A Military Intelligence Failure?
The Case of the Parasite Satellite

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Abstract

Both the 2003 and 2004 editions of the U.S. Pentagon's *Annual Report on the Military Power of the People's Republic of China* cite a newspaper article that claims China has developed and tested a "parasitic microsatellite" anti-satellite (ASAT) weapon.

Yet an examination of this newspaper story, which is the only source given for this claim, casts strong doubts on the credibility of the story.

The Pentagon's continued use of this newspaper story raises important issues about the quality of information the Pentagon is presenting to Congress and the public on this and other issues.

Introduction

Each spring, the U.S. Pentagon produces the congressionally mandated *Annual Report on the Military Power of the People's Republic of China*.[2] One issue discussed in recent reports is the extent to which China may possess or be developing anti-satellite (ASAT) weapons to disrupt the operation of U.S. satellites. This is clearly important to the U.S. military and the Congress.

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[2] Section 1202 of the National Defense Authorization Act for Fiscal Year 2000, Public Law 106-65, provides that the Secretary of Defense shall submit a report "on the current and future military strategy of the People's Republic of China. The report shall address the current and probable future course of military-technological development on the People's Liberation Army and the tenets and probable development of Chinese grand strategy, security strategy, and military strategy, and of the military organizations and operational concepts, through the next 20 years."

The 2003 edition of the Pentagon report cites a "Hong Kong newspaper article in January 2001" stating that China has "developed and tested an ASAT system described as a parasitic microsatellite," that is, a small satellite that attaches itself to a larger satellite to disrupt or destroy the larger satellite on command. The Pentagon report states this claim "cannot be confirmed."[3] The 2004 edition cites the same newspaper article, adding that China has "ground-tested and would soon be space testing" the system. The Pentagon notes that the assertions presented in the article are still "being evaluated."[4]

Since the claims made by the Hong Kong newspaper article are important, one would expect the Pentagon would have taken considerable effort to determine the credibility of the story. Indeed, the fact that the story has been given prominence in the Pentagon report two years in a row—it is the only information source that is cited in the space section of the 2004 report—strongly implies that the Pentagon finds the report credible, even with the disclaimer that the claims are still "being evaluated."

Yet an examination of the January 2001 newspaper story casts strong doubts on the credibility of the story and its claims.

We do not take a position on whether or not China might be developing such a weapon. Our concern is the quality of information that is being presented to Congress and the public on this and other issues. Such concerns are especially relevant given recent revelations about intelligence failures and the implications such failures can have.

In particular, the Pentagon's continued use of this article raises important issues. Did the Pentagon make an effort to discover the source and credibility of this article before including it in its report to Congress? If the authors of the report included the article without checking its credibility or without being able to find the source of the article, that is clearly a problem. If the authors did research the article, either they concluded it was credible—despite the evidence to the contrary we present below—or else they also had doubts about its credibility and decided to use it anyway. In any of these cases, Congress should investigate this issue and take steps to ensure the information it receives is credible.

An Investigation of the January 2001 Hong Kong Newspaper Article

In its report to Congress, the Pentagon does not give a citation for the article on parasite

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[3] Office of the Secretary of Defense, *Annual Report on the Military Power of the People's Republic of China, July 28, 2003*, p. 36, online at http://www.defenselink.mil/pubs/20030730chinaex.pdf

[4] Office of the Secretary of Defense, *Annual Report on the Military Power of the People's Republic of China, May 29, 2004*, p. 42, online at http://www.defenselink.mil/pubs/d20040528PRC.pdf

satellites or identify the newspaper in which it appeared other than to say it was a January 2001 article in a Hong Kong newspaper. However, the Foreign Broadcast Information Service (FBIS), a U.S. government agency that monitors foreign media for the U.S. intelligence community, translated an article from the Hong Kong newspaper *Xing Dao Daily* that was published on the Internet in January 2001 and describes a Chinese parasitic microsatellite.[5] This article was cited in a review of Chinese space capabilities published by the Center for Nonproliferation Studies in July 2002[6] and is apparently the source cited by the Pentagon in subsequent reports to Congress.

Using keyword searches on several large Chinese-language search engines,[7] we uncovered more than 70 separate iterations of the parasite satellite story published on Chinese Internet news and information sources during the past four years. Several articles with publication dates prior to January 2001 appear on websites with Internet Protocol (IP) addresses that place the hosting web servers within China.[8] The earliest version was posted on a Chinese military affairs website in October of 2000.[9]

The author of the October 2000 article is a self-described "military enthusiast" named Hong Chaofei who resides in a small Chinese town in Anhui province. Hong runs a Chinese-language Internet bulletin board filled with fanciful stories about "secret" Chinese weapons to be used against Americans in a future war over Taiwan.[10]

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[5] Tung Yi, "China Completes Ground Test of Anti-Satellite Weapon," Hong Kong *Sing Tao Jih Pao* (Internet Version), January 5, 2001, in FBIS-CPP20010105000026. FBIS uses the Hong Kong romanization *Sing Tao Jih Pao* for the newspaper name, which in the standard pinyin romanization is *Xing Dao Ri Bao* and which we refer to as the *Xing Dao Daily*. The Tung Yi article uses the term "parasitic microsatellite" that appears in the Pentagon report.

[6] Phillip Saunders, Jing-dong Yuan, Stephanie Lieggi, and Angela Deters, *China's Space Capabilities and the Strategic Logic of Anti-Satellite Weapons*, online at http://cns.miis.edu/pubs/week/020722.htm The authors mistakenly left off the first character of the newspaper name in their citation of Tung Yi's article.

[7] http://www.yahoo.com.cn, http://www.sina.com.cn, http://www.people.com.cn, http://www.sohu.com.cn, http://www.google.com.cn

[8] Every Internet domain name, such as ucsusa.org or yahoo.com, has a unique address consisting of 4 numbers separated by periods. These numbers are assigned and registered by a system of international and regional bodies that also publish varying amounts of information about the owners and operators of registered domains, including the location of the servers that host them.

[9] The October 2000 version appears at http://www.armystar.com/html/new_page_1190.htm and simultaneously on another bulletin board at http://www.milchina.com/bbs/wdblist.php?forumid=27&jinhua=&s=73bac7ffd91b8576900a1997bf4cedf8

[10] Another one of the secret weapons described on Hong's website is the "scaring bow," a device that sends false images to fighter aircraft to fool their systems into believing an enemy has locked on. According to the article, because they are not "real radar" they can be mass manufactured and given to every soldier and

What is striking is that all of the parasite satellite articles that have appeared on Chinese websites and newswires during the past four years, including the Hong Kong newspaper article cited by the Pentagon, appear to have come from that October 2000 story or from Hong Chaofei himself. Many include his name in the by-line. All use the same descriptive language as his original October 2000 Internet posting, often copied word for word. In a February 2003 update on the parasite satellite story, posted on another mainland Chinese website called "Redfox World of Military Affairs," Hong claims he sent a report on American concerns about the Chinese parasite satellite to "relevant (Chinese) government departments in 199X." He goes on to take credit for being the first to make this information available to the public with his Internet posting in October 2000.[11]

An almost identical version of this "Redfox" update was also published in February 2003 under Hong's name in the news section of the same Mainland Chinese website, China.com, that hosts his bulletin board. In both versions Hong writes that "from the Americans' reaction we can surmise that China is just about ready to deploy the system, although there are some conditions they have no way of knowing, but I can clarify some details for you here!" Hong begins with a lengthy discussion of U.S. reactions to China's piloted space program and cooperative microsatellite projects with Russia and the Surrey Space Center in Britain. He goes on to cite a *Washington Post* article quoting Theresa Hitchens of the Center for Defense Information on U.S. concerns about Chinese "asymmetric warfare" in space. Hong then states that "perhaps, in the near future" China's parasite satellite "will be deployed for space testing" and he identifies the same two targets he mentioned in his original posting nearly two and a half years earlier: a Philippine communications satellite and the Ikonos commercial imaging satellite.[12]

As noted above, the version of Hong's October 2000 article that was cited by the Pentagon was apparently a story published by the *Xing Dao Daily* in January 2001.[13] The *Xing Dao Daily* version was cleaned up considerably by the editors, making it sound more credible than Hong's original. Pentagon analysts should have been able to trace the story to Hong despite the extensive editing and the common practice in Chinese

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even the general population. The name is taken from a Chinese idiomatic expression about birds scared by the mere twang of a bow.
http://www.milchina.com/bbs/wdbread.php?forumid=27&filename=f_14&s=73bac7ffd91b8576900a1997bf4cedf8

[11] http://www.redfox88.com/y290.htm

[12] http://military.china.com/zh_cn/critical3/27/20030228/11421044_3.html

[13] Tung Yi, "China Completes Ground Test of Anti-Satellite Weapon," Hong Kong *Sing Tao Jih Pao* [*Xing Dao Daily*] (Internet Version), January 5, 2001, in FBIS-CPP20010105000026.

newspapers of sharing stories without attribution, since the *Xing Dao Daily* article presents the relevant information in the same sequence as Hong's original Internet posting with several passages copied verbatim (character for character in the Chinese). In considering the credibility of the information, the Pentagon should also have noted changes in the *Xing Dao Daily* that could affect the quality of the newspaper's reporting. In particular, the March 1999 sale of the staid but unprofitable newspaper led to editorial changes designed to increase circulation and target a younger audience.[14] As a result, by the time this article appeared, the *Xing Dao Daily* had been converted into a tabloid-style paper that may not be as credible a source as it had been previously.

In his article, Hong Chaofei states that he sent his plan for parasite satellites to the Chinese government in the 1990s and that it has now developed such satellites. However, the poor quality of his technical descriptions, his use of extremely provocative language, and the nature of the other materials on his website[15] call into question his credibility. He appears to be one of a legion of similar patriotic "military enthusiasts" finding a voice on the Chinese Internet today.

In writing his ASAT article, Hong may have simply used publicly available information about Chinese civilian satellites and added speculative comments. His description of the so-called "parasite satellite" displays striking similarities to the description of two Chinese observation satellites that Chinese scientists have described in some detail in international conferences and in both Chinese- and English-language publications—with the addition by Hong of a short paragraph describing the parasite satellite's mechanism for attaching itself to its "host" satellite.

In particular, Chinese engineers from Tsinghua University who were working on experimental small satellites in cooperation with the University of Surrey's Space Center presented a paper on their collaborative project at the 13th annual AIAA/USU Conference on Small Satellites, sponsored by the American Institute of Aeronautics and Astronautics

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[14] As part of the same corporate makeover the venerable Hong Kong English-language daily *The Standard* was also transformed into a tabloid called *iMail.* Since the transformation, *Xing Dao Daily* has become the second largest Chinese-language newspaper in Hong Kong and has greatly expanded its overseas editions, especially those targeting the Chinese communities in Canada and the United States.

[15] Among the many interesting topics discussed on Hong's Internet site is a new Chinese nuclear posture that calls for a full scale nuclear attack on England, France, and Russia in the event China detects a U.S. nuclear launch against China. According to Hong, this is a stop-gap measure meant to serve as a deterrent until China finishes development of the DF-41 missile sometime after 2010. Hong believes China's ability to only reach the west coast of the United States with the "currently deployed" DF-31missile is not enough of a deterrent, so China must threaten to send U.S. allies "back into the stone age." http://www.redfox88.com/z595.htm.

(AIAA) and Utah State University (USU) in 1999—the year before Hong's original article appeared.[16] This paper describes two satellites. The 50-kilogram Tsinghua-1 is about the size of a small refrigerator, and has been easily tracked by amateur astronomers. It carries a Multi-Spectral Earth Imaging System with 50-meter resolution that can take color images in three spectral bands, process, compress, store and transmit them back to Earth. The paper also describes a much smaller and less powerful imaging satellite, the THNS-1, which weighs in at a tiny 5 kilograms and looks like a miniature version of the Tsinghua-1. China, like many other countries, hopes to use this kind of technology to satisfy legitimate demands for scientific and civil space imaging, such as disaster mitigation, but like most space systems it has obvious military applications as well.

In the United States, the concept of a parasite satellite is often mistakenly associated with the Tsinghua-1 satellite.[17] This error stems in part from early press reports of the launch of the Tsinghua-1 that confused this satellite with a small maneuvering satellite—called SNAP-1—that was developed solely by the University of Surrey but was launched on the same rocket as the Tsinghua-1. The 6.5-kilogram Surrey satellite carried cameras and demonstrated the ability to maneuver and rendezvous with another satellite—capabilities that a parasite satellite would need.[18] Some press reports mistakenly attributed these maneuvers to the Chinese satellite.

Hong Chaofei is clearly familiar with the Tsinghua satellite program since he has published other articles about it. His most recent is an April 2004 post that carried an image of a ship sailing near Taiwan that was allegedly taken with the Tsinghua-2, a follow-on 25-kilogram satellite with an updated imaging package launched earlier that month.

Conclusion

These considerations strongly suggest that the 2001 news story cited in the 2003 and 2004 Pentagon reports is not a credible source, and raise serious questions about the Pentagon's continued use of this source in its annual report to Congress. Moreover, it is not the case that the Pentagon included the reference to the Hong Kong newspaper story

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[16] You, Zheng , Gong, Ke, *Tsinghua Micro/Nanosatellite Research and Its Application,* Proceedings of the 13th Annual AIAA/Utah State University Conference on Small Satellites, August 1999.

[17] Comment from Prof. Joan Johnson-Freese, U.S. Naval War College, during a discussion of China's small satellite program held at the *Symposium on the Sustainable Use of Space Resources,* sponsored by the Institute of Space Science of the Beijing University of Aeronautics and Astronautics in cooperation with the Tsinghua University Institute of International Studies and the Union of Concerned Scientists, in Beijing, April 16, 2004

[18] A description of the SNAP-1 mission is available at http://zenit.sstl.co.uk/index.php?loc=6&id=179

in its reports because it has other sources that confirm the story's claim about a parasite satellite; the Pentagon states in its report that it cannot confirm the claim. The Congress should demand better intelligence and scholarship in its reports.

Chinese aerospace technology is an appropriate interest of both the Pentagon and the Congress, and there is a significant amount of Chinese-language information that is readily available on the subject. Mainland Chinese academic journals contain many interesting analyses of space systems and possible military applications including anti-satellite weapons,[19] autonomous micro-satellite constellations,[20] space-based lasers,[21] infrared sensors,[22] and satellite positioning systems.[23] Other non-technically focused articles offer valuable insights into Chinese thinking about space weapons and space warfare. One particularly thoughtful doctoral dissertation by a Chinese military officer with a considerable experience in military aerospace focuses on space war fighting.[24] Interested analysts can also obtain useful texts in the aerospace sections of local college bookshops in China, including a good introduction to military satellites.[25]

While these sources will not provide information about secret programs, they are part of an extensive literature that can give important insights into the kinds of technologies and systems that are being developed and discussed in the Chinese technical and military communities. In this context, it is interesting to note that a full-text search on China's National Knowledge Infrastructure, a collection of databases with more than 10 million articles from Chinese periodicals published since 1994,[26] returned only one citation

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[19] Bi Wenyu, Ren Shou, Cheng Jian, "Analysis of the Effectiveness of Electronic Attacks on Satellite Systems" *Naval Electronic Countermeasures*, Vol. 26, No. 2 pp. 1-4.

[20] Fan Li, Zhang Yilin, Zeng Guoqiang, "Automation Control Technologies for Small Satellite Constellations", *Shanghai Aerospace*, No. 4, 2001.

[21] Ma Dongtang, Wei Jibo, Zhuang Jianwen, "Space Applications for Laser Communications", *Semiconductor Photoelectronics*, Vol. 2, No. 24, 2003

[22] Tan Xianyu, "Special Characteristics of Infrared Targeting Sensors and Prospects for Military Applications", *Optoelectronic Technology*, Vol. 20, No. 2, 2000.

[23] Wang Yajun, Chuan Jiuming, Pan Qizhong, "GPS Navigational Warfare Technology Research", Naval Electronics Engineering, Vol. 2, No. 5, 2003.

[24] Jia Houming, *On Space Operations*, China Library of Doctoral Dissertations on Military Science, National Defense University Press, Beijing, 2002.

[25] Wang Yonggang, Liu Yuwen eds., *A General Guide to Military Satellites and Their Uses*, Military Industry Press, Beijing, 2003.

[26] Also referred to as an "electronic library," the China National Knowledge Infrastructure is described as "the largest of its kind anywhere in the world." It includes the full text of Chinese periodicals in the natural sciences and social sciences, doctoral and masters degree dissertations, newspapers, books and conference proceedings. A full introduction is available on their website at http://www.cnki.net.cn/gycnki/gycnki.htm

using different combinations of the Chinese characters for "parasite satellite."[27] The term appears in a single speculative sentence, set off by quotation marks, and is described as an exotic potential use of small satellite technology that could be employed sometime far in the future.

[27] Xu Xinming, "Star Wars & Space Weapons," *Invention and Creation*, August 2003, p. 22.