



**RESEARCH PAPER**

**Nehru the Father of Indian Atomic Bomb and Integrated Guided Missile Development Program: A Historical Perspective**

Ashfaq Ahmed<sup>1</sup> Muhammad Ramiz Mohsin<sup>2</sup> Farzad Ahmed Cheema<sup>3</sup>

1. Assistant Professor, Department of Politics and International Relations (DPIR), University of Sargodha, Punjab, Pakistan
2. Lecturer, Department of Social Work, University of Sargodha, Sub-Campus Bhakkar, Punjab, Pakistan
3. Assistant Professor, Department of Politics and International Relations (DPIR), University of Sargodha, Punjab, Pakistan

**PAPER INFO**

**ABSTRACT**

**Received:**

August 15, 2018

**Accepted:**

December 24, 2018

**Online:**

December 30, 2018

**Keywords:**

Nehru, Nuclear, Non-Proliferation, India

**Corresponding**

**Author:**

danalyst@hotmail.com

This paper underlines Nehru's role in Indian Integrated Guided Missile Development Program. Realists explain states motives behind nuclear proliferation. Apparently there are three motives for states to proliferate. First, counterbalance rival states. Second, acquire nuclear weapons to gain prestige in international arena. Third, accrue the expenditure used for developing nuclear weapons Authors in this study have applied qualitative method. Paper concludes that Nehru was a pessimist, champion of nuclear disarmament and wanted global zero is a mere statement and a flawed notion. The second segment highlights Indian missile proliferation. It brings into limelight threats to Pakistan's security. It is recommended that Pakistani academia should highlight that Nehru issued directives to Dr. Bhaba to divert peaceful nuclear technology for nuclear weapons development. Secondly, Nehru-Bhaba collusion is responsible for South Asian nuclearization

**Introduction**

Reliance on deterrence is from the time immemorial. The realist philosophy besides theory of nuclear deterrence contributes in understanding state's security policies, rationale behind nuclear proliferation and the deterrent role of nuclear weapons. States develop nuclear weapons first to deter powerful enemy. Second states proliferate to equalize associates or third to redeem the expenditure used for developing the bomb(Kartchner, 2009). Further, nuclear bureaucracy may possibly authorize nuclear proliferation. Considering the hazardous consequences of nuclear weapons use global community posit nuclear weapons are grave threat to world peace. Global community endeavors to stop nuclear proliferation. Hence institutes were formed, pacts were signed and laws were enacted. It is argued that

when states decide nuclear weapons development they make alliances. However, determined state if unable to procure nuclear material from allies it uses surrogates (private enterprise, individuals transacting in the illicit nuclear commerce who connote to make gains or approach syndicate involved in this type of business) to build nuclear weapons.

This paper discusses Indian nuclear proliferation behavior from the outset. New Delhi based policymaker's determination to develop nuclear weapons. It also brings into limelight the role of opaque nuclear proliferation in accomplishing the objective to develop nuclear deterrent force structure. Detailed historical background is discussed in this paper to provide understanding to the readership that Indian nuclear tests created Indian favored nuclear deterrent force asymmetry vis-à-vis Pakistan. Later, Indian development of missile force structure to deliver nuclear warheads first posed security dilemma for Pakistan's security. Second achievements accomplished by Indian engineers endowed India to enjoy conventional and strategic deterrent force asymmetry vis-à-vis Pakistan.

First section probes into India's initial nuclear policy. It contradicts the established notion that Nehru was a nuclear pessimist. Attempt is made to prove that Nehru laid the foundation of Indian nuclear weapons program. Moreover, Nehru evolved rigid strategic and nuclear culture of India. Debate in this paper revolves around the following questions:

- How does realist school explain Indian nuclear proliferation?
- Is Nehru the father of Indian atomic bomb?
- What is Indian rationale behind rejecting the NPT?
- What is significance of missile developments in restoring strategic stability?

#### **Nehru's Contribution to Indian Nuclear Weapons Program: A Historical Reality 1946 to 1974**

Jawahar Lal Nehru was the architect of Indian nuclear policy and weapons program. Nehru in 1946 asserted "every country will have to devise and use the latest scientific devices for its protection...no doubt India will ... use the atomic force for constructive purposes. But if India is threatened she will inevitably try to defend herself by all means at her disposal," (Perkovich, 2001). Conceivably Nehru inferred Hobbs state of nature- due to absence of authority statesmen succumb to mutual suspicion, uncertainty including insecurity and decide to prepare for war. It is characterized by war of all against all- and global anarchy incubates conflicts and paves way for colonialism. Nehru prescribed merely self-help ensures state's existence.

Nehru set the course for nuclear weapons development by enacting Indian Atomic Energy Commission (IAEC) Act on April 15, 1948 (Arpi, 2010). Nehru warned that, "we must develop this atomic energy...if we are compelled...to use it for other purposes possibly no pious sentiments of any of us will stop the nation from using it that way." Conceivably India-Pakistan war, Kashmir partition, mutual hostility and international anarchy rejuvenated fear of colonial rule in Nehru's mind. Changes in Indian strategic environment perhaps induced Nehru to refer to two-fold usages of atom. Nehru aimed to convince Indian public that foreign pursuit to impose colonial rule in India will be repelled with nuclear deterrent. Presumably Nehru appealed Indian masses to pressurize government not to succumb to foreign pressure and continue development of nuclear weapons program. Intuitively Nehru promulgated Indian scientists particularly Dr. Homi Bhaba to actuate nuclear weapons program. Nehru, asserted here, left the legacy for Indira to develop nuclear weapons and buttress Indian security. Crux of the matter is Nehru was aware of the deterrent role of nuclear weapons hence laid foundations of nuclear weapons program. Nuclear weapons development is known as security model proliferation in literature on nuclear proliferation.

Literature on nuclear proliferation prescribes that nuclear establishment harbors confidentiality if nuclear weapons development turn into national objective. Dr. Bhaba aspire nuclear weapons development. Dr. Bhaba perceived Nehru's aforementioned warning was threatening it could have sabotaged clandestine nuclear weapons development program. Consequently Dr. Bhaba in a note entitled, "Organization of Atomic Research in India," directed to Nehru to maintain confidentiality of nuclear program (Gupta, 2007). Nehru comprehended the fact that strategic environment did not favour India. He realized sensitivity of nuclear proliferation and also discerned non-proliferation efforts of global community. Nehru's following statement endorse above claim. Nehru stated that "the advantage of research would go to others before we even reaped it," and "it would become impossible ... to cooperate with any country ... because it will not be prepared for the results of researchers to become public," (Ramana, 2015). Later, Nehru avoided publically discussing nuclear weapons development and their deterrent role. Moreover, the right to question the activities of nuclear authorities was categorically rejected. Secrecy became the trademark of evolving Indian nuclear culture. Realist notion that states are rational actor take steps in the wake of cost and benefit analysis explains the policies of the Indian government.

### **Nuclear Opacity: A Significant Feature of India's Nuclear Program**

In December, 1953, the US president presented Atoms for Peace program before UNGA. India insinuated it West endeavor to control nuclear technology and material. Further, step towards nuclear colonization of India. Aforementioned fear stems from Soviets strategy to use science and technology as a tool to colonize Central Asian republics, Armenia and Georgia (Josephson, 2005). On August 3, 1954 Nehru enacted inception of the Department of Atomic Research in

India(Ganguly, 1999) (DARI) to debar the West, from nuclear colonization of India. Nehru weighed nuclear opacity as the first pillar of Indian nuclear culture. Following reasons cements abovementioned claim, first opaque proliferation enabled India to avoid global condemnation. Opacity endowed India to acquire nuclear material and necessary technology conveniently. Declaration that India is budding nuclear weapons would have resulted in economic, technical and military embargos. Opaque proliferation expedited Indian nuclear weapons development program. By 1954, India's nuclear program had matured enough to divert it towards the development of the WMD(Arpi, 2010). Opacity helped India to achieve twofold objectives first it enabled India to become a threshold states. Second opacity patronized India to be acknowledged as civilized and responsible state. Nuclear opacity evolved as fundamental feature of Indian evolving nuclear culture.

Instead Dr. Bhaba ensured watertight control over Indian nuclear program through IAEA Act. It empowered Bhaba with executive powers (Arpi, 2010). Further he could not be held accountable by anyone including the Indian Parliament except Nehru himself. Dr. Bhaba maintained sovereign status. He could decide issues of vital importance. Bhaba managed nuclear activities beyond government control. In 1954, Nehru established Department of Atomic Energy (DAE)(Perkovich, 2001). DAE licensed Nehru to first stop political and bureaucratic interference in Indian nuclear program. Second, hold personal meetings with Dr. Bhaba concerning nuclear affairs. Consequently, assertive oversight ensured opacity at the state level and matured rigorous nuclear culture. Significantly Nehru-Bhaba enterprise evolved nuclear secrecy. In addition, assertive control at national and organizational level matured.

In 1955, Dr. Bhaba presided over the UN's first Conference on the Peaceful Use of Atomic Energy (Perkovich, 2001). This gave him an access to the declassified nuclear research work of the west. In April 1956, a nuclear accord between India and Canada enabled India to overcome its depleting uranium resources. Canadian assistance in the construction of Canada-India reactor US (CIRUS) enabled India to produce weapons grade plutonium. Bhaba from outset rejected safeguards agreements. However, in 1956 Bhaba signed safeguards agreement with Canada (Rajagopalan & Mishra, 2014). A fore known decision helped India to get heavy water from Canada and send Indian scientists for training to US (Bratt, 2006). Indian scientists covertly continued progress and matured nuclear weapons program. For instance in 1956, Nehru stated that constant supply of nuclear material will substantiate nuclear weapons development in three or four years (Suryanarayan, 2010). Nehru's announcement ratifies that India embarked on the path of nuclear weapons development. India became "virtual threshold state" as heavy water nuclear reactor enabled India to reprocess spent fuel and procure plutonium.

### **Nehru Believed in Realism**

Evolution of the IAEA in 1957 heightened Nehru and Bhaba's anxiety that the West delineated imperial policy to handle the third world. Nehru lay-out Indian nuclear weapons program. Nehru publicly condemned nuclear weapons development and demanded nuclear disarmament. Professedly Nehru mimicked nuclear disarmament to fend off the IAEA safeguards and ensure training of Indian nuclear scientists abroad. Aforesaid policy helped India to acquire nuclear material in the guise of access to peaceful uses of nuclear technology. It helped India to determine plutonium route for secretly developing nuclear weapons. Nehru-Bhaba efforts to covertly manufacture nuclear weapons determine the realist belief that statesmen take necessary steps to ensure state's survival.

Succeeding paragraph ascertain Nehru-Bhaba enterprise diverted peaceful nuclear technology to build nuclear weapons. On March 10, 1959 motion was presented in the Indian Parliament. It demanded of the government to utilize nuclear technology for defence purposes. However, Nehru first shunned Chinese nuclear threat. Later, he claimed India is ahead of China in nuclear research and development (Mirchandani, 1968). In 1960 Nehru ordered Dr. Bhaba to freeze progress on nuclear weapons development until Nehru asks him to develop. On January 9, 1961 Nehru disclosed India eventually became nuclear threshold state (India's Nuclear Weapons Program on to Weapons Development: 1960- 1967, 2001). Lip service i.e. public rejection of nuclear weapons possession and disarmament calls evolved as permanent feature of Indian nuclear culture. Contrary to disarmament calls Nehru authorized construction on Plutonium reprocessing plant at Trombay (Rajagopalan & Mishra, 2014). In 1961 contrary to disarmament calls Nehru authorized construction on Plutonium reprocessing plant(Rajagopalan & Mishra, 2014). In January, 1962, Bhaba chartered a group of physics researchers at Tata Institute of Fundamental Research (TIFR) to execute secretstudy on the "implosion weapon," (Rajagopalan & Mishra, 2014). Despite the fact India was not faced with existential threat it mastered the technology to become threshold state. Substance of the matter is Indian nuclear weapons program has nothing to do with Chinese nuclear weapons. Moreover, Nehru-Bhaba enterprise was entangled in clandestine nuclear weapons development.

In 1962 Sino-India war, India lost 14,000 square miles near Himalayan border. Bharatiya Jana Sangh (BJS) so denounced the Indian government and demanded nuclear weapons development in following words "eunuch government... in its ahimsic idiocy for the criminal folly of not pursuing nuclear weapons,"(Vikram, 2008). Crux of the matter is Indian nuclear weapons program was progressed under opacity. In 1964 Chinese nuclear tests changed Indian strategic environment. Further it tilted BOP in China's favor consequently India resorted to realist philosophy. New Delhi strived to counterbalance China through external balancing. However, it failed to seek security guarantee from major power (Smith, 1994). Hence India borrowed and applied teachings of rational deterrence

theory. It encourages states to reciprocate to changes in their strategic environment by introducing strategic reforms. Theory connotes opposition denounce government to come into power by securing public support prerequisite for replacing the ruling elite.

BJS criticized Indian Prime Minister on the basis of Bhabha's radio discussion (Weiss, 2010) emphasizing the requirement of manufacturing and relying on nuclear deterrent. It may be regarded as a political stunt to gain public sympathies to come into power. Chinese nuclearisation enabled the US Secretary of State Dean Rusk and Department of Defence officials to build consensus that India requires nuclear weapons to deter US enemy (Bhutto's Visit to Washington a Success in Every Way But One). India received its tacit authorization and clearance chit from the US opaque proliferation. Prime Minister Shastri disseminated directives to Bhabha to continue opaque proliferation and develop a nuclear bomb (Spector & Smith, 1990). India's Plutonium route for nuclear weapons development was confirmed by CIA in 1965 warning that India's plutonium stock for nuclear weapons development is sufficient (Special Intelligence Estimate: India's Nuclear Weapons Policy, 1965).

### **India and the Nuclear Non-Proliferation Treaty (NPT)**

The development and accretion of NPT was aimed to contain the threat of nuclear anarchy. The treaty embarked the world on the path to evolve new nuclear order for example; US emerged at the top, followed by NATO allies, the Soviet Union and China. The NPT adjudicated testing of nuclear device by a state before July 1, 1967 was set to acquire *de jure* NWS status. NNWS signatories to the NPT relinquished inherent right to develop nuclear deterrent. Despite Indian involvement in the development of the NPT, its upshot was contrary to Indian expectations. First the NPT recognized China as NWS. Second the NPT perpetually outlawed India as NWS.

Eventually in 1968 Indira in the Indian parliament refused to accept the NPT as it imposed restraint on Indian nuclear weapons program. It rejected the treaty. Indira while addressing the Lok Sabha stated that, "India's refusal to sign the NPT was based on enlightened self-interest and the considerations of national security... nuclear weapon powers insist on their right to continue to manufacture more nuclear weapons," (Debate on Foreign Affairs," Lok Sabha", 1968). India declared the NPT as discriminatory bargain. The NPT permanently prohibited India from manufacturing nuclear weapons. Article IX of the NPT bifurcate the constituents of the NPT into NWS and NNWS. Further, India conditioned accession to the NPT with Chinese accession to the treaty (Evolution of India's Nuclear Policy, 2010) and global disarmament. Aforesaid excuse capacitated India to retain the right of nuclear weapons development. India could have remained NNWS outside the NPT. Indian political elite cashed the opportunity. The discrimination and inequality inherent in the NPT reinforced their desire to have India equipped with nuclear weapons. India secretly transformed peaceful nuclear

program to make nuclear weapons. From realist perspective Indian decision to rely on nuclear weapons for its security was based on rational decision making approach.

In 1971 Indira licensed manufacturing of Indian nuclear device. It was completed in 1972 and in September, 1972 approved for tests. Initially, Indian nuclear doctrine, role of nuclear armory, size and structure were kept secret. Following 1974 nuclear device tests (Singh, 2010) India adopted weaponless deterrent posture however, had the contradiction against the spirit of the NPT. It also challenged the evolving nuclear order. India was well aware of global condemnation for carrying out horizontal proliferation. It therefore named its explosions as Peaceful Nuclear Explosions (PNE). The phrase PNE was used as a cover to legalize nuclear tests in the light of Article V of the NPT. From offensive realist perspective PNE were conducted to maximize Indian military power, pressure and a direct behavior of a regional state. Genuinely, it was the Chinese nuclear force structure which threatened Indian aspirations to dominate the region. Offensive realism suggests India required unrivaled nuclear forces to restore balance against China, induce caution, prevent future wars with China and ensure Indian security. India could not rely on the NPT for its security. It rejected the NPT as a rational decision to keep its option of nuclear weapons development open. Moreover, the logic of which prescribes military capability to survive also explains Indian rejection of the NPT. Indira matured and added novel features to Indian nuclear culture. Her key contribution includes cessation of the autonomy enjoyed by the scientists. The elected representatives were given the ownership of nuclear program and made them responsible to provide input in final decision making. However, the final authority or veto power was vested in the Prime Minister. Military was denied the right to provide input regarding nuclear affairs. Indira replaced secrecy with consultation on issues pertaining to nuclear testing, fissile material production, types of delivery vehicles, WMDs use and evolved neo-orthodox nuclear culture.

### **Integrated Guided Missile Development Program (IGMDP)**

In 1960s, India sent its nuclear scientists and engineers to National Aeronautics and Space Administration (NASA) in the US and Intercoms and "Voronzh nuclear power plant" in the Soviet Union (Arbatov, Dvorkin, & Oznobishchev, 2012). India aimed to develop missile apparatus to deter threats stemming from Chinese missiles. In 1970s, India launched "project valiant," to develop long range ballistic missile and "project devil (DRDL, 2003). In 1983, Indira Gandhi launched Integrated Guided Missile Development Program (IGMDP) to develop wide range of missiles including Agni series, Nag (an anti-tank guided missile), Prithvi, Akash and Trisul . This led to yet another dangerous missile race and Pakistan developed Abdali, Ghaznavi, Ghauri and Shaheen missiles to deliver WMDs in reaction. To impede (India-Pakistan) missile race the Missile Technology Control Regime (MTCR) signatories denied the transfer of

technology. It aims to restrict the spectrum of missile below 300 kilometers (Joseph S. Nye, 1992). However, India-Pakistan in defiance of the MTCR developed and extended the range of missile inventories. Undoubtedly MTCR could not prevent missile race in South Asia.

India premised that unspecified impediment in the missile program would endanger Indian national security. Fear of disastrous consequences, discriminatory treatment and biased approach of MTCR increased the pace of Indian missile developments. Indian aspirations to dominate the region provided additional impetus to Indian missile developments. Consequently, BOP shifted in Indian favor. Further, it started enjoying dominance vis-a-vis Pakistan. It aspired to enact escalation dominance against Pakistan. Escalation dominance refers to a condition in which an adversary possess the potential to escalate a conflict in directions that will be disadvantageous or costly to the opponent whilst the opponent cannot adapt the same in return, either considering it has no escalation alternatives or because the accessible alternatives would not improve the opponent's situation (Morgan, 2008).

## **Indian Missile Developments**

### **The Prithvi Missile**

In February, 1988, India successfully test fired Pakistan specific liquid fuel propelled 150 kilometers short range Prithvi ballistic missile (Norris, 1998). India built Prithvi despite global pressure to abandon it. Indian Foreign Minister Indar Kumar Gujral claimed that Prithvi was designed to launch conventional strikes as a substitute for nuclear strikes. Its radio guidance system is replaced with more sophisticated GPS system (Narang, 2009) to effectually control it. Further, accomplish precision strike capability against its targets. Prithvi however, is doubted for its accuracy despite GPS system. Keeping in view the absence of Pakistan anti-ballistic missile system Prithvi could easily penetrate in Pakistani airspace and explode in the vicinity of the target. Possible targets of Prithvi included missile deployments, runways and command centers near border. India used Prithvi as a terror weapon against Pakistan by pointing it against civilian population centers. The short range of missile also highlights the inherent dangers of unauthorized or deliberate use of Prithvi missile by junior ranking officers.

### **The Agni Series**

In May, 1987 India successfully test fired Medium range ballistic missile (MRBM) Agni-I with 700 kilometers (Chansoria, 2009). It can be launched from road-mobile platforms. In 1992, India started developing solid fuel propelled with 1500 KMs range Agni-II. It can be launched from rail and mobile platforms (Williams, 2013). Distinctive feature of Agni-II development by India is that it was developed in response to Sino-Pak defence collaboration. Indian scientists aimed to manufacture movable missile launching platforms to insure dispersal of missile

vehicles. Further to perfect the ability to launch missiles from various movable missile platforms. Dispersed missile forces are difficult to be located and destroyed. The disposition of positioning deters enemy's preemptive strike. Invulnerability ergo ensures deterrence stability. Extensive reach of Indian missiles accredited it to destroy counter-value and counterforce targets particularly airbases (Jones, 1998) across Pakistan. It could now carry out decapitating strike against Pakistan which can also prevent Pakistan to launch any nuclear strike against India. Professedly India fostered hazardous counterforce targeting strategy. Essentially it requires perfect and synchronized intelligence system of missile system to work. However, counterforce strategy inherits the problem of inviting enemy first strike. It is perpetuated against counterforce conventional and nuclear forces. However, efficient strategy to neutralize the enemy is to pose a similar threat to enemy therefore, Pakistan started developing its own missile system. Extended range of Agni-II missile enabled India to target Chinese cities. Consequently, Indian threatening moves further strengthened Sino-Pak strategic partnership to neutralize the Indian threat.

### **The Sagarika Missile**

In early 1990s India regardless of US reservations expanded its strategic collaboration with Russia to engineer missile force with a view to build an effective deterrent capability. US raised the issue of MTCR guidelines with Russia to express its reservations over Indo-Russian missile cooperation. In June, 1993 Indo-Russian joint venture resulted in the development and testing of sea-launched missile program Sagarika, with a range of 300-500 kilometers (Norris, 1998). Sagarika enabled India to destroy targets in Pakistan's Sindh and Balochistan provinces. Pakistan specific missile manifested Indian desire to increase damaging ability against Pakistani assets from air, sea and land based missile inventories. It however, enlarged the financial cost of arms race in pursuit of futuristic designs to achieve second strike capability and dragged missile race into the Indian Ocean. Qualitative changes increased conventional asymmetry in Indian favor. Foreign support enhanced lethality of the Indian navy. On the other hand, the opaque proliferation of Pakistan was directly proportional to increased threat perceptions in order to ensure credible deterrent vis-a-vis India, preserve sanctity of national frontiers and deny benefits i.e. strategic supremacy to India.

### **Conclusion**

In conclusion, fear of foreign aggression coerced Nehru to lay down the foundations of Indian nuclear weapons program. India acquired nuclear threshold state status in 1961, in Nehru's life. This claim rejects long held belief that Nehru was a pessimist. It is claimed that Nehru propagated nuclear disarmament on international forums. However, Dr. Bhaba was working on his special directives to develop nuclear weapons in the basement. In December, 1962 Bhaba asked Nehru to authorize nuclear test in Ladakh (17Ma). However, Nehru's death on May 27, 1964 (India Mourning Nehru, 74 Dead of A Heart Attack: World Leaders Honor

Him, 1964) few months before Chinese nuclear tests was a major setback to Indian nuclear weapons program. Had China carried out nuclear tests in Nehru's life the latter would have authorized Bhaba to use the latest scientific devices to protect India. Dr. Bhaba's sudden death on November 24, 1966 crippled Indian nuclear weapons program (1966 Air India Crash Victim Reborn, 2009). Instead Indian engineers and nuclear scientists into pro Raja Ramana and P. K. Iyengar and anti-bomb lobby led by M. R. Srinivasan and Vikram Sarabhai also delayed the formation of concrete Indian nuclear policy (Hymans, 2002). Bifurcated nuclear establishment authority took longtime to break down orthodox nuclear culture evolved at organizational level, understand Bhaba's opaque proliferation route for developing and testing nuclear bomb. Indira temporarily empowered pro-bomb lobby to overcome these obstacles prerequisite for developing WMDs. Nonetheless, it was Indira's decision which ultimately resulted in PNE tests.

The second portion of this paper concludes Indian missile developments enabled India to target Pakistani cities and enjoy upper hand in any crisis and war. Theoretically speaking, India chose rational decision making approach in order to handpick realistic objectives. Military modernization program capacitated Indian forces to destroy targets deep inside Pakistan. Indian military posture was hence destined to change from deterrent posture to compellence. Proportionately aforesaid developments and security dilemma propelled Pakistan to take countermeasures and repel existential threat to its sovereignty. Consequently Pakistan embarked on the route to create fear of punishment, establish credibility of deterrent forces and restore BOP vis-à-vis India. Eventually, missile race upset India-Pakistan strategic stability, increased probability of deliberate and inadvertent nuclear war. South Asian adversaries contrary to pursuing arms control measures or convening confidence building measures (CBMs) increased missile and nuclear arms stockpiles. India-Pakistan rivalry resulted in wars, insecurity, mutual distrust and provocative military strategies. The strategy likewise benefits of the foreign players add fuel to the fire by fulfilling technological needs of both regional rivals. It lubricates instability and fuel ongoing arms race. The unfolding arms race prevents India-Pakistan from signing arms control agreements. New Delhi and Islamabad's nuclear conduct and security arrangements incapacitate non-proliferation apparatus based on the NPT. Outlier states nuclear proliferation behavior also encourages NNWS signatories to the NPT to follow India and Pakistan nuclear proliferation route based on opacity and directly challenge the NPT.

## References

- Donganaak, (2015). *India's Nuclear Weapons Program 1944-1999: Full History Must Read*. Retrieved May 23, 2017, from <http://www.andhrafriends.com/topic/611761-indias-nuclear-weapons-program-1944-1999-full-history-must-read>
- Arbatov, A., Dvorkin, V., & Oznobishchev, S. (2012). *Prospects of Engaging India and Pakistan in Nuclear Arms Limitations*. Moscow: IMEMO RAN,.
- Arpi, C. (2010, October/December). France and Nuclear Disarmament between Vision and Realism. *Indian Defence Review*, 25(4), 133.
- Kennedy, T (n.d.). *Bhutto's Visit to Washington a Success in Every Way But One*. Washington Report on Middle East Affairs. Retrieved from <http://www.wrmea.org/1995-june/bhutto-visit-to-washington-a-success-in-every-way-but-one.html>
- Bratt, D. (2006). *The Politics of CANDU Exports*. Toronto: University of Toronto Press.
- Chansoria, M. (2009, October). *India's Missile Program: Augmenting Firepower*. Retrieved August 1, 2017, from <http://www.drdo.gov.in/drdo/English/dpi/2009/oct09.pdf>
- (1968). "Debate on Foreign Affairs," Lok Sabha". In P. N. Rao, *India and Disarmament: An Anthology of Selected Writings and Speeches* (pp. 176, 177). New Delhi: Ministry of External Affairs.
- DRDL, (2003). *Defence Research and Development Laboratory*. Ministry of Defence (MoD), India. Retrieved August August, 2017, from NTI: <http://www.nti.org/facilities/37/>
- Ganguly, S. (1999, Spring). India's Pathway to Pokhran II: The Prospects and Sources of New Delhi's Nuclear Weapons Program. *International Security*, 23(4), 151.
- Gupta, M. K. (2007). Indo-US Nuclear Deal: Major Legal Issues. *Master of Philosophy thesis*. Jawahar Lal Nehru University. Retrieved December 2, 2015, from [https://www.reading.ac.uk/web/FILES/123agreement/Gupta\\_Dissertation.pdf](https://www.reading.ac.uk/web/FILES/123agreement/Gupta_Dissertation.pdf)
- Hymans, J. E. (2002). Why Do States Acquire Nuclear Weapons? Comparing the Cases of India and France. In D. R. SarDesai, & R. G. Thomas, *Nuclear India in the Twenty-First Century* (p. 142). Palgrave Macmillan.

- Jones, R. W. (1998). Pakistan's Nuclear Posture: Arms Race Instabilities in South Asia. *Asian Affairs: An American Review*, 25(2), 79.
- Joseph S. Nye, J. (1992, May). New Approaches to Nuclear Proliferation Policy. *Science*, 256(5061), 1294.
- Josephson, P. R. (2005). *Red Atom: Russia's Nuclear Power Program from Stalin to Today*. Pittsburgh: University of Pittsburgh Press.
- Kartchner, K. M. (2009). Strategic Culture and WMD Decision Making. In J. L. Johnson, K. M. Kartchner, & J. A. Larsen, *Strategic Culture and Weapons of Mass Destruction: Culturally Based Insights into Comparative National Security Policymaking* (p. 62). New York: Palgrave Macmillan.
- Mirchandani, G. (1968). *India's Nuclear Dilemma*. New Delhi: Popular Book Services.
- Morgan, F. E. (2008). *Dangerous Threshold: Meaning Escalation in 21st Century*. Santa Monica, C.A.: RAND Corporation.
- Narang, V. (2009). Pride and Prejudice and Prithvis: Strategic Weapons Behavior in South Asia. In S. D. Sagan, *Inside Nuclear South Asia* (p. 147). Stanford: Stanford University Press.
- Norris, R. S. (1998, November 2). *India and Pakistan, At the Crossroads*. Retrieved March 3, 2017, from Paper presented at The Sixth ISODARCO-Beijing Seminar on Arms Control.: [http://docs.nrdc.org/nuclear/files/nuc\\_10289801a\\_039.pdf](http://docs.nrdc.org/nuclear/files/nuc_10289801a_039.pdf)
- Perkovich, G. (2001). *India's Nuclear Bomb: The Impact on Global Proliferation*. California: California University Press.
- Pervez, M. S. (2013). *Security Community in South Asia: India-Pakistan*. Oxon: Routledge.
- Rajagopalan, R., & Mishra, A. (2014). *Nuclear South Asia: Keywords and Concepts*. London: Routledge.
- Ramana, M. (2015, January 9). *Nehru, Science and Secrecy*. Retrieved from [http://www.reocities.com/m\\_v\\_ramana/nucleararticles/Nehru.pdf](http://www.reocities.com/m_v_ramana/nucleararticles/Nehru.pdf)
- Sauer, T. (The Journal of Strategic Studies, October). A Second Nuclear Revolution: From Nuclear Primacy to Post-Existential Deterrence. 2009, 32(5), 749.
- Shaikh, F. (2002). Pakistan's Nuclear Bomb: Beyond the Non-Proliferation Regime. *International Affairs*, 78(1), 31.

- Singh, R. (2010, July-December). Nuclear Weapons as a Deterrent in South Asia: An Analysis. *Asia Pacific Journal of Social Science*, II(2).
- Smith, C. (1994). *India's Ad Hoc Arsenal: Direction Or Drift in Defence Policy?* Oxford: Oxford University Press.
- Spector, L. S., & Smith, J. R. (1990). *Nuclear Ambitions: The Spread of Nuclear Weapons, 1989-90*. Boulder, Colo: Westview.
- Sublette, C. (2002, January 2). *Pakistan's Nuclear Weapons Program Development*. Retrieved December 3, 2016, from <http://nuclearweaponarchive.org/Pakistan/PakDevelop.html>
- Suryanarayan, V. (2010, March 11). *Reflection on India's Nuclear Policy During the Nehru Era," Eurasia Review*. Retrieved January 9, 2015, from <https://groups.google.com/forum/#!topic/soc.culture.indian/C9jebSwmd5k>
- Vikram, V. (2008). *Lotus and the Dragon*. IPCS. New Delhi: IPCS.
- Weiss, L. (2010, March). India and the NPT. *Strategic Analysis*, 34(2), 259.
- Williams, I. (2013, September). *India Striving to Enhance Nuclear Forces*. Retrieved February 2, 2017, from Arms Control Association: [http://www.armscontrol.org/act/2013\\_09/India-Striving-to-Enhance-Nuclear-Forces](http://www.armscontrol.org/act/2013_09/India-Striving-to-Enhance-Nuclear-Forces)