

Jeffrey Lewis, "Engage China, Engage the World," *Ad Astra* 17:2 (April-June 2005). Available at: http://www.space.com/adastra/china_engagement_0505.html

In congressional reports and testimony, the Pentagon suggested in 2003 that China may be developing a "parasite microsatellite"—a small satellite, weighing less than 100 kilograms, that would secretly attach to an American satellite and destroy it on command.¹ The claim was picked up by the press including the online news outlets *Space Daily* and *Space.com*, the latter noting that "China appears to be sharpening its war fighting space skills" and then devoting a third of the story to the "parasite microsatellite."²

In the end, it turned out to be all a hoax. Although the Pentagon noted that the claim was "being evaluated," the Pentagon never actually looked into the assertion. A pair of scholars recently discovered the story and more than 70 others like it in Chinese sources appear to have originated on a single Internet bulletin board maintained by a self-described "space enthusiast" from a small town in Anhui province.³

How could the Pentagon be so gullible? The story contained the smallest kernels of truth: China's Tsinghua University—along with groups in Algeria, China, Nigeria, Thailand and Turkey—is working with the University of Surrey in the United Kingdom to launch a constellation of microsatellites for disaster monitoring.⁴ These satellites, however, are incapable of performing the function of "parasite microsatellites".

The "parasite microsatellite"-hoax traded on the anxiety of many in the United States over the spread of space technology so dramatically symbolized by China's successful manned-mission launch. No longer the preserve of just a pair of superpowers, several dozen countries

¹ *Annual Report to Congress on the Military Power of the People's Republic of China* (Department of Defense, 2004) 42. Hereafter, *Chinese Military Power*.

² Leonard David, "China's Space Program Driven by Military Ambitions," *Space.com*, (13 March 2002, http://www.space.com/news/china_space_020313.html)

³ Gregory Kulacki and David Wright, *A Military Intelligence Failure? The Case of the Parasite Satellite* (Union of Concerned Scientists, 16 August 2004).

⁴ You Zheng and M. Sweeting, "Initial Mission status analysis of 3-axis stable Tsinghua-1 Microsatellite," The 14th Annual AIAA/Utah State University Conference on Small Satellites, 2000. and Xiong Jianping, Cheng Zhenyu, You Zheng, Gong Ke, and Jia Huibo, "On board computer Subsystem Design for the Tsinghua Nanosatellite," *20th AIAA International Communication Satellite Systems Conference* (12-15 May 2002).

now own and operate satellites in orbit. The first step in this revolution was the proliferation of spacelaunch technologies. In addition to the United States and Russia, Europe, China, Ukraine, India, and Japan now offer commercial launch services. Israel also has a spacelaunch capability, and may soon be followed by Brazil, Iran and North Korea.⁵ The next step for these fledgling spacefaring nations will be the development of inexpensive but highly functional microsatellites similar to those being developed by the University of Surrey.

As access to space technology becomes more widely available, the international laws regarding space technology and its transfer continue to reflect the bipolar 1960s when the then-Soviet Union and the U.S. competed for space dominance. The "parasite microsatellite" hoax demonstrates one danger in the growing gap between the rules and reality of the modern world. Without a more refined legal regime to set rules and build trust and confidence between the U.S. and China, even a disaster monitoring constellation can look like a "parasite microsatellite".

Consider another instance in which a poorly designed regime can create feelings of anxiety: In January 2001, the Commission to Assess United States National Security Space Management and Organization, informally known as the "Rumsfeld Space Commission", cited "Indonesia jamming a transponder on a Chinese-owned satellite" as recent example of the growing threat to space assets.⁶ Yet the reality was more complex. APT Satellite of China reported "limited interference" with its Apstar-1A satellite from another satellite in a nearby orbital slot, which was operating on the same frequency. Although the space commission called the interference "jamming," the interference in actuality resulted from two satellites operating too closely together, mainly because China and Indonesia disputed ownership of the orbital slot. The dispute was eventually resolved peacefully.⁷

⁵ Marcia S. Smith, *Space Launch Vehicles: Government Activities, Commercial Competition, and Satellite Exports*, (Congressional Research Service, 23 May 2001) 9. Available at: <http://www.google.com/url?sa=U&start=1&q=http://fpc.state.gov/documents/organization/17353.pdf&e=9707>

⁶ *Final Report of the Commission to Assess United States National Security Space Management and Organization* (11 January 2001) 20.

⁷ For a review of the APSTAR incident and other disputes over orbital slots, see "ITU System of Satellite Coordination Eroding Fast in Asia Pacific," *Space Business News* (2 April 1997); Richard McCaffrey, "Crowded Orbital Slots Test ITU's Influence; Dispute at 134 Degrees East Highlights Problems," *Space News* (7 January 1997).

Indonesia, however, questioned the right of the International Telecommunications Union to resolve the issue. The "jamming" story, then, raises an important question: What is the best way to fill the gaps in the current outer space legal regime? The option favored by the Rumsfeld Space Commission emphasized the development of new military capabilities at the expense of refining international law.

Yet, how can we expect to succeed in controlling space? Judging by the growth of space-launch and satellite programs around the world, export controls have largely failed to maintain U.S. commercial superiority, let alone control access to space. At present, the U.S. military is now developing a "space control" doctrine and systems as more countries gain access to orbit. We must have some military options just as we have some export control, but just as export controls before them were not enough, these efforts are not enough.

"Space control" does virtually nothing to address the most serious threats posed by the growing number of space-faring states. These threats include orbital debris, orbital crowding and improving transparency in outer space.

Managing these issues—which threaten the common interest in the peaceful use of space—will require broader international cooperation. Perhaps no state will be more important in developing stable solutions to these problems than China. There are three pressing items that need addressing:

- **Improve of orbital debris mitigation:** The Inter-Agency Debris Coordinating Committee (IADC)—which includes representatives from space agencies in China, France, Germany, India, Italy, Japan, Russia, Ukraine, the United Kingdom and the United States, as well as the European Space Agency—has drawn up a set of voluntary guidelines to control debris creation.⁸ The next step is for the U.N. Committee on the Peaceful Uses of Outer Space (COPUOS) to adopt the IADC guidelines, perhaps followed by a U.N. resolution calling on all states to refrain from using the launch services of parties that do not comply with the guidelines. So far, Russia and India have blocked the COPUOS from adopting the guidelines.

⁸ Inter-Agency Space Debris Coordination Committee, *Space Debris Mitigation Guidelines*, A/AC.105/C.1/L.260 (29 November 2002).

- **Improve of space-traffic control:** A working group convened by the four leading non-governmental organizations concerned with space issues—the American Institute of Aeronautics and Astronautics, the U.N. Office on Outer Space Affairs, the Confederation of European Aerospace Societies and International Academy of Astronautics—recently called for more extensive efforts to improve space traffic control procedures. The report concluded that current catalogs are too inaccurate for effective traffic control. The extent of uncertainty in the location of LEO objects in current catalogs varies, depending on altitude and orbital inclination, but "is generally on the order of tens of kilometers."⁹ The Air Force does not track objects in real time, either. Instead, the Air Force uses "predictive" techniques to monitor space objects, periodically checking objects for changes in orbit.
- **Improve transparency in outer space:** Concern over China's "parasitic microsatellite" arose because several countries, including the United States, are developing small satellites capable of conducting "autonomous proximity operations"—maneuvers that would allow satellites to inspect other satellites, diagnose malfunctions and provide on-orbit servicing. Such satellites could also provide sophisticated surveillance in space and would make excellent anti-satellite weapons. The first step to improve transparency is to improve compliance with U.N. Resolution 1721B (1961) and the U.N. Convention on Registration of Outer Space Objects (1975), which require states to provide basic information about satellites launched into outer space.¹⁰ The United States, followed by China, is the worst offender in terms of flouting the U.N. Registration Convention, often submitting incorrect data or simply failing to register some of their satellites.¹¹

In all three cases, the United States and China share a common interest in preserving the peaceful use of outer space.

⁹ E.C. Aldridge et al, *International Space Cooperation: Addressing Challenges of the New Millennium*, Report Of An AIAA, UN/OOSA, CEAS, IAA Workshop (March 2001) 10.

¹⁰ *Convention on Registration of Objects Launched into Outer Space in United Nations Treaties and Principles on Outer Space*, A/AC.105/722, A/CONF.184 (United Nations, 1999) 18-21. Available at: <http://www.oosa.unvienna.org/SORegister/regist.html>

¹¹ Jonathan McDowell, Statement on United States Non-Compliance with UNR1721B (2002). Available at: <http://www.planet4589.org/space/un/untxt.html>

Crafting solutions with widespread legitimacy will require addressing the growing global perception that anti-satellites and space-based missile defenses will drive an arms race in outer space. To date, China and much of the rest of the world have been eager to discuss the issue of "preventing an arms race in outer space" and did so at the Conference on Disarmament in Geneva in 2002. Although China is now calling for discussions on the issue, the Bush administration has blocked the adoption of a program of work at the Conference—the world's sole multilateral disarmament negotiating forum—for several years without any public explanation.

The most recent proposal—submitted by Russia, China and five other nations would not affect any military missions currently conducted in outer space.¹² In fact, the proposal recognizes the stabilizing role played by military satellites in providing early warning and the verification of arms control agreements. The proposal focuses on restricting the flight-testing of anti-satellite weapons, as well as space-based missile defenses.

Some have suggested China's call for negotiations is disingenuous, citing China's anti-satellite research. Yet, the available evidence suggests that China is not developing such weapons. As in the case of the Chinese "parasite microsatellite", many reports about Chinese anti-satellite research are merely speculative. For example, some reports suggest that China is developing ground-based lasers to damage satellites, but the U.S. Department of Defense (DOD), according to the most recent edition of its *Chinese Military Power* analysis, has not found any such facilities in China.¹³ The bottom line: "Beijing's only current means of destroying or disabling a satellite," according to the DOD, "would be to launch a ballistic missile or space launch vehicle armed with a nuclear weapon."¹⁴

¹² Working Paper Presented By The Delegations Of China, The Russian Federation, Vietnam, Indonesia, Belarus, Zimbabwe And Syria, *Possible Elements for a Future International Legal Agreement on the Prevention of the Deployment of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects*, CD/1679 (28 June 2002). Available at: <http://daccessdds.un.org/doc/UNDOC/GEN/G02/624/84/PDF/G0262484.pdf?OpenElement>

¹³ *Chinese Military Power* (2004) 42.

¹⁴ *Chinese Military Power* (2004) 42.

The case with China is the same through much of the world—anti-satellite capabilities are essentially the same as they were in the 1980s.¹⁵ We can respond to this in two ways. Some suggest that the intelligence community must look harder at the emerging military applications of China’s program. In 1998, Chairman of the Joint Chiefs of Staff General Richard Myers, then commander of U.S. Space Command, now part of U.S. Strategic Command, warned that the intelligence community paid too little attention to foreign counter-space systems, leaving the United States "a bit naked in knowing exactly where the threat is."¹⁶

Alternatively, we might recognize that much of the world shares our interest in maintaining the peaceful use of outer space and the use of diplomacy to work with countries like China in revitalizing the existing legal regime in outer space. There are two sources of leverage that the United States might use—and China features prominently in both.

Firstly, the world relies exclusively on the United States for the provision of orbital data necessary to monitor activities in outer space and avoid collisions.¹⁷ The United States, for instance, provided collision-avoidance analysis for China’s Shenzhou missions.¹⁸ The United States currently provides two kinds of data to users: One, metric data in the form of time, elevation, azimuth, range and range rate that enables the determination of a satellite's orbital position; and two, signatures and imagery that provide information about a satellite. The United States also provides analytic support, through the Aerospace Corporation, to two international consortia: PANAMSAT and INTELSAT.

The DOD recently announced plans to provide improved data and analytic services to foreign and commercial entities. The United States should require that entities receiving this data agree to a set of "rules of the road" in orbit, including IADC guidelines and provisions of the Registration Convention, and refrain from flight testing anti-satellite weapons.

¹⁵ Jeffrey Lewis, "False Alarm on Foreign Counterspace Capabilities," *Arms Control Today* (November 2004) Available at: http://www.armscontrol.org/act/2004_11/Krepon.asp#Lewis2

¹⁶ "Threats to U.S. Satellites," AFIO Weekly Intelligence Notes, no. 18-99 (7 May 1999). Available at <http://www.afio.com/sections/wins/1999.notes1899.html>.

¹⁷ General Accounting Office, *Space Surveillance Network: New Way Proposed To Support Commercial and Foreign Entities*, GAO-02-403R Space Surveillance Network, (June 7, 2002). Available at: www.dtic.mil/dtic/prodsrvvc/review/data/a402509.pdf

¹⁸ Richard Boucher, *State Department Daily Press Briefing* (15 October 2003) p.16. Available at: <http://www.state.gov/r/pa/prs/dpb/2003/25203.htm>

Secondly, the United States can use technology exports to encourage compliance with these rules. In the aftermath of allegations that China received useful missile technology from launching U.S. satellites, Congress reclassified satellites as munitions and transferred enforcement of Export Control Regulations to the State Department. The result of this policy, according to the Satellite Industry Association, has not been to keep U.S. technology out of foreign hands, but rather to undermine the U.S. industrial lead in communications satellites.

Recent signs suggest that Washington and Beijing may move, however tentatively, toward closer space cooperation. Two weeks after Chinese representatives joined a NASA workshop in Washington, D.C., Chinese National Space Agency Administrator Sun Laiyan met with NASA Administrator Sean O'Keefe. Although only a first step, the meetings were largely ceremonial. One NASA official called the Sun-O'Keefe meeting a "courtesy visit," while O'Keefe himself noted that it was "not a major milestone by any means, it's ... more an opportunity to exchange views and get more familiar with what our respective agencies are doing."¹⁹ I am told that NASA's International Relations Division has no Chinese speakers on staff.

Many of the fears that have slowed the sharing of data and technology—a cooperation that directly benefits the United States—have been driven by anxiety about China's future space military might, rather than optimism. The "parasite microsatellite" hoax, however, demonstrates how often these fears are unfounded and, if left unchecked, serve to isolate the United States. Instead of recoiling from cooperation, Washington can reach out to the world and use satellite tracking data and other technology exports to build rules of the road for outer space. In that sense, the case for engaging China is the case for engaging the world.

Dr. Jeffrey Lewis is a research fellow at the Center for International and Security Studies at the University of Maryland, College Park (CISSM). A longer version of this article, with full citations, will be available at his website: www.armscontrolwonk.com.

¹⁹ "Chinese space official to visit NASA chief," *China Daily*, November 11, 2004. Available at: http://www.chinadaily.com.cn/english/doc/2004-11/24/content_394427.htm