

Future of International Cooperation in Space
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Last December 1st marked the 43rd anniversary of the signing of the Antarctic Treaty, which preserved the continent as a non-militarized, nuclear-weapon-free area—the first arms control agreement of the modern era. The debate that preceded the negotiation of that treaty is remarkably similar to contemporary discussion on the future of outer space. In the early to mid-1950's, there were about a dozen countries vying for scientific, economic and military interests on Antarctica, an uninhabited, borderless and lawless land. In time, and after much debate, those twelve states—with others joining afterward—decided that the greater interests of all of the affected parties would be served best if the continent could be preserved for peaceful uses and that those interests could best be protected through a legal arrangement rather than the use or deployment of military forces. Thus, the Antarctic Treaty was signed on December 1, 1959.

Today, the international community is faced with similar questions about how to protect the opportunities and assets associated with the use of outer space. Here again, we have a borderless realm rich in commercial, scientific, and military potential and questions about how best to preserve those assets. Will military deployments and the weaponization of space be required to defend critical assets? Indeed, is—as some have suggested—the weaponization of space an inevitable evolution of current and historic

realities? Or is it possible, or even desirable, to craft instead a legal arrangement preserving space as a peaceful realm? Perhaps, a third way could present itself: For example, could some combination of approaches whereby both legal restraints and militarization are part of the equation? These are, but a few of the questions facing those who are working to protect access to space.

A great deal rides on the answers to these questions. Scientifically, the stakes are quite high, with everything from the International Space Station to the Hubble telescope and the exploration of Mars potentially affected by instability and unpredictability in outer space. The commercial implications are even greater. As Michael Krepon wrote in *Foreign Affairs* magazine some months ago, space-technology industries generated \$125 billion in profits in 2000, and by 2010, the cumulative U.S. investment in space is expected to reach as much as \$600 billion, roughly the equivalent of the total current U.S. investment in Europe. Clearly, it is now more important than ever to protect space assets in the best manner possible.

Similarly, it is also evident that outer space is becoming a more dangerous place. Several countries, including Russia and China along with the United States, have developed sophisticated anti-satellite weapons, and several others are thought to be seeking such technologies. If they continue to proliferate, anti-satellite weapons have the potential to dramatically undermine fundamental U.S. interests, including national security and international commerce. Krepon cites in his article, for example, a May 1998 failure by a single *Galaxy IV* satellite that caused 80% of the pagers in America to go dead, affecting some 27 million users.

The realization of the increasing vulnerability of the United States to attacks against space assets has caused some to encourage Washington to begin to deploy defensive weapon systems to protect those assets from new weapons. While this could appear to make sense on a basic level, a thoughtful analysis of the history of military development reveals flaws with this notion. Most importantly, modern history categorically demonstrates that effective defensive weapon systems will inevitably be countered by effective offensive systems, sparking an ever-spiraling arms race that ultimately leaves all sides less secure.

Some have suggested that the legal basis for a regime that preserves space as a non-weaponized realm already exists. Indeed, international law – including efforts to control weapons – is no stranger to the space environment. The Outer Space Treaty, signed in 1967, bans the deployment of weapons of mass destruction in Earth orbit, or on any celestial body, or elsewhere in space. It also limits the use of the moon and other celestial bodies to peaceful purposes.

The Outer Space Treaty joined the Antarctic Treaty and later the 1972 Seabed Arms Control Treaty, which prohibits the deployment of weapons of mass destruction on the ocean floor and in the subsoil thereof, in a unique class of arms control agreements sometimes referred to as “non-armament treaties”. These agreements were intended to – and have been successful in – preventing the deployment of weapons in areas where they have not previously been present. Today, after more than three decades, space, the ocean floor and the Antarctic all remain free of weapons of mass destruction.

These non-armament treaties, it should be noted, are the natural forefathers of the

contemporary nuclear-weapon-free zone treaties. Collectively, the Treaties of Tlatelolco (Latin America and the Caribbean), Raratonga (the South Pacific), Pelindaba (Africa) and Bangkok (Southeast Asia) have preserved the land area of the entire Southern Hemisphere as a region free of nuclear weapons, an important contribution to international peace and security.

It has been suggested that a legal regime to prevent the weaponization of space could be crafted simply by expanding or building upon the Outer Space Treaty. There may be some merit to this notion, especially considering the fact that the Treaty has more than 90 states parties. However, the subject is complicated and there are many important interests to protect, for example space assets used to verify treaty compliance and for intelligence. Ensuring non-interference with these assets is crucial to ensuring peace and security for the 21st century because of the central role they play in preserving confidence in the non-proliferation regime and in international security arrangements generally. President Reagan's devotion to the Russian adage of "trust but verify" was absolutely correct. Without space-based national technical means, this would be virtually impossible – a reality that US and Russian negotiators were keenly aware of during the arms control and international security negotiations of the last 30 years.

Such considerations apply not only in the bilateral U.S.-Russian context, but also to the broad range of international security accords. For example, activities detected through space-based national technical means can be used to trigger requests for onsite inspections pursuant to the Chemical Weapons Convention or the Comprehensive Test Ban Treaty – should that treaty be brought into force. It is important to recall that the

suspicions that Israel and South Africa may have conducted an atmospheric nuclear test in the South Atlantic during the late 1970s were driven by disputed readouts from an American *Vela* satellite.

At present, satellite imagery is regularly used to track activities that could reveal programs to develop weapons of mass destruction in countries of concern around the world. These are crucial efforts that we must never allow to be disrupted, especially not with possibly relatively simplistic weapons systems that could someday be deployed to counter anti-satellite weapon defense systems. Given the relentless progression of technological development, ensuring that these monitoring and verification measures are protected is a reality that probably ultimately can only be achieved through international law.

There are, of course, many other highly important interests to protect in space, such as remote sensing, telecommunications and navigation systems. Active defenses – that is, the deployment of devices intended to deflect, destroy or render unworkable offensive weapons – cannot by themselves be expected to provide adequate protection of these space assets either in the long term. Some way to defend against the current generation of anti-satellite technology may very well be found, but our would-be attackers will certainly find ways to counter those defenses. Thus, as I indicated, some agreed legal regime predicted upon mutually beneficial and, of course, verifiable restraint must be developed.

As more nations set their sights on the rewards that developing their own indigenous space programs have to offer, the prospect of the proliferation of space

technology has over the last decade caused alarm among some security policy makers. The main source of the concern is that the same technology that allows humankind to reach and subsequently utilize space can also be used for weapons-related purposes. Even though it is a difficult task to find a reasonable balance somewhere between upholding the principle of universal space access and preventing the application of dual-use technology for harmful purposes, it is nevertheless crucial for maintaining a sustainable security regime.

Currently the international arrangement that most directly addresses this issue is the Missile Technology Control Regime (MTCR). It is a voluntary arrangement among the world's dominant technological actors intended to restrict the proliferation of ballistic missiles and related technology. However, ballistic missiles are not the only potentially harmful application of dual-use space technology. For example, space platforms for scientific or commercial uses could be converted into orbital weapons carriers, and any object in space with sufficient maneuverability can be used as a kinetic energy weapon. It is unlikely that the MTCR is comprehensive enough to confront future contingencies of this nature, and likely there will be considerations of further measures that could be undertaken as part of a long-term solution.

Another factor is the exclusive character of the current space security regime, a quality that could weaken its effectiveness in the future. While the MTCR has achieved limited success in stemming the spread of missile technology, it has also had the effect of inhibiting the development of certain nations' peaceful space programs. Given the fact that the importance of space technology for national security applications, for scientific

advancement and for the ability of a nation to compete economically is predicted to only increase in the 21st century, it is no wonder that an increasing number of states perceive the pursuit of space capabilities to be a vital national interest. In the future, the greater part of the international community will not accept a security regime which is built upon the principles of enforced technological denial and which does not recognize the right of all nations to engage in this pursuit. Any new behavioral criteria, transparency guidelines, monitoring procedures and methods of enforcement adopted to promote greater space security thus will obtain higher levels of compliance only if they are perceived to be legitimate and consistent with the interests of all players. Otherwise, the world can expect that a significant number of nations who see greater security benefits in defiance rather than in cooperation will continually challenge the viability of the future space security framework.

Further, it should be recognized the very nature of orbiting suggests the possibility of cooperation and benefits to users around the globe. And there are gains to be shared as well; for example, cost sharing, political incentives and enlargement of ground infrastructure network. The simplest level of cooperation includes data exchange on weather, remote sensing and radiation monitoring. There are a number of types of cooperation, e.g. civilian, space exploration, educational, military and commercial.

Remote sensing, telecommunications, and satellite-based navigation systems are all commercially available space applications that also have dual-use potential. This means that the world's militaries have an interest in such applications. In some situations, acquisition of these capabilities by a terrorist organization or national

adversary could have serious implications for U.S. military operations

The following are examples which argue for maintaining some U.S. military control over access to global utilities: 1) during the 1991 Gulf War, U.S. coalition forces performed a “left hook” maneuver that would have been severely compromised had it been detected early on by the opposition through remote sensing capabilities; and 2) if an enemy gained knowledge of where Patriot Missile batteries are deployed, it might increase the missile threat for civilian and U.S. military targets. While these examples could take place in the context of a battle or war, there are also scenarios that may not occur in a wartime situation. For example, terrorist groups might be able to develop capabilities that use GPS for targeting an attack—e.g., an unmanned version of the attack perpetrated against the *USS Cole*.

On the other hand, while remote sensing companies in the U.S. are not allowed to sell imagery of the island of Diego Garcia in the Indian Ocean since it is the home of a U.S. military base, recently, however, as I understand it a customer in India who wanted to purchase satellite photos of the island approached a U.S. company. To work with this client, the company simply had to direct Israel to provide the image in order to give the U.S. company some cover. Thus, while the U.S. government can exert some leverage to influence the behavior of domestic and foreign imaging entities, the cost of doing can be politically high.

Shutter control has been considered in the past but such a practice today could be indicative of an outdated approach to information management. Today, it would be very difficult for the U.S. Government to impose shutter control on all remote sensing

companies since there are so many more than there were in early 1990s, both at home and abroad. Exercising leverage over foreign companies would involve leaning on foreign governments, which could cost considerable time and money. In addition, news media in the U.S. are poised for a first amendment fight if they are denied the right to purchase satellite imagery.

Thus, the inexorable improvement and dissemination of technology on the one hand and the increasing inability of the U.S. government to maintain high levels of control over the use of commercial space systems, particularly remote sensing, on the other suggests that United States security in space cannot be maintained over the long run either by defensive weapons or by unilateral political control. This argues for a strong commitment to international space cooperation and the gradual development of a comprehensive international legal regime for outer space.

The groundwork for such a comprehensive treaty-based regime has been laid, and the importance of this objective is clear. Much work remains, but the creation of a space regime, under which the international community decisively enshrines space as a peaceful environment, is the only thoroughgoing alternative to a weaponized space free-for-all in which the United States and the rest of the world is rendered forever vulnerable to the vagaries and fluctuations of technology development and political instability.