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(from 10,000 troops in 1972 to about 1,000 today), the United States might someday find itself in the awkward position of having a commitment to Taiwan without the means to meet it.

Pro and Con on NATO Arms

"NATO Arms Standardization: Two Views" by Dewey F. Bartlett and James H. Polk, in *AEI Defense Review* (no. 6, 1977), American Enterprise Institute, 1150 17th Street N.W., Washington, D.C. 20036.

Standardization of military hardware, long an operational goal of the 13-nation Atlantic alliance, is the "key" to NATO's survival as an effective deterrent, according to Senator Bartlett (R.-Okla.). But General Polk, former commander in chief of the U.S. Army in Europe and the Seventh Army, believes that standardization is generally not worth the time, effort, or money required.

Lack of standardized weapons and parts in the NATO force, says Bartlett, creates a "domino-like chain of inefficiency." The Senate Armed Services Committee, on which Bartlett serves, estimates that NATO has lost 30 to 40 percent of its effectiveness because of its confused mix of weapons systems. The alliance now fields 31 different antitank weapons (with 18 more under development), 7 different tanks, 8 armored personnel carriers, 24 families of combat aircraft, 100 kinds of tactical missiles, and 50 varieties of ammunition. With NATO nations plagued by rising manpower costs and faltering economies, distribution of common equipment, Bartlett argues, could save \$10-15 billion a year.

But Polk questions Bartlett's estimates of potential savings. He sees a greater need for cooperation in battle rather than for peacetime economies. Standardizing spare parts, he argues, is "impractical, costly, and idealistic." Efforts to standardize should be confined to "essential" items, such as fuel and ammunition. As for other duplication, Polk concludes, "the best policy is to forget it."

Bomb the Ban

"Candor, Compromise, and the Comprehensive Test Ban" by Donald R. Westervelt, in *Strategic Review* (Fall 1977), U.S. Strategic Institute, 1204 K St. N.W., Washington, D.C. 20006.

For two decades, the United States has sought to negotiate a treaty with the Soviet Union to eliminate underground testing of nuclear weapons. But according to Westervelt, a staff member of the Los Alamos Scientific Laboratory, the problems inherent in such a "comprehensive" test ban (current treaties cover only above-ground testing) could eventually result in a shift of the strategic balance in favor of the Soviets. He believes that only with a "limited" test-ban treaty—or none at all—can the United States maintain its technological edge over the U.S.S.R.

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The major problem with any broad new treaty, says Westervelt, is that, given the primitive state of electronic inspection devices, the Soviet Union could easily circumvent the terms of a "comprehensive" ban without detection. The closed nature of Soviet society adds to the problems of verification. Small underground tests, Westervelt believes, would pass without notice, enabling the Soviets to test and modernize their weapons systems.

In the United States, however, underground explosions could be easily detected. Inability to test new weapons as they come on line could cost the United States the "technological superiority" on which its defense posture now depends. During the 1958–61 moratorium on testing, for example, the United States added a new weapon to its stockpile. Elaborate calculations vouched for its effectiveness. When tests were finally conducted in 1963, the weapon's performance was revealed to be "totally inadequate."

Finally, Westervelt notes, strategic questions aside, testing is necessary for reasons of safety. Accidents happen—as when a U.S. B-52 bomber crashed with its nuclear bomb load in Spain in 1966. Fortunately, the design of American bombs prevented a nuclear detonation. But new designs require continual testing to ensure their effectiveness.

The Japanese Manhattan Project

"Nuclear Weapons History: Japan's War-time Bomb Projects Revealed" by Deborah Shapley, in *Science* (Jan. 13, 1978), 1515 Massachusetts Ave. N.W., Washington, D.C. 20005.

The U.S. effort to make the atomic bomb during World War II—via the Manhattan Project—was prompted by fears that Nazi Germany was nearing completion of its own nuclear weapon. But unbeknownst to the United States, says Shapley, a *Science* staff writer, the Japanese too were working on an atomic bomb.

According to recently published documents and diaries, the Japanese effort began in the early 1940s and was headed by Japan's leading physicist, Yoshio Nishina. The Japanese had closely followed developments in the field in Europe and America, and had assembled much of the hardware—including five cyclotrons—necessary for construction. However, says Shapley, because of lack of manpower, money, and uranium, the project was "probably doomed from the start."

Research on the atomic bomb in Japan stalled in 1943 after a colloquium of Japanese scientists determined that construction would be impossible even for the United States during the war.

The revelations cast new light on several historical controversies. In November 1945, U.S. occupation forces deliberately destroyed all five of Japan's cyclotrons. An outraged U.S. scientific community pointed to this incident as evidence that the military was "insensitive" to the needs of science, and the subsequent debate fueled a successful drive to keep American research and development in civilian hands. It now appears that destruction of the Japanese cyclotrons stemmed from fear