



James Clay Moltz. *Asia's Space Race: National Motivations, Regional Rivalries, and International Risks*. New York: Columbia University Press, 2011. xii + 274 pp. \$35.00 (cloth), ISBN 978-0-231-15688-2; ISBN 978-0-231-52757-6.



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Matray on Moltz

Soviet success in launching Sputnik in October 1957 had a dramatic impact on the United States, motivating an unprecedented commitment to place a satellite into Earth orbit as soon as possible. James Clay Moltz's *Asia's Space Race* shows how the same event prompted several nations in Asia to initiate space programs, igniting a race that has added more competitors as it continues into the twenty-first century. Moltz relies on direct and explicit prose to accomplish his purpose of providing "a comprehensive overview of the emergence of Asia's space programs, their current national trajectories, and their international interactions—both cooperative and competitive," as well as exposing "the role space activity plays in the specific national politics, cultures, and histories of Asia's major participants" (pp. 6-7). Editors David C. Kang and Victor D. Cha deserve credit for including this pioneering account in their *Contemporary Asia in the World* series, which attempts "to address a gap in the public-policy and scholarly discussion of Asia" (p. ii). Moltz describes a neglected rivalry in Asia to exploit space for national advantages in technology, prestige, and security. He warns,

however, that increasing spending on military space capabilities risks a catastrophe because "there is resistance to the idea of country-to-country or regionwide negotiations on confidence-building measures" (p. 190).

In his introduction, Moltz contrasts Asia's treatment of space as a kind of new "Wild West" with the approach in Europe, where eighteen nations jointly finance the European Space Agency. "Asia's space powers are," he writes, "largely isolated from one another, do not share information, and display a tremendous *divergence* of perspectives regarding their space goals and a tendency to focus on *national* solutions to space challenges and policies of self-reliance rather than on ... multilateral approaches" (p. 2). Highlighting another difference, Moltz characterizes the Cold War space race as a "one-hundred-yard dash to the Moon," while describing Asia's version as "a long-duration cross-country race" with varied goals motivating more competitors (p. 3). His definition of Asia starts in Japan and moves west to Pakistan, then extends south from the border of the former Soviet Union to Australia. Moltz fulfills his promise at the outset to

follow “a bottom-up approach in seeking to understand the role space activity plays in the ... national politics, cultures, and histories of Asia’s major participants, including their plans for economic development and their self-perceived regional and security identities” (p. 7).

Chapter 1 identifies and discusses the motivations and trends in Asia’s development of space. During the first space race, Moltz observes, the United States and the Soviet Union practiced strategic restraint and maintained “a culture of ‘managing’ space activities” through the acceptance of bilateral norms, treaties, and regularized contacts on space security matters (p. 15). A second space age began in October 2003 when the People’s Republic of China (PRC) demonstrated significant human space flight capabilities. Thereafter, the competition would be different because multiple “great powers” with “widely disparate perspectives” made reaching consensus difficult (p. 13). Also, a history of regional competition and inexperience with arms control further lowered prospects for cooperation. However, Moltz stresses that cooperative pressures, especially increasing financial interdependence and international trade, have produced mutual dependencies. In addition, more widely spread scientific knowledge has increased cooperation in resolving such problems as the elimination of space debris. Finally, “the dramatic increase of the *value* of space activity to the societies, economies, and militaries of the world in recent decades suggests that self-interest alone should promote future restraint” (p. 14). Optimistic about the positive impact of Asia’s future space efforts, Moltz references Thorstein Veblen’s logic in stressing “the ability of late-comers to start at a higher level of technological development, without the ‘baggage’ of the old system of cultural organization” (p. 23).

Moltz describes the origins, development, and current status of Japan’s space program in the first of four chapters examining the major contestants in Asia’s space race. The United States “provided it early on with privileged access to space services and technology,” but the antiwar provision of its constitution limited benefits until recently to the commercial side (p. 43). Autonomy and international cooperation have guided Japan’s actions as Asia’s most proficient space developer. The launch of its Kappa 6 rocket came in response to Sputnik, leading to the creation in 1969 of the National Space Development Agency (NASDA). Japan became the fourth nation to send a satellite into orbit the next year. By 1975, annual funding reached \$250 million after “the government made a strategic decision to push forward toward making Japan a significant space power” (p. 50). In the

1980s, Japan built the infrastructure for construction and launch of communications and meteorological satellites, as well as participating in the U.S. space shuttle program and sending a journalist to the Soviet Mir space station. But after Japan became the third nation to land an object on the Moon, the East Asian financial crisis halted robust funding for rocket testing that resumed in 2003, but suffered several launch failures. Program reorganization created the Japan Aerospace Exploration Agency (JAXA), but flat budgets thereafter limited its operations. In May 2008, the Diet approved military development in reaction to China’s activism in space and North Korea’s missile program. A new “highly fluid situation” confounded a Japanese space program already in transition (p. 57).

In the past thirty years, China’s space program, Moltz explains, has relied on “hard work, reliable state support, and the advantage provided by available foreign technology and know-how” to leap “from a backwater to a leadership position within Asia” (p. 71). But it also has experienced “major discontinuities and changes in direction” because progress has depended on politics, rather than technology and funding (p. 70). Scientists fled to Taiwan during China’s civil war, but a few whom the PRC persuaded to return became “critical to the space program” (p. 74). More important was Soviet investment, technology transfer, construction of facilities, and training. Ironically, the United States added a key component when in 1955 it deported Dr. Qian Xuesen, who had worked for the U.S. military and with German scientists in postwar relocation of V-2 rockets. Tasked with launching a satellite as part of the Great Leap Forward, the disappointing results, combined with Beijing’s split with Moscow, put China’s space program on hold. Development in the 1960s was quixotic, but PRC state council premier Zhou Enlai’s stewardship overcame uncertain funding and political purges, resulting in China’s first satellite launch in 1970. In 1978, Deng Xiaoping initiated a “new push to develop space technology ... rooted in a national plan for scientific and technological development,” with the priorities of developing satellites for remote sensing, ground stations, space science research, skylabs, and advanced launch vehicles (p. 84).

In 1984, the PRC established the Ministry of the Space Industry to supervise a program for both military and civilian use of space, setting as a goal putting a human in low Earth orbit. Financial gain motivated both the Soviet and then the Russian governments to provide equipment and technological knowledge critical in China’s skipping of a generational stage in space development. The PRC also established contacts with the U.S. National Aero-

nautical and Space Administration (NASA) and commercial firms to provide boosters to launch satellites. But Congress objected to the sharing of space technology, promptly ending the collaboration when it passed a law in 1999 naming it a prohibited export. China's strenuous opposition to the George W. Bush administration abrogating the Outer Space Treaty intensified the Sino-American rift. Nevertheless, the first ten years of the twenty-first century, Moltz explains, "represented a 'coming out' party for China's space program" (p. 93). Developing more advanced satellites and launch vehicles, the PRC offered space services for profit and to boost its influence in the Third World. Outflanking U.S. sanctions, it negotiated profitable contracts for collaborative ventures in Europe. In Asia, Beijing led the Asia-Pacific Space Cooperation Organization. By 2011, the PRC had staged 135 space launches, including a televised spacewalk during a three-man mission and a probe orbiting the Moon. But the dominance of military leaders in determining China's space program worried observers.

"India's place in the world of major space powers is unique," Moltz argues, because of its "remarkably peaceful orientation" (p. 110). Rocket testing initiated its program in the late 1700s, but impeding developments thereafter have been inconsistent funding, technological limits, domestic politics, and regional strategic factors. Sputnik inspired India to pursue an independent space capability excluding weapons and intercontinental missiles, which reflected its neutral stance in the Cold War. Ironically, it exploited this middle road to acquire technology and know-how both from the Soviets and the Americans, although Washington withheld equipment to develop a space delivery system because India had tested a nuclear device in 1974. After launching its first satellite in 1981, India relied exclusively on U.S. firms for development and on NASA for its communications network. Rising U.S. support for Pakistan caused India to begin space technology transfer from civilian to military uses, securing hardware and expertise from the Soviet Union. Successful rocket tests in the 1990s gave India a launch capability it exploited commercially in placing German and South Korean satellites into space. After Pakistan's nuclear test in 1998, India greatly expanded its space collaboration with Europe, the United States, and Japan. By 2000, the space program's budgetary growth rate was the highest in the world, although the military "had virtually no role" in its operation (p. 127). In 2009, India withheld information about its first lunar mission after a crash landing exposed weaknesses in space technology.

In 1991, the Republic of Korea (ROK) became the new

and dynamic competitor in Asia's space race. Economic recovery from the Korean War delayed its first step toward space until 1972, when it initiated a missile development program as a security measure against North Korea after a partial withdrawal of U.S. troops from South Korea. Redefinition shifted the focus in 1983 to developing space launch capabilities, which received significant funding four years later. Moltz attributes South Korea's swift progress thereafter to popular determination, government support, exceptional organizational capabilities, national pride, and the "desire to be recognized as an independent, modern, and technologically advanced society" (p. 138). Having accepted a U.S. ban on developing long-range missiles, the ROK initially worked with U.S. firms to develop and launch communications satellites, but North Korea's failed satellite test in 1998 was "a wake-up call" (p. 144). After paying foreigners for access to space, Moltz reports, Seoul now "sought to develop independent capabilities as a satellite producer, space services provider, and space-launching country" (p. 136). It proceeded cautiously to avoid inciting North Korea, alienating its U.S. protector, or alarming its Chinese rival. After paying Russia for space expertise and to train astronauts, South Korea launched satellites in 2009 and 2010; both failed. Nevertheless, Moltz judges South Korea's space record "the most politically 'balanced' among the developed programs" because it focused on maintaining "ties with a range of countries both to push its technology forward and to prevent its possible isolation" (p. 136).

Chapter 6 discusses alphabetically ten "emerging" Asian space powers. "All operate ground stations to receive foreign satellite data," the author reports, "some have operated foreign satellites, several have built and operated their own spacecraft, and a few have constructed rockets and attempted space launches of their own" (p. 159). Australia long has had the benefit of access to U.S. space data, but its program is "a loose amalgam of academic-, private-, and government-funded space-related activities, some of which were quite sophisticated, but together lacked a sense of integration or national vision" (p. 162). Indonesia has sought benefits in space with U.S. firms providing communications and Earth observation to monitor "its vast maritime domain" (p. 166). Moltz labels Malaysia the "mouse that roared" (p. 168) because it has maintained an unusually active space program since it established a center for remote sensing in 1988 (p. 168). Maximizing limited resources through international cooperation, in 2002 a Malaysian notably made a ten-day flight to the International Space Station. "North Korea appears to possess no clearly thought-

out plan for the development of a space industry, much less for coherent scientific, economic, or military uses of space” (p. 170). Its satellite launch failures indicate that it “has no sophisticated or devoted satellite program or serious plans to develop such an industry” (p. 172). Pakistan “has the [next] weakest space capabilities” because of its lack of “adequate funding, sustained governmental attention, a strong cadre of appropriately trained scientists and engineers, and technology” (p. 173).

Since Spain built a national meteorological observatory in 1894, the Philippines has had interest in space, but “activities have been slow to develop, due to a lack of resources, trained personnel, and adequate high-level political interest” (p. 177). Singapore recently made space activity a priority, contracting in 2009 with India and France to launch a satellite to monitor soil erosion. But Moltz doubts that it will “develop its own launch capability or a full array of space science programs, focusing instead on Earth applications, communications, and, likely, military support activities” (p. 179). Taiwan has worked with the United States and Europe on communications satellites and collaborated closely with Israel on space projects. Only recently has it expanded rocket research. According to Moltz, it “has developed core space capabilities to enable it to assist its military, advance its scientific role internationally, and create a solid basis for future commercial activities in space” (p. 182). Thailand hosted the Asia-Pacific Regional Space Agency Forum (APRSAF) in 2010, when it was planning to expand its satellite program. It was already “an experienced user of space data and operator of foreign-built satellites, as well as a provider of space service to other countries” (p. 182). Since the 1990s, Moltz explains, Vietnam has had extensive contact with Western capitalist nations to acquire the technology and expertise necessary for creation of “a significant space program” (p. 185). Lockheed built for it a communications satellite that a French booster put into space in 2008.

Moltz has conducted extensive research in published government documents, newspapers, and secondary books and articles. Because his topic deals with recent history, citations of primary sources are few. Less excusable, there are numerous highly speculative conclusions that have no documentation whatsoever. For example, Moltz writes that “President [Barack] Obama’s own experiences as a child in Indonesia and his visit in November 2010 are likely to increase prospects for future joint ventures in space” (p. 167). If China lands a human on the moon before the United States does so again, he argues, quoting former NASA director Michael Griffin, this will

have “‘an enormous, and not fully predictable, effect on global perceptions of U.S. leadership in the world’” (p. 5). The Six Party Talks starting in 2004 to end North Korea’s nuclear weapons program, Moltz erroneously claims in quoting another scholar, is an example of northeast Asian countries dealing “‘with new security challenges by collectively pursuing security cooperation as club goods’” (p. 37). The author also observes that it is “too often posited that authoritarian countries like China always have a clear and insidious ‘plan’” (p. 19), explaining that Cold War logic has caused U.S. leaders to substitute Beijing for Moscow. Initially, Moltz urges prudence in U.S. efforts to manage space competition. Contradicting himself, he quotes approvingly another scholar’s advice that “‘Washington should continue to discourage, or in some cases prevent, Beijing’s acquisition of military capabilities ... that directly challenge U.S. military superiority’” (p. 36).

Another weakness is the frequent appearance of unremarkable, if not innocuous statements. For example, Moltz makes the obvious point that understanding the “negative global implications” of Asia’s space race requires examining “more carefully the domestic motivations of [the] new space actors, the nature of their regional interactions, and the challenges and opportunities they pose for twenty-first-century space security” (p. 6). Similarly, he concludes that “economic factors and the drive toward both modernization and integration into the world economy have clearly played significant parts in changes throughout Asia” (p. 191). Just as self-evident is his observation that “Japan has the know-how, resources, and commitment to remain a formidable competitor in Asia’s continuing space race” (p. 69). “Thus,” he timidly asserts, “questions remain about China’s commitment to a full-scale space arms race, and it is likely that both domestic economic factors as well as international circumstances will influence [its] future direction” (p. 106). “The key question” for India, Moltz cautiously contends, is “whether [its] geostrategic needs foster the development of offensive military space technology or merely military support functions from space” (p. 131). As for South Korea, his hesitant prediction maintains that “those elements of [its] current space strategy aimed at integration, cooperation, and efforts to prevent the emergence of aggressive foreign military activities seem most likely to serve [the ROK’s] interests as a newly capable ‘middle’ space power within Asia” (p. 157).

These criticisms aside, Moltz deserves praise for producing a study that addresses timely and important issues. His thoughtful examination exposes how economic

and political competition among Asian nations has released new “forces that have made space a very different and more complicated environment than it was during the cold war” (p. 189). Now, space activities are critical ingredients in state plans for nation-building and economic development. His comprehensive description of this new pattern demonstrates conclusively that there now is no “set definition of what constitutes a ‘space program’” (p. 158). Another interesting result has been antagonism between old and new competitors. Moltz describes how “Indian representatives” in 2007 at the United Nations “argued that unfairly forcing India and other developing countries to abide by strict debris-mitigation guidelines now amounted to ‘cultural imperialism’” (p. 131). Regrettably, the author’s remark that “few are shying away from space” escapes critical analysis because he believes that these activities contribute importantly to “success in overcoming obstacles in land use, coastal management, disaster prevention, agricultural production, urban planning, and, from a broader perspective, national governance” (p. 188). An Indian space engineer at India’s first national symposium on rocketry in 1967, referring to the U.S. lunar program, asked the central question that Moltz quotes, but leaves unanswered: “‘Is this a valid enterprise? Could not this effort be applied for the teaming, starved, illiterate, ill housed, ill clad, ill cared [for] population of the world?’” (p. 114).

In his conclusion, Moltz warns that the potential for a bad outcome is real in Asia’s space race. The reason is that “space remains a bastion of nationalism” that sustains inertia and inaction (p. 193). Nationalism has produced a “missing middle” which Moltz defines as “the absence of substantive cooperation *among* the major four Asia space programs ... (China, India, South Korea, and Japan)” (p. 33). But his assessment of future questions facing space activities in civil, commercial, and military affairs identifies factors that will promote cooperation. Environmental collaboration, reducing costs, and broader economic globalization provide reason for “guarded optimism” (p. 219). Japan also has acted through APRSAF to encourage regional cooperation, initiating “a series of training efforts for less-developed Asian nations, assistance programs (such as the provision of telescopes, satellite data, and ground stations), and eventually joint development projects” (p. 54). Moltz also praises Tokyo’s low-profile approach in Asia’s space race that seeks to minimize losses while avoiding unilateralism, confrontation, and pursuit of risky gains. By contrast, Asian nations fear that cooperation is not a major priority in China’s space program. Moltz emphasizes that “all capitals need to be cautious not to overreact and not to adopt an assumption that its own country is the bulls-eye for policy decisions by all others” (p. 20).

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