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Space Diplomacy and an International Code of Conduct

https://www.e-ir.info/2012/06/21/space-diplomacy-and-an-international-code-of-conduct/

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Nations abide by rules for air traffic management. When we fly above national borders, these rules don't change. If they did, air travel would become extremely dangerous. In contrast, very few rules apply to space. The European Union, the United States, Japan and Australia have endorsed an International Code of Conduct to establish rules of the road for responsible space-faring nations. The most crucial norms in need of strengthening are debris mitigation, traffic management procedures to avoid collisions, and restraints on harmful, purposeful interference against satellites.

Satellites are crucial for national, economic and personal security. They permit quick and secure long-distance financial transactions. First responders, disaster relief workers and lost motorists can find their way using GPS devices. Satellites provide warnings of devastating storms in enough time to take precautionary measures. An increasing number of nations depend on satellites for intelligence collection and early warning of attacks. Satellites minimize civilian casualties in warfare. They help increase crop yields and monitor the health of the planet.

These satellites are now at risk from space debris, a growing competition between the United States and China, and the absence of rules of the road for what constitutes responsible behavior in space. A Code of Conduct can backstop satellite operations, preserve the space environment, and prevent dangerous clashes of interest in outer space.

Satellites are as vulnerable as they are valuable. They are far easier to damage than to defend. Because satellites usually orbit the earth in predictable paths, potential adversaries can find and target them. Missiles designed to launch satellites, attack distant targets, or intercept incoming missiles can also be used to destroy satellites. Countries with space tracking capabilities know how to find satellites in order to harm them. Countries with nuclear weapons and medium-range ballistic missiles don't need to find satellites – they can harm them indiscriminately with a nuclear detonation in the upper atmosphere or in space.

The United States learned this in 1962, when a particularly powerful US nuclear test victimized one British, one Soviet, and four US satellites. The most famous casualty of this test was Telstar, a satellite than allowed the first transmission of television images across the Atlantic. Telstar inspired an instrumental record that topped the charts as its namesake was dying from nuclear weapon effects.

Missiles used to target a singular satellite by means of a direct hit can also have indiscriminate effects that endanger many satellites or manned space operations. There have been very few tests of "hit to kill" anti-satellite weapons. One was in 1985, by the Reagan administration. The impact of this test produced approximately 300 pieces of debris large enough to track, one of which came within one mile of crashing into the newly-launched International Space Station — fourteen years later. China created the worst-ever man-made debris field by carrying out a hit-to-kill anti-satellite test in 2007. The massive debris field generated by this test has endangered over 400 satellites.

There are now over 20,000 pieces of space debris large enough to track, and a great many more that escape detection. Debris endangers human spaceflight no less than satellites. The windows of the US shuttle fleet needed to be changed over 70 times because of tiny debris hits. The International Space Station has dodged lethal debris over a dozen times. In low earth orbit, debris travels at approximately ten times the speed of a rifle bullet. A piece of

debris the size of a child's marble could strike a satellite with the same energy as a one-ton safe dropped from a five story building. Debris hits have pin-ball effects, creating new, mutating debris clouds. These debris clouds can make crowded space corridors unusable.

Some assume that a war in space will occur, so they seek superior war-fighting capabilities in this domain. The George W. Bush administration endorsed this strategy, rejecting any diplomatic initiatives that might impair U.S. freedom of military action in space. Less than a year after the Chinese test, the Pentagon demonstrated anti-satellite capabilities by using a missile to destroy a malfunctioning intelligence satellite. This test was designed so as to avoid space debris.

The Bush administration's approach to seize the high ground of space was unsuccessful. The debris problem rose to new heights because of the Chinese anti-satellite test, a collision between a functioning U.S. and a dead Russian satellite, and the break-up of orbiting Russian space junk. These events served to clarify that controlling and dominating a war in space will be as hard as controlling escalation in a nuclear war.

The vulnerability of satellites and the dangers to manned space flight place all space-faring nations in the same dilemma. Destroying someone else's satellite doesn't help, because your own satellites can be placed at risk by this act – either because of uncontrollable space debris, or because your own satellites can't be defended against counter-attacks.

What can be done to improve space security and the sustainability of this domain? The high-water mark for space diplomacy occurred in a brief five-year window framed by the 1967 Outer Space Treaty and the 1972 ABM Treaty. There has been very little effort ever since to lend order to this essential but chaotic domain. Russia and China have proposed a treaty than bans space weapons, the Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force against Outer Space Objects (PPWT). This treaty has no verification arrangements.

A treaty banning weapons that can be used in space is neither feasible nor verifiable, since many essential, multi-purpose military capabilities can be used to interfere with, disable, or destroy objects in space. Some of these capabilities, such as land- and sea-based ballistic missiles, have existed for over half a century. Their number has declined greatly, but they are not going to be eliminated any time in the foreseeable future.

Other capabilities that could be applied to space warfare, including theater missile defense interceptors, are coming on line. States that feel particularly threatened by another state's ballistic missiles will not be willing to entirely forego missile defenses – their own, or those of a protector such as the United States. Only a few of these interceptor missiles employed against satellites can mess up low earth orbit for all space-faring nations, as China demonstrated in 2007. Consequently, there are strong incentives to use missile defenses for their intended purpose, and not for blowing satellites to smithereens.

Banning all military capabilities that can be directed against satellites isn't feasible. Banning "dedicated" ASAT capabilities – those specifically designed for use against satellites – isn't consequential, because much of the latest anti-satellite capabilities would remain untouched.

There is an alternative between doing nothing and trying to negotiate a treaty that can't be effective or verifiable, and will not be acceptable to the U.S. Senate. This alternative is an International Code of Conduct for responsible space-faring nations. The practice of utilizing codes of conduct to set norms or rules of the road is not new. In 1972, the Nixon administration negotiated an "Incidents at Sea Agreement" with the Kremlin to help prevent dangerous games of chicken involving warships and submarines. In 1989, President George H.W. Bush negotiated a "Dangerous Military Practices Agreement" with Mikhail Gorbachev, establishing norms for ground and air forces operating in close proximity. The George W. Bush administration agreed to two codes of conduct to help combat proliferation.

All of these useful diplomatic initiatives took the form of executive agreements in the United States, not treaties, because they didn't control or reduce military forces. Space could also benefit from a code of conduct that clarifies

wrongdoing, facilitates corrective responses, and reduces the likelihood of devastating accidents, miscalculations and collisions.

The International Code of Conduct also has its detractors. Some critics in the United States oppose it because it seems too much like a treaty that could impede U.S. war fighting in space. This critique of the Code of Conduct dwells on potential rule breakers, especially China. If, as critics assert, a Code of Conduct would not be helpful for norm setting, how would its rejection improve the conduct that they find most objectionable in others? An analogous argument could be made against highway traffic regulations. There are speeding limits and other rules to promote highway safety, but not everyone abides by them. Would we be safer by dispensing with traffic regulations?

To be sure, rule breaking in space can be far more consequential than anarchy on the highways. As a practical matter, if China and Russia play by their own rules, the United States will, as well. An International Code of Conduct will fall short unless it includes the three most important space-faring nations.

Another argument against the Code is that it does not impose penalties or sanctions for misbehavior. Critics fail to clarify how their desire to impose penalties or sanctions can be advanced by opposing a Code of Conduct. Without rules in space, there are no rule breakers.

Some critics worry that a Code could lull the United States into a false sense of security when China is increasing its military capabilities in space, on land and at sea – especially China's growing sea-denial capabilities against the U.S. Pacific Fleet. These concerns were also expressed in the 1970s, when the Soviet Union placed satellites in orbit that could sometimes track U.S. surface combatants.

Back then, Washington and Moscow tested anti-satellite weapons infrequently before shelving them. During the Cold War, the notion of protecting surface navies by preemptively engaging in anti-satellite warfare was widely dismissed as being extremely dangerous, especially because satellites were intertwined with the nuclear deterrents of both superpowers.

With one Cold War receding in the rear-view mirror, it makes little sense to invite a new one, if it can be avoided. The United States and China have the ability to interfere with or destroy satellites. As was the case with the Soviet Union, and is the case now with respect to China, mutual capabilities to engage in space warfare constitute a basis for restraint and deterrence. Existing space warfare capabilities make a Code of Conduct all the more essential to affirm responsible behavior and to facilitate appropriate responses if others act irresponsibly.

Domestic U.S. critics of an International Code of Conduct from the Left want an ambitious new treaty. Critics from the Right want maximum flexibility to develop and use space warfare capabilities. Neither has made a persuasive case against the Code of Conduct. Nor have they offered a better alternative.

It remains to be seen whether the European Union has the negotiating savvy to succeed. The main challenge before the European Union is to bring on board major space-faring nations from other regions. Russia has yet to commit to the Code, China remains stand-offish, India has kept its distance from previous multilateral agreements, and Brazil complains that it was excluded from the drafting process. If these states decide to sign up, the EU will succeed, and the Code can then be strengthened further by endorsement at the United Nations. If the EU fails, and if other negotiating avenues, such as the Conference on Disarmament in Geneva, remained blocked, it could take a long time before the International Code of Conduct becomes a reality.

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