A Roundtable on Jayita Sarkar, *Ploughshares and Swords: India's Nuclear Program in the Global Cold War*

Andrew J. Rotter, WIlliam Thomas Allison, Nicholas Evans Sarantakes, Tanvi Madan, and Jeffrey Crean

Editor's note: *Due to extraordinary circumstances, the roundtable that follows will not include a response to the reviews by the author of* Ploughshares and Swords, *Jayita Sarkar.* **AJ**

Introduction: Roundtable on Jayita Sarkar, *Ploughshares and Swords: India's Nuclear Program in the Global Cold War*

Andrew J. Rotter

Stories of nuclear arms development are inherently compelling. They feature states and scientists conjuring with the most elemental forces in the universe, inviting terrible danger and opening the door to the ultimate threat. Nuclear weapons carry a horror unmatched by any other kind, with the possible exception of chemical and biological weapons; by their nature they supercharge diplomacy, forcing policymakers to examine every step they take, every word they utter, with the highest levels of caution. Even the possibility that Vladimir Putin would use nuclear weapons in Ukraine gives NATO leaders pause. They must weigh how far they might go to help Kyiv.

The presence of nuclear weapons in China and South Asia has for decades shadowed conflict in that region, too. The Chinese tested their first atomic bomb in 1964. India followed ten years later, and Pakistan officially joined the nuclear club in 1998, after another Indian test. Given the tensions in the neighborhood since the early Cold War—ongoing and frequently flaring conflict between India and Pakistan, hostility between China and India—the introduction of nuclear weapons in this part of Asia has been a matter of enormous concern across the globe. And it has drawn the attention of historians and political scientists. Jayita Sarkar's is the most recent book-length treatment of India's nuclear program, but, as Jeffrey Crean points out, it follows five others written since 1999. Given the limitations of access to records in India, at least until recently, this is an impressive amount of scholarship.

There is broad consensus among the reviewers for *Passport* that Sarkar's book is the most authoritative yet. William Thomas Allison calls it "exceptional" and "remarkable," praising its deep research and innovation. Crean writes that it is likely "to become the canonical text on this topic, presumably for decades to come"; Nicholas Evan Sarantakes thinks it "will likely remain the main authority on the topic for a future best measured in . . . decades." If Tanvi Madan is least effusive, she nevertheless finds the book a significant contribution to the literature on India's nuclear program. The book, the reviewers say variously, is clearly written (their own incisive summaries of its thesis give evidence of this), deeply and broadly researched, fresh in its arguments, and persuasive in its claims.

There are "quibbles," of course. While acknowledging that it was not a nuclear accident, Allison would have liked the author to address the Bhopal chemical leak disaster in 1984. He would also have liked more analysis of India's "Sputnik moment," which involved China's launch of a satellite into orbit in 1970. Crean is critical of what he considers Sarkar's overuse of Fredrik Logevall's term "intermestic"—meaning the intersection of the international and the domestic—and wishes that she had devoted more time to examining Indian domestic politics. Like Allison, Madan wants more exploration of key issues; in her case, as in Crean's, that means more on the nuclear debate in India and more on the role of the wealthy Tata family in sponsoring nuclear research. Finally, Sarantakes asks, "How important was the Indian nuclear program in the Cold War?" That is a fair question, given Sarkar's subtitle, which has to do with valence or relative importance. The Americans fretted about India's nuclear ambitions, as they fretted about the spread of nuclear weapons generally. Yet how much time did they devote to these concerns relative to their worries about events in Europe, Latin America, and East Asia?

Sarkar argues that India pursued its nuclear program as a quest for security, as two of the reviewers (Crean and Madan) note, and thus takes issue with Itty Abraham's claim that a desire for status was its main motivation.[1] The reviewers seem content to take Sarkar's side. I confess, however, that I carry a torch for Abraham's thesis, in part because I don't see security and status as an either/or matter, and in part because India was unlikely to gain security with a bomb, given the near-certainty that an Indian nuclear test would inspire a Pakistani response, as Indian policymakers knew. That Sarkar doesn't bother to fight such historiographical battles in her book strikes me as one of its strengths. I suspect the reviewers agree.

It is of interest (to me, anyway) that three of the four reviewers begin with what I would call broadly cultural references to what would otherwise seem to be a problem of cold geopolitics. Allison starts with the Bollywood (Tollywood, actually, since the film was made in South India and is in Telugu) film *RRR*, a blood-soaked song-and-dance fest that, as he perceptively says, celebrates violent resistance to British colonialism. Crean offers a Tom Lehrer song and Nevil Shute's 1957 novel *On the Beach*. Sarantakes opens with a novel, too: Sir John Hackett's *The Third World War: A Future History*.

Historians tend to use cultural references like these, sometimes as a way to ease readers into their supposedly more serious work, sometimes to show that they have lives

beyond the documents, sometimes to provide color to their accounts. And sometimes, these references suggest something about the way they think about the subject or nation they are about to explore. Now, as during the Cold War, India was in the American mind as much a series of impressions, feelings, stereotypes, and clichés as it was a nation state that deserved to be taken seriously. Indians suspected this was so. What might a nuclear program do to jolt the Americans, and others like them, out of their fairytale (and nightmare) construction of Indian inconsequence?

I share the reviewers' admiration for Sarkar's study. It is model scholarship, a bravura first book. No pressure, Jay, but I look forward to more.

Note:
1. Itty Abraham, *The Making of the Indian Atomic Bomb: Science, Secrecy, and the Postcolonial State* (New York, 1998).

Review of Jayita Sarkar, *Ploughshares and Swords: India's Nuclear Program in the Global Cold War*

William Thomas Allison

India recently marked seventy-five years as an independent nation and forty-eight years since "Smiling Buddha," its first underground "peaceful nuclear explosion." India's national trajectory has moved far from the anti-violent, secular nation Mahatma Gandhi envisioned. Today Gandhi himself is scorned by the most recent wave of determined Hindu nationalists, who instead look to India's more militant past for inspiration. Their preferred pantheon of Indian heroes had little patience for gaining independence through peaceful means, turning instead to violent force to break from the British Empire. These warrior-heroes include the controversial Subhas Chandra Bose, who commanded the Indian National Army during World War II, and Vallabhbhai Patel, who, as India's first home minister, ruthlessly forced fence-sitting provinces to join the newly independent Indian state.

The current Indian prime minister, Narendra Modi, epitomizes this militarized narrative of India's independence with his efforts to sustain India's leadership in the nonaligned developed world by encouraging Hindu nationalism and agitating anti-Muslim suspicion.[1] Even Bollywood has embraced the anti-Gandhi, pro-force version of independence. The recent blockbuster *Raudraṁ Raṇaṁ Rudhiraṁ* (*Rise, Roar, Revolt* in English, but roughly *Rage, War, Blood* in Telugu), popularly known as RRR, which is the product of screenwriter Vijayendra Prasad and director Koduri Srisaila Sri Rajamouli, "pays tribute to the 'real warriors' of India's freedom struggle" in a three-hour-long "visual-effects spectacle" that leaves Gandhi out of the story entirely.[2]

Against this backdrop of Modi's muscular Hinduism, Jayita Sarkar's *Ploughshares and Swords* could not be more timely. Sarkar, a senior lecturer in economic and social history at the University of Glasgow, maintains that Modi's assertion that Cold War India was feeble and anti-militarist is wrong. While Gandhi passively resisted British imperial rule, more militant leaders employed violence against their British overlords. A preference for the militarized over the peaceable remained after independence.

Sarkar also contends that Prime Minister Jawaharlal Nehru embraced the possibilities of atomic energy, promoted by Indian physicists, to pursue a duality of objectives—development and security. "The myth of a peaceful India," claims Sarkar, "does not hold against the reality of violence of partition and the wars that crafted India's borders with Pakistan and China" (10). She argues that India's nuclear ambitions stemmed from a strategically planned nuclear program that simultaneously pursued peaceful and militarized atomic power to maintain "freedom of action" in the bipolar Cold War world and to secure its borders at home.

To cut through the complexities of India's atomic era, Sarkar skillfully guides the reader through many twists and turns involving the influence of various personalities, India's regional security concerns, and relations with Cold War powers. She persuasively demonstrates how India's nuclear program and anti-nonproliferation stance supported the nation's nonalignment policy and concludes that these and other national security considerations were vital to India's "pragmatic response to an asymmetrical world order" (12). According to the author, "the internal-external, domestic-international, and inside-outside were closely intertwined with important implications for what geopolitical challenges meant" to India as a nation-state. Achieving nuclear fission, India's scientists and political leaders concurred, would help achieve the "geopolitical goals of the territorial state as well as the technopolitical goals of the developmental state." To maintain "freedom of action" and serve the "national goals of development and security," India therefore embarked on a "dual-use" nuclear program that simultaneously served "military and civilian ends" (2–5).

Sarkar sets forth three primary supporting arguments throughout the book. First, she stresses that the duality of India's nuclear program was, from the outset, intentional. Scientists and political leaders structured the Atomic Energy Commission of India and the Indian Department of Energy to pursue both peaceful and military uses for atomic energy. They also took advantage of commercial partnerships, technological expertise exchanges, and nuclear relationships with other countries (France plays a key role here). Second, she contends that this "Janus-faced" nuclear program both developed and existed within the complex mass of India's regional security concerns and India's rather audacious nonalignment strategy during the global Cold War. For India, "securing borderlands" was just as important as protecting its border with China and Pakistan, as the numerous internal and external conflicts involving India attest (14). Third, she argues that, like the major powers in the Space Race, India used its space program to pursue both peaceful and military development and objectives. The critical difference is that India did so to gain knowledge and cooperation from other space-states while working on its own home-grown rocket program to retain "freedom of action" (123–24).

To tell this story, Sarkar covers a lot of ground, but she does so in an efficient 204 pages of text. Organized in three chronological parts, her book devotes each chapter to an examination of technological developments against an often unstable domestic political situation and volatile regional and international security conditions. Chapters 1 and 2 use the broader context of post-war decolonization to explore India's nascent atomic program, its institutional development, and how the program fit Nehru's expansionist plans for the new Indian state and his vision for India's post-independence accelerated economic development. Interesting here is India's discovery of a willing atomic partner in France, which also sought nonalignment, albeit ineptly, to maintain its own "freedom of action" in Europe.

Chapters 3 through 5 cover 1953 through 1970 and explore the evolution of India's nuclear program as it moved toward conducting an underground nuclear test. Sarkar showcases the brilliant game of nonalignment diplomacy India played to avoid signing the 1963 Partial Test Ban treaty and the 1968 Nuclear Non-Proliferation Treaty, much to the disappointment of the United States. India's refusal reflected its strategic interests but was not without some risk, as India joined an odd company of other non-signatory nations—U.S. allies Israel, Pakistan, and

South Africa, along with perennial pariah North Korea. Sarkar's discussion of India's reaction to China's hydrogen bomb test and the clashes between India and China along the Sikkim-Tibet border is insightful.

The final two chapters connect Indira Gandhi's domestic political trials to India's so-called "peaceful nuclear explosion" in 1974. American support of Pakistan and the Soviet Union's 1979 invasion of Afghanistan challenged India's nonalignment policy and put increased pressure on its dual nuclear program. Sarkar's contextualization of India's nuclear program within the larger picture of its Cold War relations with the United States, the Soviet Union, and China is a strength here.

Several noteworthy points stand out in Sarkar's deeply researched history. Extraordinarily ambitious physicists such as Homi Bhabha and Vikram Sarabhai were indispensable in setting up India's scientific establishment and influencing government policy. Unlike their contemporaries in the United States—Edward Teller, Robert Oppenheimer, and James Conant, for example—Bhabha, Sarabhai, and other nationalist-minded Indian scientists convinced government authorities to pursue nuclear development without getting entangled in the international regulatory process. In her discussion of India's "atomic earths," especially its deposits of rare monazite, Sarkar maps out the complex web of industrialists, corporations, government agencies that had an interest in these mineral deposits and demystifies the international transactions in which the deposits were used as bargaining chips to preserve this and other coveted resources for India's own use—to preserve India's "freedom of action."

Sarkar's account of India's deft political moves to get nuclear technical support from other atomic states and to successfully resist signing international atomic agreements is sound scholarship. The bold and brazen game of *realpolitik* that India played would have made Machiavelli blush.

Similarly, Sarkar's account of India's deft political moves to get nuclear technical support from other atomic states and to successfully resist signing international atomic agreements is sound scholarship. The bold and brazen game of *realpolitik* that India played would have made Machiavelli blush. But Sarkar's most substantial contribution may be her analysis of how the Indira Gandhi government managed the difficult task of balancing the pursuit of India's nuclear program against domestic political turmoil and tensions with bordering states such as Pakistan and China. Sarkar convincingly illustrates how advancing India's nuclear development was vital in both security arenas.

Among Sarkar's more provocative points is an underlying criticism of the United States and its strategic narcissism concerning international controls on atomic energy and nonproliferation. The United States consistently failed to fully consider India's geostrategic position and nonalignment objectives. Instead, U.S. officials frequently viewed India's maneuvering only in terms of whether it served American interests and goals . From its experience maintaining nonalignment and "freedom of action," India recognized this rigid approach and often used American predictability to its advantage, enabling India to maintain "freedom of action."

Ploughshares and Swords does have some shortcomings. Sarkar's use of discipline-specific jargon seems, at times, unnecessary. Terms like "modernities," "sociotechnical imaginaries," and "intermestic" may leave non-specialists scratching their heads and wondering how these and other less-than-clear terms add to Sarkar's otherwise compelling and engaging analysis. The author's overuse of acronyms forces the reader to repeatedly return to what becomes a well-worn page of abbreviations (xv). And there are minor inaccuracies. Figure 6.1's caption describes a group of armed Mukti Bahini irregulars and "an Indian Army tank," but the purported "tank" is a bulldozer (148).

These are quibbles. More significant is the missed opportunity in Sarkar's discussion of India's reaction to China's April 1970 launch of a satellite into orbit. Sarkar offers a well-documented account of how this event ignited "acute political criticism" of Prime Minister Indira Gandhi's government. Still, the author leaves the reader wanting more about India's own Sputnik moment, including perhaps a discussion of the applicability of the Sputnik analogy.

Also missing is a consideration of the 1984 Union Carbide industrial disaster at Bhopal, which exposed countless people to methyl isocyanate gas, injuring tens of thousands and ultimately killing as many as 16,000. The Union Carbide tragedy is a curious omission, since Sarkar extensively discusses efforts to avoid treaties and commercial agreements that would have committed India to safeguards for its reactor programs (161), and she briefly covers the controversy over radiation fallout from the Pokhran test (203). The Union Carbide disaster was not a nuclear accident but a catastrophic industrial disaster that might be looked at in relation to India's resistance to international regulation. Consider that the Three Mile Island reactor meltdown had occurred only a few years before Bhopal, and Chernobyl happened less than two years after. Moreover, Union Carbide was an American company, and the United States had consistently pushed India to accept international atomic regulatory agreements (in addition to the Nuclear Non-Proliferation Treaty). Sarkar's view on whether a connection exists here would have been most interesting.

These minor issues do not detract from the fact that Sarkar has produced an exceptional volume that challenges India's peaceful-state narrative and places Indian nuclear development and geostrategic objectives in domestic and international contexts. Sarkar should be commended for weaving this complex, multi-layered story into a concise, cohesive history. *Ploughshares and Swords* reveals the far-reaching influence of India's scientific community and the political tension surrounding India's nuclear program. Yet Sarkar's more significant contribution may be the sub-theme that runs throughout the book: India's nuclear ambitions remained unaltered despite the country's rather unsettling swings from democracy on the one side toward authoritarianism on the other.

India's atomic ploughshares and swords achieved a shape-shifting quality that facilitated India's nonalignment and aided its security goals. More to the point, so nationally crucial did India's nuclear development program become that opposition to it equated to being anti-India. As Sarkar puts it, "Opposing nuclear energy" was tantamount to "resisting economic modernity." More significantly, Sarkar contends that India's resistance to oversight and other regulatory agreements went hand-in-hand with the "coproduction of India's nuclear program and Indian society as an opaque, inegalitarian, and hierarchical order" that reinforced "an antidemocratic culture" (203). The scientists, the Indian Department of Atomic Energy, and the Indian government became one with the nation and its modernized development.

Specialists and non-specialists alike will benefit from Sarkar's work and should be impressed by its deep archival research and engaging framework. This is a remarkable book. Hopefully, Sarkar has plans to carry the story from the 1990s to the present, as there is much more to tell.

Notes:

1. Annabelle Timsit, "India Celebrates 75 years since

independence amid hope and tension," *Washington Post*, August 15, 2022. https://www.washingtonpost.com/world/2022/08/15/india-independence-day-75/. See also Debasish Roy Chowdhury, "Modi's India Is Where Global Democracy Dies," *New York Times*, August 24, 2022. https://www.nytimes.com/2022/08/24/opinion/india-modi-democracy.html?searchResultPosition=2.

2. S. S. Rajamouli, Raudraṁ Raṇaṁ Rudhiraṁ, March 25, 2022, DVV Entertainment, Hyderabad, Telangana, film; Gerry Shih, "As India marks its first 75 years, Gandhi is downplayed, even derided," *Washington Post*, August 12, 2022. https://www.washingtonpost.com/world/2022/08/12/india-independence-mahatma-gandhi/.

Review of *Ploughshares and Swords: India's Nuclear Program in the Cold War*

Nicholas Evan Sarantakes

In 1978 General Sir John Hackett, a retired British Army officer, published the novel *The Third World War: A Future History*. This book was the first of a series of works of speculative fiction about World War III being fought between the United States and the Soviet Union within the context of the Cold War.[1] Hackett wrote the book as a warning that the North Atlantic Treaty Organization was becoming dangerously weak in conventional military forces, which would encourage the Soviet Union to initiate a war that the West could not win even if it turned to nuclear weapons. In fact, no one would win a nuclear war.[2]

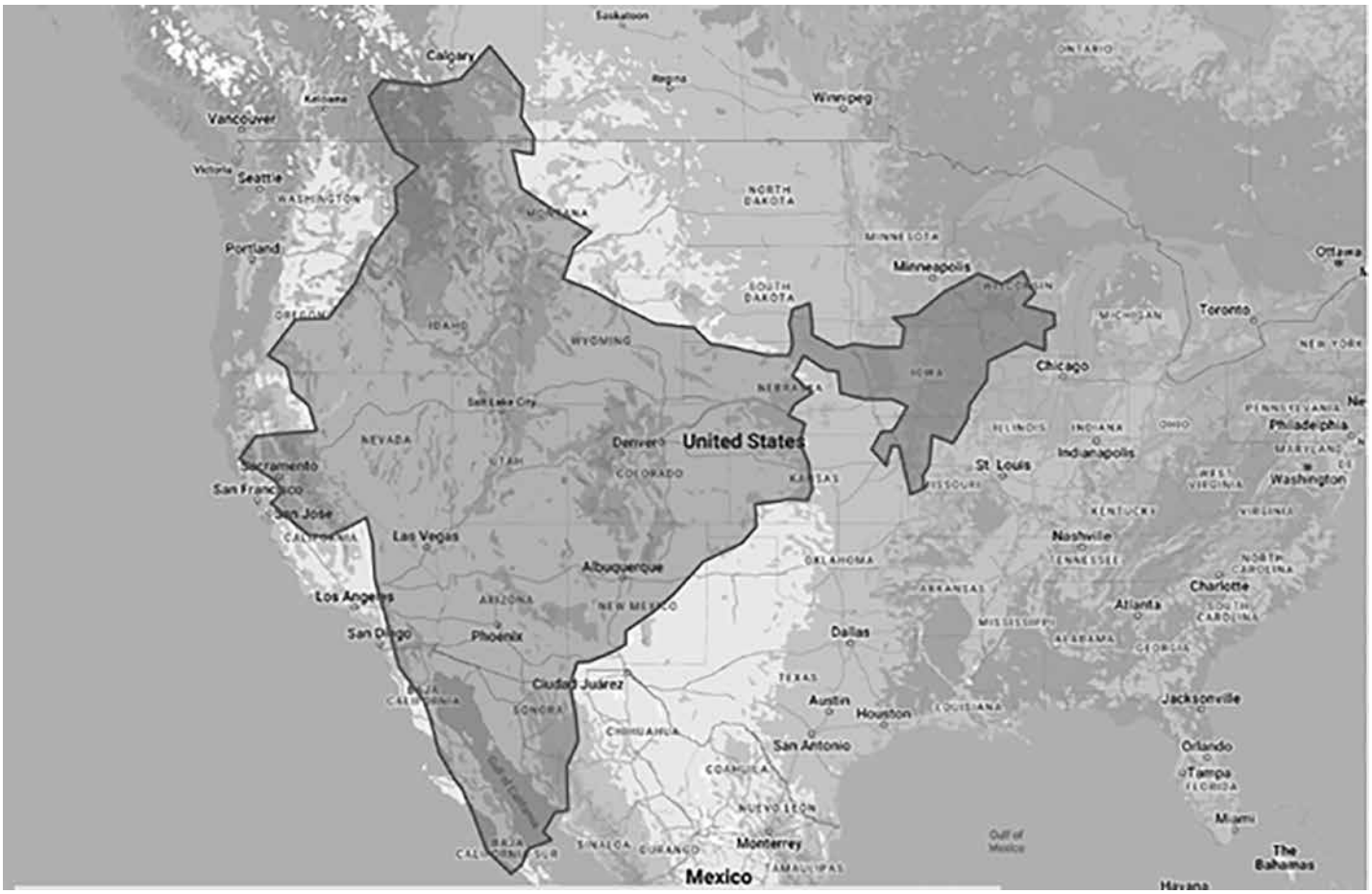
To read *The Third World War* several decades later is to be astonished at Hackett's analysis. He and his team—he co-wrote the book with several other retired British officers and civil servants, but he is the only one listed on the cover—got many things right: the breakup of Yugoslavia, an end to apartheid in South Africa, the collapse of the Soviet Union, and even electoral patterns in both the United Kingdom and the United States in the late 1970s and early 1980s. One thing they got wrong, though, was the prediction they made about the future of the Republic of India.[3]

Hackett and his team believed India would collapse. That they thought this possible suggests that India was weak at the time and faced domestic threats to its viability. That idea is one of many that Jayita Sarkar addresses in her first book, *Ploughshares and Swords: India's Nuclear Program in the Cold War* (2022). An associate professor at the University of Glasgow, Sarkar was born and raised in India, then did her graduate work in France and Switzerland.

India is big and important. If a map of India were superimposed on one of the United States, India would reach from San Francisco in the west to Milwaukee in the east, and would stretch from Calgary, Canada in the north to the tip of the Baja California peninsula in in the south. India also has a massive population of 1.3 billion. Long story made short, events in India are significant in and of themselves, just as events in the United States are.

Sarkar writes that "*Ploughshares and Swords* is not about India alone" (15). While that is true, India is the main actor in this drama. The book begins with a history of internationalized science and technology in India. The first part, in two chapters, covers early efforts to develop nuclear power in India. A great deal changed when President Dwight Eisenhower gave his "Atoms for Peace" speech, which led to greater support for India from France. China's development of a nuclear weapon put the Indian effort into high gear.

The second part of the book (chapters 3 through 5) examines the expansion of the nuclear and space programs in India. The final section (chapters 6 and 7) looks at the international reaction to the nuclear program and at dangers to Indian sovereignty. Sarkar refers to those threats as "intermestic," since they involved both internal and external actors. The threats were many and the biggest, most



dangerous ones came in the form of secession movements, suggesting that Hackett and his team had a point.

Over the course of the book, Sarkar makes three main arguments. First, she contends that India pursued a dual-use nuclear program that served both civilian and military ends. Second, she notes that geopolitics shaped Indian nuclear development in a profound manner, as keeping the borderlands peaceful by offering them nuclear technology and development was just as important to the Indian government as protecting the borders. Third, India developed a dual-use space program that was—physically, at least—separate from the nuclear program that so confounded U.S. analysts. Those analysts were using the U.S. experience as a template to measure when India would have the ability to put a weapon on target, and India organized its scientific development differently than the United States.

Domestic politics drove the decision to build a dual-use nuclear system. The author argues that Prime Minister Indira Ghandi was operating from a position of strength as she decided to proceed with a nuclear explosion. Sarkar covers many different issues, but the connections she makes between issues such as nuclear testing, the annexation of the Kingdom of Sikkim, and the third India-Pakistan war are imperfect. The importance of India to world affairs is an open question. With that point made, many nations were interested in developments in India.

One of the strengths of this study is Sarkar's ability to present the facts in a dispassionate way that offers the reader an opportunity to see different perspectives on the issues. After obtaining its independence from the United Kingdom, India pursued a foreign policy of non-alignment. That certainly was understandable. After struggling to achieve independence, Indian political leaders did not want to undercut that achievement by aligning themselves with a political order that might very well subordinate them to the political and economic interests of Europe and the United States and make India independent in name only. Considering how the Soviets administered and ruled their territory and allies, however, Indians come across here as politically tone deaf. British rule in India might have been exploitative, but morally the British were in the right in the Cold War.

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We see a similar disconnect on the question of nuclear non-proliferation. The United States wanted to limit the expansion of nuclear weapons, since they had the potential to do extensive and long-term biological and ecological damage to the planet. Indians, on the other hand, argued that non-proliferation was an infringement on their sovereignty. It was, but that seems more like a rationalization than an actual reason. India wanted the bomb to develop its international standing, and from the perspective in New Delhi, the United States was a "have" trying to keep the "have nots" from developing their own national resources.

The problem Indians faced is that world opinion was with the United States. When Canadian Prime Minister Pierre Trudeau decided to end nuclear assistance to India, Foreign Minister Jagat Singh Mehta captured the essence of the dispute in a cable he sent to Indian embassies: "We do not accept the Canadian view that there is no difference between a PNE [peaceful nuclear explosion] and a bomb" (192).

For a historian of U.S. diplomatic history, this book shows the limits of U.S. power. Even if the Americans opposed the Indian nuclear program, it still had huge support in India. When Ghandi's government announced a successful explosion, Indians of every political persuasion celebrated. India had a nuclear weapon that it could use to protect itself, but since India had used a dual track system, those who wanted to believe that India now had laid the foundation for a peaceful nuclear system could do so. Sarkar argues that in many ways this twin nuclear program allowed scientists and administrators to evade democratic accountability and enabled politicians to force consensus on the India public.

There were, however, international and domestic problems. The test site was close to Pakistan, which was worried about radioactive fallout. The health problems of villagers who lived near the test site suggest the Pakistani concerns were well-founded.

The research foundation of this book is nothing less than stunning. Sarkar has visited the archives in eight nations on three different continents, requiring a reading knowledge of at least three different languages. All told, she visited twenty-five different repositories. Her research in the United States alone is impressive. She visited institutions on both coasts and in both the north and south, with several stops in between. The document collections she examined show a real diversity, ranging from national archives to the personal papers of politicians, with the records of international organizations and the files of private corporations thrown in for good measure.

Given her emphasis on domestic politics, it is not surprising that Sarkar also consulted the digitized collections of the *New York Times*, the *Washington Post*, and the *Times of India*. It will be hard for future scholars writing on India's nuclear program to challenge this book, unless future declassification efforts produce documents that have significantly different information. The most likely new sources would appear to be archives in Pakistan or the former Soviet Union, and none of those institutions seem likely to welcome new scholars anytime soon. As a result, Sarkar's book will likely remain the main authority on the topic for a future best measured in scores rather decades.

Sarkar's writing is also good. She faces a diverse audience of scholars in South Asia, the North America, and Europe, and she has written in a manner that will be accessible to all.

The real question is the importance of the topic. India is important; 300 years of British imperial history make that clear. British control of the sub-continent was a major element in the factors that made the United Kingdom a world power. The ability to develop a nuclear weapon is an important sign that it is a world power in its own right. As a contribution to Indian history, this book is significant. But did it really stifle dissent? Gandhi's suspension of civil rights between 1975 and 1977 suggests that it had not and that a great deal more effort was needed.

How important was the Indian nuclear program in the Cold War? While the East-West confrontation did go global bringing in Africa, Asia, and South America, those incidents were secondary to events in the main theater—Europe. Korea, Vietnam, and Afghanistan were peripheral. So was India. Although there were three shooting wars between India and Pakistan, South Asia was a strategic cul-de-sac. What happened there was not going to affect the East-West confrontation in any meaningful way. The Cold War was going to be won or lost in Europe.

Scholars can agree or disagree with these points as they like. What is indisputable is that Sarkar has written the type of book that everyone should aspire to write: thought-provoking, well written, and well researched.

Notes:

1. Hackett's novel has been the subject of investigation in two academic articles: Jeffrey H. Michaels, "Revisiting General Sir

John Hackett's *The Third World War*," *British Journal for Military History* 3, no. 1 (November 2016): 88–104; Adam R. Seipp, "'Visionary Battle Scenes': Reading Sir John Hackett's *The Third World War*, 1977–1985," *The Journal of Military History* 83 (October 2019), 1235–57.
2. Leonard Downie, Jr. "The Best-Selling General Who Won World War III," *Washington Post*, June 18, 1979; Jeff Lyon, "Doomsday Author is an Optimist to the Core," *Chicago Tribune*, April 8, 1980.
3. Sir John Hackett, *The Third World War: A Future History* (New York, 1978).

Review of Jayita Sarkar's *Ploughshares and Swords: India's Nuclear Program in the Global Cold War*

Tanvi Madan

Over the years, the Indian nuclear program has garnered the attention of both scholars and policymakers. New Delhi's motivations for pursuing nuclear weapons, in particular, have been the subject of discussion and even debate. In *Ploughshares and Swords: India's Nuclear Program in the Global Cold War*, Jayita Sarkar delves into the origins, nature, and evolution of India's nuclear program. In this insightful historical account, she sheds new light on the Indian government's choices, embedding them within the geopolitical context they were facing and the foreign and security policies they were developing. Furthermore, Sarkar expands our understanding of the individuals and institutions beyond officialdom who contributed to India's nuclear and space programs. And she does so while gamely wading into the debate about India's nuclear path.

In *Ploughshares and Swords*, Sarkar takes the reader on a chronological journey from the 1940s, just before Indian independence, to the early 1980s and the aftermath of India's 1974 "peaceful nuclear explosion." Her historical treatment contributes significantly to the literature on a subject that has received greater attention from political scientists than historians in the past. Accessing documents from eight countries, including India and France, she examines Indian choices about the country's nuclear program in the midst of decolonization and nation-building, the dawning of the nuclear age, and unfurling superpower competition.

The author's main argument is that India's nuclear program did not evolve from a civilian to a military one, but was dual-track from the start. Sarkar writes of a "deliberate duality," with a program designed to speak to both the development and defense needs—the "ploughshares" and "swords" of the title—of a newly independent India. The sword might have remained sheathed for several years, but Sarkar argues that Indian policymakers sought to keep that option open from the beginning. This decision reflected a broader Indian desire to protect the country's security as well as its strategic autonomy, i.e., its freedom of action, to the extent possible. Sarkar also shows how these objectives shaped India's view of non-proliferation initiatives, such as the Nuclear Non-Proliferation Treaty. By requiring India to forswear the "sword" option, such agreements would have constrained India's autonomy. They were therefore unacceptable to officials who were intent on India maintaining an independent capacity to defend itself.

In outlining this motivation, Sarkar comes down firmly against some scholars' contention that a quest for status rather than security drove India's nuclear program. Security from whom? The author argues that it was the threat from China—more than the Pakistan challenge that some have focused on—that loomed larger in Indian decision-making in this context.

Sarkar's dual-track and security arguments also help push back against the narrative that it was only during the period around the 1998 nuclear tests that Indian decisionmakers went from being idealists to realists and weak to strong. Instead, she emphasizes the continuities in India's nuclear program, asserting that the origin story of those tests lies in decisions made—or not made—decades earlier.

Those choices, Sarkar shows, included partnering with other countries. Indian officials and scientists maintained a diversified portfolio of technology partners, including the United States, the Soviet Union, France, and Britain. This reflected Indian policymakers' broader strategy of diversification. Scholarship produced since Indian official archives have become more accessible has made evident that maintaining multiple partnerships was not a result of Indian idealism or indecisiveness. Instead, it was a deliberate, pragmatic choice to diversify India's dependence, as New Delhi sought security, development, *and* autonomy.

Sarkar contributes to the understanding of New Delh's foreign policy diversification. She highlights how it gave Indian scientists access to multiple partners and how the scientists' technical needs, in turn, added to Indian policymakers' reasons for maintaining those partnerships. Sarkar also shows the benefits of that diversification—with India using one partner's offer as leverage with another, for instance, or having other technology sources to turn to when a partner proved to be unreliable. Missing from the book, however, is a deeper look into the downsides of that diversification.

Nonetheless, in exploring India's various technology partnerships, *Ploughshares and Swords* does add to our knowledge of India's relationships with major countries. Sarkar illustrates, for instance, how access to American talent, training and technology was crucial in the early stages of India's nuclear and space programs. The story of these informal and formal collaborations complicates the traditional narrative of an India-U.S. relationship that only moved from estrangement to engagement around 2000—a correction also evident in other recent books such as Rudra Chaudhuri's *Forged in Crisis*, David Engerman's *The Price of Aid*, and this reviewer's *Fateful Triangle*.

Ploughshares and Swords previews some of the reasons for that eventual estrangement. It explores the way U.S. non-proliferation priorities led to restrictions on India-U.S. nuclear and technology cooperation that left a long-lasting impression of American unreliability in New Delhi. The book also shows that India-U.S. friction sometimes stemmed from American policies that were not India-specific but nonetheless adversely affected Indian interests. Furthermore, Sarkar examines how American hesitation to work with India at critical points opened the door to a more willing Soviet Union and led to the India-Soviet nuclear and space cooperation that has helped Moscow retain its relevance to New Delhi to this day. This book should thus be of interest to practitioners and scholars of contemporary India-U.S. and India-Russia relations as well.

It is in looking at the India-France relationship, however, that Sarkar's book makes a more novel contribution. This is an understudied partnership that deserves more scholarly attention. The author does her part by offering us a glimpse of cooperation between two countries—one an American ally, one non-aligned—that sought to maintain as much strategic autonomy as possible while recognizing the need for partners. In doing so, she also sheds light on what made France—and still makes France—an attractive partner for India, including its flexibility and the fewer strings attached to its cooperation. An additional benefit of this exploration of India-France nuclear cooperation is that it helps disaggregate the "West," whose countries often get clubbed together in studies of Indian foreign policy. The book furthermore treats European countries as independent actors and not just American satellites—indeed, Sarkar shows how British and French institutions and companies competed with their American counterparts

for agreements with India.

While *Ploughshares and Swords* is largely focused on India's decisions, it does consider how the debates in and priorities of other countries, particularly the United States, shaped New Delhi's options: how, for instance, U.S. and Soviet interest in non-proliferation affected their view of India's nuclear program, or how a change in government in Paris and in U.S.-France relations could affect India-France nuclear cooperation. And Sarkar shows that these constraints forced India's scientists to be adaptive and innovative and to try to develop capabilities as independently as possible. They also contributed, she argues, to a simultaneous rather than the more common sequential pursuit of nuclear delivery vehicles and the bomb.

New Delhi's recognition of the way external partners' interests and internal debates could constrain its choices has been a crucial reason for India's perpetual pursuit of self-reliance. But this book also helps nuance that "self-reliance." The country's nuclear program was indeed part of its pursuit of freedom of action where its energy needs and particularly its security were concerned. But Sarkar shows that the program was only made possible through openness to partnership with others, and it benefited from both informal networks and formal links with foreign counterparts.

India's past policymakers recognized the necessary trade-off—that the quest for independence required some level of dependence. They tried to mitigate the consequences of that dependence via diversification. They also used the U.S.-Soviet competition, even as they criticized it, to garner attention and technical assistance while creating space for themselves. And *Ploughshares and Swords* shows that as India became a battlefield in the Cold War, the instruments Washington and Moscow deployed weren't just the food, economic or military aid that other scholars have written about, but also assistance for India's nuclear and space programs.

An intriguing part of Sarkar's book is her argument that India, too, saw its nuclear expertise as an instrument of diplomacy and a way for scientists to establish a global reputation as innovators. She offers a glimpse of the road considered but not taken in terms of aiding other developing countries' nuclear programs (including those of Iran and Libya). This is another reminder of how choices made in the past shaped India's subsequent options. Had India been more active in sharing its nuclear expertise then, an India-U.S. civil nuclear deal might not have been possible later (since India's non-proliferation track record was cited as a key argument in favor of that agreement in the mid-2000s).

Another feature of *Ploughshares and Swords* is its focus on the role played by key scientists or technocrats, including Homi Bhabha and Vikram Sarabhai, who had access to power, capital, and international networks. Sarkar highlights their preferences, agency and entrepreneurship, as well as their interactions with each other and with key Indian policymakers. She suggests that at various points it was their choices that were determinative, with government playing a more enabling rather than driving role—a theme that could have been explored further. In considering the scientists' role, Sarkar also argues that through them and the institutions they helped establish, India's nuclear and space programs—and their civilian and military dimensions—became intrinsically linked.

Also intriguing is the brief glimpse *Ploughshares and Swords* offers of the crucial role of the private sector, particularly the Tata conglomerate. This look at business-government relations is particularly interesting, given the Indian government's desire today to involve private corporations again in the development of India's defense industrial base. Here again, although its length makes for an easy read, *Ploughshares and Swords* leaves the reader wanting more.

This reader at least would have liked the author to delve further into some of the subjects she mentions, even if doing so had added to the page count. For instance, the book could have dived deeper into decision-making within India and some of the debates that took place—in public, between the scientists, between officials, and between officials and scientists (e.g., those responsible for the budget vs. those responsible for the bomb, or those who wanted to share nuclear expertise with other countries vs. those who did not). It could have also offered more insights into the business-government links, or the leaders of India's nuclear and space programs that came after Bhabha and Sarabhai. Or it could have added more on the debate about Sarabhai's view of pursuing nuclear weapons.

A more in-depth look would have also helped bolster some of the arguments Sarkar makes. We would like to know more, for instance, about her contention that India's peaceful nuclear explosion and its takeover of the Himalayan kingdom of Sikkim were linked. Also needing further elaboration is her argument that the ambiguity of India's nuclear program made it less accountable and anti-dissent. She briefly mentions this theme in the introduction and in the epilogue, but it is otherwise largely missing from the rest of the book.

An expanded volume could also have included roadmaps at the start of each chapter, which would have particularly benefited readers unfamiliar with Indian foreign policy or nuclear history. Otherwise, the book is very readable, in part because it is not burdened with the technical jargon that can sometimes make this subject inaccessible to a broader audience. Overall, *Ploughshares and Swords* makes key contributions to the literature on the Cold War, nuclear policy history, and Indian foreign policy. And it not only expands our understanding of the history of the Indian nuclear program, but it also identifies themes and sparks questions for scholars to explore further in the future.

Review of Jayita Sarkar's *Ploughshares and Swords*

Jeffrey Crean

Luxembourg is next to go,
And who knows, maybe Monaco?
We'll try to stay serene and calm
When Alabama gets the bomb!

(Tom Lehrer, "Who's Next?" [1965])

Nevil Shute's 1957 bestselling novel *On the Beach* depicts the lives of a group of Melbourne residents in 1963. They are awaiting their deaths from radiation clouds heading southward after a nuclear war destroyed all human life in the Northern Hemisphere the previous year. That war was not started by either the United States or the Soviet Union. Rather, it began with a nuclear attack by Albania against Italy, followed by a nuclear attack by Egypt against the United States and Great Britain. The Cold War had not destroyed humanity, at least not directly. Rather, nuclear proliferation had. As nuclear bombs became more numerous and less expensive, practically any country could acquire them. As a result, local rivalries between minor powers were transformed into potentially apocalyptic events.

In the real world, fears of nuclear weapons spreading beyond the five permanent members of the United Nations Security Council led in the 1960s to the negotiation of the Non-Proliferation Treaty, which went into effect in 1970. The four nations that have notably refused to become parties to the NPT are India, Pakistan, Israel, and North Korea. All four nations now have acquired nuclear weapons, as well as the means to deliver them. While these weapons have

not proliferated to the extent that many during the early Cold War feared was inevitable, the fact that two archrivals who have fought three wars each possess over one hundred nuclear warheads has long been a cause for concern. Not for nothing did President Bill Clinton declare in 1999 that the disputed region of Jammu and Kashmir, where Indian and Pakistani soldiers have faced off since 1947, was the most dangerous place on the planet.

Jayita Sarkar's *Ploughshares and Swords* tells the story of India's development of its first nuclear weapon in an illuminating, thorough, and pathbreaking manner. Certain to be the go-to book on this topic going forward, Sarkar's sturdily researched and eminently readable monograph focuses on the Indian scientists and politicians who pushed for a nuclear India even before it achieved independence. Cogently connecting the dots over time and across continents, the author presents both an international diplomatic history of India's state-level relationships and a transnational scientific history of the interactions between Indian scientists and their overseas colleagues. Employing archives from eight nations, she shows how India utilized dual-use technologies to turn the peaceful "ploughshares" it imported into nuclear "swords."

Sarkar's book is the sixth on this topic in the past quarter century, and it will supersede them all to become the canonical text on this topic, presumably for decades to come. George Perkovich's *India's Nuclear Bomb* (1999) was the previous definitive text, but the passing of two decades has enabled Sarkar to consult a greater variety of archival sources. Itty Abraham's *The Making of the Indian Atomic Bomb* (1998) argues that India's nuclear program was more about postcolonial independence than national security, a claim Sarkar effectively refutes. Robert Anderson's *Nucleus and Nation* (2010) provides detailed profiles of India's major nuclear scientists—information Sarkar contextualizes by merging it with diplomatic and military history.

Jahnavi Phalkey's *Atomic State* (2013) complements Anderson's book by focusing on interpersonal rivalries among Indian scientists, which Sarkar also touches on, while M.V. Ramana's *The Power of Promise* (2012) describes the failure of India's civilian nuclear power program, a topic Sarkar also covers. *Ploughshares and Swords*' greatest contribution to the literature lies in the way it merges scientific, diplomatic, and military history while incorporating domestic political factors. Sarkar also breaks new ground by elucidating the connections between India's space and nuclear programs. Though shorter in length than most of its counterparts, her book somehow manages to cover more ground than any of them.

The introduction lays out Sarkar's three primary subjects: the dual-use nature of India's nuclear program, its geopolitical import as a response to territorial threats from neighboring powers, and the value of India's space program to its development of nuclear weapons. The author uses the term "intermestic" four times in the introduction, which is three times too many. This term, coined by Fredrik Logevall, describes the interplay between international affairs and domestic politics. It may be a highly useful concept, highlighted by a wonderful historian, but it is a clumsy neologism which confuses rather than reveals. Sarkar also employs the concept of "technopolitics" to refer to the use of technology to achieve political goals, making this term as obvious as intermestic is nebulous. Both concepts are central to the book, but thankfully, after the introduction the author declines to burden her readers with much more of such jargon.

The body of *Ploughshares and Swords* is divided into three chronological sections. The first covers the formative years of India's nuclear development, from World War II through independence and into the 1950s. During these years India's small coterie of trained physicists coalesced around their patron, Tata Industries, near its headquarters in Bombay, the city currently known as Mumbai. This metropolis, which is located nine hundred miles south of the political capital of New Delhi, insulated the scientists from significant political oversight, while the support of Tata made the nuclear program a mixed public-private endeavor. It was also during these years that Indian scientists developed their pattern of seeking out foreign technologies wherever they could find them. Trained in Britain, they reached out to the United States, where political leaders were wary of India using such technology for nuclear weaponry, but they also turned to France, where leaders asked far fewer questions.

Indian scientists also looked to Canada and Germany for technological assistance. India's monazite mines in its far south contained immense amounts of radioactive thorium, which can be used to produce weapons-grade uranium, albeit with difficulty. India temporarily used this resource to extort the Dwight Eisenhower administration into buying large quantities of monazite at a high price to ensure that India did not sell any to Communist Bloc nations. These actions showed how resourceful India's scientists and politicians could be.

The introduction lays out Sarkar's three primary subjects: the dual-use nature of India's nuclear program, its geopolitical import as a response to territorial threats from neighboring powers, and the value of India's space program to its development of nuclear weapons.

The second section of the book focuses on how India's nuclear development factored into its unsuccessful 1962 war with China and its successful 1965 war with Pakistan. It is in these middle chapters that Sarkar reveals her gifts as a historian to the fullest, seamlessly weaving together diplomatic intrigues, military engagements, scientific advancements, and superpower rivalries.

The 1960s were a watershed for India's strategic culture and security establishment. In the 1950s, as the leader of what would become the Non-Aligned Movement, India sought friendly relations with both the United States and the Soviet Union even as it was establishing a friendly rapport with China's leaders. This last development was epitomized by the slogan "Hindi Chini Bhai Bhai," meaning "The Indians and the Chinese are Brothers." But Sino-Indian comity did not survive China's crushing of the Tibetan revolt of 1959 and the Dalai Lama's flight to northern India, where he and his coterie found safe harbor. China began to fear Indian meddling in Tibetan territory, and the increasing antagonism between the two nations led to border clashes along India's northwestern and northeastern frontiers. Prime Minister Jawaharlal Nehru began to reinforce these frontier posts, threatening territory claimed by China.

The People's Liberation Army responded in October 1962 by seizing the northern part of the Ladakh region in India's far northwest, a territory the Chinese call Aksai Chin and still occupy. That November, three PLA divisions decisively routed a comparably sized Indian force along India's northeastern frontier in what is now Arunachal Pradesh and threatened to penetrate deep into Indian territory. Having established undisputed dominance along this frontier, the Chinese promptly retreated into southeastern Tibet, but not before a panicked and humiliated Nehru asked John F. Kennedy to send over three hundred fighter jets to defend India, along with the U.S. pilots to fly them.

Two years later, in October 1964, China compounded India's insecurity by successfully detonating an atomic bomb. While the 1962 war spurred India to significantly expand and modernize its conventional forces, the

Chinese nuclear test accelerated its attempts to develop nuclear weapons. The Indian Army partially redeemed its reputation by besting Pakistan's army on the Punjabi plains in 1965. But in 1967, the Chinese successfully tested a hydrogen bomb, and in 1970 they sent their first satellite into orbit. India might have been dominant on the subcontinent, but China reigned supreme in Asia.

The book's third section covers India's successful nuclear test in 1974 and takes the story into the mid-1980s. The author ably details the impact of Sino-American rapprochement, which severely soured Indo-American relations, particularly during the Third Indo-Pakistani War in Bangladesh in 1971, when Richard Nixon strongly supported Pakistan so as not to jeopardize rapprochement with Pakistan's ally, China. Sarkar provides a skillful overview of Indira Gandhi's tilt toward authoritarian rule during the "Emergency" period from June 1975 until March 1977. She also shows that shift's connection to the nuclear program, calling nuclear weapons "a consensus-enforcing device" in Indian domestic politics.[1]

In addition to developing nuclear weapons, Indian scientists also built intercontinental ballistic missiles to deliver warheads to their targets. In this endeavor, they were aided by India's space program. This supposedly peaceful program received foreign assistance that could be—and was—applied to the nuclear program, a notable example of India turning ploughshares into swords. The technology of rocketry and missilery was basically the same. To quote the scientist Satish Dhawan, who led India's Department of Space in the 1970s, "What's the damn difference? Only the software! You make a few minor changes, and the damn thing goes differently."[2]

India also masked the military nature of its first underground nuclear test by claiming it was a "peaceful" attempt to extract natural gas. It should be noted that in the mid-1970s, the United States detonated three nuclear weapons deep underground to see if they could be used for this purpose, so India's claim did not seem quite as absurd at the time as it would seem now. India then refrained from any additional tests until 1998, when Pakistan detonated its first nuclear weapon.

Today, India has approximately 150 nuclear warheads, a stockpile that is on a par with Pakistan's but slightly less than half of what it is assumed China possesses. Militarily, the program has been a success. Furthermore, during the later stages of the George W. Bush administration, the United States resumed cooperation with India's nuclear industry, effectively sweeping previous concerns about proliferation aside. Indo-American military cooperation continued to strengthen under the Obama and Trump administrations, and U.S. friendliness to India is as bipartisan today as antipathy is towards China. In terms of modernization, however, India's nuclear program has been a failure. Currently, nuclear power produces only slightly more than 3 percent of the nation's electricity.

My one quibble with Sarkar's exemplary monograph is that for a book that makes frequent use of the term "intermestic," there is not a lot of discussion of domestic politics. Sarkar references the existence of an anti-nuclear movement in India but fails to note if these activists were clustered in certain political parties or what form their activism took. Were there demonstrations against nuclear weapons similar to those organized by the nuclear freeze movement in the United States or Western Europe? Were there members of India's parliament who spoke out against nuclear weapons and nuclear power? This otherwise commendable work does not provide answers to these pertinent questions.

All that is clear is that both of India's governing parties fervently supported the development of nuclear weapons. Left-of-center Congress Party governments developed the first nuclear weapons, and right-of-center Bharatiya Janata governments eagerly expanded the nuclear arsenal. If anything, it would appear that these two rival parties competed to see which one's leaders could be more supportive of the nuclear program. I also wonder if the insulation of India's nuclear weapons program from political oversight is more the norm than the exception in democracies. That was certainly the case in the United States.[3] I would like to know if there were any nuclear weapons programs that did not enhance the power of the executive while marginalizing the legislature. Swords and ploughshares may go together, but bombs and democratic accountability apparently do not.

Notes:

1. Jayita Sarkar, *Ploughshares and Swords: India's Nuclear Program in the Cold War* (Ithaca, NY, 2022), 175.
2. Sarkar, *Ploughshares and Swords*, 155.
3. See Garry Wills, *Bomb Power: The Modern Presidency and the National Security State* (New York, 2010).