Philip A. Meek
Associate General Counsel (International Affairs)
Department of the Air Force

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Hearing: China's Views of Sovereignty and Methods of Access Control
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"China cannot accept the monopolization of outer space by another power."
Bao Shixiu, Senior Fellow, Academy of Military Sciences of the People's Liberation Army.

I would like to thank the U.S. – China Economic and Security Review Commission for inviting me to testify before the Commission today. I appreciate the opportunity to discuss the legal aspects of China's views on sovereignty in outer space and in cyberspace, two closely interrelated domains. The members of this Commission are very much aware of the interest of the United States in China's views on sovereignty in space, not only in terms of our bilateral relationship with China, but also in the way other nations may be influenced by watching China's claims and actions, and the U.S. response thereto.

I would like to state that the views I express today are my personal opinions, and do not necessarily represent the views of the Department of the Air Force, the Department of Defense, or the United States Government.

At the outset of my remarks, I would like to note that the Government of the People's Republic of China (PRC) has not, to my knowledge, published any official documents setting forth its specific claims of sovereignty in outer space or in cyber space. Likewise, there is little to no transparency in its doctrine or implementing policies concerning either space or cyber space. Accordingly, we must rely on publications of articles in the media written by influential individuals at high levels of the Chinese government and academia, and study the actions of the People's Liberation Army (PLA) in the terrestrial domains of land, sea and air, to discern, where possible China's views concerning the space and cyber domains. This is a challenging process with the obvious possibility of making erroneous judgments due to a lack of information.

As a prelude to addressing the questions posed by the Commission in the letter of invitation to testify here today, I would like to provide the Commission with a short summary of the overarching framework of space law and cyber law relevant to our discussion. This background discussion will lead us into the discussion of China's views on sovereignty in space and cyberspace, and how those views fit within existing international law. Finally, I will address the national security space implications of China's potential assertions of sovereignty in space and cyberspace.

Space law is a fledgling, but nevertheless increasingly important, discipline within the larger field of international law. One can argue when space law came into being, but for all practical purposes it occurred no later than October 4, 1957, when the Soviet Union launched Sputnik and its orbit passed over the territories of the countries below without any objections that Sputnik was violating their territorial airspace. That was a critical moment in the development of space law, and a moment that is central to our discussion here today.

The most important sources of international law governing outer space are four multi-lateral treaties negotiated under the auspices of the United Nations. The primary space treaties with implications for national security space activities are the Outer Space Treaty of 1967, the Rescue and Return Agreement of 1968, the Liability Convention of 1972, and the Registration Convention of 1975.

The United States, China and most major space powers are States Parties to those four treaties. Of those treaties, the Outer Space Treaty is by far the most important, indeed it is the "grandfather," of all space treaties. It was the first United Nations treaty that established broad principles for activities in outer space. Any analysis of the legal aspects of China's assertions of sovereignty in space should begin with the Outer Space Treaty. Its most relevant provisions with national security implications are:

- The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries…and shall be the province of all mankind. Outer space…shall be free for exploration and use by all States…on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies. (Art. I)

- Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means. (Art. II)

- States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the Moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding. (Art. III)

- States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner. The Moon and other celestial bodies shall be used …exclusively for peaceful purposes. (Art. IV)

Interestingly, the Outer Space Treaty does not define "space" or "outer space." The demarcation point between airspace and outer space is still an open question, although it has been studied since before Sputnik rocketed into low earth orbit in 1957. One complicating factor is that the term "airspace" has never been defined in international law. Other factors are the various schools of thought that have been proposed as the basis for developing a definition that would be acceptable in the international community. No consensus has ever been reached, and it is unlikely that this issue will be resolved in the foreseeable future.

Concerning the "peaceful purposes" language in Article IV of the Outer Space Treaty, the majority of States Parties to the treaty interpret that language as meaning "non-aggressive" and not as a prohibition on military activities in space. Under the U.S. view, "peaceful purposes" allows defense and intelligence-related activities conducted in pursuit of national interests. This is the logical interpretation of the term when considering the Outer Space Treaty as a whole, and also considering the fact that militaries have been in space since the first satellites were launched into low earth orbit in the 1950s, and since the first cosmonauts and astronauts ventured into outer space. That interpretation is also consistent with the practice of the majority of other space-faring nations. Significantly, the number of nations conducting military and intelligence activities in space increases every year.

Although the People's Republic of China has not issued any formal statements concerning its interpretation of "peaceful purposes," the writings of influential Chinese authors suggests that China may consider the phrase "peaceful purposes" to mean "non-military." This interpretation seems inconsistent with China's well-developed People's Liberation Army (PLA) space weapons programs, and the fact that the Chinese taikonauts (astronauts) are fighter pilots selected from the PLA Air Force. In addition, this interpretation is inconsistent with the existence of Chinese reconnaissance/imagery satellites, presumably military in nature, in orbit according to the Office of the Secretary of Defense in its unclassified Annual Report to Congress, Military Power of the People's Republic of China, 2007. One explanation of what may be China's interpretation of "peaceful purposes" to mean "non-military" could be its perception that such an interpretation would give it favorable international media exposure, notwithstanding the reality of their significant military involvement in space.

I am not aware of any international cyber treaties that are comparable in scope and application to the outer space treaties. Most regulation of the cyber realm is in the form of national laws and regulations. This is true for both the U.S. and China. The international cyber treaties that exist are primarily in the areas of criminal law, privacy, and intellectual law such as copyrights and patents.

Is China attempting to protect or advance what it considers its sovereignty in the outer space and cyber space domains? What non-military measures has China undertaken or is it considering?

As an overlay to responding to these questions, we should recognize China's *modus operandi* to combine several interrelated non-military components into a coordinated political approach with the objective of justifying the legitimacy of future military warfare. These components include at a minimum media warfare, psychological warfare, and legal warfare.

Media warfare is the utilization of the news media and information resources to develop a favorable environment to achieve a propaganda victory, and to break the adversary's will to fight. Psychological warfare encompasses planned psychological operations to convey selected information and indicators to foreign audiences to influence their emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups and individuals. The purpose of psychological operations is to induce or reinforce foreign attitudes and behavior favorable to the originator's objectives. It includes deception, which is utilized to mislead and surprise an adversary so that wrong decisions and actions are taken. And it includes schemes to create divisions among leaders, their subordinates and other organizations.

One has only to read the comments of Chinese officials and articles in daily newspapers and publications, listen to television programs, and watch China in action in various United Nations fora such as the General Assembly, Conference on Disarmament, and the Committee on the Peaceful Uses of Outer Space to recognize that media warfare and psychological warfare are in full swing. These non-military measures are most likely used for the purpose of developing negative international public opinion concerning the U.S. National Space Policy and our various military space programs.

The last of the three components is legal warfare, wherein a state asserts legal positions to provide justification for its own military actions, or to deny the legitimacy of the adversary's resistance. Such legal justifications are intended to engender international support while mobilizing its own military forces to engage in warfare. Across a number of fronts, China could be in the process of laying the legal foundations for possible conflict in outer space and cyber space.

From a legal perspective, the most troublesome indicators of China's apparent assertions of sovereignty in space are the increasing number of publications by influential Chinese authors advancing the principle that China's sovereign territorial airspace extends through outer space. As justification for its position, Chinese authors assert that territorial claims to outer space are not inconsistent with international law because there is no legally accepted definition of "outer space" that defines the demarcation point at which territorial airspace ends and outer space begins. They then extrapolate the lack of a formal definition into a claim that, essentially, asserts China's sovereignty over all of outer space above its territory.

Any Chinese assertion of sovereignty in outer space would be completely inconsistent with international space law. Article II of the Outer Space Treaty, clearly establishes that outer space is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means. In addition, the Chinese authors' argument

overlooks the historical context of the definitional debate, which basically revolves around the minimum altitude above the earth at which orbital flight can be sustained, i.e., low earth orbit. You do not need a formal legal definition of outer space to recognize when you are in outer space.

Insofar as intelligence, surveillance, and reconnaissance (ISR) activities in outer space over the territory of China are concerned, influential Chinese writers of the PLA assert that these ISR activities are preparations to engage in warfare, and as such are not considered within the concept of freedom of navigation embodied in the Outer Space Treaty. This would be a particularly worrisome legal position for China to take since it could be construed as a warning that ISR satellites passing over Chinese territory may be engaged. Not all Chinese authors agree with this position, however, and some recognize the benefits to China of adhering to conventional space law precepts.

By proffering these arguments over a period of years, China could be attempting to establish the legal predicate for military action in the future. It could also be testing the waters to see if its assertions of sovereignty in outer space garnered any support – or at least no vocal objection - in the international community. In that regard, eight equatorial states (i.e., Brazil, Colombia, Congo, Ecuador, Indonesia, Kenya, Uganda and Zaire) signed the Bogota Declaration in December 1976. This Declaration set forth territorial claims to the segments of the geostationary orbit over their respective countries. The basis for this assertion of sovereignty was twofold: (1) there is no agreed definition of "outer space" under the Outer Space Treaty, and therefore the nonappropriation principle of Article II impliedly does not apply to the geostationary orbit, and (2) a satellite in the geostationary orbit appears to be stationary in the sky, when viewed from the earth, and is fixed on a given point of the Equator. The Equatorial countries declared that the geostationary synchronous orbit is a physical fact linked, in effect, to their respective territory on Earth.

Other than possible endorsement from the countries that signed the Bogota Declaration, China should not garner support for their position since it would undercut significantly, if not eliminate, the fundamental principles of nonappropriation and freedom of navigation in space. The Bogota Declaration has never been recognized by the other parties to the Outer Space Treaty and is generally disregarded. Nevertheless, a coordinated action by China and the countries that signed the Bogota Declaration could be problematic.

Because China is opaque in its space and cyber space policies and doctrine, and because it has not issued formal government documents through diplomatic channels or otherwise explained its positions, it is difficult for the nations of the world to engage the PRC government in the event of disagreement with their policies. If challenged, China can always deny that the writings of particular authors reflect its official position. Conversely, if China takes action consistent with the positions espoused by the various theorists, including the use of the PLA to enforce its sovereignty claims, it could assert that the international community was on notice as to the Chinese legal positions articulated by individuals in positions of authority over a period of years.

What capabilities does China have the capacity to deploy to deny access to what it views as its sovereign space in either outer space or cyber space?

The OSD 2007 Report states that China is deploying advanced imagery, reconnaissance, and earth resource systems with military applications. Further, the Report notes China's robust, multidimensional counterspace program, including satellite communications jammers, GPS jammers, direct ascent ASAT missiles, and a range of other technologies being pursued such as directed-energy (e.g., lasers and radio frequency weapons) for ASAT missions.

As hard evidence of China's capability to deny access by the U.S. and other countries to outer space over Chinese territory and elsewhere, we need to look no further than the Chinese kinetic ASAT test of January 2007 that destroyed a Chinese weather satellite in orbit, or the blinding of a U.S. satellite with a laser in September 2006, or the capability of China to jam common satellite communications bands and satellite navigation receivers.

None of these counterspace weapons are prohibited under current international law. However, when coupled with China's continuous pursuit in the United Nations Conference on Disarmament of a space arms control treaty it has cosponsored with Russia, to wit, the Prevention of an Arms Race in Outer Space (PAROS) treaty that would ban the deployment (but not the research, development, testing and production) of these counterspace weapons into outer space, one has to wonder about the purpose of such a well-developed counterspace program. At a minimum, there is a contradiction between China's oft-stated commitment to an outer space free of weapons and its extensive counterspace weapons program that has not been explained.

In the cyber realm, China has already emerged as a world leader in cyberwarfare. The OSD 2007 Report on China notes that the PLA is investing in computer network operations (CNO) concepts including computer network attack, computer network defense, and computer network exploitation. The PLA sees CNO as critical to achieving "electromagnetic dominance" early in a conflict, and to that end has established information warfare units to attack enemy computer systems and networks.

Some analysts attribute computer network attacks originating from China to highly skilled civilian, non-governmental "gray hat" hackers who are unofficially affiliated with the Chinese government. These professional "gray hats" can be mobilized to attack computer systems if needed, but they are not, under this thinking, formal agents of the state. The actions of these civilian hackers would give the PRC deniability, while at the same time significantly increasing the frequency and lethality of cyber attacks against military and civilian targets within the U.S. or other nations.

Based on China's historical actions to protect its sovereignty in other areas, what actions might the United States expect to see China take in the coming years with regard to outer space and cyber space?

Recall the earlier discussion of legal warfare as exercised by China. It is significant to note that in June 1998, the PRC passed the "Exclusive Economic Zone and Continental Shelf Act." This Act created an exclusive economic zone (EEZ) with 200 nautical mile limits from its coastal baseline, and claimed the right, *inter alia*, to broadly undefined powers to enforce laws in the EEZ, "including security…laws and regulations." Based on the Act, the PRC does not recognize the airspace above its EEZ as "international airspace" and has interfered with and protested U.S. reconnaissance flights over its EEZ. The U.S. has protested this sovereignty claim as a violation of international law numerous times since this law was passed, but to no avail. This law forms the domestic legal basis for China's interception, harassment, and engagement of U.S. aircraft flying in the EEZ.

Remember that in 2001, Chinese fighter aircraft intercepted an unarmed US Navy EP-3 reconnaissance aircraft flying in international airspace. One of the Chinese fighters collided with the EP-3. The EP-3 suffered extensive damage and made an emergency landing in China, where officials detained the aircrew for a period of weeks. China had for many years objected to these reconnaissance flights in their EEZ, alleging that the flights equated with preparations for conflict. Although these flights by US Navy aircraft were lawful under international law, China nevertheless deployed military fighter aircraft to harass the Navy EP-3, with unfortunate results.

Since Chinese authors have voiced similar objections to ISR satellites passing over China's territory and its EEZ, it is conceivable that China would assert the rationale of the Exclusive Economic Zone and Continental Shelf Act as their claimed legal basis for any attacks on these satellites in outer space. Further, China might extend its actions beyond ISR satellites and enforce any alleged territorial claims in outer space by engaging commercial communications satellites and direct broadcasting satellites that pass overhead and broadcast materials China considered objectionable or a threat to its national security.

Therefore, a factor to watch is whether China institutes domestic legislation establishing Chinese territorial jurisdiction in outer space based upon vertical extensions of China's boundaries. This action could be evidence of the legal warfare initiatives discussed previously, and definitely would be a cause for concern. China has a history of using military force in other areas of contested jurisdictional claims, such as in the Spratley Islands, and in boundary disputes with Viet Nam and India. We should consider the possibility that China may exert similar force in space, and we should plan accordingly.

On the cyber front, we might expect China to pursue more actively a range of domestic legal measures, such as the revocation of business licenses or the institution of lawsuits, against commercial entities that decline to abide by China's requests to cease sending certain materials or information over the internet. If those legal initiatives failed, China might resort to computer network attack to remedy what it perceives as a security threat to China.

If China is able to successfully assert its views on sovereignty in outer space and cyber space, what impact will this have on the United States, especially U.S. national security?

Given the significant reliance of the U.S. on its space assets and the benefits it and other nations receive from the permissive outer space legal environment, any Chinese efforts to undercut that well-established legal regime would affect the national security of the U.S. and other space-faring nations adversely. In this context, I am not limiting national security impacts to military and intelligence considerations only; rather, national security considerations must include the critical contributions of the civil and commercial space sectors as well as economic considerations. Any attempt by China to establish territorial claims in outer space would strike at the very core of space law and should be strongly opposed at all levels of government.

China's potential assertions of sovereignty in space are not just a bilateral issue between the U.S. and China. All nations that benefit from space would be affected adversely. The global economy is dependent upon the fundamental principles of freedom of navigation in outer space, and upon the inability of nations to assert territorial claims in space.

Ladies and gentlemen, it has been a privilege to appear before this U.S.-China Commission today. I look forward to your questions.