

Weapons in Space

by
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Beginning with the Eisenhower Administration, every U.S. president has emphasized the importance of space based essentially on several principles. They represent a national consensus on space policy and strategy that extends now over half a century. They are as follows:

- Space is essential to national security;
- Space should be open to peaceful uses by all nations for the benefit of all humanity;
- “Peaceful uses” includes U.S. defense- and intelligence-related activities;
- Military superiority in space by another nation would be a direct military threat to the United States;
- We reject any claims to sovereignty by other nations over outer space or celestial bodies; and
- The United States considers space systems to have the rights of passage through space and operations in space without interference. This is comparable to the right to innocent passage in peacetime across the world’s oceans in international waters. Just as we need navies to enforce freedom of the seas, we need to be able to exert space control.

To quote from the 2006 U.S. National Space Policy:

In this new century, those who effectively utilize space will enjoy added prosperity and security and will hold a substantial advantage over those who

do not. Freedom of action in space is as important to the United States as air power and seapower. (p. 1)

We have had as a consistent policy the preservation of our rights, capabilities, freedom of action in space, while seeking to deter others from impeding our rights or developing capabilities intended to do so. We have had as a major principle the denial, if necessary, of adversaries' efforts to utilize space against U.S. national interests. We have also as a nation supported a growing commercial space sector. This includes communications satellites as well as satellite imaging in which the military and commercial applications are closely intertwined. The Global Positioning System developed by the Defense Department is now widely available for commercial applications. Finally, we have encouraged international cooperation in space activities, including space exploration, sharing intelligence gathered from space systems, and environmental monitoring.

Space and national security today brings into focus many vitally important military activities, including collection of intelligence, providing what the military call situational awareness, ensuring communications; providing global strategic and tactical warning, missile defenses and unmanned aircraft. In fact, the United States, more than any other nation is heavily dependent on space for its national security and for a large number of commercial activities as well.

More and more countries, some 43 nations, own or jointly operate satellites. There are 849 satellites presently in orbit. Of this number, the United States (440), Russia (90), and China (39) own about 67 percent. They are followed by Japan (38), India (18), and France (16).

The dominant U.S. position in space is eroding. In addition to other countries placing their own satellites into orbit, a growing number of private companies with names such as Google Earth, Keyhole, Digital Globe, and Space Imaging, sell high-resolution satellite photos on the Internet or make them available free of charge. Customers can acquire images as if they owned their own satellite at a fraction of the cost to build their own or at no cost at all. This private-sector

capability is used by the U.S. military, but is available to others as well. Terrorists could gain access to satellite photos to use against targets in the United States or elsewhere.

When we think of space, or what is usually called outer space, we should differentiate this concept from air space. This has been used to delineate the layer of atmosphere surrounding the Earth in which military and civilian aircraft operate. The upper limit of air space has usually been defined as what a nation is capable of defending by aircraft or missiles. Outer space begins where air space ends. It has also been defined as the altitude at which satellites in orbit encounter aerodynamic drag, normally at an altitude of about 100 miles with satellites actually burning up at altitudes from 90-70 miles as they descend into the earth's atmosphere.

When we discuss weapons in space we necessarily consider two important terms, the *militarization* of space and the *weaponization* of space. We have numerous commentators who fret about the weaponization of space if not its militarization. Regardless of such commentary, space is already both militarized and weaponized. It is far too late to prevent the militarization and weaponization of space. Simply put, militarization refers to the use of space for military purposes, something that has been going on for a long time. Weaponization usually refers to the stationing of weapons in space although such a description is inadequate, as I will point out. The Outer Space Treaty of 1967, among other things, prohibits the stationing of WMD, notably nuclear weapons, in space or on celestial bodies such as the Moon and therefore is designed to restrict or prevent the weaponization of space. The militarization of space began when the first German V2 ballistic missile passed through the edge of space en route to targets in Southern England in the final months of World War II. Because ballistic missiles, by definition, pass during part of their trajectory through space, they militarize space. That is to say, they use space for military purposes. The militarization of space continued with the launch of the first Soviet Sputnik in October 1957. Thus the United States was not the first country to militarize space. Ballistic missiles that by definition travel through space from their launch point to final target have the effect of militarizing space, just as satellites that transmit data to Earth may also militarize space. The use of space for military communications, as well as intelligence, surveillance, and reconnaissance missions, integrated into weapons systems that are not deployed in space also have the effect of weaponizing space. Large numbers of weapons for terrestrial

operations could not be used without space-based capabilities. For example, the stationing of reconnaissance and communications systems in space represents the weaponization of space even though such systems are indispensable to the conduct of operations on land or at sea here on Earth. Therefore, it becomes difficult to distinguish between the militarization of space and the weaponization of space.

The situation becomes even more complicated. Just as space is essential to terrestrial-based military operations, as I have just noted, assets in space can be attacked from Earth. This is a point that China vividly demonstrated when it launched a direct-ascent anti-satellite (ASAT) test on January 11, 2007, that destroyed an aging Chinese satellite. It is estimated that within the next several years China will be able to place at risk a large number of U.S. satellites. In a crisis over Taiwan, for example, the United States could face the threat of disruption of much of its space-based surveillance and communications systems. The Chinese interceptor is a ballistic missile with a conventional warhead designed to detonate in close enough proximity to destroy a satellite in orbit. The Chinese ballistic missile that disabled the satellite did not pass through space but instead into space, where it detonated its warhead near the Chinese satellite. What this shows is that the weaponization of space need not take place in space, but instead from Earth as the Chinese demonstrated. Whether or not the ASAT is launched from space or from Earth is immaterial. Designing an arms control agreement that would limit ASAT therefore becomes perhaps a fool's errand. Any weapon that can be fired into space becomes a potential space weapon. A ballistic missile could be launched with a nuclear warhead designed to detonate from 40-400 kilometers altitude, with EMP effects designed to disable our satellites and to destroy electronic systems here on Earth, as pointed out in the EMP Commission Report in 2004.

Another problem is the fact that space-based systems have indispensable ground installations that themselves could be targeted without going into space to do so. Electronic attacks on data transmissions and destruction of ground stations supporting space-based systems are attacks against space systems. Are the weapons used for such attacks themselves space weapons? You then begin to see the problems of differentiating between the militarization and weaponization of space. Weapons such as ballistic missiles that fly through space (militarization) can also be fired into space and thus become space weapons (weaponization of space). You can also begin to see

the definitional problems that this creates for an arms control regime related to militarization and weaponization of space.

This brings one to another set of observations about weapons and space. Although the United States is the world's foremost space power today, that position is not assured in perpetuity. In fact, as I have already suggested, the U.S. advantage is inevitably eroding as more countries and private-sector entities gain access to satellite imaging. At least 35 other countries have their own space programs. Knowledge about space systems, and how to counter them, is becoming more widely available on a global basis. This means also that the ability to disrupt U.S. space systems is growing. Because it is the most heavily reliant on space of all nations, the United States is most vulnerable to the disruption of its space assets. Specifically, this means that in a crisis the nation could become largely "blind, deaf, and mute" in a space sense, because our imaging, communications, missile warning, and signals-intelligence platforms had been attacked with devastating military and commercial consequences. The Rumsfeld Space Commission Report, issued in January 2001, went so far as to argue that "if the U.S. offers an inviting target, it may well pay the price of attack... The United States is an attractive candidate for a Space Pearl Harbor."

It follows from what I have already said that regardless of what the United States does, other countries, and especially China, will move forward in space. This includes manned space craft launched in 2004 and 2005 by China. It also includes a continuing Russian space program, together with Russian assistance to help Iran place into orbit its own satellites.

Just as there is a blurring of the distinction between militarization and weaponization of space, there are comparable intersections between military and commercial uses of space. Space systems are dual-use technologies. Countries capable of launching satellites from missiles have dual-use capabilities. Missiles can carry satellites into orbit or warheads to the intended targets.

This then represents a good transition to the final part of my presentation. Large numbers of countries are acquiring missiles that could be equipped with nuclear, biological, or chemical warheads. These include states such as Iran and North Korea as well as non-state actors who

could have such weapons in the years ahead. Hezbollah was able to launch thousands of Katuchya rockets against Israel last summer. The ability of the United States to counter missile proliferation and to defend itself and its allies depends on continued utilization of space. Targets identified from space by the United States or by enemies of the United States could be attacked with missiles or commando strikes or, in the case of attacks against the United States, by terrorist groups using satellite imaging easily downloadable from the Internet, as I have already shown.

Finally, we are entering a period in which additional countries are likely to acquire nuclear forces as well as their own space capabilities. We spend a great deal of time thinking about North Korea and Iran. If we cannot halt these programs, as appears to be the case, we will need to be able to counter them – to deter them from using such weapons or to defend ourselves if they are tempted to use them. Space affords the arena in which a missile defense could be deployed, adding a more robust layer to our capabilities. It also provides essential reconnaissance, surveillance, communications, and other essential capabilities. Space will also be increasingly important as we update security assurances to countries that may feel threatened by North Korea (especially Japan) or by Iran (Israel and NATO Europe). As we have seen, space militarization and weaponization is already part of the twenty-first-century security landscape. The importance of space can only grow in the years ahead.