about the new media is the way to deal with information. Tsutsui has the following opinion in the chapter "The cost of information in the Internet society":

> The purpose of publishing a thesis is something like getting a licence; to make it known that it is the author's idea. If this is the case, so it should be enough for one to upload it to the Internet.

We will see the implications of this statement in the following discussions; at least from what it is happening now, this way of thinking about the value of information has not yet been accepted by large numbers of organizations. It seems that how one attaches value to one piece of information as well as how to recognize its value is still confusing for most people. Tsutsui presents his opinion for the future in a such clear way and furthermore, he himself has genuinely practiced this philosophy.

It is already amazing to fully comprehend the energy people have put into discussing the topic of the culture of the Internet and the WWW in Japan. One can even say that this very fact actually stems from the culture of Japan and well represents the culture. To refer to the above discussions as the starting point of this paper, I will try to describe a number of my observations in the following sections.

III. UNIVERSITIES

In this section, I will concentrate on the universities.

Needless to say, in the beginning, the Internet was operated by a group of organizers from the academic field and primarily served the purposes of academic research. Universities have been the central part of Internet, playing the most important role until now. This fact is generally true for Japan too. According to "What's New in Japan" by NTT, 37 universities set up their home pages in 1994 and in the first half of this year, 28 more universities were added to this number. Meanwhile, under the topic of universities and professional schools, CSJ provides a comprehensive Yahoo-style list where we can find 137 names from the north to the south of Japan (by Aug. 21, 1995) (Figure 3).

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3 The Third Media: http://bigblue.kuhp.kyoto-u.ac.jp/ trashcan/3rdmedia/internet.html

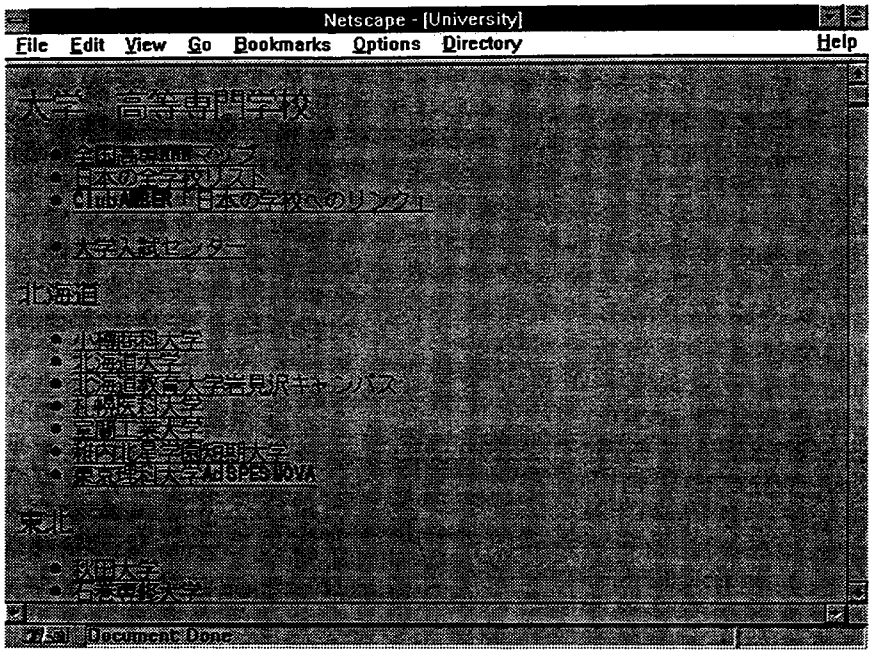

FIGURE 3 http://www.csj.co.jp/J/Yellowpage-j/university.html

Reiko Sekiguchi at the University of Library and Information Science presents an interesting opinion regarding the relationship between education and information. In a key-note article titled "Informationalized Society and the Changes of Education,"[4] Sekiguchi, as a scholar of education, gives her first section the subtitle "Education is the Earliest Information Industry." She points out that it is time to review and re-think the final goal and the real character of education in these new surroundings. While we are concerned with the largely progressed development of information and communication, the above suggestion is particularly insightful. We now tend to consider information/communication as highly technical fields which will therefore be difficult to link to the field of education, particularly while we are attempting to give the latter a ethical foundation. However, Sekiguchi defines the final goal of education as the following:

> ... [to] add new information of inventions, discoveries, skills of the current generation to what had been collected from the earlier generations, to select, to organize and to systematize them based on value, then pass them to the next generation (p. 5).

If this is also the general goal for the task of information/communication, then we now have the real reason why the Internet developed out of the academic field.

We will now move on to the very system of the WWW. It is accurate to say that the WWW is a reliable and efficient way to offer information. The advantage of two-way communication or interactive relationships is therefore based on the manner in which a user can choose the information to suit his/her needs. Therefore, as an information provider, one is active

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4 *Kyaiku Shakaigaku Kenkyu*, Vol. 51, 1992.

only in the process of organizing the information, but thereafter, during the process of the communication, the provider becomes passive. One cannot force a user to access certain information; rather, one must wait for the page to be visited.

Thus the next question is: what will be offered vis-à-vis the content and quality of the information? It should be clear that it is not correct to say that as long as a certain amount of text and graphics have been uploaded to the Internet and linked together, therefore the task has been fulfilled. The real information, ideally and as the final goal, should be what is really unique to, what "belongs" to the provider. In this sense, topics like an introduction to the university or the local area, lists of teaching staff, reports on students activities and so on may be good for the purposes of getting the system up and running, but at this point the real communication is not yet performed. Unfortunately, most WWW pages from Japanese universities in Japanese currently do not excel past the banality of the above types of information.

In reply to this argument, there may be the suggestion that because the WWW is so new, there just is not any information available and universities have still not mastered the technology. The second suggestion may be true to a certain degree, but there is less evidence to support the first. There is already a large amount of academic information handled in electronic format by universities as well as national research institutes. For example, at Kyoto University by September 1, 1993, there were 44 databases running which were accessible, though with various limitations and conditions. In humanities-related fields we can find smaller databases, such as data on the documents issued by the *Muromachi Bakufu* (Name of the database: MUROMATI, 4,041 entries) and also large databases like *Documents on East Asian Studies* (Name of the database: CHINA3, 173,253 entries). Meanwhile, at the *Gakujutsu Joho Senta* (Centre for Academic Information), there are also 44 databases on a much bigger scale, which contain not only collections of library lists and summaries, but also some "whole texts" in certain areas, including one database (Name of the database: HBR) on an English journal ("Harvard Business Review") back to 1927.

However, few databases can be accessed free of charge. There are certain fees collected for each search; take *Gakujutsu Joho Senta* as an example, where we find that the accessing fee is 50 yen/minute, on top of which is a 13 yen charge for each output. To subscribe to certain databases means to hand in not only your ID, but also your credit card number.

It is not easy to determine why this type of distribution style has been established. There should be little need to keep all this information secret or for the purposes of copyright protection. Those databases should also not be taken as a type of business, neither now nor in the future. I am even wondering whether the charge for searching a database can really cover the cost of the design and maintenance of the charging system itself! Also, few people assume that these systems are self-supporting (that is, largely paid for by the users). In other words, current practices do not stem from financial considerations.

In my opinion, both universities and the Japanese public expect controls to be placed on the information. Metaphorically speaking, people would like to take information as oil but not water for daily life. There is a type of assumption involved, namely when the information providers attempt to rank users, making sure they are serious about receiving the information, the

fees thus confirming that the users will appreciate what they are receiving. It seems that this is the way people are made to believe the information obtained is valuable!

IV. MASS MEDIA COMPANIES

In contrast with universities which, as described above, are not yet providing access to valuable information and have perhaps not mastered the technology, the next group we are about to examine is in quite a different position. The group I am going to discuss in this section comprises the "big names" from the field of mass-media (Figure 4). It would seem to me that these companies are at present entering this new media with the intention not of providing information, but rather to prove they are up to date and involved in the WWW. Let's look at the reasons for this facade.

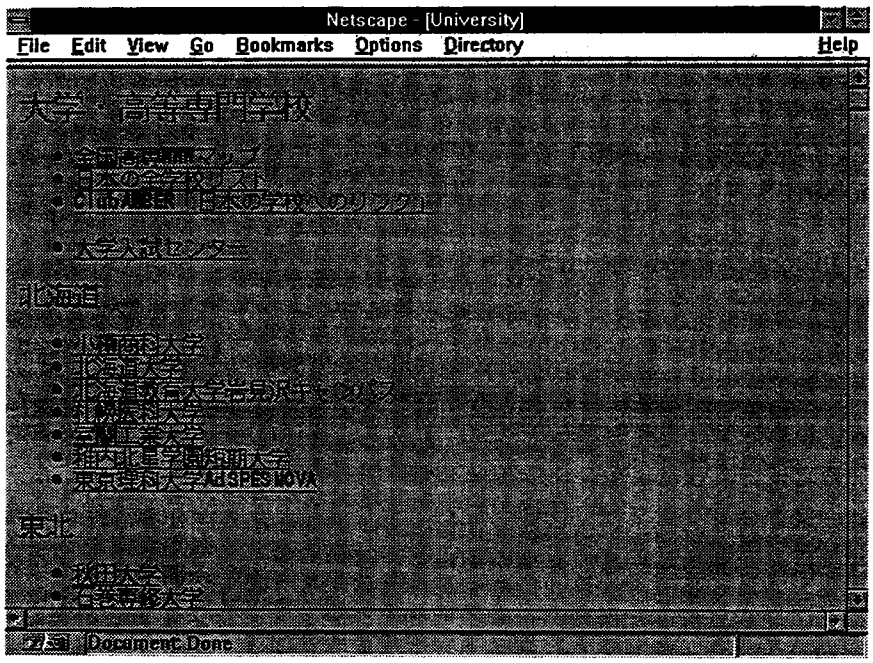

FIGURE 4. http://www.trc.co.jp/trc-japa/publish.htm

In the case of publishers of books, magazines and newspapers, it is very clear what they should provide on-line, for they work with the most common sources of information. However, for Japanese publishers, it would be a big decision to put their information directly on-line, because it is a commodity to be traded, not given away. Particularly for people who are familiar with the style of WWW home pages in the English language, they will quite often be disappointed by the content of Japanese WWW home pages.

Let us have a quick look at some representative servers.

Iwanami is one of the top names in Japanese publishing. When this name appears on the list of home pages, one can easily assume that rich content will come with it. However, to this point, their home page still only features one journal, *Kagaku [Science Journal]* (Figure 5) and no more information, including about new publications, can be found. The monthly publication *Tosho*, by the same publishing company, although freely distributed to readers, has not yet found its home there.

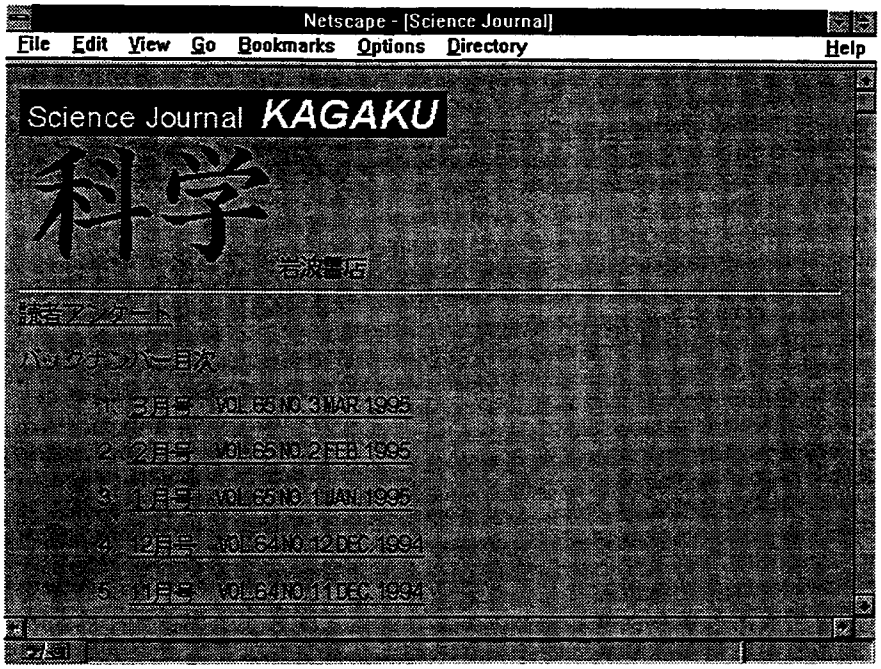

FIGURE 5. http://www.mki.co.jp/iwanami.html

The next example is an Internet publisher from Japan called *Cyber Publishing Japan.*[5] There are a number of big names listed on this web page, such as Honda, Shiseido and Kyodo Cyber Express. Two publishers listed are Shogakukan and Kodansha. However, other than some introductions to their newly published books (even this part is less exciting, both in quantity and speed, compared to book trade company servers such as Nichigai Associates Inc.[6] and TRC WWW Server[7]), we see almost no real content. An extreme example is a weekly magazine from Shogakukan, with the same cover page of *Shukan Posuto*, no issue number and the same page for more than 4 months.[8] Its content is also hardly related to a weekly magazine.

Let us turn to news publishers. *Asahi Shimbun* was one of the first companies to support a WWW server, beginning in March 1995. From the day that the name of *Asahi* appeared on the Internet, it included the sub name Open Door.[9] It calls itself a "net-magazine," indicating that *Asahi* is not yet being fully represented. As for the content of this server, the design of the page has been updated a number of times and there are many sub-titles on the main page, but most of them do not relate to daily news. Recently, we had a pre-announcement at this

5 Cyber Publishing Japan: http://www.toppan.co.jp/

6 Nichigai Associates Inc.: http://www.nichigai.co.jp/Welcome-j.html

7 TRC WWW SERVER: http://www.trc.co.jp/trc-japa/index.htm

8 *Shukan Posuto*: http://www.toppan.co.jp/bookshop/post/post-j.html

9 *Asahi Opendoors*: http://www.opendoors.eccosys.com/

same home page that a new magazine named Door will appear on the market, but we are still not certain of the type of content this Internet magazine will provide.

As readers, we certainly wish that some real articles from the daily news would appear on the Internet. Even from a publisher's standpoint, there is still room to argue the benefits in a business sense. As the connection has now been established and most of the articles for papers and magazines are already in electronic format, it should be a very natural direction to introduce the contents on-line. There should be a number of ways to perform this task while minimizing the risk. Certainly, to publish on-line columns from back-issues should not be such a difficult decision, as it is very clear that there is little sense in expecting a back-issue reader to be a lost customer. Furthermore, it would be possible to gain more readers from all over the world.

It is a fascinating and challenging topic to define the reasons behind these characteristics of Japanese mass-media companies. At least this is not something common to the information industry as a whole, because we have already had many such examples in the English world, such as *TIME* and various computer-related magazines. The efforts by these companies are already showing that the new technology and the way of presenting information will not damage their business; on the contrary, it should be easy to imagine that it would elicit and support a new type of market. I am suggesting we can find a hint of the position taken by those "big-name" mass-media organizations from the working style of Japanese companies developing new hardware.

If we do not limit our attention to the media field, but turn to the new technology market, it is quite clear that Japanese companies are always working hard to bring in various types of hardware, as well as new standards in various fields. Even given simple purposes or reliable existing technologies, Japanese companies would still rather attempt to establish new standards than pursue the concept of "compatibility." We have many examples of this phenomenon. One such example is *denshi techu*, the idea of bringing in additional information with a replaceable memory card, a brilliant idea, but for some reason these cards normally work for the products of a single company only. Another example is the *denshi bukku*, the CD-ROM book. CD-ROM books require a special reader device, as opposed to any type of existing computer. Although certain standards have started to appear in front of us, we still have names such as EB, EB/G and EB/XA. The third example is the appearance of the much-anticipated PHS, a new type of portable phone available in the Tokyo area and supposedly to be brought out all over Japan soon. The main future for a cellular phone is, we are told, the low price of minute by minute calling time. However, this phone system requires the switching of antennas every 100 to 200 square meters, there are already two companies offering the same service and these two are not compatible with each other.

To review all of the above, it is obvious that it is not proper to simply conclude that Japanese companies are good at making hardware. We need to look more closely at their method. The reason behind this phenomenon is that a company with a "big name" will attempt to get involved in a certain area only when it is quite comfortable with the area and when it can gain the market advantage by dominating that area. Naturally, before a big company can get a clear overview and a good idea about some new area or product or before they reach the stage where

they feel they should go with the planned technology, they are hesitant about serious action. Thus in the case of the WWW, it seems we need to wait a while before we can expect some real information, presented by large, established companies, to be made available. At present, we may have to be satisfied with companies showing us merely that they are there, as a sort of observer or in an experimental capacity. We can only wish that this stage will pass in short order.

So what is in store for us in the near future in this particular area? Here is a very interesting example as a hint of an answer. As for the field of computing magazines, the big one, *ASCII*, established its home page in early July, as well as *ASCII WEEKLY* in August.[10] The main style of the content from *ASCII* is merely highlights of news. However, in the very same field, under the name of Soft Bank, a number of computer-related English magazines are now preparing their Japanese editions (Figure 6). We can already find some big names on the WWW: *Internet User, UNIXUSER, MacUser, THE WINDOWS* and *PC WEEK*. We do not yet know how far they are prepared to go in their Japanese editions. However, the style they have been working with in English is somehow different from what we see in the Japanese versions and it is clear that the English style will attract many more users in this area. Meanwhile, a new company from inside Japan has presented its home page under the name *Geomet*, implementing a similar style to some of the exciting English servers.[11] These new and foreign forces will certainly be a most powerful influence for the established companies. It is obvious that changes will be forced on them through both national and international competition.

FIGURE 6. http://www.softbank.co.jp/softbank/publishing/

10 *WEEKLY ASCII*: http://www.aix.or.jp/wascii/

11 Windows On-line Information magazine *Geomet*: http://www.st.rim.or.jp/~geomet/

As of late August, *Asahi Shimbun* started to put real news from the newspaper on-line (Figure 7) as a new set from Open Doors. At the same time, they also put up the table of contents and a few articles from the popular weekly magazine *AERA* (Figure 8). In response to this move, Yomiuri[12] and Mainichi[13] also started to release their news on-line. This is certainly a new step for Japanese home pages. It not only brings us more valuable reading; we now have an indication that Japanese media companies are serious about the business of the World Wide Web.

FIGURE 7. http://www.asahi.com/

12 *Yomiuri*: http://www.yomiuri.co.jp/index-j.html

13 *Mainichi Shibun*: http://www.mainichi.co.jp/index-j.html

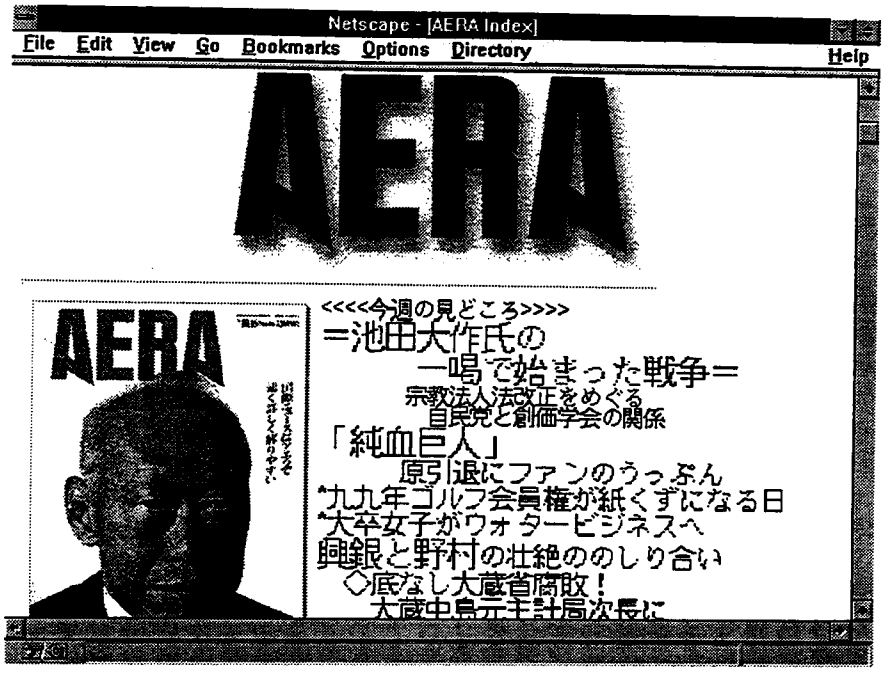

FIGURE 8. http://www.asahi.com/aera/index.html

V. INFORMATION RECEIVERS

In this last section, I will turn to the issue of the information receivers and discuss the relationship between those who offer the information and those who receive it through the Internet. The key concept which links these two in this observation is the cost of the WWW.

I have mentioned the cost for accessing the WWW over a phone line in the first section. However, that is not the major concern for this discussion here. There is a great temptation to see cost and equate it with the "business" of the WWW. There is a widely-held belief that the Internet is a huge market, the value estimated to be fifty seven trillion yen according to the Japan Electronic Machine Industry Committee (*Nihon Denshi Kikai Kogyo-kai*), or as stated on the *Nikkei Shimbun* (November 5, 1993), a hundred and forty trillion yen.

For the most part, while this type of discussion is taking place, the nuance resembles the same idea as the market for Hi-Vision TV or for notebook computers. People are assuming that the information on the Internet will be adapted to a sort of product list, thus earning dollar values for the home page providers. There are some companies which have already practiced this very bold idea, namely charging for every access of the contents offered by a home page. Below are two examples.

TK Associates International offers a "Digital Highway Report" on their home page. The theme of this report is on the current situation related to new media in the United States and the selling point of it is that the report is in Japanese (Figure 9). Similarly, in late August *ASCII* announced the coming plan that ASCII and CSK Ltd. are going to bring to the Internet a searchable Japanese-English on-line dictionary to help people read English home pages on-line.

The price as of the pre-announcement will be 500 yen/month.[14] The above examples are extreme, but more commonly, others will attempt to employ the Internet to advertise their products or to deliver their services for users' special and personal requests, such as translation services[15]and booking hotels.[16]

FIGURE 9. http://www.dhrpt.com/

Before we jump to conclusions about the validity of our assumptions on these points or on whether it will succeed in a business manner, we should spend time here to examine what is going on behind this phenomenon and what the social reasons are to support this tempting theory.

It sounds unfair to simply portray the Japanese people as supporting the idea of paying for culture, although there is certainly evidence to show that Japanese people are spending more in this regard. For example, generally speaking, Japanese people, particularly scholars and students, purchase more books than North Americans. This tradition does not come from any sense that libraries are not well managed; rather, there is an established type of business called a *karucha senta* (cultural centre), which covers various topics and involves people of all ages. The system of *iemoto* is also still alive, where people pay not only for what they learn, but also to obtain a license in order to teach others.

So why is this system possible and what is the underlying message behind the existence of the system? The status of a user in this process is the biggest reason why the system works.

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14 *ASCII* news: http://www.aix.or.jp/wascii/NEWS/ WA950818/inte0818.html

15 Kyushu Matsushita Electric Co., Ltd.: http://www.kme-lab.co.jp/mtfree/otameshi.html

16 Inn information of Japan: http://www.inn-info.co.jp/t_yokoinn_homepage.html

It is possible to say that there is a common understanding among Japanese users that cultural information is something one should pay for. Furthermore, you only pay those teachers that you can trust and therefore, the payment of money concept plays a role in ensuring or guaranteeing the quality of instruction offered. Only those students who are charged feel that they can associate the value with the cost, thus allowing them to learn without wondering about the quality. To a certain degree, both the providers and the users attempt to ensure the value of information in this manner. In this sense, those who are offering information for a fee are in fact treating the WWW as a "cultural centre," only on a bigger scale and in a new direction

With the various types of evidence we have looked at by now, a "pay-home page" is not likely to be the future of the Internet all over the world. The WWW is more likely to replace or decrease certain traditional costs in the process of communication and contribution, such as printing and marketing newspapers and magazines, but there is little likelihood that the Internet will become a commodity; rather, it will remain as a powerful method of transferring information.

By its very nature, the WWW as a new media will certainly exceed traditional ideas and establish a new communication style for society. Various possibilities have already taken shape in this regard. To examine the relationship between providers and users, I would like to bring more attention to those small home pages which specialize in particular topics. Here are some examples.

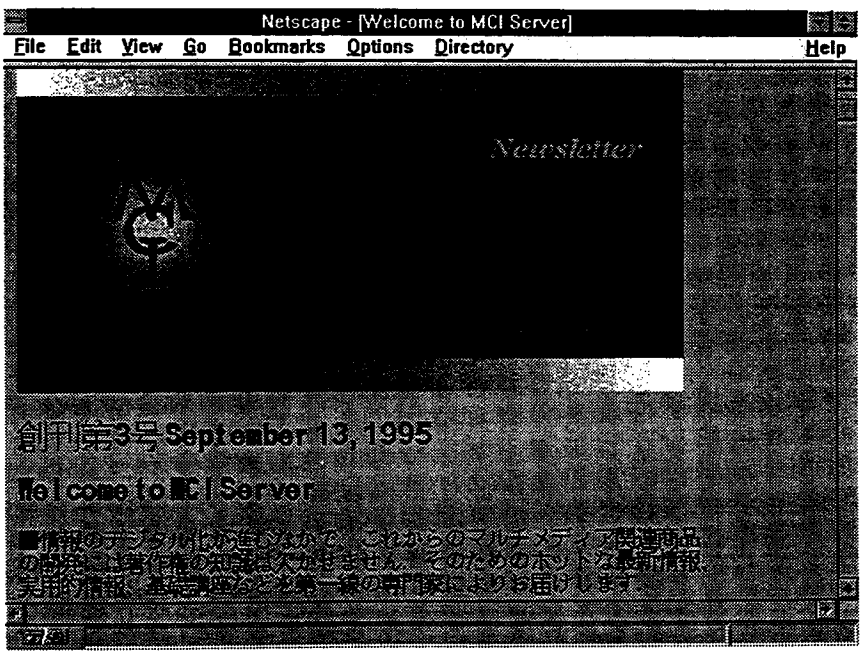

FIGURE 10. http://mci.rittor-music.co.jp/index.html

The first example is the "MCI Server" (MCI stands for "Multimedia Copyright Information") by Rittor Music, Inc. (Multimedia Copyright Information Desk) (Figure 10). Copyright in the electronic age is a timely topic. While people attempt to adapt various types of information -- texts and existing works -- to an electronic format, new rules will therefore be needed to regulate the coming century. This server offers us, in a balanced fashion, a large amount of discussion, including law case studies and new movements.

Here are two other, more casual examples: the topics are *ramen* (noodles) and beer. The first one is operated by Sapporo LAMeN Server.[17] The following line is an unedited transcription from that page:

> Lamen, is not "LAMeN," is Chinese-tasted noodles in soup. We love it too much!
> (This example covers the topic of drinks in Japan by Paimapi [18])

There are a huge number of servers of this type. One thing common to them is that they are not being operated by people who like the topic and who are therefore attempting to teach others about it. It is almost a type of hobby and, because there is little business involved, it appeals more to users. Analyzing these pages under the concept of the pay home pages, the providers of those pages portray themselves as the right users of the information. They pay for the information in time and effort and they also receive payment for their efforts at finding and organizing the information, in the form of the happiness they gain and the feeling of having shared their information with people who are interested in it.

It is obvious that the above description doesn't mean that the future of the WWW will likely take this same shape or follow a similar rule, but it is a hint for me that the traditional relationship between providers and users is now being rewritten in this process and a new type of connection for them will be created. At present, for one who is surfing around Japanese WWW home pages, these private providers are much more exciting, often offering unique, useful and good quality information. The reason is clear: they are there not merely for the purposes of showing they are there, but rather first and foremost to put the information on-line.

This paper has discussed some of the negative aspects of the phenomena of the WWW in Japan. It is obvious that new phenomena may occur at any time. Meanwhile, I should add my last comment. Certainly, the WWW in Japan is very positive. It represents the power of Japan to catch up in a new technology and also shows the admirable efforts and strong energy of the Japanese in handling a new media. It is a very interesting and productive task to follow the changes and advancements of the WWW in Japan, particularly for one who lives outside of Japan

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17 Lamen Information: http://163.130.200.1:8001/satui/std/mkonishi/misc/la-infoj.htm

18 Beer in Japan: http://www.sfc.keio.ac.jp/~t93215ts/drink/index.html

and has little means of accessing the most up-to-date information. Let us, at least, eliminate the mistaken idea that free information has little value and instead contribute our efforts in making this web of quality information a reality for our new information world.