1997

Great Hanshin-Awaji earthquake and Japanese information technology

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THE GREAT HANSHIN-AWAJI EARTHQUAKE AND JAPANESE INFORMATION TECHNOLOGY:

By

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B.L., Toyo University, 1993

Presented in partial fulfillment of the requirements for the degree of Master of Arts

The University of Montana

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This project explores the use of the Internet during the Great Hanshin-Awaji Earthquake in Japan in 1995. In an effort to determine the extent and impact of Internet use as an information source among those affected by the earthquake, the author visited the city twice after the disaster, and interviewed government officials, university professors and members of the general public. The Internet penetrated Japan almost at the same time as the Great Hanshin-Awaji Earthquake occurred, and the earthquake stimulated the rapid growth of the Internet in Japan.

Japan has started to pay much closer attention to the possibilities of the Internet since the Great Hanshin-Awaji Earthquake shattered Japanese confidence in their emergency management system.

The study demonstrated that the Internet, despite the fact that it was not widely available in Japan, was a useful tool in communicating information about the quake to the rest of the world. But it also suggests that a better developed Internet capability in Kobe and elsewhere in Japan could have saved lives and aided rescue, relief and restoration operations. One of the lessons of the disastrous earthquake was that a computer network can play a vital role in informing many people and resources even when most of the methods of communication are inaccessible.
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Kobe, one of the large port cities in Japan, with a population of 1.5 million, is situated in western Honshu, 435 km west of Tokyo. It is the capital of Hyogo prefecture, whose government serves 5.4 million people. Still, not many people around the world knew about Kobe before Jan. 17, 1995, when the Great Hanshin-Awaji Earthquake, registering 7.2 on the Richter scale, hit this Hanshin-Awaji area of western Japan about 5:46 a.m.

The Great Hanshin-Awaji Earthquake claimed the lives of 5,480 people, injuring 34,900 and destroying more than 200,000 houses. Damage costs were estimated at $98.7 billion. (Look Japan.)

After 30 seconds of nightmare, Kobe looked like a city bombed in wartime. Suddenly, Kobe emerged on the front pages of newspapers around the world. It now seems to be known primarily for its earthquake. Ironically, people started to acknowledge the city only after it was devastated.

The Great Hanshin-Awaji Earthquake turned out to be the
worst earthquake tragedy in Japan since the 1923 Great Kanto 
Earthquake that killed 142,807 people. I was in Helena, Mont., on the 
day Kobe was hit. I was making a public presentation at school in 
Helena about the Japanese education system. Traveling back to 
Missoula where I was attending the University of Montana, I had not 
yet heard the news, but I was inexplicably experiencing severe 
stomach pains.

As soon as I got home, a friend told me that the Kansai area in 
Japan had been hit by a huge earthquake. At first, I thought it was 
just another of our small quakes, which are almost a daily routine in 
Japan. I had gotten used to exaggerated news reports about 
earthquakes.

But when I turned on the TV, I couldn't believe the sight. I saw 
the utter destruction of places very familiar to me. Worried about 
my relatives and friends in the Hanshin area, I telephoned my 
parents in Tokyo. My friends were fine; my relative's house in Kobe 
was damaged. But nothing serious had happened to them.

Looking back at that time, I wonder whether my severe 
stomach pains were a sign that something really bad had happened. 
Since then I haven't been able to put Kobe out of my head. Thus, my
inspiration for this writing project seems to have come from a stomach ache.

In the days that followed, I was struck by news reports saying that the Internet was not incapacitated in Kobe when the quake hit. While the government's emergency management system failed to take full advantage of the Internet, individuals and private companies knew its power and used it. The free Earthquake News bulletin board was set up by the major private computer communications service. A Kobe government official filmed the catastrophe and put the video in a home page of the city government. In this chaotic situation, volunteers armed with computers rushed to help the victims. Everybody desperately sought information through trial and error.

Questions began to develop in my mind:

1) What role did the Internet play in assisting victims of the earthquake?

2) Could this modern technology have saved more lives that day if there had been computer systems with the Internet use existing in key places, and if the Japanese had known how to handle the Internet
effectively?

3) What is the potential of the Internet as a communication device in the case of disaster?

4) How does the Internet help the media cover national disasters more quickly and more accurately?

5) How did people get information in the Great Hanshin-Awaji Earthquake through the Internet and how did the Internet work.

6) What is the state of Japanese information technology—especially the Internet?

These are among the questions that my study seeks to answer.
Chapter 2

The National Government's Failure to Use the Internet after the Earthquake

Exactly a year before the Kobe area was hit, the Northridge area in Los Angeles was shattered by a quake. It was more than a strange coincidence. When Los Angeles was shaken, the Japanese observed the tragedy from a distance, and a little complacently. Many of them thought that Japan was prepared for a similar-sized earthquake. Such a view was proved wrong a year later.

This surprise attack by Mother Nature devastated the confidence of the Japanese in their quality and efficiency. Architecture--buildings and highways--thought to be earthquake-proof crumbled in Kobe and collapsed. The government's response to the emergency was slow and inefficient--at least at first.

Moreover, Japan was forced to learn this unexpected lesson the hard way--with an information technology that was outdated and inefficient.

Also, since the number of Internet users is limited in Japan, the Japanese people couldn't take full advantage of the new
technology during the earthquake.

Moreover, experts have criticized Japanese emergency procedures for failing to make more use of advanced technology that already was in place. Satoshi Morimoto, a senior researcher at the Nomura Research Institute, asked, "If Japan is so advanced in information capability and scientific technology, why was there no use of hi-vision and wireless communications networks to relay information to those in the disaster area?"

"The government and local public groups need to reconsider totally their information activities and organization," Morimoto said. He added that accurate information from the disaster area was not available quickly enough, and that lack of such information lengthened the time it took for Prime Minister Tomiichi Murayama and his Cabinet ministers to understand the situation. He said the prime minister hadn't grasped what was going on until he went to the disaster area three days after the earthquake. Morimoto said victims had no idea what the government, prefecture and city were doing and where they could get this information.

Soon after the earthquake, he said, there was serious concern about the distribution and transmission of information by
emergency teams.

The Japanese government's cumbersome administrative procedures have been the target of strong criticism. The government could have responded more effectively if the prime minister had received more accurate information more quickly. The delay of communication probably caused the additional loss of many lives.

According to an abstract of a summer 1995 article in Japan Echo, by a nonfiction writer Kazuma Yamane, a computer network could have been extremely helpful during the days following the quake.

"The relief effort for the Kobe disaster could have been expedited if a computer network would have been used," said Yamane. "It may be argued that it would have been impossible to establish such a network as the electricity and phone service must have been disrupted. But the phone service was in operation. If the relief centers and the local disaster relief headquarters were connected with a host computer situated outside Kobe, the information could have been transmitted easily."

There was one bright light in the communications picture, though. While even the Japanese government was not sure what was
going on, Internet users were collecting information and re-
distributing it at a high speed. As we shall see, the earthquake story
gave the Internet a spotlight.
Chapter 3

Kobe City Government's Use of the Internet

Kobe had been working to develop its Internet communication capability even before the quake.

According to a June 1995 article in New Media by Taisuke Matsuzaki, the Kobe city government was ahead of other local governments when it started using Internet communication to promote a digital network and to stimulate new industries in October 1994 as one of the aspects of "Kobe International Multimedia and Entertainment City (KIMEC)." The Kobe home page had been set up on the server at the Kobe City University of Foreign Language. Before the earthquake, its content had focused mainly on city promotion. On the day the earthquake hit Kobe, the server in KCUFL survived, but information could not be sent because of the damage to its private circuit. However, it was restored the next morning.

Matsuzaki said some people in the city government wondered if the Internet would be a useful emergency tool to Kobe people, and if there were other alternatives. Many Kobe city government officials
had not yet become familiar with the Internet at that time, said Matsuzaki.

However, the Internet worked on the day of the disaster. From computers in damaged homes and offices, information went out all over the world. It went everywhere, it seems, but to the disaster relief agencies in Japan.

After the earthquake, of course, the pursuit of information about the disaster was complicated dramatically because telephone lines immediately were disconnected in the disaster area.

However, the Kobe City University of Foreign Language's computer network system, including its Internet link, survived. In the days that followed, the Internet provided a vital communication link to the rest of the world.

Matsuzaki, an official in Kobe city's public relation bureau, filmed the damaged area with his video camera and put it on the Internet, providing much helpful information. His personal account of the disaster, published in New Media in June, 1995, is worth quoting at some length, as it suggests not only how the Internet was used to inform the public, but indicates the extent of the challenge Matsuzaki and his office faced in the traumatic hours following the
"I realized I was pushing a drawer to prevent it from falling down on me when the quake woke me up that morning with a sudden vertical jolt and the roar from the underground," he wrote. "The quake caused little damage in my house in the Suma New Town area, but the electric current was cut off and it was too dark to see what happened through the window. I remained inside until the sun came up because there were big aftershocks and no information on the radio. Then around 7:30 a.m., I climbed up a mountain near my house and observed the city."

Matsuzaki decided to record the situation by using an 8mm video camera that he always carries for his work. He called the public relation bureau in Kobe city hall and talked with its chief on the 16th floor of Kobe city hall. The chief ordered Matsuzaki to continue taping and report in later. Anticipating heavy traffic in the city, Matsuzaki used a bicycle, which allowed him much more flexibility.

He wrote, "There were so many houses destroyed and many numbers of fires in the city, and the sound of sirens echoed in the air. Some evacuees were wearing pajamas, others were wearing
When he entered Nagata Ward where he was born and raised, Matsuzaki left his bicycle and climbed up a nearby footbridge. He saw several fires rising up from many places under the dark sky. Although this was his job, Matsuzaki said he felt like stopping shooting—the view was just too depressing.

When he showed up at city hall in the afternoon, The Kobe City Earthquake Relief Headquarters had been established and the room was in chaos with a large staff on duty and the press demanding information. At this point, the TV station had been broadcasting only the films taken by its helicopter and had fragmentary information about the damage, obtained by phone from the citizens of Kobe. The press and government were stifled by the shortage of information. They exchanged information the old fashioned way—on paper.

Matsuzaki said, “Had there been a network, at least at the headquarters, we could have transmitted information more efficiently.”

After 2 p.m., the fire-fighting continued, but most of the wooden homes were destroyed and the apartment houses were still on fire. Matsuzaki walked through the ruins.
"As I stepped through the ruins on the street," he said, "I was reminded of the scene of Kobe after the war which was taken by the U.S. military 50 years ago."

Having watched similar scenes repeatedly since that morning, he said to himself, "Why? How could this happen to Kobe? Why Kobe?"

Watching the evacuees sitting in the station park, he said it seemed some people didn’t know that an elementary school was being used as a shelter.

Matsuzaki said, "Here I felt again that there wasn’t enough information given to the citizens of Kobe. Those who most urgently needed information were stranded in the country without information."

Matsuzaki returned to city hall after 9:30 p.m. The staff at the Kobe City Earthquake Relief Headquarters was still having a difficult time getting a picture of what was going on because they couldn’t always pinpoint the crisis spots they saw on TV, even though information came at almost every moment. Matsuzaki reported to the headquarters supervisor, and answered his questions.

The public relation bureau was still in a mess. Documents and
data were scattered all over, and part of the ceiling had fallen. A 10 p.m. staff meeting focused on the best ways to publicize available information useful to those needing assistance.

At normal times, Matsuzaki said, the Kobe city government prepares its own publicity for TV, radio and newspapers. However, he said, when many of the traditional news sources are destroyed, the government has to depend on other means to get its information out. The Internet was one such medium.

Matsuzaki said the Kobe city government officials understood the Internet to be primarily an educational network that the general public had few opportunities to use.

Matsuzaki said the government decided to use the Internet to send information. They hoped it would be passed on by recipients to residents not having Internet access. The government's home page announced that its server was safe, and that city officials could send and receive e-mail as well. The home page became an earthquake information bulletin board.

The home page offered a summary of quake information, information about the KCUFL server, fire damage map, a list of the staff's e-mail addresses and eight of the quake photos that
Matsuzaki took with his video camera.

Matsuzaki said the videotape turned out to be an important information source.

Matsuzaki said the government received a substantial amount of feedback on the homepage: access had reached a record 40,000 hits on Jan. 19. The number of access hits was 450,000 by the end of January, and exceeded 600,000 by the end of February. Even today, he said, as many as 7,000 or 8,000 hits a day are counted.

Among the messages people sent during the quake aftermath were inquires, offers to volunteer, encouragement, and permission requests to reproduce home pages, he said.

Matsuzaki said the Internet proved itself as an educational network because many offers of volunteers via e-mail came from technical areas such as medical, city engineering and disaster psychology.

Although many e-mailed offers of relief from abroad came even the Internet, Kobe city government couldn't take maximum advantage of them.

Foreign medical volunteers had to be turned away because of regulations that didn't allow foreign doctors to work in Japan, even
though they had offers, Matsuzaki said.

In terms of inquiries about survivors, Matsuzaki said those who checked the home page fire damage map had to be told to call Hyogo prefectural police department by phone. He said e-mail responses to foreign people were limited to information about the reconstruction of the phone lines and the number of the emergency hot-line as the section for inquiring foreign people was opened three to four days after the quake.

Matsuzaki said e-mail poured in, especially from Europe and the United States. He said these expressions of concern produced warm relationships between the Japanese and new friends from all over the world. For Kobe, he said these are very important human resources. He said the government e-mailed them back with thank-you notes and messages asking the recipients to pray for Kobe’s reconstruction.

Matsuzaki said the Internet showed that anybody could send information to the world. However, he said this experience taught the government well that sometimes the people who need help the most in a crisis cannot be reached. For Kobe citizens affected by the quake, verbal and paper communication worked much better than the
Internet and the personal computers network.

Matsuzaki said he experienced much frustration. He said in any specific rescue activities were not acted on, even when he reported to the headquarters from the spot immediately. He said the most important thing was how people manage information, and he emphasized the importance of a system geared first toward saving human lives, then to keeping records and the media. He expressed regret that his information wasn't a big help for people on the spot, but said he'd like to use his own experiences to help Kobe prepare for future disasters.

He said the Internet can provide more detailed information than can the mass media.

Matsuzaki said the assignment from now on will be to consider how to use the Internet not only during a crisis, but also in normal times.
Another Internet service that worked after the earthquake was the free Earthquake News Bulletin Board, set up by the on-line service Nifty-Serve, one of the major computer communication services in Japan.

It was up by 1 p.m. on Jan. 17, the day the quake hit. People used the electronic bulletin board to exchange crucial information that the mass media couldn't provide.

In "On-Line Services to the Rescue," Yamane wrote about how the free Earthquake News Bulletin Board worked in the emergency.

The story starts on Jan. 22, five days after the quake. Yamane and three others from the weekly Shukan Post, covering the disaster's aftermath, drove by motor scooter to an elementary school, where some 1,500 evacuees were sheltered. They found the school staff was overwhelmed by inquiries.

Instead of conducting interviews, they decided to abandon their profession temporarily, to help out. With help from his Tokyo team members with whom he communicated by cellular phone,
Yamane led an effort to have the list of evacuees put on the Nifty-Serve free Earthquake News Bulletin Board, so that they could be put in touch with relatives.

It was the beginning of a trend. Yamane said major computer communication services in Japan such as Nifty-Serve now offer a wide variety of services, and, according to a recent news report, the total number of Japanese users of these services, has surpassed three million.

Yamane said he was surprised to realize that computer networking had evolved into such a phenomenon in such a short time.

He recalled that his staff received several responses to their Nifty-Serve message asking for assistance.

"A woman in Kagoshima Prefecture volunteered to help key in the list if we faxed it to her," he said. "Some computer experts at the University of Kyushu, noting that there was plenty of news about the dead but not enough about the survivors, informed us that they were busy compiling a comprehensive list of evacuees in each of the city's shelters and asked us to forward our list when it was completed."

They also received another message from a person who was
responding by FAX to queries about survivors.

"From every corner of the country, people gathered information on the superhighway, joined in their desire to help the victims of the disaster in some way," Yamane said. "The Kobe earthquake marked the beginning of a new and truly human age of computer networking."

He also said Nifty-Serve had previously set up an emergency bulletin board when other natural disasters had struck, sharing users' first-hand observations. He said it promoted the growth of a new electronic medium offering directness and authenticity against which the traditional mass media couldn't compete.

However, he said this new medium had never functioned on such a big scale as it did during the aftermath of the Great Hanshin-Awaji Earthquake.

Once, Yamane visited displaced residents camping out in a parking lot. With electric power in the area still out, the campers completely depended on the radio for news.

But he said radio was unlikely to provide the information they really needed, namely news of their own district—even if they listened all day.

In an effort to help, Yamane set his notebook computer on a
cardboard box in the parking lot, hooked it up to his mobile phone, and "logged on, giving the evacuees a chance to get the latest earthquake news."

He said they were "able to pore over many user messages with information gained first-hand or electronically, as well as quake-related news flashes from the major national newspapers (Asahi, Mainichi, and Yomiuri) and wire services (Jiji and Kyodo).

"... In fact, all but 285,000 of the 1.4 million telephones in the Kobe area -- about 20 percent -- were working throughout the disaster, and the majority of the rest were back in order by the morning of the day after the quake," he said. "Excluding phones in buildings that collapsed or burned down, all but 38,000 home phones, or 2.6 percent, were working at that point."

By using a small word processor and a cellular phone, which an both easily available, Yamane said he could work on-line while riding a train. He said this technique proved extremely useful while he was in Kobe.

Yamane and his staff eventually decided not to post the list on bulletin board because of questions about privacy. Some might make illegal or unethical use of the list without the evacuees' permission.

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Also, Yamane and his staff questioned the value of providing the service in a piecemeal, disjointed fashion. Finally, he contented himself with providing the school with a hard copy of the list, together with the disk on which it was recorded.

"The Ministry of Posts and Telecommunications met with executives of several commercial computer services and laid plans to create a database of information on evacuees," said Yamane. "People in the shelters would be given postcards that they could mail at no expense after filling in the name of the relief center where they were staying and other pertinent information. Each of the computer services would input the information received to create a database that would aid officials in responding to inquiries. Such a method would, of course, be far less risky than publishing entire lists of evacuees without their knowledge. But since the gathering of data would depend on people returning the postcards, it would not be possible to get a complete list of the evacuees. Experiments such as this will undoubtedly prove a valuable learning experience that can be applied to future disasters. But it is hoped those involved will reflect on the circumstances that forced them to use such cumbersome and time-consuming method as postcards to gather
information."

Yamane closed his story with this: "While the media has loudly trumpeted the advent of a 'multimedia society' over the past year or two, the idea has thus far failed to capture the public's imagination. But for the thousands who witnessed or joined in the on-line mobilization that followed the Kobe quake, the information superhighway has been transformed from an abstract idea into a vivid reality."
Chapter 5
Communication from and to Kobe

On the day of the Great Hanshin-Awaji Earthquake, thousands of telephone calls from all over Japan and even foreign countries came into Kobe. Many came out as well. The experiences of three callers suggest that making connections is not easy during times of crisis, and that better e-mail availability would have eased the strain.

"I called my parents immediately when I heard about the quake," recalled Etsuko Taniguchi, a Japanese citizen from Kobe who was a high school student in Denver at the time. However, she said her parents lived in the badly damaged Hyogo Ward, and the phone call didn't get through. She was irritated at the continuous busy signal, said Taniguchi, who is now studying at the University of Montana. Finally, Taniguchi received a phone call from a friend in Kita Ward. It was the first communication she was able to establish with Kobe. Some hours later, she received a call from her parents who had been evacuated to her grandparents' house in nearby Fukusaki.
Taniguchi said she kept watching television, but it told only how much the major areas, like Sannomiya, had been damaged. It didn't tell about damage to the area where her parents lived.

Taniguchi didn't have e-mail access when the quake hit Kobe. She is now communicating with her parents by e-mail on a regular basis. She said she would now use e-mail to communicate with her parents in an emergency if the phone didn't work. However, she added, she would phone them first: "I want to hear their voice -- otherwise I will worry."

"All of my Japanese friends have FAX, but no e-mail," said Taniguchi, who is thinking of getting a FAX machine. "The phone costs me a lot, and a letter takes a week."

Pierre Sirois, a Canadian, and Janet Tombre, an American, were in Japan when Kobe was rocked. They were teaching English in Japanese high school -- Sirois in Okayama near Kobe, and Tombre in Kumamoto, Kyushu.

"Mother Nature doesn't care where it happens," said Sirois, who taught in a high school for three years in Okayama.

When the quake hit, Sirois was asleep in his apartment. "It took me a while to realize what it was," he said. "because this was
my first earthquake."

Sirois said he turned on the television to find out what was happening. After a few aftershocks, he realized he'd better call home because it was a big earthquake, and his mother and relatives in Canada would be worried. "So I was able to get through that morning on the phone before they even knew about the news because of the time change."

Sirois said, "I was able to call out before the rest of the world called in and lines became filled."

It was tougher, of course, to call into the Kobe area.

Tombre, who was in Kumamoto when the quake hit the Kansai area, tried to call Sirois when she heard about the quake, but her efforts were in vain. It took her two days to reach him.

In this regard, Yamane wrote in his article: "To be sure, the unusually high volume of calls created problems for people trying to call into the city as well as for local callers. Shortly after the quake hit on Jan. 17, the number of calls flooding into Kobe reached 50 times the normal peak level. In response Nippon Telegraph and Telephone had increased--by 5,000 within a week--the number of circuits serving Hyogo Prefecture. Even so, incoming calls frequently
did not get through. According to NTT's public relations department, limits were placed on incoming calls to ensure that lines of communication remained open for local government, police and fire authorities, but no restrictions were placed on outgoing calls. If Kobe residents were unable to make outgoing calls, it was because either a switchboard was out of order or a line had been physically broken.” (Japan Echo)

He also wrote: “This means that if, following the disaster, relief centers and the local disaster relief headquarters had been able to connect with a host computer located outside of Kobe, they would have been able to receive and relay information via that host by calling out of Kobe and thus would have had little difficulty establishing a connection. Communications could then have been carried out by e-mail, which is far more efficient than voice communication. Voice transmission keeps lines busy too long, and it leaves no visual record that can be further manipulated and transmitted. E-mail, on the other hand, can be composed off-line and then transmitted almost instantaneously; it can also be stored in the host computer and immediately accessed at any time.” (Japan Echo)

Tombre said e-mail is handy in case of emergency because one
can send an "Are you OK?" message easily.

Sirois agrees, saying the Internet is a tool that anyone can use. "One good thing the Internet shows is how tiny the world has really become," he said.
Chapter 6

The Slow Growth of the Internet in Japan

Internet technology originated in the United States. The development of the “Net,” initiated by the U.S government, began in the late 1960s. It grew slowly and its use was limited to a small set of research and educational institutions. (Japan Echo)

“Not until 1989, when the number of host computers linked to it topped an estimated 80,000, did the Internet reach a scale capable of attracting wide attention in the United States,” wrote the Japan Echo.

“Since then the number of hosts has been doubling yearly, reaching an estimated 3.1 million as of January 1995. The types of users have also proliferated, coming to include companies, government agencies, schools, hospitals, libraries, and many others.” (Japan Echo)

Millions of people throughout the rest of the world have hooked into this new technology. But, surprisingly, Japan isn’t among the countries that have taken to the new medium. Japan has failed to link itself to the Internet as comprehensively as some other
countries. Sending messages via e-mail is commonplace among millions in the United States, but not in Japan.

According to a July 15, 1995, article in The Economist, language is a huge barrier for the Japanese. In the Internet world, English is the common language even though the Japanese language is available on the Internet. So English-speaking countries have an advantage.

Nippon Telegraph & Telephone Corporation (NTT) poses a different kind of obstacle. Some say Japan's big privatized telecom company is responsible for the high cost and inconvenience of acquiring Internet access. NTT's local leased lines are expensive: A home telephone line costs 80,000 yen ($900). (The Economist)

Moreover, the NTT network has restricted capacity. "It took eight months for NTT to get the first leased line into my office," said Roger Boisvert of Global Online, one Internet provider. "In America, it would have taken 10 days." He complained that "there is no 'dark fibre' -- spare telecoms capacity-- between one NTT site and another, and that the switching system is overloaded." Global On-line tried to use TTNet, a competing telecommunications network operated by a local electricity company. "But," Boisvert continued,
“TTNet would have had to string cables of optical fibre between telephone poles belonging to NTT, and NTT refused.” (The Economist)

Since the Great Hanshin-Awaji Earthquake, Japan has accelerated the speed with which it has hooked up to computers. However, its speed has not been as fast as the famous Japanese bullet train. Here are some of the facts about how far behind Japan is in the Internet world:

According to a July 15, 1995, article in The Economist, “Per head, it [Japan] has one-fifteenth as many Internet users as America and trails the rest of the English-speaking world and of Europe. It is even behind the Czech Republic.”

According to a June 30, 1995, article in Far Eastern Economic Review, “Japan has less than one third as many PCs per capita as the U.S. In the office, only 10 percent of Japanese workers, virtually none of them senior executives, use computers. And of these office PCs, only 13 percent are connected to networks. That compares with over 50 percent in the U.S.”

The domestic ownership of PCs in Japan is low. Personal computers haven’t penetrated the Japanese household. According to the last count from the Ministry of International Trade and Industry,
about one in 10 households had a personal computer. In the United States ratio is three in 10 now. (The Economist)

According to some estimates, between 60 and 70 percent of all home users of PCs in Japan don't actually use the machines, but instead put them in storage. (Look Japan)

According to a September, 1996 article in Look Japan, "Japan is being passed by on the information superhighway, according to the Ministry of Posts and Telecommunications (MPT). The United States leads the world with more than 6 million computers hooked up to the Net, followed by Germany, Britain and Canada. Japan is in sixth place, with 269,000. Japanese business is also well behind the United States in the number of personal computers in use and in subscriptions to on-line services. MPT officials worry that the lag will hamper Japan's long-term economic growth."

According to a July 15, 1995 article in The Economist, "Japanese enthusiasm for electronic gizmos means that e-mail addresses are now joining fax and phone numbers on their business cards."

According to a spring 1995 Japan Echo, "Some went so far as to speculate that because of cultural reasons the Japanese were
unable to acclimatize themselves to the information environs of 'cyberspace' where the Net users interact."

Perhaps the informal give-and-take of Internet communication is difficult for the Japanese culture to adapt to. This might explain why more Americans use the Internet while Japanese seem to prefer faxing and phoning. Certainly the preferred technology of each country may be rooted in customs and culture.

The financially conservative Japanese prefer a prepaid card for their shopping, but Americans use a credit card more often than do Japanese. This comparison shows the different mentalities of the two countries.

According to a 1994 article in Japan Pictorial, the big communication and transportation companies introduced prepaid cards in the early 1980s for Japan's public telephones and train-ticket purchases. The cards caught on, and now can even be used to pay for dry-cleaning, a car wash, gasoline, a permanent wave, or food from a convenience store or supermarket. But the key word is pre-paid. Credit cards have been in Japan for a long time, but they have never caught on as they have in Europe and North America. Most of Japanese cannot get used to the idea of buying now and paying
later. The importance of paying your debts promptly is too deeply ingrained in the culture.

If there are cultural reasons for the Japanese failure to adapt quickly to the Internet, it's important that they be understood and countered. The stakes are too high to do otherwise.
Chapter 7

Obstacles to the Advance of Information Technology in Japan

What's wrong with Japanese information technology? Many blame Japan's failure to finance entrepreneurs of the information-technology field, the government bureaucracy's excessive regulation and unwillingness to change, and an educational system that fails to encourage creativity.

Information Technology Industry

One might think the high level of Japanese hardware products should carry over to software products, said Teruo Abe, an economics professor at Toyo University in Tokyo. He said Americans take it for granted that Japanese people use both software and hardware products efficiently in their daily lives.

But it is not true. Moreover, the information industry--mostly hardware--is almost entirely for export, said Abe, who spent a year in the University of Montana as an exchange scholar.

Abe added there is a strong demand for information technology
in the United States: it is crucial to the American military, and it works its way to the citizen level.

American business takes full advantage of the information superhighway, but Japanese business does not.

According to a June 30, 1994, article in the Far Eastern Economic Review, Japanese entrepreneurs in the information-technology field struggle to get money to start businesses. The listings of the over-the-counter (OTC) market, which are thought to suggest the future of the Japanese economy, provide little reason to believe that this situation will change.

"Over the past several years, consumer-financing firms, discount stores and pachinko-parlor chains dominated the action on the Tokyo OTC," according to the Far Eastern Economic Review. "Few of Japan's 500 OTC-listed companies are firms with a promising future in the information-technology field."

Unlike their Japanese counterparts, American companies with a promising future do get money. The Nasdaq market helped give a financial boost to hundreds of now-flourishing U.S. technology companies, such as Microsoft, MCI and TeleCommunications Inc. (Far Eastern Economic Review)
Comparing American business to its Japanese counterpart, Abe said the circumstances of financing are different. He said the typical American investment company often invests in a new company with some uncertainty and takes a financial risk. But he said, Japanese investors never give the go-ahead to a new company unless it is a sure thing financially. Because Japanese companies are doing well without computers, there is little advantage to acquiring them, Abe said. And he added it's cheaper to equip American companies with the computer systems than Japanese ones.

Abe said competition-oriented American business people pursue effective ways to do their business using the new information technology. As the new information technology advances, he said, new ideas come along with it. There is constant necessity to invest money in these new enterprises, Abe said.

Yet, he said business in Japan tends to be less competition-oriented than that in the United States. Therefore, the use of letters and phones, not e-mail, is still sufficient for many Japanese business men, Abe said.

He said the Japanese have mistakenly transplanted U.S. information technology to their soil, without trying to adapt it.
"Japan seems to have borrowed the new technology from the United States," he said, "and the current situation seems like a cut tree without a root. So its flower may not bloom."

Abe said there is no need to have the new technology in daily business inside Japan. But he said the Japanese do need to know the U.S. technology intimately because they have a need to export computer hardware products to America and elsewhere.

As the world moves into the age of information, Japan's hardware industry will grow, Abe predicted. However, he expressed doubt that the domestic software industry would advance. Although more computers will be introduced into Japanese lives, Abe said, the usage gap between the Japan and the United States won't be bridged.

**Government Bureaucracy**

The Japanese government's bureaucracy has also made it difficult for the information-technology industry to develop and thrive. Regulations in Japan consist of licensing requirements, rules and regulations, and informal guidance.

"Wider use of information technology would improve white-
collar productivity, but it would also highlight massive overstaffing," writes Jonathan Friedland in the Far Eastern Economic Review. "Allowing greater competition might bring down prices and improve services, but it could also no doubt result in corporate failures (and unemployment) and call into question the validity of such pet government projects as satellite broadcasting and analog high-definition television." (Far Eastern Economic Review)

Japanese bureaucracy is one of the major barriers preventing effective development of the Internet network. Jun Murai, a Japanese pioneer in cyberspace, waited more than two years to receive a license for Japan's first commercial Internet service from the Ministry of Posts and Telecommunications. MPT considered the Internet an academic creation, not a commercial one, a distinction that complicated the licensing procedure. (Far Eastern Economic Review and The Economist)

Murai, the so-called Internet Samurai who runs a company called Internet Initiative Japan, is nonetheless hopeful about the growth of the Internet in Japan. "When the Japanese see something new and convenient, it gets popular pretty fast," he said. (Fortune)
He was right. Within two years after the quake, Japanese people got their computers connected rapidly.

According to the Asahi Shimbun, WIDE Project, a network technology research organization demonstrated an Internet fire and quake drill exactly a year after the quake. The developers of this plan deliberately cut the phone lines, and tested Internet connections via satellite without using phone lines. Internet connections were recovered about 15 minutes after disconnection. The test was considered a success even though there is much more work to be done.

Moreover, Matsuzaki said the Kobe think-tank has a multi-network media-mix plan that allows much flexibility. If ground lines such as telephone lines, are cut, satellite communication will be available for back-up.

Japanese Education

Focusing on preparation for standardized exams and emphasizing uniformity, the Japanese educational system has produced diligent, highly literate workers in the post-war era. On
the other hand, the system discourages independent thinking and the
development of analytical skills necessary to excel in a knowledge-
based industry. Universities are more social clubs for making
friends than serious educational institutions. "At the university, the
human network you develop is much more important than the
education you receive," said Shumpei Kumon, a former professor at
Tokyo University who is now a director of the Tokyo-based Center
for Global Communications (CGC). He said universities are not
equipped with the facilities to have an impact on development of
information technology. (Far Eastern Economic Review)

North Americans arriving to teach English at Japanese high
schools are surprised to see no computers available.

"The Japanese high school students and their teachers don't
have an interest in computers," said Pierre Sirois, who taught at
Okayama. He said students focus instead on preparing for entrance
exams.

Sirois asked a head teacher in his school to use the Internet as
a teaching tool, but no computers were available except old word
processors. Janet Tombre, who taught in Kumamoto, had a similar
experience. She said that teachers in her high-school English
department had a beautiful IBM computer with Windows 95, but didn't use it. "I was the first one to use the Windows 95 on this computer," she said. The machine had Internet access, she said, but "I don't think they knew how to hook it up. I don't think they really care about the Internet. They have no reason to use it." The picture is similar in junior high school. Tombre said her students didn't use computers at all, and her teaching colleagues only occasionally.

Prof. Abe acknowledges that Japanese schools are far behind in teaching computer and Internet skills. Comparing his own university with the University of Montana, Abe said UM has many more computers and that UM students' level of knowledge is much higher. Japanese college students must learn to use the Internet, he said, and added: "There is no turning back from this technology."

In his article about the Great Hanshin-Awaji Earthquake, Taisuke Matsuzaki expressed surprise that among the e-mail correspondents to Kobe's home page were American elementary school children, who wanted to talk to children of the same age in Japan. Matsuzaki said he could tell the American kids were quite young, because they often misspelled words. But they were clearly much more computer-literate than their Japanese counterparts.
Matsuzaki said this showed him that the computer network is penetrating daily life in the United States, and that school children are becoming familiar with the computer at an early age. (New Media)

Some Japanese think that the computers needed for the nation’s schools could also be used during emergencies. Kazuma Yamane, in his article, suggested that schools be transformed into information centers during the natural disasters. He said, "If some sort of computer network linking the schools in the Kobe area had been in place before the recent disaster struck, who knows how much needless confusion could have been averted? Instead, the aftermath of the quake vividly illustrated the oft-heard admonition that Japan lags two decades behind the United States in the construction of an Infobahn." (Japan Echo)
Chapter 8

The Media's Use of the Internet after the Earthquake

When covering a disaster on the scale of the Great Hanshin-Awaji Earthquake, journalists are expected to go beyond their routine responsibilities. Yet journalists in Kobe found it extremely difficult to get around, and to get a picture of what was happening. Journalists also became victims like many other citizens, and were often out of communication with their own news companies. Thus it became crucial for citizens to get information by themselves.

According to the Asahi Shim bun, one of Japan's major dailies, quake damage severely impaired the ability of the news media to perform their mission. One local newspaper could not publish because mechanical problems prevented the layout process from being completed. The newspaper sent its news product to nearby Kyoto, where the local paper did the layout process for months, under the provisions of an emergency mutual-assistance arrangement. The agreement worked well enough to inspire imitation. Before the Great Hanshin-Awaji Earthquake, only four Japanese newspapers, including the ones in Kobe and Kyoto, had
mutual-assistance agreements, but in the years following the quake, 22 new agreements were signed.

The Kobe branch of the Asahi Shimbun was destroyed. So were the homes of some of its employees. One recalls returning home from his place of employment to find that "my home was badly damaged. Some of his colleagues found their houses were completely gone.

Under such circumstances, it is not surprising that ordinary citizens did not get all the information they needed, or that the void might have been filled by rumors and misinformation.

In his article, Matsuzaki wrote that objective reports are essential to information-gathering activities of emergency organizations. With the news media unable to function normally, such objectivity was next to impossible. (New Media)

The foreign media took advantage of the Internet to cover Kobe. Matsuzaki said BBC and CNN were active on Kobe websites within a few days after the quake. He said Time Warner reporters were the first media representatives to contact Kobe. They requested an access site that would allow them to see the Kobe city home page. He said the Swedish media also requested an access site to obtain
the minute-by-minute situation in Kobe. But most of the Japanese media did interviews by phone or visited the Kobe city government office personally, Matsuzaki said. Two weeks after the contact by the foreign media, some members of the Japanese media asked Matsuzaki what now seems an embarrassing question: “What is the Internet?”

Later the Japanese media trumpeted the Internet use in the Kobe city government because they learned from the foreign media how effective the Net was as a news tool, Matsuzaki said. That led to the rapid growth of the Internet in Japan.
Chapter 9

The Paso-Con Network: Volunteerism and Young Japanese

Japanese youth have the reputation for being timid and passive. However, they proved their potential for quick action when Kobe cried for help.

While the Japanese government and its bureaucracy have since been blamed by some for their lack of response to the crisis, the work of volunteers won praise. The volunteers, mostly young people, rushed into Kobe to lend their hand. They often used high-tech personal computers to communicate with each other and made a wide human network of “paso-con” network. (Japanese for “personal computer”) Some universities allowed students to do volunteer work instead of attending classes, and credits were given to some volunteers.

Yamane wrote: “Local schools, which commonly serve as evacuation and relief centers, would each need only a small computer or work processor equipped with a modem to join the network. Even if there were no such equipment on hand, or no one who knew how to use it, volunteers could bring in their own portable
computers and establish a connection at a moment's notice. In fact, in the aftermath of the Kobe quake there were quite a number of proposals to round up a group of such 'computer volunteers' and dispatch them to key spots in the disaster area." Not all of the proposals produced results, but the young volunteers were widely seen as a positive force. (Japan Echo)

Kayoko Hosokawa, a former First Lady of Japan, said at the 1995 Mansfield Conference at the University of Montana that volunteerism in Japan has been more prevalent since the Great Hanshin-Awaji Earthquake.

The Japanese began to accept the idea of volunteerism, as well as the importance of computer networking for emergency assistance. Even elderly volunteers have begun to learn how to use computers.
Chapter 10
Conclusions

Since working on this project about information technology and computer systems, my interest in the Internet as a research tool has been stimulated. Before I had suffered from computerphobia. Sitting in front of the computer was a big challenge for me. Moreover, it took me months to set up my computer to be able to write and read in my native language of Japanese. The language barrier was much bigger than I thought. But soon I was doing research on Netscape and was interviewing Kobe people using Japanese e-mail. As I spent many hours overcoming my computerphobia, I can’t blame other Japanese for their unfamiliarity with the computer.

My problem, then, is Japan's problem. Many Americans might think that the Japanese people must be computer whizzes since Japan is known as a high-tech nation that produces a great deal of computer hardware. However, contrary to that expectation, Japan has fallen far behind the United States in managing computer technology and only now is making substantial progress catching up
with the United States in computerizing business, government and education. Yet Japan is still unsure of how it can best make use of the Internet. It is a very useful tool of information technology, but the most efficient and effective way to use the Internet has not yet been learned.

The mass media can use the Internet as a resource to cover future disasters. The Internet played a supporting role in the mass media's effort to provide a detailed picture of the Great Hanshin-Awaji Earthquake, and it will play a stronger role in the future. One advantage of the Internet is that it can send a message simultaneously to many people at any time. The Internet use can reinforce other traditional communication media. The images of Kobe taken by Matsuzaki's 8mm video camera were transmitted all over the world by the Internet.

Now Japanese ponder when and where the next massive earthquake might hit and how to prepare for it. However, the earthquake is an act of Mother Nature, and often defies predictions.

When it happens, the priority should be minimizing the damage and saving lives. Used effectively, the Internet can do both. But there must be competent professionals who understand the new
technology, and are prepared to use it. And, perhaps most important of all, the Japanese people must be familiar enough with the system that they can use it to their advantage during an emergency. Making that goal a reality requires the commitment of all Japanese to the task.
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