

Arms Control That Could Work (1985)

Albert Wohlstetter and Brian G. Chow

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The House has voted for a fiscal 1986 moratorium on U.S. testing of anti-satellite weapons (ASATs) against objects in space unless the Soviets resume their testing. The Senate version permits such tests. This week a conference committee will try to resolve this difference. The pious insincerities of Capitol Hill suggest the issue is to avoid militarizing the untouched heavens. But the U.S. and U.S.S.R. will use and have used space for 25 years to further their rival political and military ends. Over 70 percent of Soviet satellites are purely for military purposes. Many of the rest are for both military and civilian uses. In fact, even the House measure aims to encourage an agreement with the Soviets that would protect the many satellites that supply reconnaissance, warning, communications, navigation and guidance, and other critical information for the defense of the two superpowers and their allies. Can an agreement do that?

Some agreement with the Soviet Union conceivably could help the U.S. protect the functioning of key military satellites. But it will take a fresh approach. The standard sort of ASAT ban that is supposed to be a way of defending satellites would very likely end by preventing the U.S. from protecting them. Then many (not all) proponents of the treaty would ignore its disastrous failure to accomplish its purpose of helping satellites survive. They would instead celebrate the survival of the treaty. If that seems cynical, it shouldn't. That's essentially the story of the offense and defense controls imposed by SALT I as a way of ensuring the second-strike capability of U.S. intercontinental ballistic missiles. These controls ended up ensuring that the U.S. could not defend Minuteman silos and that the Soviets would be able to eliminate them. (They deployed nearly six times as many silo-destroying

warheads as U.S. negotiators expected.) Many proponents of the SALT I defense and offense restrictions celebrated SALT I as “the jewel in the crown” of arms control. Well, it’s clear that the jewel was lost or stolen, if it was not paste in the first place.

More Than One Potential Use

The problem is that almost every military system has more than one potential use, and every prohibited military function can be performed in more than one way – often by permitted military systems or even by systems in civilian use. Satellites can be anti-satellites. So can devices that defend satellites. So, with changes in their guidance logic, can ICBMs and submarine-launched ballistic missiles. (In fact, the Soviets use ICBMs to launch their current ASAT interceptors.) Ban everything that can be used against satellites, and you might end up with no strategic offense ballistic missiles. And no satellites. Yevgeny Velikhov, vice president of the U.S.S.R. Academy of Science, is disturbingly reassuring on this: “If we can dock with a satellite, then clearly we can dock with an American satellite, but a bit carelessly, and thus destroy it. But the idea of our proposal is that there is no problem in verifying whether or not a satellite has been destroyed.”

Verifying that U.S. satellites have already been destroyed in a surprise attack might be no problem. And recording that fact could help future historians, if any. However, it would hardly enable the U.S. to prevent the surprise attack.

Even complaining to the usual sluggish Standing Consultative Commission about suspicious satellites hovering near the U.S.’s own, or U.S. threats to renounce an ASAT ban, would not prevent a Soviet surprise attack. In fact a complete ASAT ban would fatally hamper acts of self-defense. To prevent a surprise attack on American satellites, the U.S. will need to respond in time with a combination of passive and active measures: hardening, maneuver, decoys, replenishment and jamming or destruction of enemy ASATs. For, just as ships at sea are liable to sudden attack by other ships staying close to them in peacetime, so critical U.S. satellites will be vulnerable to a simultaneous raid by apparently benign satellites pre-positioned to act as “space mines.” Space mines exploit the time delays inherent in defense.

We propose a space agreement to facilitate unilateral defense against surprise attack on satellites. It resembles (but only slightly) the existing U.S. and Soviet agreement on Prevention of Incidents

On and Over the High Seas. Its basic idea is to specify a number of separate "Self-Defense Zones" for Western and Soviet satellites. Each side would have the right to inspect, expel or otherwise render harmless any invaders (should they exceed a safe number) moving through these zones.

Each could do so, of course, without harming any life, military or civilian. Unlike the agreement on Incidents at Sea that the Soviets violated during their search for the wreckage of KAL 007, this one would have automatic enforcement.

The Self-Defense Zones arranged for satellites would vary with their different orbits, since satellites differ in their orbital characteristics and some orbits are more densely populated than others. Here, we sketch only the agreement for the important geosynchronous orbits. The West has some 20 military and 30 civilian communication satellites in such orbits, and the Soviet Union a growing number. In the future, for an adversary to reach geosynchronous orbits (some 36,000 kilometers high) with hit-to-kill vehicles launched from the Earth's surface would be a slow business, taking over an hour. It would be especially hard for them to confidently manage a simultaneous raid on a sizable fraction of critical Western communication satellites. On the other hand, launching hit-to-kill vehicles (or other ASAT weapons) from satellites pre-positioned near the targeted satellites would leave almost no time for defense. But defense needs time. The West has yet to take this serious threat adequately into account.

Instead of attaching self-defense zones to satellites, advantage can be taken of the fact that geosynchronous satellites circuit the Earth roughly as it rotates and so appear almost stationary. Negotiators might designate, for example, 36 zones—bands 10 degrees wide and 7,400 kilometers across with 12 each for the West, the Warsaw Pact and neutral nations. Each zone would rotate with the Earth. Current and future satellites would enter the other side's zones at their peril. Satellites, once declared dead or uncontrollable, would be subject to the other side's disposal when they enter the other side's zones. Enforcing the agreement by defending one's satellites would not therefore involve abrogating it. Self-defense would be part of the agreement. The agreement would not replace unilateral defense. (Nothing will.) Rather, it would facilitate defense.

The cost of this would be low compared with its potential advantage. Initially, each side would need only to reposition a small number of its satellites that now happen to be in the other side's zones. Afterward, a small number of satellites stationed near the zone boundaries would require only occasional orbital adjustments to avoid slow drifting into the other's zones. Moreover, up to two live satellites could be permitted in the other's geostationary zones at any given time. This would reduce the frequency of those orbital adjustments and allow satellite operations (such as initial placement and subsequent repositioning, as well as inspection and collection of information about the other side's satellites) to be performed with few restrictions. At the same time, the small number of allowable transits would make simultaneous attacks much more difficult.

Unique Opportunity

Important Western navigation satellites at near semi-geosynchronous altitudes between 19,800 and 21,100 kilometers are already separated from Soviet navigation satellites orbiting more than 500 kilometers below them. Each side now orbits six to twelve of these satellites. Each is likely to double these numbers in the next few years in order to keep several visible at any given time for use by ships, aircraft and other vehicles requiring extremely precise navigation and guidance. An agreement would formalize this separation for purposes of self-defense.

This is the kind of agreement the U.S. should be discussing with the Soviets. A government concerned about protecting its satellites would want to use such measures of self-defense in any case. Negotiating for such an agreement would make apparent the mutual adjustments in peacetime deployments that would facilitate self-defense. The U.S. could benefit whether the negotiation failed or succeeded. Preparing and negotiating an agreement that includes enforcement would also offer a unique opportunity to inform domestic and allied publics (and allied leaders) of the intrinsic troubles that plague democratic governments (including the Reagan administration) in the standard agreements. Candor about these matters is urgent and is more easily feasible in the context of the design of a serious agreement aimed at coping with such problems explicitly. When our leaders are less than candid on these matters, they trap themselves. Being "serious" about arms control should not mean being unserious about restraining

Soviet behavior and energetic only about preventing a U.S. response. The ASAT ban, pushed by zealots for Mutual Assured Destruction, would paralyze the West, not the East. It would not verifiably prevent Soviet anti-satellite actions. It would prevent the U.S. from effectively defending its satellites.

Messrs. Wohlstetter and Chow are director of research and senior research specialist, respectively, at PAN Heuristics, a Los Angeles-area policy research firm.