

# 日本科学技術文献情報： 伸び悩むアメリカでの需要

*If you can't read this headline in Japanese, there are people to help you translate\**

To keep an eye on Japan's gains in superconductivity, University of Houston physicist Peiherng Hor reads Japanese journals published in English and relies on personal contacts among Japanese scientists to tell him the latest news. But, if a scientific paper is published in Japanese, it is likely to go unnoticed by this leading laboratory because neither Peiherng nor other members of the Houston team knows the language. "We definitely miss something," he says.

That kind of information gap about science and technology in Japan is one that the U.S. government and private companies are trying to fill to bolster America's competitiveness. Federal agencies and private companies now offer a wealth of translated information and sponsor a range of programs to keep up with science and technology in Japan. But, paradoxically, many of them are finding it hard to drum up enough clients.

The lack of demand for Japanese technical literature has been sufficiently puzzling that the Commerce Department decided in October to conduct a study of the issue. Japan watchers speculate that parochialism by Americans and the cost of the information are among the reasons behind the weak demand.

The Senate is currently considering bills that would provide a modest budget increase for a Commerce Department program intended to improve access to Japanese technical literature. Some representatives from federal agencies and companies contend, however, that the federal government should be spending more to support the goal.

"[A]t this time the problem of effective access to Japanese technical literature is not that the Japanese are unwilling to share such information with Americans, but rather that America is neither willing nor prepared to take the actions needed to seek out that information," says a Congressional Research Service report published in October. Tom Satoh, who manages an information service which translates and abstracts Japanese journals on topics ranging from biotechnology to advanced ceramics, says, "Even though

there's a lot of talk out there [about the need to monitor the Japanese], there's no real commitment" by potential users.

The Japanese, who have an insatiable appetite for information, publish 10,000 different science and technology journals. A vast majority of Japanese journals are written just in Japanese. During the past few years, federal officials, academics, and others have asserted that there is the need to tap this river of information.

Now, says Justin Bloom, a former science attaché to Japan who will conduct the Commerce study, "There are a dozen places to find out information about Japanese technology. It just depends on how timely you want it and how much you are willing to pay." The information may be one to several months old before it is translated because the number of translators in the United States trained in technical literature is limited, as few as 400 by some estimates. The faster the turnaround in translation, the higher the cost, generally.

Two main organizations supply translated Japanese technical information in the United States and have almost identical names although one is public and the other is private. The federally sponsored program is called the Japan Technical Information Research Service. The other one, run by Satoh, is named the Japan Technical Information Service, but is more commonly known as the UMI program because it is part of University Microfilms, Inc., a subsidiary of Bell and Howell, Inc.

The federal program, sponsored by the National Technical Information Service in cooperation with George Mason University, provides a broad array of information. It help clients hook up to an enormous Japanese database known as JICST (pronounced "jixt"). The English version of JICST, which covers about half of the original database, includes 5,800 Japanese journals and 200,000 translated bibliographic citations, says Atsushi Akera, a program associate. About one-fifth of the translated citations are also accompanied by abstracts. The translations are finished usually within 4 months of the original publication.

The UMI service surveys a smaller num-

ber of journals, 600, but provides more in-depth abstracts and better translation, according to Akera and others. The information, which is translated in the United States, is compiled in a thick catalog and is available online as well. Satoh says that the average turnaround time for translation in his organization is 7 months. To some, the information may be stale after that period, but Satoh argues, "Even old news you don't know of is news."

Subscribers to these and other services are few. Barbara Payne, who helps run JICST at George Mason, says that out of 400 requests for information packages about the database, only 22 organizations actually have become active users. (The clients include major companies, some universities, other government agencies, and consultants.) She says, "The interest in the package has been outstanding, but when it gets down to people paying to go online, they don't do it." Access to an online database for Japanese technical literature can run \$100 to \$140 an hour. The annual costs for the UMI catalog is \$5500 for corporations.

But some Japan watchers are not convinced that cost is the main deterrent. Pat Hill Hubbard, who is a vice president of the American Electronics Association and directs an exchange program with the Japanese, and others assert Americans are lukewarm about Japanese technical information because they suffer from parochialism or what some call the "not invented here" syndrome. Many still have not awakened to the fact the Japanese are innovators as well as gifted copiers, they say. Bloom also speculates that many American scientists are already overloaded with information from domestic publications, so they are even more hard pressed to monitor foreign news.

There is some indication that individual users, such as companies, want someone else to wade through a massive database and fish out important information. Professional organizations have begun successfully selling translated information about their particular fields. For example, this spring the American Society for Metals, in a joint venture with a Nippon Steel subsidiary, began marketing a monthly newsletter based on published information translated by the Japanese subsidiary. It also issues special reports on metals, superconductors, advanced ceramics, plastics, and other materials. The cost of a single report is \$600 for information that is about a month and half old. Robert Stedfeld, the society's director of reference materials, says that the number of

\*The headline says, "Japanese Scientific and Technological Literature Information: The Demand in the U.S. Remains Low."

subscribers has exceeded expectations.

The Center for Magnetic Recording Research, a consortium sponsored by several American manufacturers of audio and video tapes and by the National Security Agency, keeps tabs on the Japanese for its members by hiring translators based in Japan and the United States to monitor the technical literature. In addition, the center, which is located at the University of California at San Diego, scans the UMI service, and a half dozen other databases.

"We act as a sieve," says Dawn Talbot, the center's information manager. "Filtering is a big, big problem, because there is a lot of information from Japan. We send abstracts to our member companies and then they can request fuller versions of the papers." But translation expenses can climb quickly, Talbot says. The translation of one scientific paper typically costs about \$360.

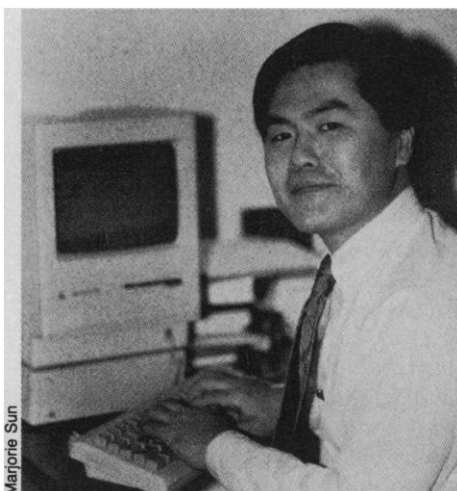
The UMI service itself has changed its marketing strategy. In January, it will begin publishing monthly reports on specific topics, including computers, manufacturing, energy, telecommunications, and biosciences. The change in format was made in response to a marketing survey UMI conducted. "Theoretically, we're offering what they want now," Satoh says, "This is the acid test not only for our product but for users."

Talbot says the federal government should subsidize more translation. She would like the National Technical Information Service to pay for translating company reports from Japanese industry, for example. The federal agency already receives the reports, but it does not have the budget for translation. "So the reports never get into the system," Talbot says.

Talbot recommends that the federal government also pump more money into machine-aided translation, which could cut costs and time. The current technology, however, is still too crude to translate Japanese to English. The major technological stumbling block is that a device has not yet been developed that can "read" Japanese characters with sufficient accuracy.

The Defense Department and other agencies already use computers to translate romance languages, for example, into English. But the current systems of machine translation from Japanese characters to English "is still useless for the majority of American engineers and scientists" because they cannot read and transcribe Japanese text using a computer keyboard, says Tamami Kusuda of the Commerce Department's Office of Japanese Technical Literature in an interview.

The United States has put little effort into machine translation, says Kusuda. In contrast, the Japanese regard machine translation "to be one of the most crucial aspects of



**Tom Satoh** runs a service that translates and abstracts 600 Japanese journals, but clients are few.

an information society," he says.

Several Japanese companies are already selling systems to translate English to Japanese and visa versa with at least 70% accuracy. A cooperative project involving Kyoto University, the Japanese government, and ten computer companies is developing a system specifically to translate English to Japanese and Japanese to English. The group has been working for the past year and a half to design a system that specializes in the translation of technical literature in Japan's huge database JICST. (But still, these systems require fluency in Japanese to transcribe a text into a computer.) Kusuda reports that MITI, Japan's Ministry of International Trade and Industry, is planning to spend \$43 million over the next 7 years to help in the development of multilingual machine translation systems for China and several other Asian countries.

But machine translation is only one way to improve access to scientific information in Japan, according to Christopher Hill of the Congressional Research Service, who wrote the recent report, "Japanese Technical Information: Opportunities to Improve U.S. Access." Congress could decide to beef up efforts by several federal agencies, which conduct their own monitoring programs. Much of the information is publicly available, but is not widely disseminated because the programs are not well known.

The Office of Naval Research, for example, issues periodic reports written by experts on staff and outside the agency and cover a range of topics, including superconductivity. The National Science Foundation (NSF) sponsors a program known as JTECH, which issues reports by a group of experts brought together to compare Japanese and U.S. technology in a specific field. In April, NSF let a contract to study its own

Japanese-related programs, reports, and cables from its Japan office for timeliness and quality. "It's an experiment," says Charles T. Owens of NSF. "What would people like to see? What would they pay for this?"

One of the tasks of the Commerce Department's Office of Japanese Technical Literature, staffed by Kusuda and just one other colleague, is to coordinate the various activities scattered among the agencies and educate government and private users about them. But the program, which has a broad mandate to improve access to Japanese technical literature, has barely gotten off the ground because of modest funding.

Congress established the program last year, authorizing it \$1 million, but did not appropriate any money for it. So Commerce pooled \$300,000 from other programs to start it up. This year, the Senate is considering legislation that would double the office's authorization and appropriate it \$500,000. Legislation on the House side would maintain the status quo.

Almost everyone agrees that the ultimate solution to keep abreast with Japanese information is to train more American scientists and engineers in the language. A program by the American Electronics Association has sent 31 graduate students in engineering and computers to Japan. The students are given intensive language training and then placed in the labs of Japanese companies, which help subsidize the students' travel and room and board. The students also attend technical meetings to establish more contacts with Japanese researchers, says Hubbard of the association. "Translation is important for certain purposes, but it has to be coupled with relationships," she says.

In addition, an increasing number of big American companies are setting up research labs right in Japan to get into the mainstream of Japanese science and technology and are hiring Japanese nationals. IBM, Du Pont, Monsanto, and Kodak are among the American corporations that have established or are soon planning to open labs in Japan. American businesses that may be losing out are the small to middle size companies that cannot afford a foreign office and perhaps do not even know that they could learn important technology from the Japanese, says Bloom and others.

Richard Samuels of the Massachusetts Institute of Technology says, "It's time to start asking industry to use the information available. I don't think we need to produce any more [information services], but we need to find out if and how the material is being used." After several years in which databanks and programs have evolved, "it's time to take a breath now" and take stock, he says. ■ MARJORIE SUN