


January 2009

## REFLECTIONS ON SINO-US SPACE COOPERATION

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### Recommended Citation

Cheng, Dean (2009) "REFLECTIONS ON SINO-US SPACE COOPERATION," *Space and Defense*: Vol. 2: No. 5, Article 3.

DOI: 10.32873/uno.dc.sd.02.03.1204

Available at: <https://digitalcommons.unomaha.edu/spaceanddefense/vol2/iss5/3>

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## REFLECTIONS ON SINO-US SPACE COOPERATION

DEAN CHENG

### Introduction

Since 2006, the US Air Force Academy's Eisenhower Center for Space and Defense Studies has sponsored an annual workshop examining the strategic impact and implications of China's space program. This workshop series has blossomed into a Track-II process, with participants from the People's Republic of China (PRC), and unofficial US government presence.

A key focus of many of the discussions during these workshops has been the prospects for Sino-US cooperation in space. This issue has gained prominence since the 2007 PRC ASAT test, and the US subsequent 2008 American destruction of a malfunctioning satellite. Sino-US space cooperation is seen as potentially serving a confidence-building function, allowing the two sides to familiarize themselves with each other.

This paper will examine some of the proposals laid out in these workshops for proposal, and discuss the potential pitfalls that confront them. It will then make some suggestions about how cooperation might be fostered.

### Approaches to Cooperation

In the most general terms, there are four levels of cooperation: sharing data; establishing common standards; planning missions jointly; and undertaking missions jointly. Each of these involves measures that might be undertaken either bilaterally, between the PRC and the United States, or multilaterally, as part of larger, multinational efforts.

Neither the levels nor the approaches are mutually exclusive. That is, there is significant

room for overlap between levels, just as there may be instances of both bilateral and multilateral cooperation for each level.

### Levels of Cooperation

The four levels of cooperation involve a steadily greater level of interaction between the two sides. At the same time, each subsequent level of cooperation also entails greater disclosure, and increasingly involves not only revealing types of data, but also decision-making processes.

**Sharing data.** Most promising may be the possibility of sharing the data derived from space. With the increasing quantity and quality of data derived from space that is available commercially, it was suggested by some of the participants in the Eisenhower Center workshops that data-sharing may be a means of facilitating cooperation between the US and the PRC.

Indeed, there is already some degree of data sharing already, in both bilateral and multilateral contexts. For example, the United States is on record as sharing debris data with the PRC prior to any manned Chinese launches. Some of this already occurs. The US, for example, has provided collision avoidance analysis to the PRC prior to several of its manned launches, including the Shenzhou-VI.<sup>1</sup>

In a more multilateral context, there are already several venues where the US and the PRC are both members. These include the

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<sup>1</sup> "Chinese Experts Welcome US Offer of Warning Datum for Spacecraft Launch," Xinhua (October 16, 2005). [http://english.peopledaily.com.cn/200510/16/eng20051016\\_214641.html](http://english.peopledaily.com.cn/200510/16/eng20051016_214641.html).

World Meteorological Organization (WMO), to which both nations provide data from their respective meteorological satellites. In addition, the United States, the PRC, and the European Space Agency have all decided to allow unrestricted access to their respective Earth observation data and archives.<sup>2</sup> Thus, the US can now examine Chinese data from its CBERS (China-Brazil Earth Resources Satellite) system, while the PRC may examine the range of LANDSAT data. While this may not constitute direct sharing of data, each state can access the information that the other provides.

Similarly, the United States decided years ago to make the GPS signal readily accessible. While it initially only provided a downgraded signal, today, the more accurate signal is made available. While not specifically aimed at China (or any other nation), this again suggests that there is ample room for sharing data.

Less sanguine observers would not, however, that such cooperation is nonetheless extremely limited. Both nations, for example, are also party to the UN Convention on the Registration of Objects Launched into Outer Space, as well as the Outer Space Treaty.<sup>3</sup> Compliance by both states (as well as others)

to the UN Registration, however, has been described in the past as “spotty.”<sup>4</sup>

***Establishing common standards and baselines.*** A potentially deeper level of interaction would be cooperation in the creation of common technical standards or baselines. This level of cooperation would create not only equipment and procedures that were compatible, but would also begin to expose scientists, technical staff, and administrators from each side to the other.

To some extent, this has occurred in some areas of satellite services. Companies manufacturing GPS receivers, for example, are all accessing the same GPS signal; therefore, to some extent they must work to a common standard (at least in terms of their receivers). That does not mean, however, that the receivers are mutually compatible, only that they rely upon a common signal source and format. Cooperation at this level would, in fact, encourage not just accessibility but compatibility.

Establishing common standards and baselines, however, would require each side providing the other with information on how each side designs their systems, and, to some extent, how those systems operate. Greater cooperation might require more detailed discussion of operating procedures. All of this may be seen as offering a potential venue for espionage.

It was this type of concern in the Loral and Hughes scandals that ultimately ended American use of Chinese commercial space launchers. In the wake of two launch failures involving APSTAR II atop a Long March-2E and Intelsat 708 aboard a Long March-3B, the

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<sup>2</sup> Group on Earth Observations, “GEO Announces Free and Unrestricted Access to Full LANDSAT Archive,” Press Release (November 20, 2008). [http://www.earthobservations.com/documents/pressreleases/pr\\_0811\\_bucharest\\_landsat.pdf](http://www.earthobservations.com/documents/pressreleases/pr_0811_bucharest_landsat.pdf).

<sup>3</sup> United Nations Office for Outer Space Affairs, *United Nations Treaties and Principles on Outer Space and Related General Assembly Resolutions*, Addendum “Status of International Agreements Relating to Activities in Outer Space as at [sic] 1 January 2008 (Vienna, Austria: Office for Outer Space Affairs, 2008), pp. 9, 15.

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<sup>4</sup> Christopher Noble, “US, China, G7 Countries Flout Satellite Registry,” Space.com (August 16, 2001). [http://www.space.com/news/satellite\\_orbits\\_010816.html](http://www.space.com/news/satellite_orbits_010816.html).

American partners, Hughes Space and Communications International, Inc., and Space Systems/Loral respectively, assisted in the subsequent investigations. In each case, the companies helped identify shortcomings, involving both design flaws as well as failures in analytical methodology. This assistance was seen as contributing significantly to improvements in not only China's space systems, but China's nuclear missile forces.<sup>5</sup>

These worries have likely escalated in the intervening decade. Recent concerns about cybernetic intrusions, especially American fears about Chinese electronic espionage, might well discourage the creation of common standards and baselines, since it would disclose aspects of the data formats and codes that operate equipment.

**Joint mission planning.** This level of cooperation would involve establishing a common objective for the two (or more) parties, with each side contributing its own spacecraft. The best example is probably the Disaster Monitoring Constellation (DMC). The DMC is comprised of satellites from five nations (Algeria, Nigeria, PRC, Turkey, the UK). These operate together as a single constellation. Thus, it constitutes more than simply a matter of sharing information, but instead involves operating together in order to provide prompt support to international disaster monitoring.

Another example of joint mission planning, this time in a bilateral sense, is the Apollo-Soyuz Test Project (ASTP). The ASTP was cited at the Eisenhower Center workshops as a possible model for Sino-US space cooperation, with some suggesting a Shuttle-

Shenzhou mission. In the ASTP, the US and USSR agreed to a mission involving a rendezvous and docking, with each nation using its own spacecraft. To undertake the mission required not only making sure that the docking systems were compatible, but that each side understood the other's flight procedures. Consequently, not only were there repeated exchanges of flight crews, but there were also repeated sessions involving both nations' flight controllers mission control centers and their respective communications links.<sup>6</sup> It should be noted that the ASTP ultimately involved nearly four years of planning and exchanges, suggesting that joint mission planning will be an extensive, and extended, process.

**Joint missions.** There are several different ways in which one could conduct joint missions. The use of components from one nation, placed aboard the bus of another nation, might be one means. The deployment of European instruments aboard a Chinese bus, as occurred with the "Doublestar" program, would be an example of a multilateral joint mission.<sup>7</sup> The creation of common standards and baselines would facilitate the process of creating such joint missions, by making equipment compatible without requiring extensive modification.

Joint cooperation in human space activities is seen by many as non-zero-sum in nature, providing mutual benefits to all the

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<sup>5</sup> US House of Representatives, *Report of the Select Committee on US National Security and Military Commercial Concerns with the People's Republic of China* (Washington, DC: Regnery Publishing, 1999), pp. 219-279.

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<sup>6</sup> Charles Redmond, "The History of Apollo-Soyuz." <http://history.nasa.gov/apollo/apsoyhist.html>, and Edward Ezell and Linda Ezell, *The Partnership: A History of the Apollo-Soyuz Test Project* (Washington, DC: NASA, 1978). Electronic Table of Contents can be found at: <http://www.hq.nasa.gov/office/pao/History/SP-4209/toc.htm>.

<sup>7</sup> "Doublestar Summary," European Space Agency (January 25, 2005). <http://sci.esa.int/science-e/www/object/index.cfm?fobjectid=31490>, and British National Space Centre, "Double Star" (March 17, 2008). <http://www.bnsc.gov.uk/5620.aspx>.

cooperating states. This is usually envisioned as joint crewing of a spacecraft, drawing astronauts from different nations. The current situation aboard the International Space Station could be characterized as a form of joint mission, conducted multilaterally. The prospect of manned missions conducted jointly by the US and the PRC has been of particular interest to the workshop participants.

This is by no means an exhaustive survey of potential levels of cooperation. Indeed, recent developments suggest that there may be a host of new potential venues for cooperation. The growth, for example, of “new space,” in the form of non-government space efforts, poses intriguing new challenges to both the American and Chinese space programs. The “new” space sector, including space tourism, is less subject to governmental intervention or restrictions. At the same time, at least theoretically, it may well be focused wholly on the capitalization. With the growing Chinese economy, it is not clear what impact non-governmental Chinese funding might have on the prospects for “new space.”

### **Obstacles to Cooperation**

In considering the potential for cooperation, the discussions undertaken at the three workshops have served to highlight the very real obstacles to cooperation that exist between the PRC and the United States. At its most basic, cooperation between the two sides has to operate within the political realities that mark the Sino-American relationship. There are a number of outstanding issues that separate the two, from their respective political ideologies, to such issues as human rights, trade policy, and the status of Taiwan that make *any* improvements in relations a delicate process.

An especially prominent obstacle to greater cooperation of any sort are the mutual suspicions over security issues. US-Chinese military-to-military contacts, for example, have varied greatly, reflecting the vagaries in the general tenor of Sino-American relations—and space was no exception. In October 2006, the commander of the US Strategic Command (STRATCOM), Marine General James Cartwright, expressed interest in engaging the PLA on such space issues as collision avoidance and perceptions of attacks on satellites. He hoped to raise these topics in discussions with his counterpart, General Jing Zhiyuan, commander of the Chinese Second Artillery force (which is responsible for China’s nuclear forces). Indeed, Jing’s visit had been discussed as part of the same April 2006 Hu-Bush summit that had led to NASA Administrator Griffin’s visit.<sup>8</sup> As of the end of 2008, however, Jing had still not visited the United States, despite repeated invitations.

The security issue is especially prominent in the multilateral arena, which directly affects prospects for space cooperation. Although both the US and the PRC are members of the UN Outer Space Committee (also known as the Committee on the Peaceful Uses of Outer Space or COPUOS) and the Ad Hoc Committee for Preventing an Arms Race in Outer Space (PAROS) within the UN Conference on Disarmament, little movement has occurred in either body. Significant differences of opinion on the utility of a new arms control agreement (proposed by the PRC and Russia, and opposed by the United States), coupled with complicating linkages to such issues as limits on new fissile materials, have led to few new space-related developments in these multilateral security arenas.

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<sup>8</sup> Shirley Kan, *US-China Military Contacts: Issues for Congress*, RL-32496 (Washington, DC: Congressional Research Service, 2008), p. 25.

Beyond these broad strategic political concerns that affect all aspects of relations between Beijing and Washington, are a number of factors that are specifically likely to affect US Chinese space cooperation. These include issues of technological disparities and non-parallel government structures and space organizations, as well as deeper differences rooted in fundamental approaches to negotiations, as well as cultural and historical differences that color both sides' views.

### **Organizational and Technical Asymmetries**

At the most basic level, one of the key obstacles to increased Sino-American space cooperation is the disparity in space-related experience. The United States has placed over a thousand objects into orbit; by contrast, the PRC has only orbited a hundred. In the realm of human spaceflight, the disparity is even greater. The United States has nearly fifty years of experience with manned missions; the PRC, as of 2008, had thus far engaged in only three actual crewed flights.

Paralleling the differences in experience, there are also differences in technological capability. Chinese systems often have a shorter lifespan than their Western counterparts. The Chinese Fengyun-2 geostationary weather satellites, for example, had projected lifespans of only two years; by contrast, the US GOES (Geostationary Operational Environmental Satellite) has a projected lifespan of 5 years, but often exceeds that (GOES-10, for example, was launched in 1997, and exhausted its fuel in 2006). Chinese literature does suggest that the latest generation Fengyun weather satellite and Dongfanghong-4 communications satellite will have life-spans approaching those of their Western counterparts.

These differences complicate any effort at cooperation, since it is not clear what the United States would necessarily gain from cooperating with the PRC, at least in terms of technology and experience.

This is further complicated by the integrated nature of the Chinese space program. Any cooperation between the two states, from the American perspective, should not result in a transfer of militarily significant technology to the PRC. Indeed, it was precisely charges to this effect, leveled against the Loral and Hughes Aerospace corporations, which brought a halt to US use of Chinese launchers for commercial and civilian purposes. As the Cox Commission Report notes, "the guidance system used on the Long March-2C, Long March-2E, and Long March-3 rockets is also used on the CSS-4 intercontinental ballistic missile."<sup>9</sup> The commonality of systems between Chinese civilian space launch vehicles and current Chinese missile systems means that any cooperation between the two nations' space programs, even in ostensibly civilian or commercial areas, could well lead to improvements in China's offensive missile capabilities. According to some of the Chinese participants in the Eisenhower Center workshops, they had been unaware of this concern.

Nor is the integration of Chinese civilian and military space capabilities limited to issues of dual-use systems. Broadly speaking, there is no bright dividing line between Chinese military and civilian space authorities, either. That the Chinese should have a closely integrated civilian and military space sector is not surprising. When Deng Xiaoping came to power in 1978, he set forth the general

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<sup>9</sup> US House of Representatives, *Report of the Select Committee on US National Security and Military Commercial Concerns with the People's Republic of China* (Washington, DC: Regnery Publishing, 1999), p. 215.

Chinese guideline (*zong fangzhen*) of “civil-military combined, wartime-peacetime combined, give preference to military goods, have the civilian nurture the military” [(*junmin jiehe, pingzhan jiehe, junpin youxiang, yi min yang jun*)]. This general guideline remains a cornerstone in China’s efforts to foster broad national development.

Deng’s call for close civil-military integration is echoed in the PRC’s 2006 space white paper. This paper (and its 2000 predecessor) issued by China’s State Council, the highest governmental body in the People’s PRC, was specifically cited by Chinese delegates to the 2008 workshop as essential for understanding China’s space program. The paper notes that a key principle underlying the development of China’s space industry is that it is “a strategic way to enhance its economic, scientific, technological, and *national defense strength*, as well as a cohesive force for the unity of the Chinese people.”<sup>10</sup>

Nowhere is this more evident than in the management of the Chinese space infrastructure. On the one hand, the Chinese claim that their space facilities are managed by yet another subordinate organization to COSTIND, the China Satellite Launch and Tracking Control General (CLTC). This is the entity that has generally contracted with foreign space organizations for commercial or civilian space launches, such as the Brazilian space agency for the launch of CBERS-2.<sup>11</sup>

Other Chinese reporting, however, suggests that it is the military, in the form of the General Armaments Department (GAD), that has authority over China’s launch facilities and mission control centers. The GAD is one of the four General Departments that administers the Chinese People’s Liberation Army (PLA). Established in April 1998, it is responsible for development of military equipment for the entire PLA.<sup>12</sup> Moreover, the GAD also controls the military academy that, according to PLA writings, is the main institution responsible for training the personnel that staffs China’s space-related facilities, including launch sites and mission control centers.<sup>13</sup>

Based on available data, it seems that the GAD actually controls the various Chinese space launch and mission control facilities. The facilities are generally identified as being designed and constructed by units of the GAD.<sup>14</sup> Moreover, Chinese reporting suggests that GAD has ultimate responsibility over missions conducted at these facilities. According to one Chinese news report, the launch of the 20<sup>th</sup> Fanhui Shi Weixing (FSW) from Jiuquan Satellite Launch Center encountered difficulties with an instrument. The director of the JSLC debated whether to proceed with the launch, recognizing that any failure to do so might disrupt the subsequent Shenzhou-VI space launch. The JSLC director decided to proceed with the FSW launch, but

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<sup>10</sup> Emphasis added. PRC State Council, *China’s Space Activities in 2006*, “Aims and Principles of Development,” (Beijing, PRC: State Council Information Office, 2006).

<sup>11</sup> Valcir Orlando, Helio Koiti Kuga, Jun Tominaga, “CBERS-2 LEOP Orbit Analysis,” Proceedings of the 18th International Symposium on Space Flight Dynamics, ESA SP-548. (Munich, Germany: October 2004), p. 1. <http://www2.dem.inpe.br/hkk/2004/Orlando&Kuga&Tominaga-P1062.pdf>

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<sup>12</sup> Phrase Dictionary Committee, *Large Phrase Dictionary, Military Volume* (Shanghai, China: Shanghai Dictionary Publishing House, 2003), p. 98.

<sup>13</sup> “Academy of Command Equipment and Technology,” in *An Overview of Chinese Military Academic Institutions*, ed. by Jin Peng and Dong Ming (Beijing, PRC: Academy of Military Science Publishing House, 2003), pp. 163-164.

<sup>14</sup> “A Development History of China’s Aerospace Launch Facilities,” *Jiefangjun Bao* (November 2, 2005). [www.jingning.gov.cn/zhxx/zhxx/t20051102\\_114819.htm](http://www.jingning.gov.cn/zhxx/zhxx/t20051102_114819.htm)

only after receiving permission from the GAD (*dedaole zongzhuangbei bu de pizhun*).<sup>15</sup>

While this integration of civilian and military organizations and systems may be understandable, especially in light of constrained Chinese human, financial, and technological resources, it nonetheless complicates any effort at Sino-American cooperation.

The opacity and uncertainty regarding the organization of China's space efforts, beyond the role of the PLA, adds yet another layer of complication. The United States and the PRC have almost no parallels in how each has organized its overall space organizations and political infrastructure. This makes establishing counterparts for even discussing space cooperation much more difficult.

For the United States, there are four major sectors of space activity:<sup>16</sup>

**Civil.** The activities in this sector are conducted by the US Government (USG), in order to "explore the universe and advance human knowledge." This sector is mostly under the direction of the National Aeronautics and Space Administration (NASA). It includes exploration of other planets and space bodies, scientific missions relating to Earth observation, and human spaceflight.

**Commercial.** These activities are performed by the private sector, as a means of making money. Commercial space activities used to mainly involve the launch and operation of communications satellites, but there has now developed a commercial remote sensing sector as well. The space services sector, including satellite positioning and navigation, is one of the fastest growing areas of space activity, in terms of revenue.

**Intelligence.** The collection of information through the use of a variety of surveillance and reconnaissance satellites is part of the intelligence space sector. Previously referred to as "national technical means," this sector is under the joint purview of both the US military and the US intelligence community.

**Military space.** This sector supports the military directly, including communications, meteorology, missile early warning, and a variety of other roles. It also includes the use of force to, in, and from space. It is largely administered by the US Department of Defense, operating through Strategic Command (STRATCOM) and the US Air Force Space Command (AFSPC).

While there are inter-relationships among the four sectors, each is also relatively autonomous from the others. By contrast, the fundamental organization of the PRC space program is shrouded in mystery, with few reliable sources of information on whether it has distinctive sectors and communities comparable to those in the American system.

Based upon the limited available evidence, it would appear that in the PRC the space sector as a whole, and not just the space launch facilities and mission control centers, is deeply embedded within the military industrial complex, with very close ties between the military and civilian sides. Indeed, it is not clear whether there is a meaningful distinction

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<sup>15</sup> "Jiuquan Satellite Launch Center Director Zhang Yuling Chases Dreams of Flight," China National Space Agency (October 26, 2005). [www.cnsa.gov.cn/n615708/n942529/n942861/70240.html](http://www.cnsa.gov.cn/n615708/n942529/n942861/70240.html).

<sup>16</sup> This section draws from Peter L. Hays, James M. Smith, et. al., "Spacepower for a New Millennium: Examining Current US Capabilities and Policies," in *Spacepower for a New Millennium: Space and US National Security*, ed. by Peter L. Hays, James M. Smith, et. al. (NY: McGraw-Hill Companies, 2000), pp. 2-3. All quotes are drawn from this section.



between the civilian and military in the Chinese space arena.

Thus, until March 2008, for example, China's space program was part of the Commission on Science, Technology, and Industry for National Defense (COSTIND). Indeed, the China National Space Agency (CNSA), ostensibly responsible for all civilian space activities, was a subordinate entity within COSTIND (or State-COSTIND, as Western China scholars commonly refer to it).

State-COSTIND was itself an outgrowth of the National Defense Science and Technology Commission (NDSTC), which was established in 1958 in order to oversee China's strategic weapons development and was also given authority over the space program. The NDSTC reported directly to the Central Military Commission, the highest military authority, and therefore "could lay nearly automatic claim to extensive proprietary rights throughout the Chinese bureaucracy.... [and gave it] the ability to mobilize resources and to command compliance virtually at will."<sup>17</sup>

Over time, the NDSTC underwent bureaucratic evolution, merging with several other bureaucracies focused on science and technology in 1982, to become the Commission on Science, Technology, and Industry for National Defense (COSTIND). It retained responsibility for the space program, along with other key high-technology areas of interest to the military. In 1999, COSTIND in turn underwent further bureaucratic reorganization, calving off a new General Department (the General Armaments Department or GAD) to oversee military weapons development, while retaining a quasi-civilianized COSTIND (often referred to in Western writings as State-COSTIND, to

distinguish it from its predecessor) to serve as an administrative oversight of defense industries.

The situation is further confused by uncertainties of how recent reorganizations have affected the Chinese space program. In March 2008, several ministries were consolidated into super-ministries. COSTIND, previously a ministerial-level government entity, was subsumed under the newly established Ministry of Industry and Information Technology (MIIT). At the same time, it was ostensibly downgraded to become the State Administration for Science, Technology, and Industry for National Defense (SASTIND). This would have made it the equivalent of CNSA in terms of bureaucratic power.

It remains unclear, nearly a year later, however, whether CNSA is a component of SASTIND (i.e., was itself also downgraded), or separated from SASTIND to become a stand-alone agency, and if so, at what level of authority. For example, the release of several hundred hours of data from the Chang'e-1 lunar mission (a CNSA mission area) was announced by SASTIND.<sup>18</sup> Meanwhile, Sun Laiyan, the director of CNSA, has been described as a Deputy Director of SASTIND, while Chen Qiufa, the director of SASTIND, is described as a deputy minister of MIIT.<sup>19</sup> This would suggest that CNSA remains subordinate to SASTIND, within the larger context of MIIT.

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<sup>18</sup> "China to Release 700 Hours of Chang'e-1 Data," Xinhua (August 4, 2008).

<sup>19</sup> "SASTIND to Study and Implement National IP Strategy Outline," Intellectual Property Protection in China (July 22, 2008), [http://english.ipr.gov.cn/ipr/en/info/Article.jsp?a\\_no=225422&col\\_no=925&dir=200807](http://english.ipr.gov.cn/ipr/en/info/Article.jsp?a_no=225422&col_no=925&dir=200807), and "China Reveals Its First Full Map of Moon Surface," Xinhua (November 12, 2008), [http://news.xinhuanet.com/english/2008-11/12/content\\_10347379.htm](http://news.xinhuanet.com/english/2008-11/12/content_10347379.htm).

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<sup>17</sup> Evan Feigenbaum, *China's Techno-Warriors* (Stanford, CA: Stanford University Press, 2003), p. 54.

Even Chinese officials appear uncertain at this time about exactly how the various pieces of the Chinese space bureaucracy will fit together, noting that the reorganization remains “a work in progress.” Nonetheless, the uncertainty associated with the basic organization of the Chinese space bureaucracy, including who is subordinate to whom, underscores the potential difficulties confronting more extended negotiations between the two sides, as well as more extensive cooperation.

### **Different Approaches to Negotiations**

Should the US and the PRC actively seek to cooperate, any ventures will first require extensive negotiations. As noted earlier, there has been only minimal interaction between American and Chinese space authorities. This means that there is not an extensive foundation of personal relationships or even negotiating experience on space issues between the two countries upon which to build. With neither institutional nor personal relations, the process is likely to be extremely lengthy.

In particular, the absence of a legacy of interactions goes to the heart of the Chinese approach to negotiations. President Richard Nixon’s visit to China in 1972 and the subsequent establishment of diplomatic relations in 1979, for example, was the culmination of nearly twenty years of meetings in Geneva and Warsaw.<sup>20</sup> “From the Chinese perspective, these [Ambassadorial] Talks and the events leading to the Talks established the boundaries within which the ultimate solutions were found. Like building a stone house, a solid foundation for the

relationship had to be laid, if the relationship was to endure.”<sup>21</sup>

The absence of such a foundation means that any effort to foster cooperation in space arena, which touches on sensitive issues of national capabilities as well as being potentially highly technical, will also have to reconcile very different approaches to the *process* of negotiation.

### **“Top-Down” versus “Bottom-Up”**

In this regard, American and Chinese negotiators tend to take very different approaches. Chinese negotiators in general seek first to establish sets of principles that will then govern all subsequent interactions.<sup>22</sup> For example, in many international negotiations, the Chinese emphasize the importance of both sides starting from the “five principles of peaceful co-existence”:

- Mutual respect for territorial integrity and sovereignty
- Mutual non-aggression
- Mutual non-interference in internal affairs
- Equality and mutual benefit
- Peaceful coexistence<sup>23</sup>

This is in direct contrast to the American approach, in which negotiations begin by establishing specifics, “avoiding debates about generalities which can easily become entangled in political or philosophical

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<sup>20</sup> For further details on the Ambassadorial Talks, see Kenneth T. Young, *Negotiating with the Chinese Communists* (NY: McGraw-Hill, 1968).

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<sup>21</sup> Alfred D. Wilhelm, *The Chinese at the Negotiating Table* (Washington, DC: NDU Press, 1994), p. 201.

<sup>22</sup> For more discussion about the role of principles in Chinese negotiating style, see Alfred D. Wilhelm, *The Chinese at the Negotiating Table* (Washington, DC: NDU Press, 1994), pp. 51-52.

<sup>23</sup> Samuel S. Kim, “China and the Third World,” in *China and the World*, 3<sup>rd</sup> Edition, ed. by Samuel S. Kim (Boulder, CO: Westview Press, 1994), p. 131.

differences.”<sup>24</sup> In essence, Chinese negotiators tend to adopt a “top-down” approach, with senior leaders focusing on broad principles, whereas American negotiators more frequently adopt a “bottom-up” approach, with working level officials focusing on concrete measures.

The Chinese focus on principles, as one Japanese diplomat has noted, is rooted in a number of factors.

- It establishes the essence of the Chinese position. This is in keeping with what the Chinese are seeking to determine about their counterpart, i.e., their counterpart’s essential “bottom lines.”
- The negotiating process for the principles also provides an opportunity for the Chinese to take their measure of their counterparts. Are they a cohesive group? Or are they internally fragmented, presenting opportunities for division and exploitation?
- The creation of principles are also a means of establishing *internal* support among various Chinese stakeholders. The establishment of the Chinese position in any given negotiation is likely to require extensive internal negotiation *within* the Chinese bureaucracy (and may explain why getting the Chinese to shift away from their own principles can often be so difficult). Along these lines, the principles serve as a short-hand, easily understood at a glance (*yi mu liao ran*).<sup>25</sup>

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<sup>24</sup> Lucian Pye, *Chinese Commercial Negotiating Style*, R-2837-AF (Santa Monica, CA: RAND, 1982), p. 40.

<sup>25</sup> Ambassador Kagechika Matano, “Chinese Negotiating Styles: Japan’s Experience,” Center

- Once principles are established, they become the starting point for subsequent negotiations. For this reason, the Chinese will strive to establish said principles on their own terms. If a negotiating partner will accept the principle that “the weak need not reveal to the strong,” or that “knowledge should not be limited,” that position will then be exploited in subsequent rounds.

The first two factors listed by Ambassador Matano indicate, again, that American and Chinese negotiators hold very different perceptions of the significance of negotiations. In general, the Chinese, unlike their American counterparts, do *not* see political negotiations as “a highly technical process of haggling over details in which the two sides move to a point of convergence from their original positions through incremental compromises.”<sup>26</sup> Instead, they are viewed as an attempt to reconcile (or impose) “principles and objectives of the two sides and the testing of their interlocutor’s commitment to a relationship with the PRC.”<sup>27</sup> Rather than “getting to ‘Yes,’” for the Chinese “the purpose...is to size the opposition to draw out the US position with minimum exposure of China’s.”<sup>28</sup>

Under such circumstances, an opening position is unlikely to have “give,” since the aim is not so much to gain reciprocal

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Occasional Paper, Asia Pacific Center for Security Studies (Honolulu, HI: Asia Pacific Center for Security Studies, December 1998). <http://www.apcss.org/Publications/Ocasional%20Papers/OPChinese.htm>.

<sup>26</sup> Richard H. Solomon, “Friendship and Obligation in Chinese Negotiating Style,” in *National Negotiating Styles*, ed. by Hans Binnendijk (Washington, DC: Foreign Service Institute, 1987), p. 6.

<sup>27</sup> *Ibid.*

<sup>28</sup> Alfred D. Wilhelm, *The Chinese at the Negotiating Table* (Washington, DC: NDU Press, 1994), p. 46.

concessions, but to address a counterpart's bottom line requirements without compromising one's own. This, again, is in contrast with most American negotiating styles. "Flexibility, by indicating the softness of the US position, may impede and not facilitate agreement."<sup>29</sup> The resulting disconnect may well hamper negotiations.

Another consideration is that the Chinese usually appear at the negotiating table with their own position already formulated. If they are seeking to determine their counterpart's bottom lines, the Chinese negotiators are well aware of their own. "Before negotiations at any level begin, the central leadership will have assessed the 'objective reality' and determined its objectives vis-à-vis the principal 'contradictions as well as the strategy for achieving those objectives.'"<sup>30</sup> Such assessments are likely to have been arrived at only after significant internal bargaining within the Chinese system, in order to create the necessary consensus among competing bureaucracies, stakeholders, and leadership groupings. They are therefore unlikely to be lightly modified, much less altered or abandoned.

In order to shift the Chinese, then, it is essential to be able to traverse the labyrinthine bureaucracy of China. As one observer notes, "The first stage of wisdom in negotiating with the Chinese is to grasp that one is confronted with the world's oldest bureaucracy."<sup>31</sup> Apparent gains at the negotiating table are insubstantial unless they can garner support from the actual Chinese leadership. As one Japanese diplomat has observed, "In order for a point to be accepted by the Chinese side, it is important that our presentation is formulated

in such a way that it would reach the top strata of the Chinese decision-making machinery."<sup>32</sup> Conversely, "pragmatism is displayed amply when there is positive political will in the top leadership of China to conclude an accord...."<sup>33</sup>

The key leaders and decision-makers, however, are not located in the state bureaucracy, but within the Chinese Communist Party, specifically, the Chinese Politburo. This is because policy *decisions* are the purview of the Party's leadership, whereas policy *implementation* is the responsibility of the state's bureaucracy. It is arguably for this reason that the Chinese are extremely opaque about the details of their space policy decision-making process. The process of determining policy occurs, not in the government, but in the Party. Allowing outsiders to gain an understanding of said processes would also provide them with the ability to detect and exploit potential vulnerabilities.

### ***Different Views of Each Party's Responsibilities***

A more fundamental issue rests in the perception of roles and responsibilities. In particular, in seeking to establish "common principles," the Chinese are often seeking to establish that both sides agree upon "mutual interests" being at stake. In the Chinese perception, however, once such mutual interests are established, it is the responsibility of the better off, more powerful, or more well-to-do to sustain said interests. "For the Chinese, the acknowledgement that both sides

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<sup>29</sup> Raymond Cohen, *Negotiating Across Cultures* (Washington, DC: US Institute of Peace, 1991), p. 93.

<sup>30</sup> Wilhelm, p. 40.

<sup>31</sup> Cohen, p. 101.

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<sup>32</sup> Ambassador Kagechika Matano, "Chinese Negotiating Styles: Japan's Experience," Center Occasional Paper, Asia Pacific Center for Security Studies (Honolulu, HI: Asia Pacific Center for Security Studies, December 1998). <http://www.apcss.org/Publications/Ocasional%20Papers/OPChinese.htm>.

<sup>33</sup> Ambassador Matano

have common interests is only a first step in a continuous process of trying to get the other party to do more for the common interest.”<sup>34</sup>

Thus, from the Chinese perspective, it is not incumbent upon the weaker party to disclose information, or indeed, to even reciprocate concessions. This message was sounded by one Chinese delegate who attended the 2007 Eisenhower Center China conference, who noted that the weak are not obliged to reveal their secrets to the strong. A variation of this asymmetric view of obligations was sounded by the three Chinese delegates who attended the 2008 China conference. One specifically stated that the purpose of space arms control was to constrain the strong, by which she meant the United States.

Such an attitude is deeply problematic under most circumstances. Coupled with some discussions about whether the very concept of transparency isn't analogous to espionage, and it soon raises questions about whether cooperation with China would involve symmetric or asymmetric concessions and reciprocity. Where the issues are dual-use technologies, however, many of which are considered essential for national security, it dims the prospects for cooperation.

### ***Broader International Implications***

Beyond the bilateral difficulties of cooperating with the PRC, it is also important to consider potential ramifications of Sino-US cooperation in space on the Asian political landscape. In particular, cooperation between Washington and Beijing on space issues may well arouse concerns in Tokyo and Delhi. Both of these nations have their own space programs, and while they are arguably not engaged in a “space race” with China (or each

other), they are certainly keeping a close eye on developments regarding China.

Of particular importance is Japan. The United States relationship with Japan is arguably its most important in East Asia.

US interest in Japan should be self-evident. Japan hosts 47,000 US troops and is the linchpin for forward US presence in that hemisphere. Japan is the second largest contributor to all major international organizations that buttress US foreign policy.... Japan is the bulwark for US deterrence and engagement of China and North Korea—the reason why those countries cannot assume that the United States will eventually withdraw from the region.<sup>35</sup>

For Japan, whose “peace constitution” forbids it from using war as an instrument of state policy, the United States is an essential guarantor of its security. Any move by the US that might undermine this view raises not only the prospect of weakening US-Japanese ties, but also potentially affecting Japan's security policies.

In this regard, then, it is essential not to engage in activities that would undercut perceptions of American reliability. Such moves, it should be noted, are not limited to those in the security realm. For example, the Nixon administration undertook several initiatives in the late 1960s and early 1970s that rocked Tokyo-Washington relations, and are still remembered as the “Nixon shocks.” While some of these were in the realm of security (including Nixon's opening to China and the promulgation of the Nixon Doctrine), the others were in the trade area. These

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<sup>34</sup> Lucian Pye, p. 77.

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<sup>35</sup> Michael Green, *Japan's Reluctant Realism* (NY: Palgrave, 2003), p. 9.

included a ten percent surcharge on all imports entering the US and suspended the convertibility of the dollar (i.e., removed the US from the gold standard).<sup>36</sup>

Part of the “shock” was the fundamental nature of these shifts. Even more damaging, however, was the failure of the Nixon Administration to consult their Japanese counterparts, catching them wholly off-guard. It took several years for the effects of these shocks to wear off. If the United States is intent upon expanding space relations with the PRC, then it would behoove it to consult Japan, in order to minimize the prospect of a “space shock.”

Failing to do so may well incur a Japanese reaction. The decision on the part of Japan to build an explicitly intelligence-focused satellite was in response to the North Korean missile test of 1999, suggesting that Tokyo is fully capable of undertaking space-oriented responses when it is concerned.<sup>37</sup> That, in turn, would potentially arouse the ire of China. The tragic history of Sino-Japanese relations continues to cast a baleful influence upon current interactions between the two states. If there is not a “space race” currently underway between Beijing and Tokyo, it would be most unfortunate if American actions were to precipitate one.

Potentially further complicating this situation is India. With a burgeoning space program,

India constitutes yet another participant in a potential Asian space race. Fueled by a growing economy, India has steadily improved its space capabilities, launching the Chandrayaan-1 lunar probe in 2008, soon after the Japanese Kaguya and Chinese Chang’e-1 probes. Again, this is not to suggest that there is a space race underway, but it would be hard to deny that the major Asian powers are each watching the others carefully (or, more accurately, that China is being watched carefully by its neighbors).

That space is a major potential arena for competition among these states is highlighted by the Joint Declaration on Security Cooperation Between Japan and India, initialed by the Japanese and Indian Prime Ministers on October 22, 2008 in Tokyo. The final “mechanism of cooperation” listed in the agreement was for cooperation between the two nations’ space programs. “Cooperation will be conducted between the Japan Aerospace Exploration Agency (JAXA) and the Indian Space Research Organisation (ISRO) in the field of disaster management.”<sup>38</sup>

For the United States, cooperating with China on space issues, when it is not yet doing so with India, could well send mixed messages to Delhi. In particular, there is a perception in many quarters that the United States is intent upon balancing China through India.<sup>39</sup> US space cooperation with China might allay such concerns and signal that the US is not seeking

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<sup>36</sup> Laura Stone, “Whither Trade and Security? A Historical Perspective,” in *The US-Japan Alliance: Past, Present, and Future*, ed. by Michael Green and Patrick Cronin (NY: Council on Foreign Relations Press, 1999), p. 255, and Robert Gilpin, “The Global Context,” in *The United States & Japan in the Postwar World*, ed. by Akira Irye and Warren Cohen (Lexington, KY: University Press of Kentucky, 1989), pp. 12-13.

<sup>37</sup> Brian Harvey, *The Japanese and Indian Space Programmes* (NY: Springer Books, 2000), p. 119.

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<sup>38</sup> Joint Declaration on Security Cooperation Between Japan and India, Japan Ministry of Foreign Affairs. [http://www.mofa.go.jp/region/asia-paci/india/pmv0810/joint\\_d.html](http://www.mofa.go.jp/region/asia-paci/india/pmv0810/joint_d.html).

<sup>39</sup> Paul Richter, “In Deal with India, Bush Has Eye on China,” *Los Angeles Times* (March 4, 2006). <http://articles.latimes.com/2006/mar/04/world/fg-usindia4>, and Leonard S. Spector, “US Nuclear Cooperation with India,” Testimony before House Committee on Foreign Relations (October 26, 2005), p. VII., <http://cns.miis.edu/research/congress/testim/spe102605.pdf>.

to counter China through India. It might, however, be seen as “double-dealing” by the Indian government, which has its own concerns about China stemming to at least the 1962 Sino-Indian War.

### ***Prospects for Cooperation***

In light of these difficulties, what are the prospects for Sino-American cooperation in space?

As noted previously, there is already some degree of cooperation, at least at the level of data-sharing. Both multilateral and bilateral data sharing might therefore be expanded, with minimal staffing or negotiations required. The Chinese, for example, have donated ground stations that can access its *Fengyun* weather satellites to nearly a dozen nations, as part of its FENGYUNCast network.<sup>40</sup> It might choose to provide the United States with comparable ground stations (or information on how to access the data from the satellite).

At the same time, however, such sharing of data constitutes only a minimal level of interaction between the two states and their respective space programs. If it is relatively easy, it is also relatively low-level.

The political situation in the United States, unfortunately, suggests that there may be significant obstacles to implementing a more extensive bilateral cooperative approach. In particular, there was little optimism among attendees to the various workshops that ITAR would be changed anytime soon—although there was broad agreement that the ITAR system needed significant overhauling and revamping. Similarly, longstanding restrictions on technology transfer to the PRC

(for reasons of not only national security but also intellectual property rights and questions of competitiveness), as well as concerns about human rights and other aspects of the Chinese situation suggest that there would be significant political opposition to any effort to radically upgrade Sino-US bilateral cooperation in space. It remains to be seen how the incoming Obama administration might deal with these concerns.

While the US has not engaged the PRC in negotiations over cooperating in space, it has engaged in a variety of other cooperative efforts, both commercial and political. From these past instances, it is clear that, should there be an effort to expand cooperation in space, there are certain essential preconditions that need to be met, if one is to be successful when working with the PRC.

First and foremost, it is essential to not make space cooperation an end unto itself. Rather, it is essential to consider it in the larger context of Sino-American relations. What is the purpose of this cooperation, not only in terms of scientific or technical data, but in terms of broader national ends? Is it primarily intended to presage further, substantive cooperation in other fields? Is it intended to build mutual confidence in space? Is it to allay security concerns?

Then, the American side needs to do a great deal of homework. Past experience with the Chinese in negotiations makes clear that the following rules need to be followed:

- Know the substantive issues thoroughly
- Master the past negotiating record
- Know your own bottom line
- Present your position in a broad framework
- Understand the PRC’s political context

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<sup>40</sup> “CMA’s Satellite Based Data Services,” Undated presentation to the World Meteorological Organization, [www.wmo.int/pages/prog/www/ISS/Meetings/ET-CTS\\_Toulouse2008/documents/pCMASat.ppt](http://www.wmo.int/pages/prog/www/ISS/Meetings/ET-CTS_Toulouse2008/documents/pCMASat.ppt)

- Be patient, avoiding deadlines or being rushed
- Minimize media pressures<sup>41</sup>

One of the key findings of the Eisenhower Center workshops has been that both sides would like to see more “clarity of intent.” For the Chinese, gaining that clarity from the United States requires that the American side actually know its own positions, and that it be pursued consistently and with support from above.

At this point, it is not clear that the American side has done this. Nor is it clear that the groundwork necessary for negotiations, as noted above, has begun. To balance this, however, it is unlikely that Sino-American space cooperation will be a “front-burner” topic for the new administration. Consequently, even the initiation of discussions for cooperation is likely to be delayed. This means that the American side has been granted a reprieve to learn the record, understand the issues, and arrive at an American bottom line, to which it can then adhere.

What the Eisenhower Center workshop experience suggests, however, is that the Chinese are unlikely to be helpful in gaining an understanding of the PRC’s political context. Judging from their comments, there is an apparent indifference towards, if not rejection of, transparency. This is complicated by the lack of American analysts on Chinese space policy. It remains to be seen whether the Chinese will value providing clarity of intent to the American side.

### ***Options for the Future***

Given the lack of a bilateral track record in negotiating cooperation in space, much less

actually engaging in joint efforts, this would suggest that a series of lower profile options might well be more productive as a starting point for Sino-American space cooperation. Such steps would provide both sides with an opportunity to understand their counterpart’s negotiating behavior, and in particular would help the American side to understand the “bottom lines” that the Chinese are likely to be pursuing. At the same time, achieving some lower profile cooperative ventures would also reassure the US, building confidence in, and support for, the process.

In particular, it is worth considering the consequences of potential failure—that is, if a given initiative were to fail, either due to internal political pressures from either side or external political developments (e.g., an EP-3 type incident), how would this affect the overall course of Sino-US cooperation in space and in other areas?

The perceived failure of high-profile projects would likely generate a long-term adverse effect on US-Chinese cooperation in space and elsewhere. Conversely, while successes in small projects may not create as much benefit, they would provide additional data for subsequent cooperative efforts. In this regard, it is useful to consider that the Apollo-Soyuz mission occurred after the negotiation of the SALT I Accords, and in the midst of SALT II, as well as a variety of negotiations (e.g., Helsinki).

The pressures of today’s media environment also would militate against high-visibility projects. On the one hand, news that the US was negotiating with China to cooperate on space issues would generate correspondingly heightened expectations from the American mass media—which the Chinese media would happily abet. The push to initial some kind of agreement would run counter to the need for patience when negotiating with Beijing.

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<sup>41</sup> Solomon, pp. 14-16.



Ironically, these same pressures might also *undermine* Sino-American cooperation. Beijing's release of a "transcript" of conversations between the Beijing mission control center and the Shenzhou VII even before the mission had begun suggests that the PRC retains a skeptical view of free reporting. Conversely, Western coverage of the 2008 Beijing Olympics aroused some indignation despite its generally positive tenor, as the press noted the lip-synching by Lin Miaoke and the age controversy of the Chinese women's gymnastics team.<sup>42</sup>

eventually building a common spacecraft, as well as mounting a joint mission together.

This mutual suspicion (if not antagonism) would likely be exacerbated in the event of a high-profile mission such as a Sino-American counterpart to Apollo-Soyuz. While such a mission would likely provide moments of high drama, as well as significant public relations value, the reality is that the media pressures would be far greater in today's media environment than thirty years ago.

All this suggests that there should be an effort to first establish precedents for cooperation at lower levels, before striving for such approaches as a joint mission, or even joint mission planning. It should be possible, for example, to foster common standards and procedures between the two sides, as the logical next step in deepening cooperation between the two space powers. If coupled with an overhaul of the ITAR system, this would allow for the possibility of commercial as well as civilian space cooperation. Even without addressing ITAR, however, working together towards common standards and techniques would lay the groundwork for

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<sup>42</sup> "Chinese Defense Olympic Ceremony Lip-Synch," AP (August 13, 2008). <http://www.msnbc.msn.com/id/26182056/>, "IOC Seeks to Settle Furor Over Age of Chinese Gymnasts," AP (August 22, 2008). <http://www.foxnews.com/story/0,2933,408541,00.html>.