in a telephone interview from Tokyo that if this provision "is coming from the military, it has to be watched very carefully. I understand the importance of national security, but you have to consider the international community of scientists too, and its need for the free flow of information."

Science counselor Ikeda notes that "there is no precedent for this provision. [U.S. science] agreements with other countries don't include this." He adds, however, "Maybe we need to accommodate the U.S., but it's a matter of how we articulate it in the agreement."

The Administration, particularly the Commerce Department, also wants to award patent rights to the host federal agency "unless otherwise specified." The provision is intended to set a general policy for assigning patents resulting from international ventures; they are currently designated on an ad hoc basis by individual agencies. Patent rights are now not part of cooperative agreements with other countries either.

Japan maintains that the issue of patent rights should not be part of this agreement and should be addressed separately, according to Administration sources. Ikeda would not comment on Japan's position on this issue, but expressed general frustration with Commerce's Office of the U.S. Trade Representative (USTR). "USTR doesn't know anything about science and technology. They look at it with the same eye as trade. They are insensitive to the healthy atmosphere we should provide scientists."

The Administration also wants to include a measure that would allow foreigners to participate in research conducted jointly by government and the private sector, a common form of collaboration in Japan. Under the proposal, an individual research entity itself, rather than the parent agency, would be given the authority to permit foreign researchers to participate.

Japan has made a bid of its own to modify the agreement. According to the *Asahi* article, whose general substance was confirmed by U.S. authorities, Japan has pressed for 5-year joint research programs in several new areas, including superconductivity, biomedical engineering, information-related technology, manufacturing, materials, and biological functions. White House science adviser William Graham wanted to press the Japanese to cooperate in superconductivity but was advised by officials at other agencies not to do so to protect the American lead.

As the United States has put more verbal heat on Japan to open up its lab doors, three Japanese federal agencies have proposed setting up more fellowships for foreign researchers and picking up the tab. But all these proposals must first win budget approval by the Ministry of Finance. The Japanese federal budget for the next fiscal year will be announced in early January.

The Ministry of Education, Science, and Culture would support the biggest increase in foreign researchers. According to its plan, 50 Americans and 50 Europeans would be eligible. Of the American candidates, 25 would be nominated by the National Science Foundation (NSF), 5 by the National Institutes of Health, and 20 by individual Japanese laboratories. The ministry would pick up the tab for travel, research, and living expenses, which will cost about $40,000 per researcher.

The Science and Technology Agency has applied for similar funding to support 24 more researchers, who will be selected by the Japanese, according to Charles T. Owens, a Japan specialist at NSF. In addition, the Ministry of International Trade and Industry has proposed to support five new fellowships for Americans to work in its laboratories, but the United States would select the researchers.

The new proposals by the Japanese government to open its agencies' doors a little more to foreigners represent some progress, but they do not resolve two problems related to the imbalance in scientific cooperation. Most research in Japan is supported by private companies and conducted in their laboratories. Entree to this research would not be covered by the agreement being negotiated.

Second, although the opportunities for Americans to do research in Japan are increasing, few Americans seem to be interested. The applications to NSF's exchange program with Japan have remained steady in recent years.

Aware of this lack of interest, NSF recently proposed a new $1.6-million program called the Japan Initiative to lure more Americans to Japan. The program, which is awaiting congressional budget approval, would subsidize primarily graduate and postgraduate scientists and engineers to conduct research and to study the Japanese language. NSF plans to encourage Japanese laboratories, including those in the private sector, to host American researchers, and it will serve as a matchmaker for these laboratories and American researchers. NSF also intends to help researchers with orientation in Japan and with arranging housing there, which is a big headache.

So, given the basic structural differences in how research is conducted in the United States and Japan, even if President Reagan and Prime Minister Takeshita eventually sign the modified agreement about science and technology cooperation, deeper and more difficult problems about achieving a balance in access will persist. ■

MARJORIE SUN

IBM, Chen in Supercomputer Partnership

On 22 December, in a move clearly aimed at strengthening its position in the burgeoning supercomputer market, the IBM corporation announced its intention to form a partnership with a brand-new start-up company founded by Steve S. Chen, former chief engineer and star designer at Cray Research, Inc., of Minneapolis.

An announced goal of the partnership is to produce a new machine in the 1990s having 100 times the processing power of current-generation supercomputers. According to the initial agreement, IBM will provide Chen with an undisclosed amount of development capital, as well as access to its own advanced technology in such areas as high-speed memory devices and bipolar logic chips. Chen, however, will have complete design authority. The new computer will be marketed by both firms jointly.

Chen started his new company, Supercomputer Systems, Inc., of Eau Claire, Wisconsin, shortly after he left Cray Research on 2 September in a dispute over future directions for supercomputer development. IBM and Supercomputer Systems stressed in their announcement that they will take great care not to utilize technology that Chen had developed at Cray. Nonetheless, the machine they are proposing does sound similar to the "MP," or multiprocessor, machine that Chen was developing there. The MP would have achieved a hundredfold speedup by harnessing 64 individual processors in parallel. Cray, which had originally supported the development effort, terminated it because of its high projected cost—$100 million—and because of its technological risk.

Cray currently dominates the $1-billion supercomputer market with about 61% of world sales. However, a number of serious competitors have begun to emerge in recent years. Among them are Fujitsu in Japan and the Control Data Corporation in this country. With IBM also taking a more aggressive stance in supercomputers, the pressure on Cray can only increase.

The details of the partnership are not yet final, say company spokesmen, but they should be concluded over the next several months. ■ M. MITCHELL WALDROP