Demokratie, Sicherheit, Frieden
Democracy, Security, Peace

herausgegeben von Prof. Dr. Michael Brzoska
Series Editor Prof. Dr. Michael Brzoska

DSF Band 197
DSP Volume 197

Eine Veröffentlichung aus dem Institut für Friedensforschung und Sicherheitspolitik an der Universität Hamburg

A publication of the Institute for Peace Research and Security Policy at the University of Hamburg

Subrata Ghoshroy/Götz Neuneck (Eds.)

South Asia at a Crossroads

Conflict or Cooperation in the Age of Nuclear Weapons, Missile Defense, and Space Rivalries

Nomos

Asif A. Siddiqi

An Asian Space Race: Hype or Reality?

In the fall of 2007, both print and on-line media were abuzz with claims of a new phase in the exploration of space, which they dubbed the "Asian space race."[1] These stories did not appear out of the blue but were prompted by recent space launches by China and Japan; each nation carried out highly successful launches of scientific probes to the vicinity of the Moon. The tone of the reports seemed to suggest that decades after the Soviet Union and the United States had breached the boundaries of the cosmos, the Asian economic giants were finally "arriving" as bona fide space powers. Since then, these types of stories multiplied, particularly when India launched *its* first Moon probe in the fall of 2008. With three Asian nations in the mix, with seemingly similar goals and apparently comparable capabilities in space exploration, analysts and journalists had ample justification to dub this flurry of space activity a new "space race." Predictably, official spokespersons from each of these three national space programs disavowed the notion of a race to space, emphasizing the methodical and calm-headed nature of their respective efforts focused as they were on benefits to society rather than publicity stunts.[2] Notwithstanding these vigorous denials, and indeed, regardless of the real goals and strategies of each of these individual national programs, it is abundantly clear that the media hoopla in 2007-2008 has created an enduring and self-generating notion of an Asian space race that analysts have to take seriously. The "Asian space race" may reflect reality or encompass myths but it warrants serious scrutiny precisely because it illuminates the important relationship between international prestige and domestic space program in the Asian context.

In this essay, I explore the nature and contours of the "Asian space race" with a view to illuminating several dimensions of this episode. First, I reconstruct the events in 2007-2008 as a means to identify the publicly stated rationales for how the media justified its identification of the "Asian space race." Second, I explore the national settings of each of these three programs with a view to teasing out the rationales for and against why this might indeed be (or not be) a race. Third, I explore the existence of regional institutional mechanisms as a means for the three major Asian powers to exert their influence, an under-scrutinized aspect of the Asian competitiveness in space activities. Finally, I conclude with some analytical thoughts about the relationship between international prestige and space exploration, particularly in the Asian context, but also in a broader historical context by juxtaposing the recent Asian achievements with the accomplishments of the two superpowers during the Cold War. By historicizing the recent Asian activity in space, my hope is to underscore that this "new" space race has precedents that may be useful for further analysis of future Asian exploits in space exploration.

1 Peter Ford, "What's behind Asia's moon race?," Christian Science Monitor, October 25, 2007, http://www.csmonitor.com/2007/1025/p06s01-woap.html; "Asian Space Race Stirs Friction, Pride," Newser, October 25, 2007, http://www.newser.com/story/10265/asian-space-race-stirs-friction-pride.html; Dingli Shen, "Asia's space race," Bulletin of Atomic Scientists, October 30, 2007, http://www.thebulletin.org/web-edition/columnists/dingli-shen/asias-space-race; "SKorea to join Asian space race: science ministry," Moon Daily, November 20, 2007, http://www.moondaily.com/reports/SKorea_to_join_Asian_space_race_science_ministry_999.html; Justin Norrie, "Tokyo first to lift off in Asian space race," The Age, September 15, 2007, http://www.theage.com.au/news/world/tokyo-first-to-lift-off-in-asian-space-race/2007/09/14/1189276985904.html; Eric Talmadge, "Japan trying to catch China in Asia space race," The Seattle Times, April 19, 2007, http://seattletimes.nwsource.com/html/nationworld/2003672940_webjapanspace19.html.

2 See for example, "Christopher Bodeen, "China Insists There's No Asia Space Race," Space.com, November 1, 2007, http://www.space.com/news/ap-071101-china-nospace-race.html.

The 2007-2008 Asian Space Race

Until quite recently, in the Western public imagination, space has always been linked to the two Cold War superpowers, the United States and the Soviet Union. This relationship was established first during the halcyon days of the "Moon Race" in the 1960s and then reinforced through the decades with various American and Soviet (and later, Russian) accomplishments. The Cold War's powerful grip on the popular conception of space exploration was finally loosened in the early 21st century with the arrival of a new player, China. The media's fascination with Chinese space exploits was, of course, inseparable from the obvious signs of China's dramatic economic growth. Public awareness that the Chinese had "arrived" as a global, rather than a regional power was fed by a veritable cottage industry of books on the emerging threat or promise, depending on one's perspective, of the rising Asian giant.[3] In this context, China's space program represented an important symbol of Chinese aspirations in the leading edge of science and technology. For over three decades, China had been launching satellites into space but little had resonated with a global audience until October 2003 when China launched its first citizen (*yuhangyuan*), 38-year old Yang Liwei, into space on board the *Shenzhou V* spacecraft.[4] This feat, only hitherto achieved by the

3 For only a small sampling, see Oded Shenkar, *The Chinese Century: The Rising Chinese Economy and Its Impact on the Global Economy, the Balance of Power, and Your Job* (Wharton, 2006); W. John Hoffman and Michael Enright, *China into the Future: Making Sense of the World's Most Dynamic Economy* (Wiley, 2007); James Kynge, *China Shakes the World: A Titan's Rise and Troubled Future – and the Challenge for America* (Mariner, 2007); Rob Gifford, *China Road: A Journey into the Future of a Rising Power* (Random House, 2008); Jonathan Fenby, *Modern China: The Fall and Rise of a Great Power, 1850 to the Present* (Ecco, 2008); Randall Peerenboom, *China Modernizes: Threat to the West or Model for the Rest?* (Oxford University Press, 2008).

4 The more commonly used identifier of Chinese spacefarers as "taikonauts" appears to be non-Chinese phenomenon. The domestic Chinese media typically refer to their astronauts as *yuhangyuan* ("space navigator").

former Soviet Union and the United States, put the Chinese on a qualitatively different level than other "junior" members of the "space club" such as the European Space Agency, Japan, and India. Since the first satellite launch in 1957, nine nations had achieved the capability to launch their own satellites into orbit, but the requirements for human spaceflight were substantively higher than for automated satellite launches. Beyond the many technologies needed to have a "basic" satellite launch capability, the ability to launch humans into orbit requires mastery of a host of highly sophisticated technologies, including systems for life-support, crew recovery, worldwide communications, astronaut training, medical support, and most important, a major increase in the reliability of components and systems.

China's success attracted an enormous amount of global media attention, with many suggesting that China's space program was a challenge to the American one.[5] With public perception that American space achievements lacked luster, many space enthusiasts, including politicians seeking to drum up support for NASA, used a flurry of alarmist media reports to emphasize Chinese achievements in space in the post-Shenzhou era. Each crewed Shenzhou mission – there have been two since the first one in 2003 – only bolstered their case.[6] A series of subsequent events brought more publicity: one shed light on Chinese military ambitions while the other suggested that the Chinese harbored aspirations beyond Earth orbit. In January 2007, the Chinese destroyed an old weather satellite (*Feng Yun 1-C*) using a ground-launched anti-satellite (ASAT) system, setting off a round of international debate on the militarization of space.[7] Later that same year, on October 24, China launched the *Chang'e 1* space probe, its first to venture beyond Earth orbit, to the Moon. Two weeks later, the spacecraft entered orbit around the Moon and began transmitting pictures back to a Chinese control center. This achievement required a sophisticated infrastructure and years of long-range planning; like the human spaceflight program, it represented a qualitative leap in technical expertise.

By the time that China's *Chang'e 1* arrived in lunar orbit, there was already another Asian space probe orbiting the Moon. Just three weeks earlier, on October 3, Japan's *SELENE* probe successfully entered an initial polar orbit around our only natural satellite. The spacecraft, built by the Japanese Aerospace Exploration Agency (JAXA), was a massive 3-ton observatory equipped with a suite of 13 scientific experiments and two sub-satellites designed to "understand the Moon's origin and evolution, and to observe the moon in various ways in order to utilize it in the future." JAXA claimed it

5 Peter Ritter, "The New Space Race: China vs. US," *Time*, February 13, 2008, http://www.time.com/time/world/article/0,8599,1712812,00.html.

6 Larry Wheeler, "U.S. Losing Unofficial Space Race, Congressmen Say," Space.com, March 31, 2006, http://www.space.com/news/ft_060331_nasa_china_congress.html.

7 Theresa Hitchens, "U.S.-Sino Relations in Space: From 'War of Words' to Cold War in Space?," *China Security* (Winter 2007): 12-30.

was "the largest lunar mission since the [American] Apollo program."[8] The seemingly close coincidence of these missions suggested on both practical and symbolic levels that the two Asian economic giants were in very close "race" to explore the Moon, a suggestion played out many media reports even before the launches of these two probes.[9] CBS News noted that "China and Japan are set to launch lunar probes in the hottest space race since the Cold War."[10] The hysteria magnified almost exactly a year later when India launched *its* first lunar probe, *Chandrayaan-1*; the new space probe arrived safely in lunar orbit on November 8, 2008 and, like its predecessors, began a long program of scientific research. A little over a week later, the spacecraft disengaged a small "impact probe" probe that crash-landed near the lunar south pole, thus making India one of only a handful of nations to have actually delivered an object – albeit one that was destroyed on impact – to the Moon's surface. The nationalist dimension of this singular achievement was not lost upon the chairman of the Indian Space Research Organisation (ISRO), G. Madhavan Nair, who noted that, "Just as we had promised, we have given India the moon."[11] The reaction in the media, both in Asia and in the West, was exemplified by a cover story in *Time* magazine with the heading "40 Years Later, It's Moon Race 2.0."[12]

Background and Rationales

The notion that there was an Asian space race was predicated on three obvious and related notions: that space activities are a measure of a nation's standing on an international stage; that these nations are all at a roughly comparable stage of competence; and that the timing of these feats, such as the near simultaneous arrival of spacecraft from Japan, China, and India in the vicinity of the Moon, was the result of deliberate planning. The first assumption, that competence in space operations – especially in human spaceflight – is a measure of a nation's mastery of science and technology, is a largely accepted axiom.[13] In the post-World War II era, space exploration, like nuclear power, and computing, represented one of a constellation of factors with

8 "SELenological and ENgineering Explorer 'Kaguya' (SELENE)," JAXA, http://www.jaxa.jp/projects/sat/selene/index_e.html.

9 Justin McCurry and Jonathan Watts, "China and Japan Launch Race to the Moon," *The Guardian*, March 5, 2005, http://www.guardian.co.uk/science/2005/mar/05/spaceexploration.china.

10 Stephen W. Smith, "Asia's Race to the Moon," August 24, 2007, CBS News, http://www.cbsnews.com/stories/2007/08/24/tech/main3200903.shtml.

11 Divya Gandhi, "Chandrayaan-1 lands probe on Moon," *The Hindu*, November 15, 2008, http://www.hindu.com/2008/11/15/stories/2008111550580100.htm.

12 Jeffrey Kluger, "40 Years Later, It's Moon Race 2.0," *Time*, November 13, 2008, http://www.time.com/time/magazine/article/0,9171,1858878,00.html.

13 Asif A. Siddiqi, "National Aspirations on a Global Stage: Fifty Years of Spaceflight" in *Remembering the Space Age*, ed. Steven J. Dick (Washington, DC: NASA History Division, 2009), 17-35.

which to announce a nation's "arrival" as a regional, if not global, power. All three of the major Asian space powers recognize this notion; their commitment to human spaceflight and deep space exploration (i.e., activities that depart from the more "mundane" satellite-based operations of communications, weather, remote sensing, and navigation activities) is frequently driven by the needs of pride and prestige, and directed at both domestic and international audiences. These symbolic benefits can translate into material ones. As a recent MIT report on human spaceflight noted, "human spaceflight translates into a symbol of technological advantage, which brings real economic dividends, and those, in turn, translate into greater political influence."[14]

The three major Asian space powers followed common paths to prestige-related activities. Both China and India, for example, focused for decades on building a basic technological competence in various satellite-based applications programs whose spinoffs were directed to the welfare of the population. Once the respective space industries in the two nations attained a critical level of maturity in space applications, they moved into the arenas of human spaceflight and deep space exploration.

Consider the case of China. The nation launched its first satellite in 1970, thus becoming the fifth country to do so. For the next thirty years, China slowly and methodically developed a broad spectrum of capabilities, including a fleet of reliable launch vehicles and applications satellites. The goal of human spaceflight, approved in 1992, was the first major departure from this mode of thinking, and was part of a strategy to emphasize activities that were difficult to justify on grounds of benefits to the national economy.[15] Further action in this direction was explained by Luan Enjie, the former chairman of the China National Space Administration (CNSA), who noted, "[i]n 1998 . . . we had a serious question before us: What would be the directions and priorities for the future development of China's space program?" Accord to Luan, decision-makers prioritized two particular profiles: the first, continuing the older tradition of application satellite work, and the second, creating a completely new program of deep space exploration, officially justified on scientific grounds.[16]

India had a similar path. India's space program emerged as a result of initiatives dating back to the 1960s when key industrialists and technocrats convinced the government that space activities would aid in overall national development in areas such as communications, education, weather forecasting, and remote sensing. Since launching its first satellite in 1980, the Indian Space Research Organisation (ISRO) has allotted its funding to two major

14 David A. Mindell et al., *The Future of Human Spaceflight: Objectives and Policy Implications in a Global Context* (Cambridge, MA: American Academy of Arts & Sciences, 2009), 28.

15 Zheng Zhongyang, "The origins and development of China's manned spaceflight programme," *Space Policy* 23 (2007): 167-171.

16 Luan Enjie, "The Third Milestone for China's Space Industry – China's Lunar Exploration Program (I)," CNSA, http://210.82.31.82/index.asp?modelname=eng\en-news_nr&FractionNo=&titleno=News&recno=8.

areas: developing a robust and capable domestic infrastructure to provide indigenous access to space (through launch vehicles) and producing a spectrum of satellites to deliver services to domestic agencies involved in development. At the turn of the 21st century, ISRO managers, building on the high growth rates in the Indian economy and record of remarkable successes in their original goals, began to reorient their space program from an original vision of "space for development" to one focused on international prestige. This change in focus manifested itself in two new ISRO programs: a deep space exploration project and a human spaceflight program. The former, represented by a successful lunar orbiter probe, *Chandrayaan-1,* launched in 2008, brought ISRO the kind of international attention that none of its dozens of applications satellites and reliable launch vehicles had succeeded in bringing. Although ISRO is not planning to abandon its original mandate of focusing on domestic development and applications goals, a major shift had nonetheless occurred in India's space priorities.

Although China possesses the broadest range of space capabilities, the three national programs of China, Japan, and India have a comparable range of competence. The space programs of the three Asian powers began approximately in the same period, the early 1960s, and within three decades had achieved maturity. In the aura of the post-*Sputnik* period, when space became a potent measure of both technological power and modernity, many nations in the developing world began to consider seriously the possibility of indigenous space activities. China and Japan, benefiting from a large resource base, educated elite, and political will, came out of the starting gate almost simultaneously, both launching their first indigenous satellites in 1970. India launched its first a decade later in 1980. All three nations began with modest steps and each developed competence in both common and different areas. All three operate a fleet of reliable launch vehicles. All have developed a wide range of systems and subsystems indigenously to support the manufacture of advanced satellites. All also possess mature infrastructure – both human resources and sophisticated facilities – that supports a wide range of activities. Each also developed competence in areas that bring them a comparative advantage. India, for example, developed some of the best remote sensing satellites in the world, competitive on a global scale.[17] The Japanese were the first of the Asian powers to cast their interest beyond Earth orbit when they sent two probes for encounters with Halley's Comet in the mid-1980s. They also became key participants in human spaceflight as full partners in the creation of the International Space Station (ISS). Japan's main contribution, *Kibo*, includes the "largest pressurized module" on the ISS.[18] By the early 2000s, however, China had clearly outstripped its closest rivals in almost every aspect of space technology. China now owns and operates a

17 Krishnaswami Kasturirangan, "Indian space programme," *Acta Astronautica* 54 (2004): 841-844.

18 "Pressurized Module," JAXA, http://kibo.jaxa.jp/en/about/kibo/jpm/.

vast infrastructure to support a diverse array of operations in space that support communications, meteorology, remote sensing, navigation, science, reconnaissance, human spaceflight, and deep space exploration. It has multiple launch sites and a fleet of highly reliable launch vehicles serving various classes of payloads.[19]

China has little need to feel "threatened," either symbolically or otherwise, by the achievements of Japan and India in space. In that sense, the Asian space race is one that concerns China, the frontrunner, the least, while Japan and India, who are perceived as playing second place, have much more at stake. This imbalance was manifested particularly in the distinct lack of acknowledgment, in official Chinese statements, of Indian and/or Japanese achievements in space, while spokespersons and media from the latter two nations frequently allude to Chinese achievements in space (as well those of each other) as benchmarks. In early 2009, for example, JAXA president Keiji Tachikawa announced that the Japanese space agency needs to "have the technology for independent manned missions" and will begin a new round of research on the feasibility of an independent Japanese human spaceflight program, possibly even including a lunar landing project.[20] In explaining this change, Tachikawa was "inspired by China's successful manned space flight in 2003."[21] Similarly, Indian spokespersons often invoke China. In mid-2008, the Indian army chief General Deepak Kapoor argued that India urgently needs to "optimize space applications for military purposes" because the "Chinese space program is expanding at an exponentially rapid pace."[22] The approval of the new Indian human spaceflight program appears to be tied to the similar Chinese program. In early 2003, before the first Chinese human mission, the chairman of ISRO emphatically stated that India had no interest in a human spaceflight program. This situation changed dramatically by 2006, after China flew two Shenzhou spacecraft with astronauts on board.[23]

There is clearly a competitive aspect to the space programs of these three countries, especially with regard to Japan and India, but is this really a race? The confluence of the three lunar probes, one each from each nation in 2007-2008, suggested so. But a deeper exploration of the circumstances behind these missions shows that, while there was competitiveness among the major Asian powers, the fact that the lunar missions all coincided within a one-year period owed more to coincidence than deliberate planning.

19 Gregory Kulacki and Jeffrey G. Lewis, *A Place for One's Mat: China's Space Program, 1956-2003* (Cambridge, MA: American Academy of Arts & Sciences, 2009).

20 "Japan Removes Independent Human Spaceflight Ban," *Parabolic Arc*, March 6, 2009, http://www.parabolicarc.com/2009/03/06/japan-begins-feel-heat-asian-space-race.

21 "For the Aerospace of Tomorrow," JAXA, http://www.jaxa.jp/about/2025/p5_5_e.html.

22 "Indian army chief calls for military space program," *USA Today*, June 17, 2008, http://www.usatoday.com/news/world/2008-06-17-indiaspace_N.htm.

23 "India Planning No Manned Spaceflights in Near Future," *Space News*, January 13, 2003, http://www.space.com/spacenews/archive03/jbriefsarch_012103.html; and "India: No Plans to Follow Chinese Manned Space Launch," *Aerospace Daily*, January 7, 2003.

Chinese scientists and engineers began internal deliberations on lunar missions as early as 1991 but they did not begin concept definition until 1998. In November 2000, a white paper on China's space activities clearly articulated the need for a lunar exploration program. Information on the lunar program was first publicly revealed in March 2003, and the Chinese government officially approved the project in January 2004.[24] At the time, the mission was set for early 2007. The Indian project followed a parallel but independent schedule. The Indian Academy of Sciences mentioned a Moon project in 1999, long before news of China's achievements, but the project was officially approved in November 2003, after the Chinese announcement. There was, however, no evidence that the *timing* of the Indian launch was determined by Chinese plans. Japan came to lunar exploration from an entirely different perspective. Japan had launched its first interplanetary probes in 1985, nearly twenty years before either China or India. Its deep space program, in fact, was remarkably ambitious. Building on experience with these two probes to Halley's Comet, Japan launched its first lunar missions (*Hiten and Hagoromo*) in 1990, over a decade before any Chinese or Indian probe arrived there. Similar sophisticated missions have included a failed mission to Mars (*Nozomi*), launched in 1998, and an asteroid sample return mission (*Hayabusa*). The recent Moon mission that coincided with the Chinese and Indian missions was formally approved by the Japanese government long before its "competitors" and was originally intended to fly in 2003.[25]

If the confluence of these three missions was largely coincidental, their proximity set off a wave of publicity about an "Asian space race" that communicated deliberate intention. The publicity itself, generated spuriously, has paradoxically served to create a much more charged climate among the three great Asian space powers, as well as drawing into the orbit of the "Asian space race" other countries with ambitious to match their more powerful neighbors. As part of a bilateral agreement with Russia, for example, South Korea's first astronaut entered space in 2008 on a Soyuz rocket on a week-long trip to ISS. South Korea is also cooperating with Russia to build its own indigenous launch vehicle, the KSLV (now known as Naro-1). Despite a failed launch in August 2009, the South Koreans are pushing ahead with its development.[26] At the time, the *Korea Times* announced the launch as "the country's formal arrival into the Asian space race," a point emphasized by the prominent statements of South Korean President Lee Myung Bak in connec-

24 "Milestones of the Program," CLEP, http://210.82.31.82/index.asp?modelname=eng\en-news_nr&FractionNo=&titleno=News&recno=1.

25 Yutaka Kaneko et al., "The Selene Project and the Following Lunar Mission," *Acta Astronautica* 47 nos. 2-9 (2000): 467-473; Yutaka Takano et al., "The SELENE project and Japanese future lunar exploration," *Acta Astronautica* 57 (2005): 112-115.

26 Choe Sang-Hun, "South Korea Launches Satellite," *New York Times*, August 25, 2009, http://www.nytimes.com/2009/08/26/world/asia/26rocket.html?scp=3&sq=korea%20space%20rocket&st=cse; "S. Korea, Russia to determine cause of rocket launch mishap," Yonhap News Agency, October 19, 2008, http://english.yonhapnews.co.kr/techscience/2009/10/19/0601000000AEN20091019002900320.HTML.

tion with the launch.[27] Other countries in Asia such as Israel, Iran, and North Korea are also developing or have developed an indigenous satellite launch capability, and although prestige is a factor in their efforts, strategic and military considerations are principal drivers of their programs. Their programs are also at a nascent stage, and notwithstanding the occasional outspoken assertion, none of these programs are expected to mount any significant challenge to the dominant Asian powers in the next decade.

There are undoubtedly military implications to the Asian "space race" but these are much more difficult to predict and must be placed in the larger context of international relations between the three leading Asian space powers. China operates military and intelligence satellites while Japan has an operational reconnaissance satellite system. ISRO, which runs the Indian space program, has a civilian mandate but in the last decade there have been calls for closer ties between it and the Defense Research and Development Organisation (DRDO), the largest defense contractor in India.[28] The Chinese ASAT test in January 2007 generated much discussion both within and beyond India on the need for a commensurate response from India. Abdul Kalam, the former President and missile engineer, noted after the Chinese test that India already possesses the ability to "intercept and destroy any spatial object or debris in a radius of 200 km."[29] Even before the Chinese ASAT test, China had loomed large over Indian military space planning. A noted observer of Indian military space aspirations, Squadron Leader K. K. Nair, predicted in 2006 that further Chinese efforts in the militarization of space would provoke both India and Japan to invest in military and intelligence systems.[30] In particular, one might expect new Indian investments in space-based reconnaissance as well as organizational restructuring within the military to meet the needs of military and intelligence operations in space.

Military-flavored competition in space will also play out through alliances, with China and Iran on one side and India and Israel on the other. The Iranian space program has undoubtedly benefited from cooperation with China; a recent Chinese satellite, *Huangjing-1A*, carried imaging equipment produced jointly between the two countries. On the other side, the scale of Indian-Israeli cooperation in defense and space, a vast industry difficult to ignore, was most strikingly illustrated with the launch recently of *RISAT-2*, a sophisticated Israeli spy satellite apparently procured by the Indians.[31] The

27 Kim Tong-hyung, "Korean Rocket to Face Moment of Truth," *Korea Times*, August 18, 2009, http://www.koreatimes.co.kr/www/news/tech/2009/10/133_50336.html.

28 "India to Counter China's Anti-Satellite Test, Says DRDO," *The Tribune*, January 20, 2008, http://www.tribuneindia.com/2007/20070121/nation.htm#15.

29 "India too has Technology to Intercept, Destroy Rogue Satellites," *The Hindu Business Line*, February 22, 2009, http://www.thehindubusinessline.com/2008/02/23/stories/2008022351582100.htm.

30 K. K. Nair, *Space: The Frontiers of Modern Defense* (New Delhi: Knowledge World, 2006).

31 R. Ramachandran, "Tango with Israel," *Frontline* 26 no. 10 (May 9-22, 2009), http://www.frontlineonnet.com/fl2610/stories/20090522261003000.htm.

strategic implications of this "other" space race, not only between China and India, but between Iran and Israel, are self-evident and could have serious repercussions in regions far beyond east and south Asia.

Regional Dominance

While the public view of the "Asian space race" is one dominated by talk of missions to the Moon or human spaceflight, there is another dimension to competition in the region which, in the long run, may have a much deeper impact on the dynamic of power in Asia than any "firsts" in space. This "other space race," led by China but facing increasing competition from India and Japan, is embodied in the struggle of these nations to influence and project their power over smaller and developing Asian countries. Nations that lack the capacity to develop satellites themselves or are spurned by Western companies and agencies (for reasons of politics, corruption, and other barriers to cooperation) have in recent years avoided American and European firms in favor of seeking out Asian assistance, particularly from China, Japan, and India, three nations that have built up a substantial competence in reliable delivery of satellites to Earth orbit. For example, through its commercial arm Antrix, ISRO has so far launched satellites for South Korea, Indonesia, Argentina, and Israel. China, however, has carved out the most dominant position in this niche market; the principal vehicle for China's use of space to project "soft power" regionally has been the Asia-Pacific Space Cooperation Organization (APSCO), which currently involves nine nations: Bangladesh, China, Indonesia, Iran, Mongolia, Pakistan, Peru, Thailand, and Turkey. APSCO has not garnered the kind of publicity usually reserved for other Chinese space-related achievements, but in the long run, it may prove to be one of its most enduring and influential creations. Although tiny compared to such established international cooperative bodies as the European Space Agency, APSCO has already established a viable network among developing countries interested in the uses of space for civilian purposes. The history and nature of APSCO bears detailed scrutiny also because it represents one aspect of the Chinese space program's increasingly global reach.

The roots of APSCO date back to the early 1990s, coinciding with China's first overtures in the commercial satellite market; its first commercial launch occurred in 1990.[32] Driven by the twin rationales of the ability of space technology to transform "quality of life" and the strengthening of multilateral cooperation among Asia-Pacific nations, China signed a Memorandum of Understanding with Pakistan and Thailand in February 1992 to initiate the so-called Asia-Pacific Multilateral Cooperation in Space Technology and Applications (AP-MCSTA). Later that year, in December, China hosted

32 China launched *AsiaSat 1* for the Hong Kong-based Asia Satellite Telecommunications Ltd. in 1990 as part of a commercial agreement.

a workshop with representatives from 16 nations, including the original three plus Australia, India, Indonesia, Japan, and South Korea, among others. A liaison committee, led by China, held at least seven conferences of the AP-MCSTA over a period of nine years, from 1994 to 2003, each time meeting in a different host country.[33] These meetings were designed to hammer out an overall operational agreement to set up an institutional mechanism to enact specific programs within the AP-MCSTA. Finally, on October 28, 2005, the Asia Pacific Space Cooperation Organization (APSCO) was formalized. Eight member states – Bangladesh, China, Indonesia, Iran, Mongolia, Pakistan, Peru, and Thailand – signed the original convention; a ninth nation, Turkey, joined on June 1, 2006.[34] Chinese Vice-Premier Huang Ju attended the signing ceremony of APSCO, committing full support without any ambiguity; he noted that, "China is ready to work together with other countries in the peaceful use of space resources to allow all of the world's people to benefit from ... space technology and its application."[35]

A large portion of APSCO's activities have involved "education and training in space technology and its applications." For these, China has hosted training workshops for 250 participants from 30 countries, focused on such areas as "the use of satellite remote sensing data in environmental studies/protection, natural resource exploitation," and "disaster monitoring and prevention."[36] A typical workshop was one on remote sensing held in the fall of 2006; during a week of intense activity, 15 participants attended sessions directed by the Academy of Opto-Electronics, a Chinese developer of remote sensing capabilities. Instructors from various space-related institutions comprised the "faculty." The workshop also included visits to various Chinese remote sensing and applications institutes under the Chinese Academy of Science. At the end of the workshop, participants were awarded a "certificate" of completion issued by the host organizations.[37]

Beyond educational activities, probably the most important activity of APSCO has been groundwork to develop and launch satellites to support the common objectives of member nations. The first steps towards a concrete space project were taken in April 1998 when a Memorandum of Understanding was signed jointly by China, Iran, Mongolia, Pakistan, South Korea, and Thailand to develop a Small Multi-Mission Satellite (SMMS). A year later, in

33 These were held in China, Thailand, Pakistan, South Korea, Bahrain, Iran, China, and Thailand. See "Conferences," Secretariat of AP-MCSTA, http://www.apsco.int/ Conferences/index.aspx.

34 "AP-MCSTA Mechanism in Perspective and Its Institutionalization," Secretariat of AP-MCSTA, http://www.apsco.int/CommonWeb/foreword.aspx.

35 "The Signing Ceremony of the Convention of the APSCO," Secretariat of AP-MCSTA, http://www.apsco.int/Apsco/Scca.aspx.

36 "AP-MCSTA Mechanism in Perspective and Its Institutionalization," Secretariat of AP-MCSTA, http://www.apsco.int/CommonWeb/foreword.aspx.

37 "Background," Secretariat of AP-MCSTA, http://www.apsco.int/Training_ Education/tc2006/Training_Course_2006_Bankgrand.aspx.

July 1999, Bangladesh joined this project.[38] The project involved the development of a basic modular platform, derived from a three-axis stabilized Chinese satellite bus (known as CAST-968), which could be altered or augmented for custom missions focused on such diverse goals as remote sensing, disaster monitoring, agricultural management, and geographic surveying. Initial discussions centered on two primary goals, remote sensing and disaster management, to be implemented in two phases, the first encompassing three satellites and the second involving eight.[39] Each of the satellites would be launched on Chinese launch vehicles. The first two satellites in the series were evidently developed by China, Iran, and Thailand rather than the entire nine-nation consortium.

Undoubtedly one of China's principal aims is the projection of Chinese "soft power," what Joseph Nye has called "the ability to get what you want through attraction rather than coercion or payments."[40] Seen in this light, the international overtures of the Chinese space program represent a small but key element of growing Chinese influence in the developing world, one that adds legitimacy to the image of China as a global power.[41] China's sponsorship of APSCO is in line with a more positive attitude towards regional and global cooperation in space activities; these include participation in various UN fora as well as dozens of bilateral and multilateral agreements with African, South American, and European nations. Officially, Chinese activities have been guided by the notion of the "peaceful use" of outer space, and Chinese officials frequently pay lip service to United Nations declarations on peaceful international cooperation in the use of space, especially those focusing on developing nations.[42]

A key if not principal motivation for APSCO's work is the existence of similar multi-lateral organizations led by India and Japan, which are vying for regional influence. In 1995, India sponsored the creation of a Center for Space Science and Technology Education in Asia and the Pacific

38 "Joint Technical Coordination Meeting of the Small Multi-Mission Satellite (SMMS) Project held in Beijing," Secretariat of AP-MCSTA, http://www.apsco.int/Projects/index.aspx.

39 "SMMS for Environmental Monitoring and Disaster Management," Secretariat of AP-MCSTA, http://www.apsco.int/Projects/SMMS_Management.aspx.

40 Joseph S. Nye, Jr., *Soft Power: The Means to Success in World Politics* (NY Perseus Books Group, 2004), x.

41 See for example, Kevin Pollpeter, *Building for the Future: China's Progress in Space Technology During the Tenth 5-Year Plan and the U.S. Response* (Carlisle, PA: Strategic Studies Institute, U.S. Army War College, 2008), available at http://www.strategicstudiesinstitute.army.mil/pubs/download.cfm?q=852.

42 The most important in this regard was the UN's "Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries" ratified in 1996. See "A/RES/51/122. Declaration on International Cooperation in the Exploration and Use of Outer Space," http://www.un.org/documents/ga/res/51/a51r122.htm. See also, Yang Mingjie, Chinese Role in the Regional Space Security Cooperation and APSCO, April 2007, Tokyo, available at http://www.docstoc.com/docs/11738677/Chinese-Role-in-the-Regional-Space-Security-Cooperation-and-APSCO.

(CSSTEAP) to help train scientists and engineers from regional nations on the operation of space systems, particularly those focused on remote sensing and meteorology.[43] Unlike APSCO, this center is affiliated with the United Nations, thus lending it with a patina of international legitimacy that APSCO lacks. And like APSCO, it provides training seminars and courses to representatives of 15 nations, only three of whom (Indonesia, Mongolia, and Thailand) also belong to APSCO.

Japan also has taken the lead in a regional organization, forming the Asian-Pacific Space Agency Forum (APRSAF) in 1993 to "enhance the development of each country's space program and to exchange views toward future cooperation in space activities in the Asia-Pacific region"; the primary goal of this regional mechanism is to provide advance warning for natural disasters.[44] These parallel initiatives suggest that Asian space cooperation has fractured along China, India, and Japan lines. The overlaps in their respective initiatives (for example, with respect to training engineers and with disaster monitoring) underscore their common goals, but the largely different constituency of each organization suggests that regional "blocks" of nations are fragmenting along the patronage of the three major Asian space powers.[45] Of the 20 nations who are part of Japan-led APRSAF, only six are also part of the China-led APSCO, i.e., Japan caters to a different clientele in Asia than APSCO. The existence of competing organizations feeds a kind of competitiveness, benign but undeniably present, that embodies a different "Asian space race," one that is a battle for the hearts and minds (and money) of the lesser Asian and Pacific powers. Given its geopolitical and material implications, this may be the "real" Asian space race, played out quietly behind the glare of spectacular missions to the Moon.

Conclusions

The earliest media perception of an Asian space race emerged in the wake of China's launch of its first astronaut into space in 2003. This realization – largely imagined at that point – was significantly amplified by the near-simultaneous launches of Moon probes by each of the major space powers (China, Japan, and India) in 2007-2008. The fact that the launches of these probes converged in a short time period stemmed from coincidence rather than any deliberate plan to upstage one or the other. Although there had always been a distinct level of competitiveness among the Asian space powers,

43 Center for Space Science & Technology Education in Asia & The Pacific, http://www.cssteap.org/.

44 Asia-Pacific Regional Space Agency Forum, http://www.aprsaf.org/.

45 Rob Chambers, "China's Space Program: A New Tool for PRC 'Soft Power' In International Relations?," Thesis, Naval Postgraduate School, Monterey, California, March 2009, available at http://www.stormingmedia.us/93/9307/A930794.html. See particularly, pp. 70-75.

the notion of a "race" was largely a media construct. However, in the *aftermath* of the lunar invasion in 2007-2008, the media hubbub over the space race created a kind of self-generating rhetoric that eventually seeped into the public statements of Japanese and Indian space program officials. It remains unclear whether this is simply rhetoric or this sense of a "race" will have real repercussions, but there is now an undeniable public dimension to Asian space achievements that the space agencies of China, Japan, and India cannot afford to ignore. Understandably, official statements from Chinese space officials show little acknowledgement of this competitive quality of Asian space aspirations, but this is not so surprising given China's enormous lead in many different areas of space activities, particularly human spaceflight and military space operations. On the other hand, recent statements from Indian and Japanese space officials evince an awareness that the public dimensions of their space activities, particularly in the context of the Asian space race, are important. In that sense, the Asian space powers have are appropriating the old rhetoric of the Cold War years, of a race into space, a conception of space activities that the major space-faring powers, the United States and Russia, have abandoned a long time ago. Here, the Cold War continues to cast a long shadow over the aspirations of new Asian space powers.

There is another aspect to the Asian space race that has largely escaped detailed scrutiny, the struggle among China, Japan, and India to establish their influence over smaller Asian nations interested in space activities. The most important of these is the China-led APSCO, which, from China's perspective is an effective way to expand its use of "soft power" into the developing world; the organization establishes close ties to developing markets while underscoring the authority and prestige of Chinese competence in science and technology to a regional audience. When China recently launched a satellite for Nigeria (which is not a member of APSCO), the *New York Times* astutely noted that:

> "Beijing is trying to position itself as a space benefactor to the developing world – the same countries, in some cases, whose natural resources China covets here on earth. The latest and most prominent example came last week when China launched a communications satellite for Nigeria, a major oil producer, in a project that serves as a tidy case study of how space has become another arena where China is trying to exert its soft power."[46]

There are undoubtedly strategic considerations at play here. The existence of parallel and somewhat overlapping but similar organizational mechanisms led by Japan and India suggest that China's continuing commitment to APSCO is intertwined with larger issues of political and economic influence in Asia. At this point, APSCO clearly has a much bigger profile than its competitors, partly because it is the only one of these multilateral organizations

46 Jim Yardley, "Snubbed by U.S., China Finds New Space Partners," *New York Times*, May 24, 2007, http://www.nytimes.com/2007/05/24/world/asia/24satellite.html?_r=1.

which espouses the creation of actual space *hardware*; the others are directed only towards training and data use. APSCO's avowed goal of creating a series of Small Multi-Mission Satellites (SMMS) under cooperative agreements suggests a model that may eventually echo that of the European Space Agency rather than the many UN-based data-sharing agencies that currently facilitate space cooperation on an international level. In this respect, if APSCO proves to be a more influential framework than the Japan-led APRSAF and the India-organized CSSTEAP, then it may prove to be the most enduring and important legacy of the new Asian space race, one that has genuine political, economic, and strategic consequences not only for the three major Asian space powers but for all of Asia.