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Artificial Intelligence Revolution: Contemporary Trends and Implications for the Future of Warfare

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ACRONYMS

AESA	Active Electronically Scanned Array
AG	Australia Group
AI	Artificial Intelligence
APT	Advanced Persistent Threats
BJP	Bharatiya Janata Party
BMD	Ballistic Missile Defence
BVR	Beyond Visual Range
C2	Command and Control
CAE-CD	CAE-Cyber Defence
CAE-CO	CAE-Cyber Operations
CCDCOE	Cooperative Cyber Defence Centre of Excellence
CCS	Cabinet Committee on Security
CFM	Council of Foreign Ministers
CIIP	Critical Information Infrastructure Protection
CLIAD	Comprehensive Layered Integrated Air Defence
CMD	Credible Minimum Deterrence
CAE	Centre of Academic Excellence
COTS	Commercial-Off-The-Shelf

CPPNM	Convention on the Physical Protection of Nuclear Material
CTBT	Comprehensive Nuclear-Test-Ban Treaty
CTI	Cyber Threat Intelligence
CSD	Cold Start Doctrine
DASI	Directorate of Air Staff Inspection
DCC	Development Control Committee
DGMO	Director General Military Operations
DOD	Department of Defence
DRDO	Defence Research and Development Organization
ECC	Employment Control Committee
EIC	Estonian Informatics Centre
HRO	High Reliability Organizations
HRP	Human reliability program
HRT	High Reliability Theorists
IAEA	International Atomic Energy Agency
IAF	Indian Air Force
IDF	Israeli Defence Forces
IHL	International Humanitarian Law
IRGC	Islamic Revolutionary Guards Corps
ISPR	Inter-Services Public Relations

ISR	Intelligence, Surveillance, and Reconnaissance
JAIC	Joint Artificial Intelligence Centre
JDIAF	Joint Doctrine of the Indian Armed Forces
LAWS	Lethal Autonomous Weapon Systems
MFA	Ministry of Foreign Affairs
MIRV	Multiple Independently targetable Re-entry Vehicles
MOD	Ministry of Defence
MTCR	Missile Technology Control Regime
NAT	Normal Accident Theory
NATO	North Atlantic Treaty Organization
NCA	National Command Authority
NFU	No First Use
NGAIDP	Next Generation Artificial Intelligence Development Plan
NISAS	National Institute of Safety and Security
NNWS	Non-Nuclear Weapon States
NORAD	North American Air Defence Command
NSA	National Security Advisor
NSAB	National Security Advisory Board
NSCAI	National Security Commission on Artificial Intelligence

NSC	National Security Council
NSCS	National Security Council Secretariat
NSG	Nuclear Suppliers Group
NSTC	Nuclear Security Training Centre
NTI	Nuclear Threat Initiative
NWS	Nuclear Weapon States
OIC	Organization of Islamic Cooperation
PAF	Pakistan Air Force
PAL	Permissive Action Links
PNRA	Pakistan Nuclear Regulatory Authority
PRPs	Personnel Reliability Programmes
PSDP	Public Sector Development Programme
PSPs	Personnel Security Programmes
R&D	Research and Development
SNRS	School for Nuclear and Radiation Safety
SPD	Strategic Plans Division
TOS	Third Offset Strategy
UAV	Un-crewed Aerial Vehicles
UNGA	United Nations General Assembly
UNSCR	United Nations Security Council Resolution
USASOC	US Army Special Operation Command
WMD	Weapons of Mass Destruction

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Editor's Note

A compendium of thought-provoking academic analyses is presented to the worthy readership of the Journal of Security and Strategic Analyses (JSSA). Six research articles and three book reviews have been carefully selected after a rigorous three-tier double-blind peer-review process. Keeping in line with the scope of JSSA, its volume 8, number 1, highlights regional and global issues of security and strategic importance with a particular focus on South Asia. Each research article furnishes a logical policy-oriented conclusion and a way forward by employing theoretical concepts and clearly defined methodological tools, making it a compelling volume for academics, students, and policymakers.

The first research paper entitled "Artificial Intelligence Revolution: Contemporary Trends and Implications for the Future of Warfare" analyses the Artificial Intelligence (AI) related progress of the US and China and examines the importance of AI for Russia, India, and other countries. The authors suggested that military adaptation of AI would have several wide-ranging implications on the future of warfare and the global strategic environment. They predict that the ongoing US-China rivalry driven by economic, political, ideological, and military interests pushes both countries to engage in a technological competition with a significant focus on AI and its integration for military and non-military applications.

The second research article, entitled "The Diminishing Credibility of the Indian 'No First Use' Policy," examines the credibility of India's nuclear policy of 'No First Use (NFU) under the Modi Regime. The author analyses the impact of BJP's domestic political consolidation and future international developments on Indian nuclear doctrine. Furthermore, the author argues that India's nuclear policy shift will be influenced by the continuous strengthening of its nuclear missile forces. Procurement, deployment, and command and control structure configuration can predict any future policy shift. The author claims that

Indian shift from its NFU posture will not impact global powers' behaviour towards New-Delhi.

The third research article is "Understanding India's 'Surgical Strike' Special Operations and Pakistan's Response." This article employs a methodological framework of analysis and synthesis with theoretical and policy implications to reveal and understand India's concept of surgical strikes and Pakistan's response. On the theoretical side, it underlines the enduring relevance of classic principles of special operations espoused by Sun Tzu. The authors scrutinize the relationship between surgical strike special operations and military strategy. Furthermore, the authors highlight the Indian doctrinal thinking and practice of surgical strikes as a special operation and Pakistan's understanding and proportionate responses to reinforce security and stability in the region.

The fourth research article entitled, "Prophets of Cyber War: Examining the Role of Pakistan's Private Sector in a Strategic Cyber Context," examines the role of Pakistan's private sector in meeting the challenges in the cyber domain. The authors evaluate that cyberspace is a very dynamic environment with a critical trend in recent years: Pakistan's "cyber power" cannot be wielded by one sector, but it must be propagated through different sectors that are tirelessly creating and maintaining Pakistan's cyberspace. The authors highlight that; this new perspective must identify the implications of constant contact and inter connectedness.

The fifth research article, entitled "Nuclear Weapons' Security and Pakistan: Theoretical Analysis," highlights numerous theoretical assessments to postulate a frame for evaluating the security of Pakistan's nuclear weapons and management systems. The authors examine that a safe and secure nuclear weapons programme is in the best interest of Pakistan. The main theories implied in this research are high-reliability theory, organizational theory, realism, deterrence theory, and constructivist school of thought. Furthermore, it highlights

a robust and advanced nuclear management system based on highly advanced international practices that are verifiable and credible. The authors reveal that a nuclear arsenal in the current anarchic global system is the only effective way for Pakistan to deter the enemy and maintain strategic stability in South Asia to secure its sovereignty, identity, and dignity.

The last research paper entitled "Indian Cruise Missile Misadventure: Malfunction or Malafide Intentions?" highlights the Indian missile fire in Pakistan's territory and has brought to spotlight a set of puzzling questions: Was it an accidental or unauthorized fire or a deliberate act to test the readiness of Pakistan's missile defense systems? Why did India fail to notify Pakistan of this missile incident immediately? If it was an accidental fire, then does it not undermine the accuracy of Indian BrahMos class missiles, the credibility of its Command and Control (C2) system, and international aviation and safety protocols? What does Pakistan's restraint mean? How has this cruise missile incident led to creating renewed escalation risks? The authors examine the above questions, offering some guiding posts for the nuclear-weapon states on risk management and avoidance of future misadventures, unauthorized use, or malfunctions.

The JSSA conforms to the standard HEC guidelines/rules of publication and seeks to maintain the general quality of the contributions as per the international standards. It is an HEC-HJRS-recognized journal in the Y-category and aspires to become a top-ranking HEC-recognized journal. The quality aspect remains and will always be the prime concern of the SVI, supplemented by a careful selection of the manuscripts, wherein the readers can find a collection of well-written, academically sound research papers that have attempted to methodically examine various strategic and security issues in detail. It is hoped that the readers will be able to benefit from the analyses presented in this issue. SVI plans to bring out subsequent

volumes of JSSA regularly and is looking forward to receiving high-quality manuscripts exclusively written for the JSSA.

RESEARCH PAPERS

Artificial Intelligence Revolution: Contemporary Trends and Implications for the Future of Warfare

Dr. Adil Sultan¹ and Shayan Hasan Jamy²

Abstract

The Artificial Intelligence (AI) revolution has already begun, with major states integrating AI for a wide range of military applications, including decision making, Lethal Autonomous Weapon Systems (LAWS), and other defence-related systems. Major states like the US, China, and others plan to integrate AI for military applications entirely within the next decade. The US Third Offset Strategy (TOS) of 2014 and the 2021 US National Security Commission on Artificial Intelligence (NSCAI) report have linked AI with the future of the US global leadership. Similarly, China's 2017 Next Generation AI Development Plan envisions itself as the global AI leader by 2030 and labels AI as an essential strategic technology. This paper compares the AI-related progress of the US and China and examines the significance of AI for states like Russia, India, and some others. It predicts that the military adoption of AI would have several wide-ranging implications on the future of warfare and the global strategic environment.

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Keywords: Artificial Intelligence (AI), US-China Competition, Lethal Autonomous Weapon Systems (LAWS), National Security Commission on Artificial Intelligence (NSCAI), warfare

Introduction

Although the concept of AI can be traced back to the 1950s, developments within the last decade, in particular, have ignited the AI revolution. The US Joint Artificial Intelligence Centre (JAIC) mentioned four recent products. Modern AI has overgrown, including massive datasets, increased computer power, improved machine learning algorithms, and greater access to open-source code libraries.³ With AI-related software and hardware constantly growing, tremendous technological progress is being made quickly in human history. This progress will inevitably bring beneficial and some de-stabilizing effects that could impact the global strategic environment.

The ongoing US-China rivalry driven by economic, political, ideological, and military interests pushes both countries to engage in a technological competition with a significant focus on AI and its integration for military and non-military applications. Although the militarization of AI is currently in its initial phase, advancements in this field would eventually transform the militaries of both the US and China and other major states. This paper focuses on the US-China AI competition and its implications for strategic stability. It discusses some of the other players trying to join the new competition, which could potentially impact the future of warfare.

³ Clive Williams, "Artificial intelligence and the future of warfare," *Australian Strategic Policy Institute*, April 13, 2021, Available at: <https://www.aspistrategist.org.au/artificial-intelligence-and-the-future-of-warfare/> (Accessed on December 10, 2021).

Artificial Intelligence: Definition and Its Military Applications

AI is one of the emerging technologies with vast scope for civilian and military applications. Various scholars have tried to define the concept, but this is likely to evolve with the advancement of new technologies. John McCarthy, one of the founders of the discipline of AI, has defined it as the "science and engineering of making intelligent machines."⁴ Based on this definition and considering new technologies, AI can be defined as intelligence demonstrated by a machine without direct human control. It is also important to define 'intelligence' to differentiate between AI and non-AI technologies in this context. Intelligence can be considered the ability to learn and solve a task that requires logic and problem-solving. It is also crucial to understand that AI should not be viewed simply as a stand-alone technology but as an enabling technology. In much the same way as for electricity, it can be applied to and improve other technologies.⁵ Nevertheless, due to the revolutionary nature of AI, it can transform essentially every single industry. Some experts predict that AI will outperform humans in many activities by 2030, with a 50% chance of AI beating humans in all tasks by 2065 and automating all human jobs by 2140.⁶ Although this may seem a long way away, it is relatively short in the context of human history. In every sense of the word, AI will be a revolutionary technology. However, the focus of this research paper will be on the

⁴ Andy Peart, "Homage to John McCarthy, the Father of Artificial Intelligence (AI)," *Artificial Solutions*, October 29, 2020, Available at: <https://www.artificial-solutions.com/blog/homage-to-john-mccarthy-the-father-of-artificial-intelligence>(Accessed on December 10, 2021).

⁵ "The Militarization of Artificial Intelligence," *UN Office for Disarmament Affairs*, August 2019, Available at: <https://reliefweb.int/sites/reliefweb.int/files/resources/TheMilitarization-ArtificialIntelligence.pdf>(Accessed on December 10, 2021).

⁶ Katja Grace, John Salvatier, et al. "When Will AI Exceed Human Performance? Evidence from AI Experts," May 3, 2018, Available at: <https://arxiv.org/pdf/1705.08807.pdf> (Accessed on December 10, 2021).

potential impact that AI could have on the militaries of major states and the global strategic environment.

The AI-based technologies could be used for improving existing weapon systems and the decision-making processes,⁷ which could fully transform a state's military operations. Like the US, China, Russia, and others, major states have already begun integrating AI into their militaries. The US and China are the two leading competitors investing heavily in research and innovation for their military applications. Some other countries, such as Israel, have also demonstrated their potential in AI.

In May 2021, the Israeli Defence Forces (IDF) used AI-enabled technologies to collect and analyse data using signal intelligence, visual intelligence, human intelligence, geographical intelligence, and more⁸ during their operation against Hamas. The operation was dubbed the 'world's first AI war.'⁹ AI-based technologies were also used to generate recommendations for Military Intelligence and its use by the Israeli Air Force, which possibly made the conflict shorter and more efficient.¹⁰ The IDF also used AI-enabled drone swarms and 3D modelling to map the conflict territory and launch precision attacks.¹¹ Israel's Iron Dome, an anti-aircraft defence system, also used AI algorithms to stop 90% of

⁷ "The Militarization of Artificial Intelligence," *UN Office for Disarmament Affairs*, August 2019, Available at: <https://reliefweb.int/sites/reliefweb.int/files/resources/TheMilitarization-ArtificialIntelligence.pdf> (Accessed on December 10, 2021).

⁸ Ibid

⁹ Anna Ahronheim, "Israel's operation against Hamas was the world's first AI war," *The Jerusalem Post*, May 27, 2021.

¹⁰ Ibid

¹¹ Seth J. Frantzman, "Israel pushes digital military transformation in the age of 'artificial intelligence war'," *C4ISRNET*, July 23, 2021, Available at: <https://www.c4isrnet.com/battlefield-tech/it-networks/2021/07/23/israel-pushes-military-digital-transformation-in-the-age-of-artificial-intelligence-war/> (Accessed on December 10, 2021).

incoming missiles fired by Hamas.¹² After the operation, a senior IDF commander noted that AI was used as a "key component and power multiplier in fighting the enemy."¹³ The IDF's use of AI against Hamas provided a significant technological advantage, highlighting the importance of this new technology for the future of warfare.

US-China Artificial Intelligence Competition

Currently, the global strategic environment is in a state of flux. The unipolar world order that emerged after the disintegration of the former Soviet Union in 1989 proved to be short-lived, and China is emerging as a new threat to the US global hegemony. China uses its economic strength to enhance its global influence, mainly through its Belt and Road Initiative, while the US hopes to contain China's rise through its Indo-Pacific strategy. China's plan to be a global superpower and have a world-class military by 2049,¹⁴ is also a major cause for concern for the US. In recent decades, this plan has been backed up by tremendous Chinese economic growth, showing no signs of receding. According to the Centre for Economic and Business Research, China will surpass the US economically by 2028.¹⁵ The US-China competition will continue to grow in the coming years and decades. AI-based technologies could be a major factor in the ongoing competition between the two major powers as both are investing to reap their civil and military dividends. The US and China have already made tremendous progress in adopting AI for military purposes since the 2010s and are leading other central states by a significant margin.

¹² Ibid

¹³ Anna Ahronheim, "Israel's operation against Hamas was the world's first AI war," *The Jerusalem Post*, May 27, 2021.

¹⁴ Mark Moore, "China seeking to develop 'world class' military by 2049: Pentagon report," *New York Post*, November 9, 2021.

¹⁵ "China set to surpass the US as world's biggest economy by 2028, says report," *CNBC*, December 25, 2020, Available at: <https://www.cnbc.com/2020/12/26/china-set-to-surpass-us-as-worlds-biggest-economy-by-2028-says-report.html> (Accessed on December 12, 2021).

Currently, it is believed that the US is still ahead of China in the AI race, but China is not far behind and is catching up. According to Bob Work, Vice-Chair of the US *National Security Commission on Artificial Intelligence* (NSCAI), China currently leads the US in three key AI metrics: data, applications, and integration.¹⁶ The US, Work believes, still leads China in AI-related talent, algorithms, and hardware. Perhaps even more telling is the language being used by US officials to describe China's AI progress. Nicholas Chaillan, the former US Pentagon Software Chief, stated that "we (the US) have no fighting chance against China (in AI) in 15-20 years."¹⁷ Such strong language has been rare in the US but is becoming more and more common now.

In terms of military applications of AI, the US already employs certain AI-enabled technologies, such as guided munitions, air-defence systems, unmanned vehicles, and others.¹⁸ Several other AI-related defence projects are currently in the Research and Development (R&D) phase, which are expected to be deployed within the next decade. These include projects for early warning and intelligence, surveillance, reconnaissance, command and control, and precision strike and delivery systems.¹⁹ However, less is known about the exact use of AI by the Chinese military. Nevertheless, China has made tremendous progress in AI and AI-enabled technologies in recent years. These

¹⁶ Sydney J. Freedberg Jr., "China Leads US In 3 of 6 AI Areas: Bob Work," *Breaking Defense*, April 9, 2021, Available at:<https://breakingdefense.com/2021/04/china-leads-us-in-3-of-6-ai-areas-bob-work/>(Accessed on December 12, 2021).

¹⁷ "China has won AI battle with the US, Pentagon's ex-software chief says," *Reuters*, October 12, 2021, Available at:<https://www.reuters.com/technology/united-states-has-lost-ai-battle-china-pentagons-ex-software-chief-says-2021-10-11/> (Accessed on December 12, 2021).

¹⁸ Vincent Boulanin, Lora Saalman, et al., "Artificial Intelligence, Strategic Stability, and Nuclear Risk," *SIRPI*, June 2020, Available at:https://www.sipri.org/sites/default/files/2020/06/artificial_intelligence_strategic_stability_and_nuclear_risk.pdf(Accessed on December 12, 2021).

¹⁹ Ibid

technologies include drone swarms, robotics, facial recognition technology, 5G, quantum computing, and much more.²⁰ Through AI applications, these technologies can be repurposed for military use. With China's rapid AI progress being led by President Xi Jinping's vision and an efficient merger between the state and Chinese technological companies, the US has a serious cause for concern about its technological and military advantage in the near future.

Significance of US-China AI Competition

Both the US and China, and other major states have identified AI as having strategic and military importance. In 2014, the US released its *Third Offset Strategy* (TOS), which aimed to improve US military capabilities through innovation and new technologies. The TOS stated that emerging technologies, such as AI, would play an essential role in bringing autonomy to its weapon systems to offset the threats emanating from its adversaries.²¹ This sentiment has been echoed by the US on multiple occasions, including in the 2018 *National Defence Strategy*,²² which states that "the Department of Defence (DOD) will invest broadly in military applications of autonomy, artificial intelligence, and machine learning, including the rapid application of commercial breakthroughs, to gain competitive military advantage."²³ Similarly, the US DOD released its *Artificial Intelligence Strategy* in 2018, in which it highlighted strategic focus areas in military ethics and

²⁰ Graham Allison and Eric Schmidt, "Is China Beating the US to AI Supremacy," *Belfer Center*, August 2020, Available at:<https://www.belfercenter.org/publication/china-beating-us-ai-supremacy>(Accessed on December 12, 2021).

²¹ Brian C. Kempf, "The Third Offset: The US Strategy to Combat Future Threats," (Master's Thesis, Missouri State University, 2017), Available

²² "Summary of the 2018 National Defense Strategy of the United States of America," *Department of Defense*, Available at:<https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>(Accessed on December 12, 2021).

²³ Ibid

AI safety, and a partnership with leading private sector technology companies and global allies.²⁴ The language used in these reports clearly shows the US military establishment's strategic importance given to AI.

More recently, and perhaps more indicative of the critical strategic role that, AI will play in the US-China competition, is the US NSCAI report released in March 2021. This report went into specific detail about the AI development plan. It presented a strategy for the US to "defend against AI threats, responsibly employ AI for national security and win the broader technology competition."²⁵ It recommended that the US take certain actions to ensure that it achieves a "state of military AI readiness by 2025", in order to stay ahead of China as the global AI leader.²⁶ The NSCAI report, while acknowledging the fact that the US is far from "AI-ready", urged the DOD and Intelligence Community to take action by 2025 to overcome this shortcoming,²⁷ and to accomplish this, the NSCAI recommends that the Pentagon should increase annual investment in AI R&D, which is currently at \$1.5 billion, to \$8 billion by 2025.²⁸ It also suggested that

²⁴ "Summary of the 2018 Department of Defense Artificial Intelligence Strategy," *Department of Defense*, Available at: <https://media.defense.gov/2019/Feb/12/2002088963/-1/-1/1/SUMMARY-OF-DOD-AI-STRATEGY.PDF?source=GovDelivery> (Accessed on December 10, 2021)

²⁵ "2021Final Report," *National Security Commission on Artificial Intelligence The USA*, March 19, 2021, Available at: <https://www.nsc.ai.gov/wp-content/uploads/2021/03/Full-Report-Digital-1.pdf> (Accessed on December 12, 2021).

²⁶ Shayan Jamy, "US National Security Commission on Artificial Intelligence Report: A Call to Arms in the AI Era," *Institute of Strategic Studies Islamabad*, June 16, 2021, Available at: https://jissi.org.pk/wp-content/uploads/2021/06/Final_IB_Shayan_June_16_2021.pdf (Accessed on December 12, 2021).

²⁷ "'Wakeup call': Report calls for massive AI investments to counter China," *c4isrnet*, March 1, 2021, Available at: <https://www.c4isrnet.com/artificial-intelligence/2021/03/01/wakeup-call-report-calls-for-massive-ai-investments-to-counter-china/> (Accessed on December 19, 2021).

²⁸ Ibid

the US government should increase non-defence AI R&D funding to \$32 billion by 2026.²⁹ Additionally, the NSCAI wants the DOD to implement a completely top-down approach through which it focuses on integrating AI-enabled technologies into every facet of war-fighting.³⁰ It also warns that “if the United States does not act, it will likely lose its leadership position in AI to China in the next decade and become more vulnerable to a spectrum of AI-enabled threats from a host of state and non-state actors.”³¹ The NSCAI report is significant as it highlights the US disadvantage to China when it comes to AI capabilities and in the ongoing competition between the two rivals for the global leadership role.³²

In 2017, China released the *Next Generation Artificial Intelligence Development Plan* (NGAI), in which it announced its strategy to become the world leader in AI by 2030. It intends to monetise AI into a \$150 billion industry and wants to emerge as the driving force in defining ethical norms and standards for AI.³³ China considers AI to be a “strategic technology.”³⁴ Although China plans to focus mainly on the civilian use of AI but due to its dual-use potential, these technologies

²⁹ Ibid

³⁰ “Stop the emerging AI cold war,” *Nature*, May 11, 2021, Available at: <https://www.nature.com/articles/d41586-021-01244-z> (Accessed on December 19, 2021).

³¹ “Wake up call: Report calls for massive AI investments to counter China,” *c4isrnet*, March 1, 2021, Available at: <https://www.c4isrnet.com/artificial-intelligence/2021/03/01/wakeup-call-report-calls-for-massive-ai-investments-to-counter-china/> [PI address these minor mistakes] (Accessed on December 19, 2021).

³² Shayan Jamy, “US National Security Commission on Artificial Intelligence Report: A Call to Arms in the AI Era,” *Institute of Strategic Studies Islamabad*, June 16, 2021, Available at: https://issj.org/wp-content/uploads/2021/06/Final_IB_Shayan_June_16_2021.pdf (Accessed on December 19, 2021).

³³ Roberts, H., Cowls, J., Morley, J. *et al*, “The Chinese approach to artificial intelligence: an analysis of policy, ethics and regulation,” *AI & Soc* 36, 59-77 (2021), Available at: <https://link.springer.com/article/10.1007/s00146-020-00992-2> (Accessed on December 19, 2021).

³⁴ Ibid

can be used for military purposes, such as for drone swarms, facial recognition technology, and autonomous intelligent systems. China has also indicated a push toward military-civil fusion which furthers the strategic importance of AI.³⁵ These developments have also been acknowledged in the US DOD's 2021 China Military report, which states that China's future military will be shaped by advances in AI and emerging technologies.³⁶

Looking at these developments and the emerging strategic thought, it seems that the US and China both consider AI-based technologies to be critical to providing their leadership with an edge in decision making. This is likely to influence other players in the field, resulting in the spiralling of arms competition at the global level.

Other Major Competitors in AI

“The one who becomes the leader in this sphere (Artificial Intelligence) will be the ruler of the world.” *Russian President Vladimir Putin.*³⁷ While both the US and China are the two frontrunners when it comes to AI, other major states, like Russia, India, Israel, and some others, have also given importance to AI in their military strategies and have made certain AI-related advancements in their own. Within the next few decades, the US-China AI competition will likely have a spillover effect on other major states regarding the militarization of AI. The US NSCAI report, besides mentioning China, also refers to Russia as a

³⁵ Ibid

³⁶ Michael C. Horowitz and Lauren A. Kahn, “DoD’s 2021 China Military Power Report: How Advances in AI and Emerging Technologies Will Shape China’s Military,” *Council on Foreign Relations*, November 4, 2021, Available at: <https://www.cfr.org/blog/dods-2021-china-military-power-report-how-advances-ai-and-emerging-technologies-will-shape> (Accessed on December 19, 2021).

³⁷ “Putin: Leader in artificial intelligence will rule world,” *CNBC*, September 4, 2017, Available at: <https://www.cnb.com/2017/09/04/putin-leader-in-artificial-intelligence-will-rule-world.html> (Accessed on December 19, 2021).

significant threat. While President Putin views AI to be linked with global supremacy, it significantly lags behind the US and China.

In 2019, Russia announced its National Strategy for the Development of AI until 2030, which was focused mainly on the civilian uses of AI and its economic benefits.³⁸ Russia has been largely dependent on imports when it comes to technology. In terms of high-tech goods, it imports \$19 billion annually from the EU, the US, and China.³⁹ Through its AI strategy, it hopes to attain technological sovereignty and build a domestic AI industry.⁴⁰ Much like in China, the extent of the Russian militarization of AI has not been publicly revealed. Judging from the words of President Putin and other officials, however, it seems unlikely that Russia would not use AI for military purposes. According to a May 2021 report by the US Centre for Naval Analyses, Russia has more than 150 AI-enabled military systems in various stages of development, including autonomous air, underwater, surface, and ground platforms.⁴¹ The extent of deployment and use of these AI-enabled platforms by Russia is unknown. However, following Russia's recent invasion of Ukraine, reports have stated that Russia has

³⁸ "Putin approves National Strategy for AI until 2030," *TASS*, October 11, 2019, Available at: <https://tass.com/economy/1082644> (Accessed on December 19, 2021).

³⁹ Monika Grzegorzcyk, J. Scott Marcus et al., "The decoupling of Russia: high-tech goods and components," *bruegel*, March 28, 2022, Available at: <https://www.bruegel.org/2022/03/the-decoupling-of-russia-high-tech-goods-and-components/#:~:text=Russia's%20dependency%20on%20Western%20high,2%25%20from%20the%20United%20Kingdom> (Accessed on March 30, 2022).

⁴⁰ Julien Nocetti, "The Outsider: Russia in the Race for Artificial Intelligence," *French Institute of International Relations*, December 2020, Available at: https://www.ifri.org/sites/default/files/atoms/files/nocetti_russia_artificial_intelligence_2020.pdf (Accessed on December 19, 2021).

⁴¹ Jeffrey Edmonds, Samuel Bendett et al., "Artificial Intelligence and Autonomy in Russia," *CNA*, May 2021, Available at: https://www.cna.org/CNA_files/centers/CNA/sppp/rsp/russia-ai/Russia-Artificial-Intelligence-Autonomy-Putin-Military.pdf (Accessed on December 22, 2021).

used the KUB-BLA kamikaze drone in its operations.⁴² The KUB-BLA drone, which can stay airborne for 30 minutes and explode once its intended target has been found, uses AI for real-time recognition and classification of targets.⁴³ India is another country with AI-related ambitions. Though currently in its initial phase, India's AI industry is expected to grow exponentially within the next few decades, reaching around \$7.8 billion by 2025.⁴⁴ Militarily, India has identified AI as a critical technology. In 2018, the Indian government established two AI task forces, one of which was under the Indian Ministry of Defence (MOD). The MOD task force studied the strategic implications of AI from a national security perspective.⁴⁵ Although the MOD's report has not been made public, the strategic importance given to AI by India is clear. In 2018, Indian PM Modi mentioned AI as an important "determinant of defensive and offensive capabilities for any defensive force in the future."⁴⁶ Given the US-India strategic partnership and the US support for India as a regional competitor to China, AI cooperation between the two countries is likely. This would pose several new challenges to the regional stability of South Asia, which has already faced numerous challenges in recent years.

⁴² Thomas Harding, "Russia's KUB-BLA kamikaze drone intercepted in Ukraine," *The National News*, March 15, 2022.

⁴³ "Zala KYB Strike Drone, Russia," *Army Technology*, March 25, 2022, Available at:<https://www.army-technology.com/projects/zala-kyb-strike-drone-russia/> (Accessed on March 28, 2022).

⁴⁴ Aarti Betigeri, "India's AI conundrum," *the interpreter*, October 20, 2021, Available at:<https://www.lowyinstitute.org/the-interpreter/india-s-ai-conundrum#:~:text=The%20overarching%20goal%20is%20%E2%80%9Cmaking,set%20at%20US%24949%20million> (Accessed on December 10, 2021).

⁴⁵ Vincent Boulanin, Lora Saalman et al., "Artificial Intelligence, Strategic Stability, and Nuclear Risk," *SIRPI*, June 2020, Available at:https://www.sipri.org/sites/default/files/2020-06/artificial_intelligence_strategic_stability_and_nuclear_risk.pdf (Accessed on December 10, 2021).

⁴⁶ Ranjat Pandit, "India now wants artificial intelligence-based weapon systems," *The Times of India*, May 21, 2018.

Some of the European countries have also made significant progress in the field of AI. In 2020, the European Commission adopted various projects of new military technologies, including algorithms for drone swarms, high-precision missiles, cyber security, and more.⁴⁷

The *United Kingdom* (UK) has also released its National AI Strategy in September 2021, which has highlighted a 10-year vision to make the UK a “global AI superpower.”⁴⁸ The report also linked AI with future national security concerns. Likewise, *France* has also released its National AI Strategy in 2018, which plans to use AI for future military modernization.⁴⁹ Another recent military use of AI was during the 2020 Azerbaijan-Armenia conflict, in which Azerbaijan used low-cost, high-technology AI drones supplied by Turkey and Israel to inflict significant damage on Armenia.⁵⁰ Armenia lost 47% of its combat vehicles and 93% of its artillery in the conflict. The conflict showed that not only has the militarization of AI begun, but smaller states can also possess AI-enabled technologies and use them to their advantage.

Pakistan is another state with the potential to become a significant AI player in the future. Currently, its AI-related progress is limited, although there have been some developments about the use

⁴⁷ Elena Sanchez Nicolas, “EU’s AI military strategy poses ‘threat to Europeans,’” *Euobserver*, January 18, 2021, Available at: <https://euobserver.com/science/150628> (Accessed on December 10, 2021).

⁴⁸ “National AI Strategy,” *HM Government*, September 2021, Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1020402/National_AI_Strategy_-_PDF_version.pdf (Accessed on December 10, 2021).

⁴⁹ Vincent Boulanin, Lora Saalman et al., “Artificial Intelligence, Strategic Stability, and Nuclear Risk,” *SIRPI*, June 2020, Available at: https://www.sipri.org/sites/default/files/2020-06/artificial_intelligence_strategic_stability_and_nuclear_risk.pdf (Accessed on December 10, 2021).

⁵⁰ Arnaud Sobrero, “Can Artificial Intelligence shape the way we conduct war in the future?,” *Strife*, July 19, 2021, Available at: <https://www.strifeblog.org/2021/07/19/can-artificial-intelligence-shape-the-way-we-conduct-war-in-the-future/> (Accessed on December 10, 2021).

of AI for Intelligence, Surveillance, and Reconnaissance (ISR) purposes.⁵¹ With India expected to make major strides in AI within the next few decades, Pakistan would not want to be left behind and will likely make concerted efforts to offset any military advantage that India might gain in AI-related developments. In this regard, it may benefit from the Chinese expertise in the field, but to make progress in the civilian and military applications of the AI-based technologies, it will have to build its indigenous capacity as per national requirements and avoid imbalance in the region.

AI and the Future of Warfare

AI has the potential to be both a revolutionary and disruptive technology. While most people worry about Lethal Autonomous Weapon Systems (LAWS), the scope is much broader than that when it comes to the military applications of AI. Experts predict that AI will become integrated into various aspects of defence within the next few decades, from actual warfare to cyber security and decision-making.⁵² This would have several global implications.

Firstly, AI could further blur the lines of warfare. Technology developed purely for civilian purposes, such as facial recognition technology or 3D modelling, could easily be adopted for use in various objectives and used for military purposes. With this blurring of civilian and military technology lines, the lines of warfare would also become blurred further. Identifying a new technology with potential military applications would become even more difficult. As we have seen

⁵¹ Aamna Rafique, "Militarization of Artificial Intelligence and Future of Arms Control in South Asia," *Institute of Strategic Studies Islamabad*, August 10, 2021, Available at: https://issi.org.pk/wp-content/uploads/2021/08/4_SS_Aamna_Rafiq_No-3_2021.pdf.pdf (Accessed on December 22, 2021).

⁵² Michael E. O'Hanion, "The role of AI in future warfare" *Brookings*, November 29, 2018, Available at: <https://www.brookings.edu/research/ai-and-future-warfare/> (Accessed on December 22, 2021).

historically, states that take the lead over others in understanding and implementing a certain technology militarily often become major global players. The British after the Industrial Revolution and the US after acquiring nuclear weapons serve as good examples. Whoever takes the lead in AI could become the dominant superpower for years to come. Also of importance is the potential for widening the gap between AI-enabled states and the others, as was the case with nuclear-weapon states.

Secondly, the character of warfare could change as a result of major states integrating AI-enabled technologies into their militaries.⁵³ With states potentially having LAWS and AI-assisted decision-making systems, human involvement in war could be minimized. This raises some ethical and moral questions and the likely conflict with the International Humanitarian Law (IHL). How LAWS would act towards enemy combatants or civilians is an interesting debate. In terms of the software used, states would have different AI algorithms programmed into their LAWS, meaning they would not all act the same way. An AI algorithm written by China for military purposes would be completely different from one written by the US or any other state for that matter. With AI potentially involved in future military decision making and command-and-control systems, the risk of escalation of war might also increase.⁵⁴ How an AI defence system would have acted during the Cuban Missile Crisis, an event during which humanity came so close to destruction, or other such events needs to be considered thoroughly. There are also potential issues will arise that we cannot imagine today. Such is the revolutionary nature of AI.

Thirdly, there is a very likely scenario of an AI arms race occurring between major states.⁵⁵ With the rapid progress in AI-related software

⁵³ Ibid

⁵⁴ Ibid

⁵⁵ Ibid

and hardware, it will be difficult to stop this arms race. As AI-related hardware is relatively cheap and software can be found or written by a non-state actor, preventing the proliferation of AI-enabled technologies would be difficult.⁵⁶ A potential AI arms race would be much more difficult to control than the Cold War-era nuclear arms race between the US and the former Soviet Union.⁵⁷ In many ways, this AI arms race has already begun.

Fourthly, the impact of AI on nuclear weapons and strategic stability is another cause for concern. According to a 2020 report by SIPRI, recent advances in AI contribute to nuclear risk.⁵⁸ The report claims states that advances in machine learning and autonomy could unlock new and varied possibilities in a wide array of nuclear weapons-related capabilities, ranging from early warning to command and control and weapon delivery.⁵⁹ It also highlights the lack of transparency of nuclear-weapon states regarding the role of AI in their nuclear forces.

In terms of efforts toward developing some set of international standards and laws for the use of AI in warfare, no substantial progress has been made so far.⁶⁰ Most recently, at the December 2021 meeting

⁵⁶ Shayan Jamy, "US National Security Commission on Artificial Intelligence Report: A Call to Arms in the AI Era," *Institute of Strategic Studies Islamabad*, June 16, 2021, Available at: https://issi.org.pk/wp-content/uploads/2021/06/Final_IB_Shayan_June_16_2021.pdf (Accessed on December 22, 2021).

⁵⁷ Ibid

⁵⁸ Vincent Boulanin and Lora Saalman et al., "Artificial Intelligence, Strategic Stability, and Nuclear Risk" *SIRPI*, June 2020, Available at: https://www.sipri.org/sites/default/files/2020-06/artificial_intelligence_strategic_stability_and_nuclear_risk.pdf (Accessed on December 22, 2021).

⁵⁹ Ibid

⁶⁰ Shayan Jamy, "US National Security Commission on Artificial Intelligence Report: A Call to Arms in the AI Era," *Institute of Strategic Studies Islamabad*, June 16, 2021, Available at: https://issi.org.pk/wp-content/uploads/2021/06/Final_IB_Shayan_June_16_2021.pdf

of the UN Convention of Certain Conventional Weapons (CCW), an effort to establish new regulations on the development and use of LAWS failed.⁶¹ Despite a majority consensus, the proposed regulations were opposed by states such as the US, Russia, India, and Israel.⁶² Other such international efforts to regulate the use of AI in warfare have also failed, as states with a military edge in AI refuse to halt their progress. Major states also broadly differ in terms of the role AI and LAWS should be allowed to play in warfare, although there seems to be a consensus that a certain level of human involvement must be ensured.⁶³ Unfortunately, the current rate of technological advancement regarding AI far outweighs the speed of international diplomacy to address the potential risks associated with it.

Conclusion

In the past, states that have gained technological edge over their rivals have become the global military leaders of that era. AI can play a similar role. Currently, major states have begun integrating AI into their military capabilities. The US and China are leads this race for AI integration and competing for AI supremacy. The on-going AI competition will have a major effect on the US-China rivalry, as it could decide the fate of the future global power. Both the US and China, and other major states have identified AI as a strategic technology. Other

[content/uploads/2021/06/Final IB Shayan June 16 2021.pdf](#)(Accessed on December 22, 2021).

⁶¹ Coralie Consigny, "Are Killer Robots Better Soldiers? The Legality And Ethics Of The Use Of AI At War," *Human Rights Pulse*, February 8, 2022, Available at:

<https://www.humanrightspulse.com/mastercontentblog/are-killer-robots-better-soldiers-the-legality-and-ethics-of-the-use-of-ai-at-war> (Accessed on March 7, 2022).

⁶² Ibid

⁶³ Shayan Jamy, "US National Security Commission on Artificial Intelligence Report: A Call to Arms in the AI Era," *Institute of Strategic Studies Islamabad*, June 16, 2021, Available at:

<https://issi.org.pk/wp-content/uploads/2021/06/Final IB Shayan June 16 2021.pdf> (Accessed on March 7, 2022).

states, such as Russia, India, Israel, and a few others, are following this trend and have begun the militarization of AI. AI is being used for military purposes in the modern-day, and its role in the military will only continue to grow. From LAWS to decision making and much more, AI could change the very character of warfare. This would have several wide-ranging implications, such as an AI arms race, nuclear risks, proliferation of AI-enabled technologies, etc. There is currently a lack of international debate and consensus surrounding the military use of AI, making it difficult to develop a consensus on preventing the proliferation of these technologies. Resultantly, most states are likely to engage in this new AI competition for both civilian and military applications, which could have an adverse impact on strategic stability at the regional as well as global levels.

The Diminishing Credibility of Indian “No First Use” Policy

Hasan Ehtisham¹

Abstract

India's nuclear policy of NFU, with conditions attached, has indicated explicitly that New Delhi seeks the nuclear option at lower escalation levels. NFU pledge is very difficult to enforce during a military crisis. Therefore, the BJP government is exploring a policy option where India can maintain the formality of a NFU doctrine but carry on with preparations for first use capacity. BJP's domestic political consolidation and future international developments will subsidize any change in nuclear doctrine. India's nuclear policy shift will be influenced by the continuous strengthening of its nuclear missile forces. Any future policy shift can be judged through procurement, deployment, and command and control structure configuration. The transition in Indian employment posture towards developing usable nuclear weapons as the first strike further reduces the credibility of its declared NFU policy. Any country's declaratory nuclear doctrine is beneficial only if it is credible. India's quest for preemptive counterforce strikes could lead to deterrence instability. India is expanding its nuclear weapons programme under the guise of nuclear mainstreaming. While branding India as a responsible nuclear power, the professed NFU has offered an excuse to discourage foreign criticism

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and scrutiny of India's nuclear expansion. Notwithstanding, the Indian shift from its NFU posture will not impact global powers' behaviour towards New Delhi concerning arrangements like MTCR, NSG, and Australia Group.

Keywords: Indian Nuclear Doctrine, No First Use, Preemptive Counterforce Strike, Nonproliferation, NSG, MTCR

Introduction

The traditional outlook of Indian nuclear deliberations and debates revolves around the No First Use (NFU) policy, which has been internationally recognized as the core component of India's formal nuclear strategy. The approved nuclear policy of India incorporates an NFU determination with conditionality, which several Indian officials have already underlined on many occasions.² The conventional wisdom guides us that India's policy of NFU has always been conditional and the Indian nuclear doctrine explicitly states that India retains the choice of retaliating with nuclear weapons to a biological or chemical attack on it or its forces anywhere. The Cabinet Committee on Security (CCS) 2003 unequivocally authenticated "Credible Minimum Deterrence" (CMD) as a cornerstone to adopting authentic operational arrangements.³ The declared nuclear doctrine of India does not express evidently what "credible" and "minimum" actually imply.

² Kumar Sundaram and M. V. Ramana, "India and the Policy of No First Use of Nuclear Weapons," *Journal for Peace and Nuclear Disarmament*, Vol.1, no. 1 (2 January 2018), 152–68, <https://doi.org/10.1080/25751654.2018.1438737>.

³ Ministry of External Affairs, "The Cabinet Committee on Security Reviews Operationalization of India's Nuclear Doctrine," (Government of India, 4 January 2003), Available at:https://mea.gov.in/press-releases.htm?dtl/20131/The_Cabinet_Committee_on_Security_Reviews_operationalization_of_Indias_Nuclear_Doctrine+Report+of+National+Security+Advisory+Board+on+Indian+Nuclear+Doctrine.(Accessed on November 14, 2021).

‘In the contemporary strategic scenario of South Asia, critical insight is needed into Indian nuclear doctrine while discussing the ambiguity shrouded around the policy of NFU. Analysts are contemplating that senior policymakers' remarks and approaches in New Delhi suggest that India has now moved towards a nuclear position that Pakistan can no longer consider minimal.⁴ There are numerous explanations to consider that credible minimum deterrence may be New Delhi's declaratory doctrine, but the deterrence signaling of operational nuclear posture differs from India's official nuclear doctrine against Pakistan and China.⁵ A sufficient ambiguity exists in nuclear doctrine because the Indian government used broader terms like "massive retaliation" and "unacceptable damage" without elaborating on how these may be executed. India has not attained the prerequisites (for instance, thermonuclear weapons), which are an essential aspect of operationalizing and materializing the strategy of “massive retaliation.”⁶ Emerging debates regarding India's NFU policy suggest that the current Indian government of Bharatiya Janata Party (BJP) is considering revisiting its nuclear doctrine of NFU to Preemptive First Use OR Counter Force Disarming First Use.⁷ This ambiguity and mixed deterrence signaling is creating rough grounds for the credibility of the Indian strategic posture, which will continue to diminish in an environment where the triangular nuclear rivalry between China, India, and Pakistan exacerbates security trilemma.

⁴ Vipin Narang, "Five Myths about India's Nuclear Posture," *The Washington Quarterly*, Vol.36 (1 August 2013), 143–57, <https://doi.org/10.1080/0163660X.2013.825555>.

⁵ Vipin Narang, “Five Myths about India's Nuclear Posture,”

⁶ Umar Hayat Luk, "Strategic Ambiguities in Indian Nuclear Doctrine Implications for Pakistan's security," *Policy Perspectives*, Vol. 13, no. 1 (2016), 5–23.

⁷ "India May Abandon Its “no First Use” Nuclear Policy: Expert,” *The Economic Times*, 12 July 2018.

Evolution of India's Nuclear Doctrine:

Former PM of India, Atal Behari Vajpayee, in his address to the parliament on 27 May 1998, classified India as a rational nuclear power to use these arsenals against provocations from any country. Vajpayee branded nuclear weapons as a force multiplier to achieve self-defence and demonstrated his country's will to not engage in any arms race.⁸ PM again briefed the Parliament in December 1998 to prepare several essential elements of the country's nuclear strategy and officially "*announced a policy of NFU and non-use against the non-nuclear-weapon state.*" He stressed that India would not participate in any arms race or competition with other states. Vajpayee concluded that Indian nuclear policy "*will be a minimum credible deterrent, which will safeguard India's security, the security of one-sixth of humanity, now and into the future.*"⁹

In a discussion, former Foreign Minister Jaswant Singh of the BJP government addressed the ambiguity related to minimum credible deterrence. Singh elaborated that the minimum terminology while describing credible deterrence cannot be categorized as a constant position in terms of physical measurement. He deliberated that in the backdrop of inconsistent threat perception, the nuclear policy is often decided through calculating changing security dynamics. The "minimum" requirement will therefore be readjusted and modified to meet the needs of the security institution. Singh used the vague term "national interests" as an indicator to decide the strategy concerning nuclear weapons.¹⁰ Feedback from a range of sources is included in the preparation of nuclear doctrine and policy in India. Military routes its

⁸ "Statement to Parliament by Prime Minister Vajpayee," (Government of India, 27 May 1998), Available at: <http://www.acronym.org.uk/old/archive/spind.htm>. (Accessed on November 14, 2021).

⁹ As quoted in Scott D. Sagan, *Inside Nuclear South Asia* (Stanford University Press, 2009).

¹⁰ See Sagan.

input through the Ministry of Defence (MoD), the National Command Authority (NCA), and the "National Security Advisory Board" (NSAB). Civilian institutions like NSAB, MoD, the National Security Council Secretariat (NSCN), and the National Security Council (NSC) remain in the upper tier of decision-making. Finally, under the leadership of the Prime Minister, CCS articulates policy decisions regarding nuclear weapons programme. The most important person in this decision-making process is the National Security Advisor (NSA).¹¹

The first Indian nuclear doctrine was articulated in 1999 by NSAB, founded by the first NSA, Brajesh Mishra. The board was composed of experts from the non-government sphere, i.e., retired bureaucrats, academicians, and professionals from civil society. The Indian government then proclaimed the experts' advice as an unofficial nuclear policy. The consultative board, in its report, suggested the effectiveness of CMD posture and adopted the NFU strategy. The report emphasized that "*India will not resort to the use or threat of nuclear weapons against states that do not possess nuclear weapons or are not aligned with nuclear weapon powers.*" So report legitimized the Indian freedom to use nuclear weapons against non-nuclear weapons states if they composed any anti-Indian alliance with states with nuclear arsenals.¹² This was the nearest approximation to the idea of "negative security assurances of the U.S." in the 1980s, which was the perspective of utilizing nuclear weapons against non-nuclear weapons states.¹³

¹¹ Rajesh Basrur, '*India's Escalation-Resistant Nuclear Posture*', in *Escalation Control and the Nuclear Option in South Asia* (Washington DC: Henry L. Stimson Center, 2004), 58.

¹² "Draft Report of National Security Advisory Board on Indian Nuclear Doctrine," 17 August 1999, Available at: <https://rb.gy/ms6mtb>.

¹³ George Bunn and Roland M. Timerbaev, "Security Assurances to the Non-nuclear-weapon States," *The Nonproliferation Review*, Vol.1, no. 1 (1 September 1993), 11–20, <https://doi.org/10.1080/10736709308436519>.

In January 2003, regarding operational arrangements, the CCS updated and reviewed India's nuclear policy. The critical attributes of nuclear doctrine formulated by the Cabinet Committee can be described as 1) Operational preparations will be articulated as per requirements of CMD; 2) NFU will guide the actual retaliatory use of nuclear weapons during a crisis; 3) The country who employ the first use of nuclear weapons will bear "unacceptable damage" from "massive retaliation" of Indian nuclear forces; and 4) India reserves the right of using nuclear weapons first *"in the event of a major attack against India, or Indian forces anywhere, by biological or chemical weapons."*¹⁴

A comprehensive examination of the CCS's guidelines exposes numerous policy shifts compared to the nuclear posture adopted by India in 1999. First, there was an indication of transformation from a strict minimum approach to a more flexible stance of credible minimum deterrence. CCS added the term "credible" in the deterrence posture to ensure that in the future, India will analyze its nuclear capabilities by emerging threats emanating from its nuclear rivals, Pakistan and China. Second, India's attempts to follow a stringent NFU strategy have been undermined because NSAB, while discussing objectives of Indian nukes in article 2, allowed nuclear arsenals to be used first against any non-nuclear weapons state allied with a nuclear weapons state. Third, the robust approach of utilizing nuclear arsenals first in reaction to an invasion by biological or chemical weapons has been altered in India's nuclear strategy.¹⁵

¹⁴ "The Cabinet Committee on Security Reviews Perationalization of India's Nuclear Doctrine," *Ministry of External Affairs*, January 4, 2004, Available at: https://mea.gov.in/press-releases.htm?dtl/20131/The_Cabinet_Committee_on_Security_Reviews_perationalization_of_Indias_Nuclear_Doctrine+Report+of+National+Security+Advisory+Board+on+Indian+Nuclear+Doctrine . (Accessed on November 14, 2021).

¹⁵ Sagan, *Inside Nuclear South Asia*, 246–48.

India’s Political Rhetoric around Nuclear Doctrine

Since the inception of its nuclear doctrine, the Indian government has been claiming that nuclear arms are purely for deterrence and retaliatory purposes. The narrative that India will only use nuclear weapons as a deterrence tool has been smashed in the light of the ongoing attacks on the NFU policy by the BJP's government. In its 2014 election manifesto, the BJP government challenged NFU. The nuclear doctrine would be revamped because *"the strategic gains acquired by India during the Atal Bihari Vajpayee regime on the nuclear programme have been frittered away by the Congress."*¹⁶ This discussion was not new in BJP's power corridors because previously,, Jaswant Singh in 2011 had already demanded to revisit NFU pledge.¹⁷ After BJP's comprehensive victory in the 2014 election, it was evident that the Modi government would create some stirs regarding the overall nuclear strategy.

The controversy regarding NFU was further reinforced in 2016 by the Former defence Minister of India, Manohar Parrikar. Parrikar suggested that India state that it should "responsibly" by utilizing its nuclear weapons rather than emphasizing the NFU pledge. *"Why do many people say that India is for 'not first use...why should I bind myself? I should say I am a responsible nuclear power, and I will not use it irresponsibly,"* he said.¹⁸ After Parrikar’s comments, it has almost become a norm for the Indian defence ministry to contest the country's

¹⁶ "Will Revise India’s “no First Use” Nuclear Policy, Says BJP," *India TV*, April 8, 2014, Available at: <https://www.indiatvnews.com/news/india/will-revise-india-s-no-first-use-nuclear-policy-says-bjp-35247.html>. (Accessed on November 14, 2021).

¹⁷ "Jaswant for Review of No-First-Use Nuke Policy," *outlook*, March 15, 2011, Available at: <https://www.outlookindia.com/newswire/story/jaswant-for-review-of-no-first-use-nuke-policy/715202>. (Accessed on November 14, 2021).

¹⁸ "India Should Not Bind Itself to a “No-First-Use Nuclear Policy”," *Scroll*, November 10, 2016, Available at: <http://scroll.in/latest/821251/india-should-not-bind-itself-to-a-no-first-use-nuclear-policy-says-manohar-parrikar>. (Accessed on November 24, 2021).

nuclear doctrine publicly. Indian defence minister Rajnath Singh has recently indicated that India's policy regarding nuclear weapons may change depending on the shifting strategic environment.¹⁹

India has indicated explicitly that it retains the nuclear option at lower levels of escalation.²⁰ India may launch a nuclear attack to address a threat below its threshold level – an attack on its very existence.²¹ This implies a constant debate within India that government should be flexible regarding its nuclear posture, and it should not confine itself to only a response level against a nuclear attack, but it should also broaden the canvas of threat perception. This argument can be strengthened by referring to a book, *“Choices: Inside the Making of India’s Foreign Policy (Geopolitics in the 21st Century)”* by Shivshankar Menon, who was NSA to Prime Minister Manmohan Singh. Menon said in an interview with Ajai Shukla: *“India’s nuclear doctrine has far greater flexibility than it gets credit for.”*²² Menon had previously discredited Indian nuclear doctrine in 2010 and inferred that NFU is only directed towards non-nuclear weapons states.²³ These

¹⁹ Indrani Bagchi, “No First Use’ of Nukes Policy Is Open to Review,” *The Times of India*, August 17, 2019, Available at: <https://timesofindia.indiatimes.com/india/no-first-use-of-nukes-policy-is-open-to-review-rajnath/articleshow/70707921.cms>. (Accessed on November 24, 2021).

²⁰ SAV Editorial Staff, “Hot Takes: Potential Indian Nuclear First Use?,” *South Asian Voices*, March 20, 2017, Available at: <https://southasianvoices.org/sav-dc-nukefest2017-potential-indian-nuclear-first-use/>. (Accessed on November 24, 2021).

²¹ Karthika Sasikumar, “After Nuclear Midnight: The Impact of a Nuclear War on India and Pakistan,” *Bulletin of the Atomic Scientists*, Vol. 73, no. 4 (4 July 2017), 226–32, <https://doi.org/10.1080/00963402.2017.1338009>.

²² Ajai Shukla, “Will India Nuke Pakistani Cities, or Go for Its Nuclear Arsenal?,” *Business Standard News*, March 20, 2017, Available at: https://www.business-standard.com/article/economy-policy/will-india-nuke-pakistani-cities-or-go-for-its-nuclear-arsenal-117031700921_1.html. (Accessed on November 24, 2021).

²³ “Speech by NSA Shri Shivshankar Menon at NDC on “The Role of Force in Strategic Affairs”, *Ministry of External Affairs*, October 21, 2010, Available at: <https://www.mea.gov.in/Speeches-Statements.htm?dtl/798/Speech+by+NSA+Shri+Shivshankar+Menon+at+NDC+on+The+Role+of+Force+in+Strategic+Affairs>. (Accessed on November 24, 2021).

debates ensured that the Indian government could not have understood the complete effect of the NFU pledge, and top political leadership was more focused on its instrumental purpose.²⁴

India's debate regarding nuclear doctrine is a consequence of two different factors. **First**, the classical debate regarding the credibility of NFU because a rival nuclear state always has some doubt regarding this so-called idealistic posture. **Second**, the evolution of Indian nuclear forces will ultimately enhance its strategic options.²⁵ The credibility of NFU is a debatable topic within the strategic community of India. Academicians in New Delhi have already highlighted that the pledge of NFU is only applicable to a country that has absolute trust not only in the ability of its nuclear forces that they could bear the first strike effectively but also in the ability to manage a crisis. Another problem with NFU is that this pledge is difficult to enforce during a crisis, especially military. As it is not feasible to build nuclear arms only for the second strike capability, NFU is a mere promise in peacetime that a nation will not have to comply with during a military crisis.²⁶ Therefore, a stated NFU cannot eliminate the possibility of using nuclear arms first. The instability and confidence-based deficiency correlated with the NFU could have detrimental deterrence effects.

It is pertinent to mention the importance of the NSA in the decision-making process to formulate nuclear strategy. The current NSA and Minister of External Affairs are critical advisers to PM Modi on the issues related to foreign policy. These voices within BJP are formulating a strategy for a clever doctrinal shift regarding nuclear weapons. Policy pundits are trying to find a middle ground where India can maintain the formality of an NFU doctrine – to project itself as a

²⁴ Sundaram and Ramana, "India and the Policy of No First Use of Nuclear Weapons,"

²⁵ Bruno Tertrais (Deputy Director of Foundation for Strategic Research), e-mail discussion with Hasan Ehtisham.

²⁶ Bharat Karnad, *Nuclear Weapons and Indian Security: The Realist Foundations of Strategy* (New Delhi: Macmillan, 2005), 442–43.

'responsible' nuclear power – but carry on with preparations for first use capacity. This domestic political rhetoric around nuclear doctrine with a deliberate injection of ambiguity sends the message to Pakistan from India that 'doesn't think our NFU formal position will necessarily bind us.' Meanwhile, any future change in nuclear doctrine will be subsidized by BJP's domestic political consolidation and future international developments. Notwithstanding, the certain and formal change in India's nuclear doctrine in the near future is highly improbable because it could create adverse effects on Indian soft power related to nuclear weapons when New Delhi is in pursuit of nuclear mainstreaming.²⁷ The Indian doctrine of NFU has never served the desired purpose because Pakistan is skeptical of this nuclear strategy.²⁸ In reality, NFU is a policy of using nuclear weapons tacitly, and it has to be treated as "*merely being a deterrence posture.*"²⁹

The idea of any expected policy change concerning the Indian nuclear weapons is significantly less convincing.³⁰ There are huge incongruities regarding India's contemporary technological incapability to operate a proper counterforce posture, which involves preemption or decapitation. But the incessant strengthening of the Indian nuclear missile forces, in terms of quality and quantity, would change Indian policymakers' opinions regarding the future use of such capabilities. Missile launchers with increased mobility and faster ready-to-launch ability will present Indian planners with new or modified ways of

²⁷ Achin Vanaik (Founding Member of the Coalition for Nuclear Disarmament and Peace (CNDP) of India), e-mail discussion with Hasan Ehtisham.

²⁸ Malik Qasim Mustafa, "India Rethinking of Its No First Use (NFU) Policy: Implications for South Asian Strategic Stability," *Issue Brief Institute of Strategic Studies*, April 6, 2017, Available at: http://issi.org.pk/wp-content/uploads/2017/04/Final-Issue_Qasim_dated_06-4-2017.pdf.

²⁹ Ayesha Abbasi, "India's Nuclear Minimalism: Looking Through the Smokescreen," *Islamabad Policy Research Institute*, Vol. XIX, no. 2 (2019), 35–59.

³⁰ Bruno Tertrais, e-mail discussion with Hasan Ehtisham.

deploying and potentially using nuclear weapons.³¹ Some prominent academicians also support the notion of India's nuclear first use as "The combination of more weapons, a greater number of accurate delivery vehicles at a higher state of readiness and responsiveness, precise warheads, Multiple Independently targetable Re-entry Vehicles (MIRVs), and a layered ballistic missile defence system allows Indian civilian and military leaders to start thinking about first-strike strategies—or damage-limiting, launch-on-warning strategies—that use nuclear missiles to target an adversary’s nuclear arsenal and then rely on missile defenses to intercept any assets that survive the disarming strike attempt."³² Previous doctrinal shifts like the draft nuclear doctrine after Operation Shakti, limited war doctrine after 1999, Cold Start after 2002, or Joint Doctrine of the Indian Armed Forces (JDIAF) of 2017 were always formulated in haste after some significant strategic event. The pattern of doctrinal shifts has never communicated a clear message, whether the emphasis is primarily one of rhetorical signaling or India is moving away from its declared position. Any future change in nuclear doctrine to permit first use can be judged by analyzing the configuration concerning procurement, deployment, and command and control structure.³³

Credibility Problem with India’s Nuclear Doctrine

Official spokespersons and policy pundits in the Indian government consistently suggest that the NFU pledge should remove its neighbor's fears regarding the possible use of nuclear weapons. There is a contradiction to this assertion, as India itself opposes China's NFU

³¹ Hans Kristensen (Director at Federation of American Scientists), e-mail discussion with Hasan Ehtisham.

³² Christopher Clary and Vipin Narang, "India’s Counterforce Temptations: Strategic Dilemmas, Doctrine, and Capabilities," *International Security*, Vol. 43, no. 3 (1 February 2019), 7–52.

³³ Timothy D. Hoyt (Professor of Strategy and Policy at U.S. Naval War College), e-mail discussion with Hasan Ehtisham.

pledge and uses Beijing's nuclear capabilities as a justification for modernizing its nuclear forces.³⁴ Although China has an unconditional NFU declaration, Beijing has been increasingly mentioned by New Delhi as a primary nuclear rival. India is justifying its technological advancement in expanding its missile programme and triad capability to assure a second strike as a counterweight to China's strategic capacity. But these strategic stances and policies of India undermine deterrence and crisis stability proportionately towards Pakistan.³⁵

The Indian nuclear doctrine, owing to its high level of uncertainty, is heavily criticized by both domestic and international analysts. In the Indian nuclear strategy, the ambiguous principles of "unacceptable damage" and "massive retaliation" were put out; however, at the same time, India has accelerated its efforts to acquire triad capabilities even though New Delhi has an official NFU stance.³⁶ Contemporarily, the official discourse within India about arms procurement and military expansion is leading towards optimal first use of nuclear weapons and flexible nuclear response under the pretext of modernization of nuclear forces. New Delhi is preparing grounds to distance itself from the NFU pledge, or at least it is looking for other employment options beyond NFU to provide more strategic choices for the policymakers based on expanded flexibility.³⁷

While it is essential to underscore that NFU triggers credibility complications, there is little clarification in the Indian case on how it could revisit its nuclear doctrine. Therefore, at the macro level, it

³⁴ Sundaram and Ramana, "India and the Policy of No First Use of Nuclear Weapons,"

³⁵ Zulfqar Khan and Ahmad Khan, "The Strategic Impasse over India's Doctrinal Restructuring," *The Washington Quarterly*, Vol. 39, no. 1 (2 January 2016), 139–57, <https://doi.org/10.1080/0163660X.2016.1170485>.

³⁶ Khan and Khan.

³⁷ Michael Tkacik, "India Nuclear Weapons: No First Use or No Full Disclosure?," *Defence Studies*, Vol. 17, no. 1 (2 January 2017), 84–109, <https://doi.org/10.1080/14702436.2016.1271721>.

automatically implies that India is looking for "Counter Force Disarming First Use," and India is transforming its nuclear forces accordingly. Although NFU could be the existing declaratory policy of India, the employment policy is in a transition phase.³⁸ India is developing nuclear arsenals, which are far more useable during a conflict. India is contesting its nuclear doctrine by developing a variety of short-range capabilities, which could have significant consequences for a regional arms race.³⁹ From the perspective of the absolute NFU pledge, India is working on modernizing its nuclear forces, which is challenging the idea of using nuclear weapons for second-strike deterrence purposes. Though India still insists that NFU guides its nuclear thinking, the development of usable nuclear weapons as the first strike reduces the credibility of its declared nuclear doctrine.⁴⁰

Contrastingly, there are severe weaknesses regarding the ambiguity shrouded in the concept of massive retaliation, which was first proposed in 1954 by John F. Dulles, former U.S. Secretary of State, as a significant aspect of nuclear deterrence.⁴¹ Massive retaliation in India's context is *“a nuclear strategy that, as a deterrent, conveys to the adversary that the costs of pursuing an objective are much more than the possible gains the adversary could acquire.”* Shyam Saran, former Foreign Secretary of India, has explained how massive retaliation is interpreted in New Delhi without any proper evidentiary support by the Indian government. Saran identified the massive retaliation as a critical element of India's nuclear posture, and he tried to eliminate any uncertainty over how India was contemplating enormous retaliation. He restated that the Indian nuclear capability is

³⁸ Tkacik.

³⁹ "Prahaar," *Missile Threat*, June 15, 2018, Available at: <https://missilethreat.csis.org/missile/prahaar/>.

⁴⁰ Tkacik, "India Nuclear Weapons,"

⁴¹ History.com Editors, "U.S. Announces Policy of "Massive Retaliation" against Communist Aggressors," *History*, November 13, 2009, Available at: <https://www.history.com/this-day-in-history/dulles-announces-policy-of-massive-retaliation>. (Accessed on November 24, 2021).

designed to inflict unacceptable damage through massive nuclear retaliation, and "any nuclear exchange, once initiated, would swiftly and inexorably escalate to the strategic level." India sees enormous retaliation as a strategy without any flexibility, which requires counter-value targeting like the usage of nuclear weapons against very heavily populated areas.⁴²

Notwithstanding, there is a credibility problem with India's massive retaliatory means. Thermonuclear devices provide essential means for massive retaliation. On 11 May 1998, in Operation Shakti-1, India claims to have tested a thermonuclear weapon. International analysts, however, believe that the Indians overly exaggerated the thermonuclear test's results.⁴³ The scientific community which organized Operation Shakti-1 has established the fact that the project failed as the fusion device "never produced the desired results."⁴⁴ Therefore, India's massive retaliation credibility is highly questionable in any future military crisis. Indian scientists have urged their government to avoid signing the Comprehensive Nuclear-Test-Ban Treaty (CTBT) to open the door for future thermonuclear tests.⁴⁵ Recently, the US government has initiated a debate to revoke its unilateral moratorium on nuclear weapons testing. India will probably join this bandwagon by resuming its thermonuclear tests.⁴⁶ The Defence Research and Development Organization (DRDO) have already

⁴² Arka Biswas, "Incredibility of India's Massive Retaliation: An Appraisal on Capability, Cost, and Intention," *Comparative Strategy*, Vol. 36, no. 5 (20 October 2017), 445–56, Available at: <https://doi.org/10.1080/01495933.2017.1379837>.

⁴³ Mark Hibbs, "India May Test Again Because H-Bomb Failed, US Believes," *Nuclear Watch*, November 26, 1998, Available at: <http://www.bu.edu/globalbeat/nucwatch/nucwatch112698.html>.

⁴⁴ "Pokhran II Not Fully Successful: Scientist," *The Times of India*, 27 August 2009.

⁴⁵ Ibid

⁴⁶ Hasan Ehtisham, "If the Donald Trump Resumes US Nuclear Weapons Testing, India Will Follow," *The National Interest*, June 13, 2020, Available at:

<https://nationalinterest.org/blog/buzz/if-donald-trump-resumes-us-nuclear-weapons-testing-india-will-follow-162736>. (Accessed on December 2, 2021).

shown the preparedness to conduct more nuke tests “at short notice.”⁴⁷

Today, India's strategy is based on a mixed approach toward counter value and counterforce targets responding to nuclear attacks. If India in the near future opts for nuclear war fighting in the sense of decapitation – meaning a comprehensive preemptive attack – then it is exceptionally difficult for India and not fail-proof even for the most advanced nuclear-armed states. The approach of decapitation strikes needs a considerable number of resources and technological advancement, a luxury that is currently unavailable to India. Even Russia and the US have not considered this type of strategy, which involves decapitating an opponent's nuclear forces. India could develop capabilities against Pakistan and China to ensure decapitation strikes in the foreseeable future. A preemptive strike is more accessible, but it relies on identifying the threats that a country tries to preempt. India can target a weapon system to limit the damage before being used.

Nevertheless, a predicament exists regarding the successful implementation of preemptive strikes because a nuclear rival could be left with other nuclear forces to respond with. Preemption can be used for two purposes; to prevent a nuclear attack before an actual attack happens or to launch a decapitation strike against the remaining nuclear forces for damage-limitation. This strategy is highly destabilizing and dangerous because it could provoke rival nuclear countries to switch towards offensive crisis postures. If Indian adversaries operationalized offensive crisis postures to deter preemptive strikes, then New Delhi would be less secure and not more protected in the context of crisis stability. In the near future, India will

⁴⁷ "India Capable Of Nuclear Test At Short Notice: Defence Research Chief," *NDTV*, May 29, 2018, Available at: <https://www.ndtv.com/india-news/india-capable-of-nuclear-test-at-short-notice-defence-research-chief-1858949>. (Accessed on December 2, 2021).

not change its NFU pledge, but change could be anticipated in terms of an effort to increase the readiness of its retaliatory posture.⁴⁸

An expansionary Indian modernization of its nuclear forces – particularly those conducted in the context of so-called preemptive strikes – would be detrimental to "minimum deterrence" because enhancing the quality of nuclear weapons has zero utility in a minimal approach. The acquisition of more potent weapons does not lead to deterrence stability because it has a symbolic value. Although Pak-China relations are sometimes projected as a legitimate threat to Indian strategic interests, a two-front nuclear competition is not a very convincing threat. The recent Sino-India face-off in the disputed Galwan Valley of Indian occupied Ladakh has manifested this reality. PM Modi has downplayed the clash that killed 20 Indian soldiers and said that "*nobody has intruded into our border, neither is anybody there now nor have our posts been captured.*"⁴⁹ India has deployed more than eighty percent of conventional/unconventional resources against Pakistan. It will avoid every circumstance that leads to a split of its military might on two borders. The Indian government will always use a policy of appeasement against China while focusing its military strength against Pakistan. New Delhi is just using a two-front war mantra to gradually enhance the quality and quantity of its armed forces, which is not relevant to the concept of minimum deterrence. There is a minimum relevance of asymmetry in terms of quality and quantity of nuclear forces while discussing the idea of "minimum deterrence." In a nuclear paradigm, the utility of conventional forces eventually diminishes as military conflict at maximum scale becomes less likely.⁵⁰

⁴⁸ Hans Kristensen, e-mail discussion with Hasan Ehtisham.

⁴⁹ "Modi Says There Was No Border Intrusion in Deadly Clash with China," *The Express Tribune*, June 19, 2020, Available at: <http://tribune.com.pk/story/2246378/3-modi-says-no-border-intrusion-deadly-clash-china>. (Accessed on December 2, 2021).

⁵⁰ Basrur, "India's Escalation-Resistant Nuclear Posture,"

The declaratory policy of any country concerning nuclear weapons is only useful when it is credible. Since Indian opponents (Pakistan and China) are not convinced of the New Delhi NFU pledge, any improvements in declaratory policy are not significant regarding deterrence. However, a change that provides legitimate threat perceptions and acceptable public means to develop counterforce capabilities has strategic significance, which could be destabilizing.⁵¹ Due to the credibility problem with NFU, any future abandonment of this pledge could enhance Indian deterrence credibility, but this would not automatically translate into more excellent regional strategic stability.⁵²

NFU has an inherent disability of lacking credibility in a crisis,⁵³ so India's shift may reflect this reality, though this could be anticipated as an aggressive posture. India's transformation regarding nuclear posture may make its deterrence more credible, but it colossally depends on a reasonable willingness to use nuclear weapons in response to a non-nuclear attack.⁵⁴ Any transformation might authenticate Indian deterrence more credible, but it may bring little change unless there's a credible willingness to use nuclear weapons in response to a non-nuclear attack. However, deterrence stability is not directly dependent on the nuclear postures of relevant countries, but future instability could be translated through political and military advancements. Political hostility between nuclear weapons states is the foundation for creating balance through deterrence stability.⁵⁵ Any change in India's nuclear doctrine is directly related to the strategic posture of China and Pakistan, whom the move will be intended to affect. If India begins

⁵¹ Joshua White (Associate Professor at Johns Hopkins University), e-mail discussion with Hasan Ehtisham.

⁵² Bruno Tertrais, e-mail discussion with Hasan Ehtisham.

⁵³ Peng Guangqian and Rong Yu, "Nuclear First Use Revisited," *China Security*, Vol. 5, no. 1 (Winter 2009), 27–44.

⁵⁴ Iain King (Former UK Fellow at CSIS), e-mail discussion with Hasan Ehtisham.

⁵⁵ Achin Vanaik, e-mail discussion with Hasan Ehtisham.

implementing a change in nuclear doctrine, some indications will appear in procurement, deployment, and command and control pattern.⁵⁶

Pakistan has long maintained that it does not consider India's NFU pledge a credible posture, and Pakistan's convictions are much more strategically relevant than other powers, i.e., the United States. Notwithstanding, most the nuclear weapons states are reluctant to adopt the policy of NFU because NFU gives your adversaries a clear signal that at which point a country will respond with nuclear weapons. This is why several nuclear-armed powers, notably Russia, the United Kingdom, France, and the United States, have pursued a deliberate ambiguity approach. Contemporarily, India has shifted its posture to counter Pakistan's nuclear weapons capabilities – which could be used to offset the conventional asymmetry – with enhanced abilities to carry out counterforce strikes. A large-scale counterforce strike would not be a credible threat in a conventional conflict, but a counterforce strike against a nuclear attack could be considered credible signaling. India's quest for preemptive counterforce strike could lead to deterrence instability, and rival nuclear weapons states will further invest their resources to make its nuclear forces more survivable. This kind of strategy will coerce the rival state to put its nuclear forces in a position to "use them or lose them." Bunn has identified a fundamental dilemma of counterforce strikes: acquiring a capability to destroy the weapons in a preemptive strike is ideal in a military sense, but having that capability may make the adversary more likely to launch that weapon.⁵⁷

Notwithstanding a structured NFU strategy, there are reasons for concern that India may first use nuclear weapons, particularly in the

⁵⁶ Timothy D. Hoyt, e-mail discussion with Hasan Ehtisham.

⁵⁷ Matthew Bunn (Professor of the Practice of Energy at Harvard Kennedy School), e-mail discussion with Hasan Ehtisham.

military crisis. In this regard, political instability could be detrimental to deterrence stability. For instance, the Balakot Crisis in February 2019 was about to spiral out of control, with India showing unwillingness to pursue its NFU policy. When Pakistan captured an Indian pilot at the apex of the crisis, several sources reported that Indian Prime Minister Narendra Modi earnestly deliberated a missile strike. Afterward, Modi stressed frequently that the threat was real, and he was willing to oblige what he termed a "night of murder" because Pakistan hadn't returned the pilot.⁵⁸ The domestic popular politics of the BJP has engaged India in a discourse where achieving deterrence stability is gradually getting out of hand. There are no national discourse for hardware criteria, usage, thresholds, and escalation management connections related to the NFU pledge prerequisites. Throughout its hasty hunt for various capabilities, Indian nuclear policy is unrestricted in terms of strategic modernization, including developing an operational nuclear triad. Suppose India is concerned about using NFU to supplement crisis management or peace initiatives or reducing nuclear arms usage. In that case, it will have to discourage large weapon acquisitions and nuclear weapons deployment, all in keeping with specified structured policies and practices.⁵⁹

India's NFU Pledge and Nuclear Mainstreaming

Another aim of the NFU policy in the Indian context is to enable Indian lawmakers and officials to depict India as a responsible nuclear state. Indian analysts documented this contributory goal for the NFU as "*part of [India's] ongoing efforts at constructing itself as a moderate and responsible power after it has shamelessly behaved in the most*

⁵⁸ Jeffrey Lewis, "Night of Murder": On the Brink of Nuclear War in South Asia, "*Nuclear Threat Initiative*, November 6, 2019, Available at: <https://www.nti.org/analysis/articles/night-murder-brink-nuclear-war-south-asia/>.(Accessed on December 2, 2021).

⁵⁹ Sundaram and Ramana, "India and the Policy of No First Use of Nuclear Weapons,"

immoderate and irresponsible manner by going openly nuclear! The [NFU] pledge is also a cover to enable India to go ahead and put a nuclear weapons system in place.”⁶⁰ Meanwhile, India has manipulated the United Nations as a specific place for spreading this ethical approach regarding the NFU. During a 2013 high-level United Nations General Assembly (UNGA) Nuclear Disarmament Conference, Indian Minister of External Affairs Salman Khurshid reiterated India's position in global nuclear order, “as a responsible nuclear power, [who has] a credible minimum deterrence policy and a posture of no-first-use. [Indians] refuse to participate in an arms race, including a nuclear arms race [and] prepared to negotiate a global No-First-Use treaty and [India’s] proposal for a Convention banning the use of nuclear weapons remains on the table.”⁶¹ A similar kind of approach was adopted during a 2014 meeting of the UNGA Committee on Disarmament and International Peace when Ambassador DVB Varma said, “as a responsible nuclear power, India has a policy of credible minimum deterrence based on a no-first-use posture and non-use of nuclear weapons against non-nuclear-weapon states [and India is] prepared to convert these into bilateral or multilateral legally binding arrangements.”⁶²

The diplomatic initiative to identify India as a responsible nation with atomic weapons involves demands for numerous steps that oppose Indian policy. In the UNGA since the 1990s, India has been presenting a resolution every year calling for the creation of a "Convention on the Prohibition of the Use of Nuclear Weapons." The proposal demands to reaffirm that the possession or use of nuclear

⁶⁰ Praful Bidwai, *South Asia on a Short Fuse: Nuclear Politics and the Future of Global Disarmament* (Oxford University Press, 1999), 103.

⁶¹ As quoted in Sundaram and Ramana, ‘India and the Policy of No First Use of Nuclear Weapons’.

⁶² "India Ready for Nuclear No-First-Use Agreements," *The Times of India*, October 22, 2014.

arms is an infringement of the UN Charter and a threat against humanity and also needs Disarmament Conference to launch talks to establish an international agreement banning or preventing, in all conditions, the usage or possibility of the use of nuclear weapons. The essence of these demands is opposed to the Indian nuclear ideology, which calls for nuclear weapons to be used in exchange for retaliatory attacks.⁶³ The NFU has also offered Indian policymakers a way to discourage foreign criticism and scrutiny of India's nuclear programme activities. For example, on the one hand, the UN Security Council adopted a draft resolution condemning Indian nuclear tests. On the other hand, the US appreciated the Indian nuclear policy while negotiating nuclear trade waivers.

India has avoided protracted isolation by constructing a so-called ethical approach of NFU. The international community accepted this pledge as a yardstick to measure the responsible behaviour of the Indian nuclear programme. New Delhi has exceedingly established a virtuous narrative regarding its nuclear posture, and the international community deliberately used the mantra of India being a responsible nuclear state to mainstream its nuclear programme. India has cashed on the benefits of this popular narrative, and a process of New Delhi's mainstreaming in global nuclear order was initiated with the U.S.-India Civil Nuclear Cooperation in 2008. India has concluded civil nuclear arrangements with fourteen countries following its nuclear deal with the United States. Given the fact that the international community had already relaxed specific procedures to accommodate India in the global nuclear mainstream (e.g., the Missile Technology Control Regime (MTCR) membership of India and membership in Australia Group, etc.), its yet to be seen how Indian nuclear doctrinal shift will upset global powers' behaviour towards India. Answers to these questions can be

⁶³ Sundaram and Ramana, "India and the Policy of No First Use of Nuclear Weapons,"

inferred through a realist perspective, where state interests are more important than the moral standing of the Indian nuclear posture.

Indian shift from its NFU posture will have no impact one way or the other on global powers' behaviour towards New Delhi. The major global powers seem tolerant of India's behaviour under the pretext of the largest democracy, market share, and a dominant player to counter China.⁶⁴ India has a China-focused political partnership with the United States in the current international political scenario.⁶⁵ The main contesting area will remain India's pursuit to join NSG and China is likely to continue to block Indian entry into the NSG at any cost.⁶⁶ A change in public declaratory policy could exacerbate India's ambitions to gain NSG membership, which China is blocking. However, other States, including Mexico and New Zealand, have also seen Indian policy dismissively. It will lessen the case of India as a responsible and restrained state of the international nuclear order. Nevertheless, the basis of Chinese opposition to NSG membership in India will not be impacted.⁶⁷ There is also a possibility that any future shift in the Indian nuclear posture – mainly to materialize a preemptive counterforce strategy – will generate great powers' response on a scale where there will be no willingness to offer India a more significant role in international affairs (e.g., on the UN Security Council).⁶⁸

Conclusion

The approved India's nuclear policy incorporates a conditional NFU pledge with a salient feature of CMD and massive retaliation. India's nuclear policy does not express evidently what "credible" and "minimum" actually imply, and there is a credibility problem with India's massive retaliatory means. New Delhi is preparing grounds to

⁶⁴ Bruno Tertrais, e-mail discussion with Hasan Ehtisham.

⁶⁵ Achin Vanaik, e-mail discussion with Hasan Ehtisham.

⁶⁶ Matthew Bunn, e-mail discussion with Hasan Ehtisham.

⁶⁷ Joshua White, e-mail discussion with Hasan Ehtisham.

⁶⁸ Iain King, e-mail discussion with Hasan Ehtisham.

distance itself from the NFU pledge and changing the trajectory of employment options beyond NFU to provide more strategic choices for policymakers. Contemporarily, India's nuclear strategy is based on a mixed approach toward counter value and counterforce targets. India modernizes its nuclear forces for the optimal first use of nuclear weapons and flexible nuclear response. Though the strategy of acquiring the capability of comprehensive preemptive attack is farfetched, recent Indian attempts to pursue this course are highly destabilizing. India's quest for a preemptive counterforce strike could lead to deterrence instability because a large-scale counterforce strike would not be a very credible threat in a conventional conflict. The official dissolution of NFU could boost Indian deterrent legitimacy, but it would not necessarily lead to greater regional strategic stability. India may end up in a creative mode where it formally continues to adopt NFU and informally implement a First Use nuclear posture which will create further doubts in the strategic thinking of its nuclear adversaries. Lt Gen Khalid Kidwai (Retd) has deliberated upon this incongruity in the Indian strategic course during the Balakot crisis, where India consistently attempted to "induce strategic instability."⁶⁹

India manipulated the whole idea of NFU to depict itself as a responsible nuclear power and avoided protracted isolation of not being a part of global nuclear mainstreaming. Major international powers, especially the United States, had already relaxed certain procedures to accommodate India's global nuclear mainstream. If India alters its nuclear posture, it will not affect the international political behaviour of arrangements like MTCR, NSG, and Australia Group. Whatever the outcome of domestic political pressures on shaping Indian nuclear policy, the uncertainty regarding Indian nuclear posture

⁶⁹ Khalid Kidwai, "Pakistan's Policy of 'Quid Pro Quo Plus': Remarks by Lt Gen Khalid Kidwai (Retd) at the IISS London," *Strafasia*, February 7, 2020, Available at: <https://strafasia.com/gen-kidwai-speech-iiss-ciss-workshop-london-6-february-2020/>. (Accessed on November 15, 2021).

increases the risk of vertical nuclear/missile proliferation by New Delhi. The vague deterrence signals by India could cause its nuclear adversaries to adopt offensive crisis postures in fear of a preemptive nuclear strike. If NFU is a guiding instrument for India's nuclear weapons programme then it will have to discourage the acquisition and deployment of nuclear forces in large numbers.

Understanding India's 'Surgical Strike' Special Operations and Pakistan's Response

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Abstract

There is no systematic examination of India's special operations' doctrinal thinking under the new "Surgical Strike" lingua in the extant literature. To fill this gap, this article resurrects Sun Tzu's ingenious principles of special operations as an embarkment point. Accordingly, it unpicks India's idea and practice of surgical strike special operations and its relationship to broader military strategy. Plausibly, nuclear weapons have induced strategic restraint and caution in India-Pakistan relations. However, nuclear weapons could not affect the decades-long underlying power-political antagonism between them. India is developing its armed forces to gain strategic advantage by exploiting the existing stability-instability paradox against Pakistan. For this purpose, it has weaved together and tailored various doctrines for different levels of warfare, including surgical strikes under the rubric of special operations. To reinforce conventional deterrence, Pakistan promptly makes preventive, proportionate, and non-escalator

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adjustments in its military capabilities (both conceptual and material). To understand India's concept of surgical strike and Pakistan's response, this article employs a methodological framework of analysis and synthesis with theoretical and policy implications. On the theoretical side, it underlines the enduring relevance of classic principles of special operations espoused by Sun Tzu. On the policy front, it reinforces that states tend to pursue special doctrine for different levels of warfare, with seamless integration. India and Pakistan have entered a fresh round of special operations, causing enormous conceptual and operational implications.

Keywords: Special Operations, Surgical Strike, Military Strategy, India, Pakistan

Introduction

Pakistan and India, since their independence, have been engaged in a spectrum of conflicts that continue to pose a threat of escalation. Unlike the past, future conflicts have the potential to quickly escalate into a full-scale war amidst a fast-changing politico-strategic milieu. With the dawn of the 21st century, India is continually refining its doctrinal thinking, developing, and expanding its military capabilities to exploit the stability-instability paradox against Pakistan. To this end, India has developed doctrines named "Limited War," "Cold Start," and "Surgical Strike" below the nuclear threshold. This is evident from the statements of Indian military leadership, which has continuously asserted that India reserves the right to punish Pakistan with a preemptive strike under its limited war doctrines. Indian military doctrinal thinking and capabilities go side by side. They have, in fact, a

symbiotic relationship, which further promotes war hysteria in the Indian political and military echelon against Pakistan. It is essential to mention here that India has institutionalized and disseminated its doctrinal thinking through the Cold Start Doctrine (2004),³ Basic Doctrine of the Indian Air Force (2012),⁴ Joint Doctrine Indian Armed Forces (2017),⁵ and Land Warfare Doctrine (2018).⁶

Under its proactive doctrinal military thinking, India is trying to achieve a strategic advantage against its neighbors. Fundamentally, India is attempting to redefine the meaning of borders, territoriality, geo-politics, and power relations in South Asia. India conducted surgical strikes against Pakistan to display its willingness and capabilities to introduce a new standard in the region. To reinforce deterrence at all levels, Pakistan responded in kind. However, these strikes and counterstrikes are fraught with dangers. Given the intrinsic relationship between different levels of war, such special operations and counter operations may quickly escalate the situation towards a major war.

This article is divided into four main sections. It begins by outlining a few enduring principles of special operations espoused by Sun Tzu. The second section distills the meaning of a surgical strike and identifies its place within the perimeters of the special operations. The third section tries to establish the Indian doctrinal thinking and practice of surgical strikes as a special operation. Finally, it summarizes

³ Walter C. Ladwig III, "A Cold Start for Hot Wars? The Indian Army's New Limited War Doctrine," *International Security*, Vol. 32, no. 2 (Winter 2007/08), 158-190; General Bipin Rawat, "We will Cross Again," interview by Sandeep Unnithan, *India Today*, January 4, 2017.

⁴ Indian Air Force, *Basic Doctrine of the Air Force-2012* (New Delhi: Directorate of Operations, 2012), 3-30.

⁵ Headquarters, Integrated Defence Staff, Ministry of Defence, India, *Joint Doctrine Indian Armed Forces-2017* (New Delhi: Directorate of Doctrine, 2017).

⁶ Indian Army, *Land Warfare Doctrine-2018* (New Delhi: Government of India, December 2018).

Pakistan's understanding and proportionate responses to reinforce security and stability in the region.

Sun Tzu and Special Operations

Although no proper theory of special operations is available in the literature, classic strategists have eloquently touched upon the subject. In this regard, the master strategist, Sun Tzu, stands tall among the others. He is the oldest and the most famous Chinese military thinker and army general. In so many ways, his work has long-lasting effects on strategic thinking and practice. Sun Tzu's book *The Art of War* offers a set of critical operational concepts, which explicitly informs about special operations short of war. This includes extraordinary forces, indirect tactics, intelligence, surprise, and deception. Sun Tzu endorsed the idea of special operations forces and warfare by stating: "To ensure that your whole host may withstand the brunt of the enemy's attack and remain unshaken, this is affected by maneuvers direct and indirect."⁷

The concepts of direct (normal) and indirect (extraordinary) forces do merit careful consideration. The normal forces distract the adversary, whereas the extraordinary forces act when and where they are least anticipated. Sun Tzu's reference to extraordinary forces is akin to special operations forces, capable of carrying out operations where they are least expected. In continuation, he emphasized the tactics of extraordinary forces. According to him, the tactics of extraordinary forces are inexhaustible and infinite as the heavens and the earth.⁸ By implications, the commander must conceive of special operations in a whole range of ways and across domains.

⁷ Sun Tzu, *the Art of War*, trans. Lionel Giles (Leicester: Allandale Publishing, 2000), 15.

⁸ *Ibid.*

Sun Tzu wrote an exclusive chapter on intelligence and its significance for warfare. To him, foreknowledge accords a clear edge over the enemy. Interestingly, special operations forces are often secretly employed behind the enemy lines to collect intelligence for strategic and tactical purposes.⁹ Parallel to this, reliable, actionable, and timely intelligence is also essential for the successful conduct of special operations. Without better intelligence, special operations become susceptible to risks and failures. Sun Tzu succinctly penned down:

Hence it is only the enlightened ruler and wise general who will use the highest intelligence of the army for spying and thereby achieve great results. Spies are the most critical element in war because they depend on an army's ability to move.¹⁰ Surprise is another cardinal principle for the successful conduct of special operations. Sun Tzu unequivocally stressed the element of surprise while planning special operations. In the first chapter of his book, he underlined: "Attack him where is unprepared; appear where you are not expected."¹¹ Insofar as Special Forces are smaller in size and operate behind the enemy lines without properly sustained firepower, the element of surprise becomes foundational in the execution of special operations. Subsequently, Sun Tzu prompted the importance of deception in conducting special operations. He asserted:

All warfare is based on deception. Hence, when able to attack, we must seem unable; when using our forces, we must seem inactive; when we are near, we must make the enemy believe we are far away; when far away, we must make him feel we are near.¹² With limited military strength and supplies, special operations force greatly value the element of deception. They master the techniques of camouflage

⁹ Adam Leong Kok Wey, "Principles of Special Operations: Learning from Sun Tzu and Frontinus," *Comparative Strategy*, Vol. 33, no. 2 (2014), 136.

¹⁰ Sun Tzu, *the Art of War*, 62.

¹¹ *Ibid.*

¹² *Ibid.*

and distraction.¹³ Through the environment of deception, Special Forces can perform missions efficiently and safely. These five operational principles (extraordinary forces, indirect tactics, intelligence, surprise, and deception) espoused by Sun Tzu provide an important vision to frame and comprehend the nature of special operations in the contemporary world.

Surgical Strike: A Variant of Special Operations

Defining a surgical strike is not as easy as one might think. Although the surgical strike is a different doctrinal military term, academicians, politicians, military individuals, and organizations have slightly (or even radically) different perspectives on it. To begin with, the expression “surgical strike” is composed of two words: a) surgical and b) strike. Depending upon the contexts, they have different meanings and usages. According to Lexico, surgical means “done with great precision,”¹⁴ whereas strike means “inflict a blow.”¹⁵ William Safire believes the strike is a deterrent preemptive strike rather than a mere surprise attack.¹⁶ Similarly, he refers surgical to special tactics, which ought to be “precise, quick, clean, and incisive.”¹⁷ Surgical strike, according to James Cartwright and Amos Yadlin, is a well-targeted military campaign, with “the least collateral damage and potential for escalation.”¹⁸ Michael Noon terms the surgical strikes as “shorter

¹³ Adam, “Principles of Special Operations” 137.

¹⁴ “Surgical,” *Lexico*, Available at: <https://www.lexico.com/definition/surgical>. (Accessed on November 17, 2021).

¹⁵ “Strike,” *Lexico*, Available at: <https://www.lexico.com/definition/strike> (Accessed on November 17, 2021).

¹⁶ William Safire, “On Language; On Surgical Strike,” *New York Times*, May 4, 1986.

¹⁷ *Ibid.*

¹⁸ James Cartwright and Amos Yadlin, “Israeli or U.S. Action Against Iran: Who Will Do It If It Must Be Done?,” *The Atlantic*, May 29, 2013.

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duration direct” military actions and “longer duration special reconnaissance assignments.”¹⁹

Mark Regev, the former Israeli prime minister’s spokesperson, portrays surgical strikes with humane coloration and contrasts it with indiscriminate use of force.²⁰ US Army Special Operation Command (USASOC) Manual presents the most detailed meaning of the term by recording: “The execution of capabilities in a precise manner that employs special operations forces in hostile, denied, or politically sensitive environments to seize, destroy, capture, exploit, recover or damage designated targets, or influence threats.”²¹

In the preceding, one can safely underline a few common attributes of a surgical strike. These include: 1) it is a variant of special operations; 2) it involves special strike forces; 3) It is speedy and targeted; 4) it is based on actionable intelligence; 5) it avoids collateral damage and escalation; 6) it implicitly serves strategic purposes, especially during peacetime; 7) it involves explicit sanctioning of higher political and military leadership. In a nutshell, a surgical operation is a special contingency military plan and action against a key enemy target amidst a fast-closing window opportunity.

It is important to note that surgical strike encompasses and exploits the controversial ideas of preemption and prevention. It also tends to supplement the operations of compellence and deterrence. In doing so, it attempts to give legitimacy to its offensive nature during peacetime. Furthermore, it is distinct from a standard raid strike.

¹⁹ Michael Noonan, “The Seductiveness of Special Ops” *War on the rocks*, March 3, 2015.

²⁰ “Gaza crisis: Israeli strikes 'as surgical as possible,” *BBC News*, April 06, 2021.

²¹ Headquarters, Department of Army, US, *ADRP3-05 Special Operations* (Washington: Army Doctrine Publication, 2019), 3.

Special operations involve not only distinct forces but also functions. There are two major variants of special operations: 1) surgical strike and 2) special warfare. The difference between a surgical strike and special warfare is summarized in table 1.

Surgical Strike	Special Warfare
Lethal Capabilities only	Both lethal and non-lethal
Applied to shape the operational environment	Facilitate leveraging indigenous forces
Speed, precise, and a scalable and surprise	Go slow, go long, and go local
Damage and destroy targets	Building and maintaining partnerships

Source: Special Operations Forces in Unlit Spaces.²²

Raid is a small, basic, routine combat activity to attack a forward post and patrolling party along the borderline. One of the raid's main goals is to dominate the borderline. Usually, raids are not sanctioned by the highest political and military authority levels. Contrarily, surgical strike seeks strategic purposes. It entails relatively deeper penetration, sophisticated targets, and a more complex operation, a longer period of preparation, updated actionable intelligence, and greater integration with wider doctrinal military thinking.

Nevertheless, it is worth noting that surgical strike special operations purportedly provide an easy way out of pressing strategic problems. In reality, surgical strikes are fraught with dangers of failure and escalation, as each step in the strategic realm has strategic

²² Joseph A. Royo, "Special Operations Forces in Unlit Spaces: Understanding the World's Dark Spots in the Context of SOF Operational Planning," *The Land Warfare Papers*, Vol.101, (June 2014), 9-10.

consequences. Equally important, the surgical strike has serious moral and legal issues in contemporary international relations.

Indian Surgical Strike Special Operations: New Lingua for New Warfare

Arguably, India carried out the so-called surgical strikes as a part of its sub-conventional/low-intensity conflict operations. Low-intensity conflict is the “politico-military confrontation between contending states or groups below conventional war, and above the routine, peaceful competition among states.”²³ It can range from subversion to the use of military force. Subversive operations are classified as indirect, while the employment of armed forces is described as direct.²⁴ Nonetheless, military power is used with the utmost restraint, precision, and discrimination. These direct military actions, therefore, necessitate authority, intelligence, meticulous planning, and the requisite military assets. Even though special operations are often associated with offensive and defensive operations on a conventional level, they are also instrumental in low-intensity conflict operations. It is essential to underline that low-intensity warfare is increasingly becoming common in the developing world and has serious regional security repercussions.

The Indian government first associated the term surgical strike with the self-proclaimed raids conducted across the Line of Control (LoC) in 2016 and then with the Balakot air strike, which occurred deep into Pakistani territory in 2019. At the time of Uri, Indian Director General Military Operations (DGMO) Lt. Gen. Ranbir Singh called the intelligence-based mystery actions of the Indian Army Special Forces across the LoC against the impending threat of alleged non-state

²³ Department of Defense, US, *Fundamentals of Low Intensity Conflict* (Washington: Headquarters of Army and Air Force, 1990), 1

²⁴ Ibid.

actors' infiltration into India as a "surgical strike."²⁵ Again in 2019, the Indian Air Force (IAF) portrayed the Balakot surgical air strike as an intelligence-based non-military preemptive strike against alleged non-state actors linked to Jammu & Kashmir's armed independence movement.²⁶ On both occasions, the Indian political and military establishment appeared to be justifying direct military actions under the excuse of imminent terrorism threats. Similarly, New Delhi contended that the launching pads of the non-state actors are not pure military targets and instead fall into the non-military target category. It hoped to conceal its aggression behind the guise of self-defence and just use of force. On the other hand, Pakistan has vehemently denied the existence of an alleged camp at the Balakot site.²⁷ Fundamentally, the use of the words "preemption" and "surgical" was a strategic signal to Pakistan that India would not be deterred from striking whenever and wherever its interests were threatened.

Overall, the Indian rationale behind the strikes was three-fold. First, the Indian government sought to defame Pakistan internationally by associating its ties to terrorist organizations. It aimed to portray Pakistan as a state that sponsors terrorism around the world. The narrative that Indian officials developed before and after the strikes evidently demonstrated this. "The land of Taxila, one of the greatest learning centres of ancient times is now hosting the ivy league of

²⁵ "Transcript of Joint Briefing by MEA and MOD," *Ministry of External Affairs, India*, September 29, 2016, Available at: https://www.mea.gov.in/media-briefings.htm?dtl/27446/Transcript_of_Joint_Briefing_by_MEA_and_MoD_September_29_2016(Accessed on November 17, 2021).

²⁶ Deepshikha Ghosh, "India Strikes After Pulwama Terror Attack, Hits Biggest Jaish-e-Mohammed Camp In Balakot," *NDTV News*, February 26, 2019, Available at: <https://www.ndtv.com/india-news/india-struck-biggest-training-camp-of-jaish-in-balakot-large-number-of-terrorists-eliminated-governm-1999390> (Accessed on November 17, 2021).

²⁷ News Desk, "India Refuses to Share Proof of Air Strikes in Balakot," *Dawn News*, March 03, 2019.

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terrorism,” an Indian envoy said at the United Nations.²⁸ The goal was to malign Pakistan before the international community.

Secondly, pre-emptive strikes aimed to probe Pakistan's defence systems. It also wanted to test Pakistan's resolve and coerced it into not retaliating. Moreover, the Indian strategists hoped to calibrate their future military contingency plans in accordance with Pakistan's response. Thirdly, the Indian government sanctioned the surgical strikes in 2019 to stoke nationalism and create favorable domestic conditions for elections. The Hindu nationalist Bharatiya Janata Party (BJP) used this tactic to gain public support, which had been on the wane before the strike but had soared following the strike. Undoubtedly, the war frenzy generated a sympathetic environment for the BJP, which was needed to win the 2019 general elections. The Indian opposition parties aptly emphasized that the 2019 strike was a political charade staged solely to win public sympathy.²⁹

Indian Surgical Strike Operations Doctrine

This section traces and illustrates doctrinal inspiration underlying Indian surgical strike operations; as such complex undertakings require the institutionalization of a particular way of warfare. During the first two decades of the 21st century, India developed and tested different military doctrines to cover the entire conflict spectrum. Chronologically, India put its major theater war Sunderji doctrine into practice during the compound military of 2001/2002. This doctrine rested on the premise of placing seven holding corps along the

²⁸ “India's Right of Reply during the General Debate of the 71st session UN General Assembly,” *Ministry of External Affairs, India*, September 16, 2019, Available at: [https://mea.gov.in/Speeches-Statements.htm?dtl/27422/Indias Right of Reply during the General Debate of t he 71st session UN General Assembly on September 21 2016](https://mea.gov.in/Speeches-Statements.htm?dtl/27422/Indias+Right+of+Reply+during+the+General+Debate+of+the+71st+session+UN+General+Assembly+on+September+21+2016)(Accessed on November 17, 2021).

²⁹ Web Desk, “Under Modi Govt, Surgical Strike Happens Just Before Elections: Congress,” *India Today*, October 20, 2019.

Pakistan border for defence while three strike corps carried out the mission of cutting Pakistan into two halves.³⁰ The operation Parakram aided India in evaluating the Sunderji doctrine's viability in a nuclear setting.³¹ Building on this, the Indian army conceived the Cold Start Doctrine (CSD) for limited war operations. It was designed to allow for shallow penetration into Pakistan's territory within a short period, ranging from 72 to 96 hours.³² After subsequent reassessment and reorganization of the strategic field and the margin of maneuver, the Indian political and military echelon decided to introduce low-intensity conflict operations against Pakistan. Accordingly, during the second decade of the 21st century, the Indian Armed Forces institutionalized an exclusive surgical strike special operations doctrine on a sub-conventional level.

The Joint Doctrine Indian Armed Forces-2017, for example, contained explicit understanding and direction for surgical strike special operations. The doctrine springs from a "proactive and pragmatic philosophy" to combat various threats across the conflict spectrum. Within this context, it enjoins "surgical strikes" under the pretense of "terror provocation" on the sub-conventional level of the spectrum of conflict.³³ It enunciates special operations ought to be carried out by the specially developed forces of the Indian Armed Forces (Army, Air Force, and Navy) in enemy territory in all three dimensions – land, air, and navy. In this regard, the Indian army is mandated to operate in all three dimensions. Indian navy is tasked with the maritime domain. Indian Air Force is sanctioned, among other things, for "precision strikes at the target of critical importance."

³⁰ Farrukh Saleem, "Understanding India," *The News*, December 04, 2016.

³¹ Nitin Gokhale, "India's Doctrinal Shift," *The Diplomat*, January 25, 2011, Available at: <https://thediplomat.com/2011/01/indias-doctrinal-shift/> (Accessed on November 20, 2021).

³² Walter C. Ladwig III, "A Cold Start for Hot Wars?," 165.

³³ Ministry of Defence, India, *Joint Doctrine Indian Armed Forces-2017*, 13.

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Operationally, three services can conduct special operations separately or in conjunctions with each other. For the efficient execution of precision strikes, the Joint Doctrine underlines the value of quality intelligence and “direct command.”³⁴ Although special operations forces are isolated from the main combat force, the doctrine reckons the “possibility of sub-conventional escalating to a conventional level.”³⁵ It astutely directs a conception of conventional scenarios arising from sub-conventional warfare and instructs three services to develop synergetic responses to dominate the escalation ladder.

In conjunction with the Joint Doctrine, the Indian Army Land Warfare Doctrine 2018 provides pointers on the surgical strike operations. It envisions more substantial operational capabilities for “punitive response to greater depth, effect, sophistication, and precision” along the Line of Control.³⁶ Not to mention it emphasizes the significance of timely and assured intelligence, surveillance, and reconnaissance for precision employment.³⁷ Similarly, the Indian Air Force (IAF) published a revised doctrine in 2012. In keeping view of the evolutionary nature of air power and the requirement to stay relevant across the conflict spectrum, it presented exhaustive narratives of the basics of air power development and employment.³⁸ The Air Doctrine is blunt and obvious in highlighting the significance of air power in dominating the sub-conventional conflict operations. To put it into perspective, it envisioned both the non-kinetic and kinetic support role of air power on a sub-conventional level. Some of these roles include: 1) conducting surveillance, reconnaissance, and intelligence of targets; 2) providing air mobility and logistics to ground forces involved in low-

³⁴ Ibid.

³⁵ Ibid.

³⁶ Indian Army, *Land Warfare Doctrine-2018*, 3.

³⁷ Ibid.

³⁸ Christina Goulter & Harsh V. Pant, “Realignment and Indian Airpower Doctrine,” *Air University Online Journal*, January 02, 2022.

intensity operations, 3) targeting the leadership of non-state actors, 4) destroying infrastructures of non-state actors, 5) and evacuation and extraction missions.

For the successful employment of air power on the sub-conventional level, the doctrine espoused a few pre-requisites: political will, integration, surveillance grid, intelligence, targeting and collateral damage, escalation, training, night/weather capability, and media.³⁹ India seemingly pursued these doctrinal injunctions for the 2019 Balakot surgical strike. For example, Indian political leadership explicitly sanctioned the cross-border offensive air strike. Similarly, New Delhi directly commanded and directed the strike operation. Not surprisingly, all possible intelligence sources, surveillance, and reconnaissance were integrated and employed. During the conduct of the strike, collateral damage was consciously avoided. Wider contingency plans were developed and put in place in case an offensive strike prompts escalation with Pakistan.⁴⁰ The designated squadrons were adequately trained beforehand. The selected crew was ready to operate different capabilities under different weather conditions. Finally, Indian media was effectively used to garner public support for such offensive air strikes against Pakistan. Indeed, this doctrine provided a blueprint for the planning and execution of the Balakot strike.

It is worth recalling that the Indian Air Force had conducted three major exercises to validate these doctrinal underpinnings, focusing on striking the targets with precision, which is rudimentary for sub-conventional operations to avoid collateral damage. These exercises

³⁹ Air Headquarters, *Basic Doctrine of the Air Force-2012*, 109-110.

⁴⁰ Air Marshal, B S Dhanoa, "Balakot Air Strike Anniversary: Dhanoa Reveals about the Trick Which Fooled Pakistan," interview by Jagwinder Patial, *ABP News*, February 27, 2020, Available at: https://www.youtube.com/watch?v=l_xpEZ0dgKg (Accessed on November 20, 2021).

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included all operational IAF platforms to be mission-ready simultaneously to perform high-risk operations under intense pressure in a shorter time, which is another criterion for success when executing sub-conventional offensive strikes. The exercises were conducted at the Pokhran firing range. They were concerned with accurately locating and destroying ground as well air targets. During these drills, all of the IAF's systems were tested, including firing different munitions in real-time. Importantly, these exercises also synergized operations day and night. The following lines provide the salient characteristics of these military drills.

To begin with, the Indian Air Force conducted the Iron Fist 2016 exercise as a follow-up to Iron Fist 2013. The exercise involved 181 IAF aircraft, with the goal of demonstrating "capability to punish" over the entire spectrum of aerial operations.⁴¹ It was designed to assess the IAF's operational capability in real-time operations, with all its delivery systems effectively targeting an enemy. Gagan Shakti, which commenced on April 12, 2018, was the largest exercise the IAF had ever undertaken.⁴² The purpose of the exercise was to validate the precision of armaments and to improve the efficiency of IAF employment during intense and shorter periods of engagements with the adversary.⁴³ One of the most critical aspects of the exercise was the delivery of precision weaponry from aerial platforms in a real-time situation.⁴⁴ Finally just two weeks before Balakot surgical strike, IAF

⁴¹ Franz-Stephan Gady, "Indian Air Force Might: 181 Aircraft to Participate in Large Combat Exercise in India," *The Diplomat*, March 18, 2016, Available at: <https://thediplomat.com/2016/03/indian-air-force-might-181-aircraft-to-participate-in-large-combat-exercise-in-india/> (Accessed on November 20, 2021).

⁴² Vimal Bhatiya, "IAF Kicks Off Its Biggest Combat Drill Gagan Shakti in Jaisalmer," *Times of India*, April 12, 2018.

⁴³ Ministry of Defence, Government of India, "Conclusion of Exercise Gaganshakti-2018," *PIB India*, April 24, 2018.

⁴⁴ Waqar Ahmed, "Indian Air Force Exercise and its Objectives," *The News*, April 23, 2018.

planned the Vayu Shakti exercise on February 16, 2019. The exercise showcased IAF's latest doctrinal innovation and operational capabilities. While commenting on the salience of the exercise, IAF Chief B S Dhanoa stated: "We are showcasing our ability to hit hard, hit fast and hit with precision, hit during the day, hit during the night, and hit under adverse weather conditions through our autonomous bombing capability."⁴⁵ He did not mince words to correlate the exercise with the prospective surgical strike operations across the border by maintaining: "While wars are few and far between, we have an ever-present sub-conventional threat so today we showcase our ability to punish, our ability to insert and extricate our troops from hostile territories."⁴⁶

It is essential to mention that India's determination to employ air power to counter so-called sub-conventional threats has diversified the country's special operations capabilities. The use of air power was formerly deemed too risky by India's political class, which opposed using it to target sub-conventional threats, particularly across the border. The Indian Air Force (IAF), on the other hand, holds a different opinion. It was eager to employ its assets after the Indian air chief proposed air strikes against alleged terror sites in Azad Kashmir following the 2008 Mumbai attacks.⁴⁷ Owing to the ongoing Global War on Terrorism, the then Indian political leadership did not sanction direct action and only approved subversive activities against Pakistan.⁴⁸ Nevertheless, the 2019 strike marks the end of the political elite's era of restraint amidst power transition in the international security system and the start of a new level of regional confrontation. The

⁴⁵Ajai Shukla, "Vayu Shakti 2019: Air Force Demonstrates Mega Firepower at Pokhran", *Business Standard*, February 16, 2019.

⁴⁶ Ibid.

⁴⁷ George Perkovich and Toby Dalton, *Not War? Not Peace? Motivating Pakistan to Stop Cross Border Terrorism* (India: New Delhi, Oxford University Press), 1.

⁴⁸ Ibid.

decision was long due because of the IAF's consistent advocacy, which had been persuading the political establishment for longer. The decision to utilize air power in sub-conventional warfare was the IAF's fantasy, which was realized only because of the Modi regime's political support during the Balakot strike.

Pakistan's Response

Pakistan prudently and strategically assessed India's provocative surgical strike special operations. In this regard, the Pakistani decision-makers explored the Indian surgical strike's intended political, military, and strategic purposes. They have presumably highlighted the following net political designs: 1) India is seeking to exercise strategic autonomy by violating the Pakistani airspace; 2) by undermining the 2003 Line of Control Ceasefire Agreement, it is attempting to advance its position over Jammu & Kashmir; 3) the surprise Indian attack is intended to undermine the Pakistani people confidence in its armed forces; 4) By citing non-state actors as a pretext of attack, it is attempting to portray Pakistan as a terrorism-sponsoring state internationally; and 5) it is renewing its efforts to establish regional hegemony by diluting the meanings of borders and territoriality.

In line with this, the Pakistani government viewed significant consequences in the military realm. It has plausibly underlined that India is endeavoring to demonstrate its technologically driven operational capabilities and prowess across the border. Along with this, it also aims to demoralize Pakistan's military. In the strategic sphere, the Indian armed forces intend to dilute the veto power of the Pakistani nuclear weapons. Taken together, the Indian provocative surgical strike challenged Pakistan's national security in many ways.

Pakistan re-energized its grand strategy to counter the Indian designs effectively. To this end, it directed and coordinated various elements of its national power. Pakistan vehemently denounced the

Indian military actions at the diplomatic and international levels. It dismissed the Indian claims of the 2016 surgical strikes, calling them "delusion and fabrication of truths."⁴⁹ On the Balakot strikes, the National Command Authority (NCA), the highest decision-making authority in the country's defence, condemned the strikes as reckless Indian behaviour intended to placate the domestic audience during an election season. The Indian misadventure, according to Pakistani foreign minister Shah Mahmood Qureshi, was a grave violation of the Line of Control. Pakistan reserved the right to respond.⁵⁰ The then military spokesperson, Major General Asif Ghafoor, claimed that the enemy air force did not strike any targets and that no one was killed.⁵¹ Moreover, the Pakistani government denied that India had surprised Pakistan, vowing to respond to Indian aggression at a place and time decided by Pakistan. "You will never be able to surprise us, and we have not been surprised," Asif Ghafoor asserted.⁵² "We were ready, we responded, we denied."⁵³ The net Pakistani response was that the Indian air force failed to hit its intended targets due to the prompt response of the Pakistani air force. The Indian government sanctioned the surgical strikes to incite nationalism to create favorable domestic conditions for elections. On the other hand, Pakistan will respond at its time and place. In line with these policy commitments, the Pakistani air force effectively carried out well-restrained counter-air strikes under its deterrent doctrinal thinking.

⁴⁹ Ellen Barry and Salman Masood, "India Claims 'Surgical Strikes' Across Line of Control in Kashmir," *New York Times*, September 29, 2016.

⁵⁰ Murali Krishnan and S. Khan, "Pakistan Vows Retaliation After India's Airstrikes on Alleged Militant Camps," *DW News*, February 26, 2019.

⁵¹ George Steer, "From Suicide Bombing to Captured Pilot: A Timeline of the Latest Crisis in Kashmir," *Time*, February 28, 2019.

⁵² National News, "Time for India to Wait for Our Response: ISPR DG Debunks New Delhi's Claims on LoC Violation," *Dawn News*, February 26, 2019.

⁵³ Muhammed Anis and Muhammed Saleh Zafir, "We will Pick Time, Place to Hit Back," *The News*, February 27, 2019.

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In order to restrict space to Indian surgical strikes and maintain conventional deterrence in the immediate future, the Pakistani military has inducted a variety of sophisticated and advanced weaponry capable of countering threats in challenging environments. Following the 2019 Balakot strikes, the force development strategy underwent significant revisions. Military and political leadership in Pakistan concluded that to maintain deterrence against India, they needed to undertake preventive, proportionate, and non-escalatory steps that thwart India from striking below the nuclear threshold. To this end, Pakistan procured, inter alia, fighter jets, air defence weapons systems, radars, and armed drones. Introducing and deploying air defence weapons systems, such as the HQ-9 surface-to-air missile system, improves airspace deterrence. The HQ-9 has a long-range and is easily deployable, allowing it to secure and make impenetrable airspace. According to Inter-Services Public Relations (ISPR) Pakistan, the system was officially inducted into the court of arms on October 14, 2021, with the primary objective of having a "Comprehensive Layered Integrated Air Defence (CLIAD)."⁵⁴ In the absence of a costly Ballistic Missile Defence (BMD) system, Pakistan can use the abovementioned capability to safeguard its airspace at a lower cost. Furthermore, the Balakot strike prompted Pakistan to speed up the induction of the J-10 Vigorous Dragon, which Pakistan first selected in 2006. The 4.5th generation aircraft has Active Electronic Scanned Array (AESA) radar and is equipped with Beyond Visual Range (BVR) capability.⁵⁵

Parallel to this, Pakistan has also purchased modern radars and drones. The Pakistan Air Force (PAF) has inducted and operationalized the American-made TPS-77 MRR long-range radar to improve situational awareness. The radar has a detection range of 300 to 500

⁵⁴ Samuel Cranny-Evans & Gabriel Dominguez, "Pakistan Army Commissions HQ-9/P Air-Defence System," *JANES*, October 15, 2021.

⁵⁵ Sebastien Roblin, "China's J-10C Is No F-35, But It is a Cutting-Edge 4.5-Generation Jet," *National Interest*, August 06, 2020.

kilometers and can even detect aerial threats in valleys.⁵⁶ Coupled with this and the PAF inducted a Chinese-made YLC-8 long-range radar to close low-level air defence vulnerabilities.⁵⁷ In a cluttered electronic warfare environment, this radar system effectively detects stealth fighter and helicopter aircraft with an extended range of 500 km.⁵⁸ Previously, the PAF lacked this capability. Aside from that, Pakistan has shown keen interest in new and advanced drone systems to help with border surveillance. Cai Hong-4 (CH-4), Un-crewed Aerial Vehicles (UAVs), was procured from China that can stay in the air for an extended period of time and have the potential to strike the enemy as well as to conduct surveillance.⁵⁹ This has increased PAF's ability to monitor country's airspace round the clock.

Besides the air domain, Pakistan also enhanced its conventional land capabilities. It has tested and deployed Fateh-1 Multiple Launch rocket systems, which has a range of about 1550 kilometers.⁶⁰ Fateh-1 was prioritized to lessen dependency on Nasr short-range nuclear-capable missiles. In the meantime, Pakistan has increased its armored forces' effectiveness in countering Indian ground thrust. In this regard, Pakistan purchased VT-4 tanks from China and entered them into service to bolster the strike capabilities of ground forces. Additionally, to increase its firepower Pakistani army procured SH-15 self-propelled

⁵⁶News Desk, "Pakistan Improves Defence with Two New Radar Systems," *Global Village Space*, November 29, 2021, Available at: <https://www.google.com/amp/s/www.globalvillagespace.com/pakistan-improves-defence-with-two-new-radar-systems/%3famp> (Accessed on December 11, 2021).

⁵⁷ Web Desk, "PAF has Added New Radar Equipment to Its Air Defense Monitoring System," *Bol News*, December 02, 2021, Available at: <https://www.bolnews.com/latest/2021/12/paf-has-added-new-radar-equipment-to-its-air-defense-monitoring-system/amp/> (Accessed on December 11, 2021).

⁵⁸ P.C. Katoch, "China's Anti-Stealth Radar," *SP'S Aviation*, November 02, 2021.

⁵⁹ Gabriel Dominguez, "Pakistan Receives Five CH-4 from China," *JANES*, January 27, 2021.

⁶⁰ News Desk, "Pakistan Tests Multi-Launch Rocket System," *Dawn News*, January 08, 2021.

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howitzer from China in the early half of this year.⁶¹ The system has an approximate range of 50 kilometers. It can fire satellite and GPS-guided munitions.⁶² The system has provided the Pakistan army with precision artillery targeting capabilities that it previously lacked. The Pakistani navy's combat surface and sub-surface ships, radars, and command & control systems have also been modernized.

The Pakistani armed forces refined several doctrinal concepts for different levels of war after the Balakot incident. Pakistan has conducted military exercises across three domains to validate new ideas and weaponry. For example, it has conducted the "National Air Defence exercise," which focuses on synergistic and integrated employment of defensive and offensive forces.⁶³ The exercise, which also involved army air defense assets and was coordinated by the PAF air defense command, affirms the integration of sensors and targeting systems from all services under one roof to enhance conventional deterrence. In a realistic threat environment, the exercise involved scrambling fighter jets and force multipliers simultaneously. Its goal was to boost the Pakistani armed forces' offensive and defensive operations prowess. Pakistan went for this military drill after realizing that if the country's air defence were under one command rather than multiple, the response to the Balakot incident would have been considerably better. The unification of air defence assets under an

⁶¹"Pakistan Receives First Chinese-Made SH-15 155mm Self-Propelled Howitzers, "Army Recognition, January 25, 2021, Available at: https://www.google.com/amp/s/www.armyrecognition.com/defense_news_january_2022_global_security_army_industry/pakistan_receives_first_chinese-made_sh-15_155mm_self-propelled_howitzers.html (Accessed on December 11, 2021).

⁶²Christopher F Foss, "NORINCO marketing SH-15 155 mm Artillery System for Export," *JANES*, June 10, 2020

⁶³Muhammad Anis, "PAF Conducts National Air Defence Exercise," *The Nation*, February 04, 2022.

integrated air defence command led by the air force is a classic example.

Conclusion

Sun Tzu's classic treatise provides critical insights into mapping the Indian thinking and practice of surgical strikes' special operations. Inspired by the US and Israeli surgical strikes, India is fast developing and executing its special operations doctrine to exercise strategic autonomy against Pakistan. India may eventually feel tempted to broaden the scope of surgical strikes across domains, employing a range of indirect tactics and Special Forces. To deny any military space to India, Pakistan instills the survival/deterrent doctrinal spirit into its special operations warfare. Accordingly, it is conceiving its training institutions, force composition, and command & control systems. It is essential to underline that both countries are increasingly linking their special operations strategy with their overall military plans. As surgical strikes are designed for operational and strategic purposes within a nuclearized environment, these special operations undertakings and counter undertakings have a high risk of quickly developing into a full-fledged war. In this backdrop, regional and international communities must revisit their apathy towards the conduct of Indian provocative special operations. Instead of viewing Indian surgical strikes as isolated and benign sub-conventional military actions, they need to reckon with surgical strikes' operational and strategic purposes, as well as their link with wider military strategy. Deep inside an opponent's territory, special operations seriously threaten the institutions of the border, territoriality, geopolitics, balance of power, diplomacy, and international law. Therefore, regional and international players must exert pressure on India to abandon irrational and risky military actions in the interests of regional peace and stability.

Prophets of Cyber War: Examining the Role of Pakistan’s Private Sector in a Strategic Cyber Context

Hammad Salik¹and Rao Ibrahim Zahid²

Abstract

Developed nations have historically leveraged the productivity and efficiency of the private sector to drive R&D and growth in several sectors. This, in turn, has been used as a driver of national economic, diplomatic, and military power. The same is true for the cyber domain, where the private sector has made significant contributions to cyber defence, development of offensive cyber capabilities, and support for cyber operations. Developing nations struggle to follow a similar path due to several challenges. A prerequisite to solving these challenges is an accurate understanding of the strategic problems before tackling them effectively to avoid wasting scarce resources, a viscous constraint for developing nations. The reality states must acknowledge that deterrence has failed to dissuade adversaries from taking aggressive actions in cyberspace. This is a direct result of two factors. One, cyberspace is interconnected, implying that the terrain is continuously updated and contact with the adversary is constant. Two, states have realized

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that they can manage strategic gains through cyberspace by conducting cyber offensive operations with effects below the threshold of armed conflict. This is significant as activity below the threshold carries a risk of escalation, which is non-existent. Hence, this is an attractive avenue for states pursuing a redistribution of power in the international system. Developing states such as Pakistan must incorporate the implications of this understanding before designing any national strategy or policy for cyberspace, including policies that can leverage the private sector to meet these Challenges.

Keywords: Offensive Cyber Operations; Private Sector Combatant Groups; Cyber Deterrence; Persistent Engagement, Cyber Strategy

Introduction

The military sector has always been home to significant innovation. World War -II events set out a prime example of how innovations such as radars, jet engines, blood plasma transfusion, cameras, and electronic computers, were born purely out of the necessity to survive. Private corporations are commonly known as "Prophets of War."³ Such as Lockheed Martin, Northrop Grumman, Raytheon, Amazon Web Services, and Huawei have served as drivers of innovation, economic growth, and national power for developed nations. Although the development and employment of offensive cyber capabilities and operations fall in the military domain, private corporations and defence

³ Kelly Krebaum, "Capital from Carnage: An Analysis of the Military-Industrial Complex," *ESSAI*, Vol.13, no.1 (2015), 23. "Prophets of War" is an expression used to describe the affinity between the military and the private defense sector, which may sway public policy.

contractors have played a pivotal role for developed states. The corporate sector is a critical driving force behind the development of modern cyber security products and tools, with lines blurring between the private, public, and military sectors. Cyber capabilities are being developed rapidly, but the sensitivity of these products and services has led them to be carefully guarded secrets by national governments.

It is only logical then for developing nations to adopt similar practices to augment their cyber capacity and capabilities if they compete. But this is easier said than done as several challenges impede the pursuit of this strategy. A precursor to these challenges is that developing states lack the academic capacity to conduct primary research, which drives an understanding of the challenges themselves. This understanding is critical so that effective solutions can be envisioned. Otherwise, these states may invest scarce resources in solutions that will be ineffective in the long run. Pakistan faces similar challenges, limiting the state's potential to develop and then effectively deploy cyber capabilities that may serve as a driver of national power.

This article first submits the theoretical framework, which serves as the foundational perspective of the analysis of the problem. It then explains the significance of the topic: Why is it significant to understand that a role must be played by the private sector of any state in pursuit of national power in cyberspace? And finally, the article describes the challenges Pakistan faces in embracing a national strategy that successfully realizes the private sector's potential to contribute to national cyber power, which is then leveraged for the propagation of national interests in, from, and through cyberspace.

Theoretical Framework

This theoretical research examines Pakistan's private sector's role in offensive cyber operations through the prism of two theories: *Cyber Persistence* and *Cyber Deterrence*. According to Richard Harknett and

Michael Fischerkeller, cyber persistence theory is based on the premise that “the dominant strategic interaction dynamic in cyberspace is competitive interaction within a definable operational space.”⁴ The need for this new strategic framework arises from the argument that the strategic framework must align with the realities of the respective strategic environment. A framework cannot be imposed on a strategic environment. But it must be derived from a strategic environment which is possible only after understanding the fundamentals and unique characteristics of the environment. The perspective further implies that these interactions are constant. States are inclined to pursue this strategy because they realize that strategic gains can be achieved through aggressive actions with effects below the threshold of armed conflict. Cyber persistence theory can be viewed as a refutation of the theory of cyber deterrence. The theory of cyber deterrence maintains that a defending state can deter potential hostile cyber activity by influencing another state’s decision-making calculus. This influence is based on communicating the ability, and the intention, to impose costs if the adversarial state crosses a specified red line. The potential costs imposed must outweigh any potential gains the adversary expects to reap through aggressive behaviour.⁵ The perspective implies that aggressive activity in cyberspace is episodic and can be deterred via coercion. The current dynamics of cyberspace seem to disobey this logic. Extensive empirical evidence indicates that aggressive activity in cyberspace is only increasing in frequency and

⁴ Michael Fischerkeller and Richard Harknett, "Cyber Persistence Theory, Intelligence Contests, and Strategic Competition," *Institute for Defense Analyses Alexandria United States*, 2020, Available at: <https://apps.dtic.mil/sti/citations/AD1118679> (Accessed on December 12, 2021).

⁵ Emilio Iasiello, "Is Cyber Deterrence an Illusory Course of Action?," *Journal of Strategic Security*, Vol.7,no.1(2014), 54–67, doi:10.5038/1944-0472.7.1.5.

intensity despite states developing advanced offensive cyber capabilities.⁶

These theories are two competing arguments and represent starkly different strategic imperatives. The strategic framework of cyber persistence theory aligns more accurately with the environment of cyberspace. There is overwhelming evidence of failing cyber deterrence below the threshold of armed conflict.⁷ Failure of deterrence in cyberspace can be attributed to low escalation risks and cumulative strategic gains in return for an aggressive activity.⁸ It is essential to understand that adopting the correct strategic imperative is crucial for Pakistan to mitigate issues of domestic workforce and retention, oversight of the private sector, cost of economic inefficiency, and the broad definition of the private sector's role.

The Barons of Cyberspace

The precise understanding of how security can be achieved in cyberspace is yet to be determined. However, before we even scratch the surface, this section puts forth a central argument to answer the question: Is cyber a military domain? The fundamental imperative to reach a mature understanding is that cyber is a strategic environment used to conduct military operations that lead to cumulative strategic gains.⁹ What influences these organizing principles to drive military cyber strategy is the perspective that deterrence is not the cornerstone strategy for cyberspace. Still, cyberspace instead is an offensive

⁶ Fischerkeller, Michael P., and Richard J. Harknett, "What Is Agreed Competition in Cyberspace?," *Lawfare*, February 19, 2019, Available at: <https://www.lawfareblog.com/what-agreed-competition-cyberspace>(Accessed on December 12, 2021).

⁷ Ibid.5

⁸ Ibid.4

⁹ Larry Welch, "Cyberspace-The Fifth Operational Domain," *Institute for Defense Analyses Alexandria VA*, 2004, Available at: <https://apps.dtic.mil/sti/citations/AD1124078>(Accessed on December 12, 2021).

persistent strategic environment.¹⁰ Setting the foundation accurately is essential for ensuring that cyber theory and policy are not derived from the construct of cyber war. Fischerkeller & Harknett¹¹ It is concluded that cyberspace's security strategy must be separated from notions of coercion, conflict, and military crisis. The logic leading to this conclusion is that the cyberspace environment, as stated before, is defined by a persistent nature of activities rather than an episodic nature of actions.¹²

This is based on the genuine possibility that strategic outcomes and behaviour of states in cyberspace are not captured through coercion and conventional deterrence but motivated by competition. Deterrence in cyberspace is not failing across the board, but it cannot avert the exponentially increasing frequency of cyber-attacks conducted below the threshold of armed conflict. We argue that these attacks are exactly the ones causing a cumulative strategic impact by delegitimizing democratic institutions and processes, eroding our national sources of power - our military capability, political cohesion, and economic prosperity. States are now incentivized to make strategic gains (tactically, operationally, and strategically) in, from, and through cyberspace by engaging in offensive activity short of armed conflict. Therefore, raising the argument that Pakistan's military leadership wrongly categorizes cyberspace as an intelligence contest and calls for a drastic shift from previous thinking. The thought process should be informed by the fact that adversaries are conducting well thought out strategic and sophisticated campaigns that undermine instruments of

¹⁰ Michael Fischerkeller and Richard Harknett, "Deterrence Is Not a Credible Strategy for Cyberspace." *Orbis*, Vol.61, no.3 (2017), 381–93, <https://doi.org/10.1016/j.orbis.05.003>.

¹¹ *Ibid*,3.

¹² Fischerkeller, Michael P., Harknett, Richard J., Goldman, Cyber Persistence Subject Matter Expert Emily O, *Cyber Persistence Theory: Redefining National Security in Cyberspace* (United States: Oxford University Press, Incorporated, 2022), 11.

national power and cause a redistribution of power in the international system.¹³ Adversarial states are degrading the state's power without deploying traditional military resources and avoiding conflict concurrently.¹⁴ This awareness moves away from the conventional understanding that cyber activity falls under cybercrimes and surprise attacks on critical infrastructures. Lonergan points out that “ongoing behaviour in cyberspace suggests that states perceive a strategic utility in leveraging cyberspace for both intelligence and military purposes.”¹⁵

For Pakistan to achieve cyber military superiority, which is sustained cyber initiatives and is quickly becoming central to maintaining dominance in all conventional military areas, two objectives should inform the core strategy. One freedom of action in, from, and through cyberspace while integrating it with broader strategic initiatives and goals and two, denying adversaries the same freedom of action in cyberspace. It is important to note here that we use the term "superiority," a carefully chosen military doctrinal concept, instead of "dominance." Because we recognize that one cannot dominate cyberspace, superiority can be achieved at a particular time and place to operate and deny the same ability to the adversaries of Pakistan.

¹³ Hammaad Salik and Ibrahim Zahid, “Pakistan and National Cyber Command: A Strategic Competitive Enabler (part I) – OpEd,” *Eurasia Review*, January 24, 2022, Available at: <https://www.eurasiareview.com/25012022-pakistan-and-national-cyber-command-a-strategic-competitive-enabler-part-i-oped/> (Accessed on January 28, 2021).

¹⁴ Michael Fischerkeller and Richard Harknett, "Persistent Engagement and Tacit Bargaining: A Path toward Constructing Norms in Cyberspace," *Lawfare*, November 9, 2018, Available at: <https://www.lawfareblog.com/persistent-engagement-and-tacit-bargaining-path-toward-constructing-norms-cyberspace> (Accessed on January 28, 2021).

¹⁵ Erica Lonergan, "Cyberspace Is Neither Just an Intelligence Contest nor a Domain of Military Conflict; SolarWinds Shows Us Why It's Both," *Lawfare*, May 12, 2021, Available at: <https://www.lawfareblog.com/cyberspace-neither-just-intelligence-contest-nor-domain-military-conflict-solarwinds-shows-us-why> (Accessed on January 28, 2021).

“Cyber Pearl Harbor” is one of the most common and familiar analogies used by academics and researchers.¹⁶ This analogy is often misused out of context due to a lack of understanding of this strategic environment. One critical point to register here is that we have not witnessed a cyber-pearl harbor.¹⁷ Hence, it may be safe to argue that states are abiding by the laws of self-defence codified in the United Nations (UN) charter that ministers these activities as equivalent to an armed attack or acts of war, legitimizing the right of self-defence.¹⁸ We conclude that Pakistan may never witness a cyber-pearl harbor during peacetime.¹⁹ Adversarial states have concluded that they do not need to risk escalation by engaging in such activity to diminish Pakistan's national power. They are simply engaging in the aggressive activity below the threshold of armed conflict where escalation risks are non-existent, and the deterrence doctrine is inapplicable. This set of circumstances calls for a strategy of constantly competing against a malicious activity as it cannot be avoided. Such a strategy will require the development of cyber capabilities at scale in Pakistan. This, in turn, will only be possible if the private sector contributes to R&D and support at scale.

¹⁶ Jeremy Straub, “Defining, Evaluating, Preparing for and Responding to a Cyber Pearl Harbor,” *Cornell University*, 2021, Available at: <http://arxiv.org/abs/2103.07662>(Accessed on January 28, 2021). “Cyber Pearl Harbor” is a catastrophic cyber-attack on a nation-state's critical infrastructure that deals a tremendous psychological blow to the general population in addition to causing massive damage”.

¹⁷ Valeriano Brandon and Ryan C. Maness, “How We Stopped Worrying about Cyber Doom and Started Collecting Data.” *Politics and Governance*, Vol.6, no.2 (2018), 49–60, <https://doi.org/10.17645/pag.v6i2.1368>.

¹⁸ Gray Christine, “International Law and the Use of Force,” *Oxford University Press*, 2004.

¹⁹ Hammad Salik and Ibrahim Zahid, “Pakistan and National Cyber Command: A Strategic Competitive Enabler (part II) – OpEd,” *Eurasia Review*, January 31, 2022, Available at: <https://www.eurasiareview.com/31012022-pakistan-and-national-cyber-command-a-strategic-competitive-enabler-part-ii-oped/?cv=1> (Accessed on February 4, 2022)

Issues of Domestic Workforce and Retention

Cyber workforce challenges are the most existential for the military sector. Coupling that with offensive cyber operational challenges opens a new Pandora's Box because it requires intense training to create these cyber warriors who can successfully execute these operations. Professional human resources are also needed to develop effective tools and technologies. There is already a significant shortage of cyber security professionals in Pakistan partly because educational institutions have only recently adopted this domain as a core area of technology research and have struggled to keep pace with the growing need for cyber talent.²⁰

The current approach to military hiring needs a drastic change from an individual level to a more robust corporate staffing model in which the private sector can be employed to provide crucial contributions by filling staffing needs. It makes sense to vet individuals from a military perspective before allowing them access to sensitive information. However, the most acute challenges that Pakistan's military faces are finding, hiring, and retaining relevant cyber professionals across the spectrum of cyber capability development, support, and operations. This holds for the military more than intelligence agencies or federal ministries because of the secrecy around the cyber domain.²¹ Secondly, even if the military can hire and train an individual at its great expense to become highly proficient in offensive cyber operations, retention will always remain a challenge.

²⁰ APP, "President Alvi Inaugurates Pakistan's First-Ever Cyber Security Academy," *Geo News*, November 23, 2021, Available at: <https://www.geo.tv/latest/383844-president-alvi-inaugurates-pakistans-first-ever-cyber-security-academy-in-islamabad>(Accessed on December 8,2021).

²¹ David Barno and Nora Bensahel, "The 'Force of the Future' and the Fate of the United States Military," *The Atlantic*, November 5, 2015, Available at: <https://www.theatlantic.com/politics/archive/2015/11/us-military-tries-halt-brain-drain/413965/>(Accessed on December 8,2021).

Thirdly, the private sector offers more attractive and alluring compensation at the very least two or three times the military's basic compensation.

On top of that, the commercial sector offers flexible working conditions and the prospect of rapid career advancements.²² States such as the U.S., China, and Israel, have specific and extensive programmes to fill lingering skilled workforce gaps as part of the remedy.²³ Pakistan's military fails to do so. We must find ways to seamlessly move our skilled cyber workforce between the public, private, and military sectors. Furthermore, it fails to invest in the right areas, such as cyber capacity-building efforts, primarily due to economic constraints and ill efforts on its borders by neighboring states. A better understanding of state interests, analysis of the shortfall of cyber capacity, and a broader discussion around the magnitude of the problem in developing and maintaining offensive cyber teams will shed light on whether, how, and in what capacity the private sector can be leveraged for such functions. Suppose the military cannot solve the retention issue timely. In that case, it may find itself in a challenging position to rely on the private sector for exceedingly sensitive support roles to conduct cyber operations. Irv Lachow and Taylor Grossman accurately state, "There is a vast difference between *choosing* to use the private sector and *needing* to use the private sector."²⁴

²² Cory Bennet, "NSA Staffers Rake in Silicon Valley Cash," *The Hill*, Feb. 2018.

²³ Morgan Chalfant, "Army Leaders Launch Program to Recruit More Cyber Warriors," *The Hill*, December 5, 2017, Available at: <https://thehill.com/policy/cybersecurity/363349-army-leaders-launch-program-to-recruit-more-cyber-warriors>(Accessed on December 8,2021).

²⁴ Herbert Lin and Amy Zegart, *Bytes, Bombs, and Spies: The Strategic Dimensions of Offensive Cyber Operations* (Brookings Institution Press, 2019), 388.

Oversight Issues in Private Sector

If Pakistan is to employ the private sector for offensive cyber operations, it must first tackle many obstacles. The first and foremost would be to bridge the gap between academia, industry, and the government.²⁵ Second, as discussed in the earlier section, there is a shortage of cyber expertise not only at the federal government level but also in the private sector. The third is the concern that no proper contracting model exists. Pakistan released its first National Cyber security Policy in 2021, a step in the right direction but policy-wise, highly flawed and missing core constituent components.²⁶

Moreover, it barely scratches the topic of public-private partnerships. National-level projects and initiatives fall under the Planning Commission of Pakistan or Public Sector Development Projects, which are awarded to contractors via an open bidding process. Unlike countries like the U.S., where laws and regulations are in place to limit the transfer of technology, enforce export control, and enforce standards over contractors, or China, where state capitalism and control prohibits undesirable outcomes - for Pakistan, establishing technical liaisons in the form of contracting mechanisms and hiring relevant contracting officers as subject matter experts will be a challenge. Cyber-related contracts can be effectively, legally, and ethically managed only by overcoming this challenge.

The complexity, scope, and unique challenges that cyber offensive operations pose, accompanied by the shortage of cyber expertise in Pakistan, give birth to three significant risks. One is the

²⁵ Muhammad Naseer, "Bridging the Gap between Academia and Industry," *The Express Tribune*, June 11, 2015.

²⁶ Soumik Ghosh, "Pakistan's New Cyber Policy: Welcome, but Flaws Remain," *Bankinfo Security*, August 12, 2021, Available at: <https://www.bankinfosecurity.asia/pakistans-new-cyber-policy-welcome-but-flaws-remain-a-17269>(Accessed on December 8,2021).

financial aspect, where a lack of oversight on these projects would deliberately lead to fraud, waste, and abuse, a historical issue faced by all developing nations.²⁷ The second would be the implementation aspect, where subpar technical expertise and unprofessional leadership often lead to poor project outcomes. Cobb's paradox holds in most cases, where perils of over-commitment and under-delivery with requirements volatility, lack of discipline, process immaturity, and funding instability are quite observable.²⁸ The third risk that falls in murky waters; is the operational aspect, where a lack of understanding of international and strategic implications of offensive cyber operations coupled with actions undertaken by the private sector may lead to intentional or inadvertent escalations.

International Balance of Power

Private businesses offer advanced cyber tools and weapons for sale to international governments or individuals with strong ties to rogue military regimes for use against other states or their populations.²⁹ This reality creates alternative patterns of power and authority affecting domestic politics and international dynamics since the cyber environment is often characterized by low barriers to entry for new actors. The proliferation of offensive cyber operations, therefore,

²⁷ Vaishali Sharma, "Pakistan Debt Crisis Intensifies as Economic Mismanagement Continues Unabated," *The Wire*, February 27, 2021, Available at: <https://thewire.in/south-asia/pakistan-debt-crisis-intensifies-as-economic-mismanagement-continues-unabated>(Accessed on December 8,2021).

²⁸ Joseph Carl and George Freeman, "Non stationary Root Causes of Cobb's Paradox," *Defense Acquisition Univ Ft Belvoir, VA*, 2020, Available at: <https://apps.dtic.mil/sti/citations/ADA523877>(Accessed on December 8,2021).. Cobb's Paradox questions why projects fail despite the management being aware of issues that lead to failure and specific risk mitigation techniques for particular problems

²⁹ Department of Homeland Security, "Geopolitical Impact on Cyber-Threats-Nation-State-Actors.pdf," *Public-Private Analytics Exchange Program*, 2019, Available at: https://www.dhs.gov/sites/default/files/publications/ia/ia_geopolitical-impact-cyber-threats-nation-state-actors.pdf(Accessed on December 8,2021).

opens up this new seam in cyberspace, which raises a fundamental question: Will the private sector lead to greater global stability by providing a level playing field for states to develop offensive cyber capabilities, or will it further the divide where few cyber powers will dominate others?

Pakistan has limited to almost non-existent offensive cyber capabilities and is highly dependent on the Transfer of Technology in cyberspace. This transfer of technology approach is forced by the lack of technical expertise and economic feasibility.³⁰ Unfortunately, the development of these capabilities is not embedded in the military structure and broader strategy despite a keen need. In general, states building their entire arsenal of cyber weapons on commercial-off-the-shelf products and services will not be able to compete with advanced players possessing sophisticated cyber capabilities in this domain.

In addition, since wealthier state governments and militaries are now involved in the back-door exploits markets, it forces poorer and less developed countries like Pakistan out of the exchange. Our analysis concludes with two reasons for the failure to adapt to these conditions. Pakistan has minimal cyber resources and an almost non-existent infrastructure to integrate commercial-off-the-shelf (COTS) offensive cyber capabilities with full-scale military and intelligence operations. Second, cyberspace is a dynamic strategic environment with a rapidly changing technology landscape, and offensive cyber operations require intensive and timely intelligence about the intended target. This means a drastic fundamental change in military intelligence planning, strategy, and operations is required.

³⁰ Nicola Whiting, "Cyberspace Triggers a New Kind of Arms Race," *SIGNAL Magazine*, January 29, 2018, Available at: <https://www.afcea.org/content/cyberspace-triggers-new-kind-arms-race>(Accessed on December 8,2021).

Role of Private Sector Actors as Combatants

The concept of ‘corporate warriors’ in the conventional domain is not novel. Instead, security studies academics have extensively researched this subject matter worldwide.³¹ Expanding on this concept in the cyber environment, if Pakistan actively employs the private sector to support offensive cyber operations, we are compelled to raise fundamental questions. How can states legitimately draw the lines when private sector actors act as cyber combatants, making them lawful targets of a retaliatory counter-attack? How can we control escalation dynamics and the spillover effects leading to an all-out cyber conflict?³² Civilians generally are not considered legitimate targets in military conflicts but rather share *hors de combat* status. States are encouraged to follow the principle of, among other things.³³ However, civilians’ direct or indirect participation in cyber hostilities or cyber combatant functions invokes this status, making it legitimate for states to respond with force. To understand the roles of states employing the private sector for offensive cyber operations, such as the U.S. and China, we found the role to be more of intelligence gathering, military planning, development of tools and weapons, and operational support rather than direct participation in hostilities or actual combat operations.³⁴

³¹ Peter Singer, “Corporate Warriors: The Rise and Ramifications of the Privatized Military Industry,” *International Security*, Vol.26, no. 3(2002), 186–220.

³² Martin Libicki and Olesya Tkacheva, “Cyberspace Escalation: Ladders or Lattices?” *Cyber Threats and NATO 2030: Horizon Scanning and Analysis 60*, (2020), Available at: https://ccdcoe.org/uploads/2020/12/Cyber-Threats-and-NATO-2030_Horizon-Scanning-and-Analysis.pdf#page=67 (Accessed on December 8, 2021).

³³ International Committee of the Red Cross, “Rule 1. The Principle of Distinction between Civilians and Combatants,” *ICRC*, Available at: https://ihl-databases.icrc.org/customary-ihl/eng/docindex/v1_rul_rule1 (Accessed February 3, 2022)

³⁴ Madelyn Wardle, “Offensive Cyber Operations: An Examination of Their Revolutionary Capabilities,” *Wright State University*, 2021, Available at: https://etd.ohiolink.edu/apexprod/rws_olink/r/1501/10?clear=10&p10_accession_nu_m=wright1620995515559657 (Accessed February 3, 2022).

States are already employing private sector services in “proxy war” scenarios in cyberspace. This enables nation-states to deny any state involvement. Iran can be identified, allegedly, as the top offender for leveraging private cyber actors to augment its national cyber capabilities that sometimes even rival the United States, China, Russia, and the United Kingdom.³⁵ The Chinese government allegedly conducts large-scale espionage activities and intellectual property theft at scale through a wide range of actors.³⁶ Furthermore, China has positioned itself as a geostrategic competitor with targeted investments in emerging technologies. It uses overt legal behaviour to invest in enterprises to supplant American and European advantage to be in the lead for upcoming technological developments. China is also influencing global design and engineering standards in its favor by positioning itself as the world's leading manufacturer and distributor of Information Technology (IT) equipment.

The Russian government has also allegedly involved the private sector, hacktivist groups, and Advanced Persistent Threats (APTs) in conducting offensive cyber operations, psyops, and subversion activities on its behalf. These activities cause a redistribution of power in the international system by eroding faith in its adversary’s national institutions.³⁷ Russia's cyberspace operations demonstrate its role as more of a geostrategic agitator. Russian private sector actors as combatants can be traced in Russia-Ukraine and Russia-Georgia cyber

³⁵ Jordan Brunner, “Iran Has Built an Army of Cyber-Proxies,” *The Tower*, Available at: <http://www.thetower.org/article/iran-has-built-an-army-of-cyber-proxies/> (Accessed February 3, 2022).

³⁶ Ethan Gutmann, “Hacker Nation: China’s Cyber Assault,” *World Affairs*, Vol.173, no. 1(2010), 70–79.

³⁷ Tim Maurer, “Cyber Proxies and Crisis in Ukraine,” *Cyber War in Perspective: Russian Aggression against Ukraine*, edited by Geers, K., *Tallinn: NATO CCD COE Publications*, (2015), 79–86.

war events.³⁸ The employment of proxies to shift and redistribute the relevant power and maintain plausible deniability of such operations further increases uncertainty in attribution, enabling states to avoid retaliation against their actions.

One important concept that should be central when envisioning the role of Pakistan's private sector as combatants are mentioned in the theoretical framework; 'persistent engagement' adversaries continually engage in low-level attacks, below the threshold of armed conflict, against Pakistan's military, society, and economy, cumulatively eroding its national power sources. "Persistent engagement"³⁹ Acknowledges the fact that adversaries will not be degraded in a single strike or a single episode. It further implies that threat actors will not cease aggressive activity immediately; hence, the defending state will have to engage adversaries persistently to define acceptable behaviour. The emphasis on "engagement" accentuates its need to be done instantaneously. The fundamental operational impetus of Pakistan's cyber forces should be established on two concepts - enabling and acting.

The concept of enablement concentrates on the synergy between Government institutions and departments, international partners and allies, and the corporate sector by contributing to threat intelligence, early warning systems, information sharing mechanisms, and human resources. Therefore, enabling and equipping Pakistan's cyber forces with the ability to compete and win in cyberspace. The argument driving

³⁸ Geers, Kenneth, "Cyber War in Perspective: Russian Aggression Against Ukraine," *CCDCOE*, Available at: <https://play.google.com/store/books/details?id=UJ2mnQAACAAJ>, (Accessed February 3, 2022).

³⁹ Jacquelyn Schneider, "Persistent Engagement: Foundation, Evolution and Evaluation of a Strategy," *Lawfare*, May 10, 2019, Available at: <https://www.lawfareblog.com/persistent-engagement-foundation-evolution-and-evaluation-strategy>(Accessed February 3, 2022).

this idea is that no one entity can practically hold all the authorities, capabilities, resources, and most critically, all the acuity required for operational persistence. The second concept, acting - emphasizes when authorized to execute a spectrum of offensive and defensive mission-critical operations. This notion permits competition in, though, and from cyberspace to yield outcomes like discomfiting the adversary, inducing mistrust in their capabilities, forcing a redistribution of resources required by the need to shift from an offense centric to a defence-centric operational outlook, jeopardizing the cohesion and coordination among institutions, strategic planning, and actual operations. This should act as the blueprint for Pakistan's cyber forces (operational war fighters) on how they should be operationalized in the cyber environment and cooperate with other institutional components of Pakistan

The Cost of Economic Inefficiency

The Public Sector Development Programme (PSDP) report of 2021-2022 includes six projects focused on the word “cyber”.⁴⁰ Examining the PC-Is of these projects, we identified the absence of a consistent and coherent nature of cyber security risk assessment and investment optimization research from the documentation. Furthermore, the feasibility of the projects from technical and financial perspectives and the metrics by which security can be measured and evaluated to validate the investment decisions were also incorrect or absent. National-level projects and initiatives need to align with the implications of cyberspace, which imply the constant nature of the contact, universal interconnectedness, the dominance of persistence which is strategic as a factor motivated by the terrain of cyberspace, and accurate analysis of the environment, which suggests that: cyberspace is a terrain which frequently iterates and to defend and

⁴⁰ Planning Commission-Ministry of Planning, “Public Sector Development Programme 2021-22,” *Development & Special Initiatives, Government of Pakistan*, 2021, Available at: https://www.pc.gov.pk/uploads/archives/PSDP_2021-22.pdf (Accessed February 3, 2022).

grow national power, actors must be persistently engaged, and the initiative of this competition must be seized and retained. An effort to gain initiative when competing will be necessary to achieve security in this strategic space.

These initiatives may be the tactical, operational, and technical outcomes of accurate anticipation of adversarial actions in the context of exploiting cyber vulnerabilities.⁴¹ The core strategic question that leadership in Pakistan should ponder while examining National level projects should be: How do we secure national assets and achieve cyber superiority while being in constant contact with the adversary, ally, private sector, and individuals, all of whom are operationally persistent? The measure of effectiveness in evaluating these projects should be the anticipation of exploiting cyber-related vulnerabilities, and the decision-making model should indefinitely be constant and flexible. Concurrently, an understanding is required of the escalation dynamics of the strategic cyber environment and its ramifications for national interests advanced through winning or supporting de-escalation outcomes. The capabilities development these national initiatives should include must be adaptive to preempt the exploitation of vulnerabilities: Across the spectrum from resiliency, defence, active defence, and offense (tactical, strategic, and operational).

It is worrisome that the design and objectives of these projects do not align with the strategic requirements of cyberspace. Therefore, they will eventually not align with the national needs of Pakistan. This pays homage to the challenge discussed earlier; a correct

⁴¹ Combined Action Group, "How Understanding Cyberspace as a Strategic Environment Should Drive Cyber Capabilities and Operations," *U.S. Cyber Command & NSA*, 2018, Available at:

<https://nsarchive.gwu.edu/sites/default/files/documents/6560991/National-Security-Archive-2-USCYBERCOM-How.pdf> (Accessed December 16, 2022)

understanding of the strategic cyberspace environment is required to make the right investment decisions

The proliferation of Cyber Weapons and Global Stability

Understanding the proliferation of cyber capabilities via the private sector is a tenor for policymakers and academics because of their resultant effects on global stability, implications in fueling the cyber arms race, and exploring critical facets of the ecosystem that facilitates the proliferation of offensive cyber capability.⁴² Theoretically, cyber proliferation leads to a greater likelihood of cyber conflicts, conflict escalations, restricting a state’s freedom of action, erosion of strategic power, and systematic redistribution of national power. However, substantial empirical data is unavailable around this domain; much of cyberspace is shrouded in secrecy, challenging data collection.⁴³ The lack of a clear proliferation framework in cyberspace and increasing destabilizing potential of cyber capabilities contributes to making this debate often moribund. The study undertaken by Anthony Craig⁴⁴ demonstrates the correlation between cyber threats and the development of military cyber capabilities to understand the proliferation of cyber weapons. States susceptible to cyber threats are most motivated to develop the operational capacity to defend and retaliate against any future aggression.

⁴² Robert Morgus and Max Smeets and Trey Herr, “Countering the Proliferation of Offensive Cyber Capabilities,” *The Global Commission on the Stability of Cyberspace*, 2017, Available at: <https://cyberstability.org/wp-content/uploads/2017:12> (Accessed December 16, 2022)

⁴³ Kello Lucas, “The Meaning of the Cyber Revolution: Perils to Theory and Statecraft,” *International Security*, Vol.38, no. 2 (2013), 7–40, https://doi.org/10.1162/isec_a_00138.

⁴⁴ “Understanding the Proliferation of Cyber Capabilities,” *Council on Foreign Relations*, Available at: <https://www.cfr.org/blog/understanding-proliferation-cyber-capabilities> (Accessed Feb. 2, 2022)

However, this is just one of many factors. States have also realized that they can make strategic gains below the threshold of armed conflict, placing interventions such as arms control agreements and traditional counter proliferation models as an infeasible path.⁴⁵ Richard Harknett and Michael Fischer Keller make a valid point and best describe this as tacitly "agreed competition."⁴⁶ This competition will lead to consistent expectations of acceptable and unacceptable behaviour in the strategic cyberspace environment by facilitating actions and interactions between adversaries fueled by a strategic opportunity.⁴⁷ This opportunity is one of advancing national interests while circumventing any escalation risks. Similar actions to advance national interests would otherwise present a cost in the physical domain. This approach will lead to greater global stability by providing a level playing field for states to develop offensive cyber capabilities and create an environment of cyber restraint and stability by promoting the gap between acceptable and unacceptable behaviour. Other non-favorable outcomes would be tilted towards greater instability where few cyber powers will dominate others. Despite the balance of power distribution by wide accessibility of capabilities, this will also lead to greater instability due to the lack of deterrence.⁴⁸

Conceptualizing the Development of a Cyber Effective Private Sector

As stated in earlier sections, Pakistan must concentrate on two core concepts for developing a cyber-effective private sector: enablement and acting. The private sector must be cultivated so that it can enable other stakeholders to act in, from, and through cyberspace, for the

⁴⁵ Ibid.17.

⁴⁶ Ibid.11.

⁴⁷ Jason Healey, "The Implications of Persistent (and Permanent) Engagement in Cyberspace," *Journal of Cybersecurity*, Vol. 5, no.1(2019), 34, <https://doi.org/10.1093/cybsec/tyz008>.

⁴⁸ Herbert Lin and Amy Zegart, *Bytes, Bombs, and Spies: The Strategic Dimensions of Offensive Cyber Operations* (Brookings Institution Press, 2019), 395

entire spectrum of cyberspace operations. In instances where enabling resources are needed, such as threat intelligence, early warning systems, information sharing mechanisms, development of code, and human resources, and the private sector should be positioned to act as a practical resource cache and promote cyber security workforce development to build a robust and sustainable pipeline of skills. At the same time, actions of the private sector itself should be limited to national cyber defence, national cyber capacity-building efforts, cyber emergency response, and national cyber resilience. If the private sector is directly involved in any offensive cyber operations, it may likely become the target for a counterattack in cyberspace.

At the core, the private sector's development must be envisioned at the national policy level. A revision of the national cyber policy is required to better align with the current cyberspace environment and meet the challenges faced by Pakistan. In 2007, when Estonia was subjected to unprecedented cyber-attacks, policymakers recognized it as an opportunity to redraft the national security strategy and the national cyber security policy.⁴⁹ These policy transformations led to the emergence of national organizations such as the Estonian Informatics Centre (EIC), CERT-EE, and the Department of Critical Information Infrastructure Protection (CIIP).⁵⁰ These organizations led to a revolution in the Estonian cyber landscape, and the country is now considered Europe's Cooperative Cyber Defence Centre of Excellence (CCDCOE). Similar public sector initiatives in Pakistan will pave the way for developing an enabling private sector. Furthermore, the policy should focus on developing and enforcing minimum cyber security standards, security by design practices, and industry best practices for

⁴⁹ Czosseck, C., Ottis, R., & Talihärm, A.-M, "Estonia after the 2007 Cyber Attacks: Legal, Strategic and Organisational Changes in Cyber Security," *International Journal of Cyber Warfare and Terrorism (IJCWt)*, Vol.1, no.1 (2011), 24–34, <https://doi.org/10.4018/ijcwt.2011010103>

⁵⁰ Ibid.47.

any private and public sector entities that operate IT infrastructure in any shape or form. This will increase the country's demand for cyber security resources, especially human resources. To meet this demand, the public sector should finance and license private sector cyber security organizations (start-ups) so that they are awarded the status of 'cyber auditors.' These start-ups may provide cyber auditing, cyber risk assessment, penetration testing, and risk mitigation services to other private firms and public sector entities on behalf of the public sector. These services will be required by private firms and public entities so that they may meet national policy requirements. This will also lead to skilled cyber human resources training and development.

Another area that should be stimulated to improve the private sector in terms of cyber effectiveness in Pakistan is academia and scholarship. A prime example of private sector academia contributing to combating national cyber challenges is the National Centre of Academic Excellence (CAE) initiative in the U.S. Currently, two iterations of the CAE programme are being nurtured by the U.S. government; the CAE-Cyber Defence (CAE-CD) and the CAE-Cyber Operations (CAE-CO). The fundamental difference between the two is that CAE-CD programmes focus on cyber policy and risk mitigation skills, whereas the latter focuses on cyber operational skills and training.⁵¹ The academic requirements and modules of these programmes are specifically designed by the Department of Homeland Security and the National Security Agency so that graduates of these programmes can be inducted into the pursuit of national cyber objectives. Iran follows a similar programme of nurtured cyber academics, allegedly. There are speculations that the Islamic

⁵¹ Crumpler, William, and James A. Lewis, "The Cybersecurity Workforce Gap," *Center for Strategic and International Studies (CSIS)*, January 29, 2019, Available at: <https://www.csis.org/analysis/cybersecurity-workforce-gap> (Accessed December 16, 2022).

Revolutionary Guards Corps (IRGCs) Electronic Warfare and Cyber Defence Organization have tailored academic cyber training programmes offered at the Shahid Beheshti University and the Imam Hossaein University.⁵²

Pakistan's military departments and the public sector should adopt a similar strategy. A needs analysis of the cyber skills required to meet cyber challenges must be conducted. This analysis should guide the development of academic programmes that focus on policy and strategy and cyber operational skills. Cyber operational skills include exploitation techniques, secure coding principles, risk mitigation techniques, operating system internals, low-level programming languages, Linux-based systems, networking, computer architecture, data, and cryptography.⁵³ These programmes should then be sponsored at existing academic institutes, and graduates of these programmes must be offered positions where these skills are required. An attractive career path and remuneration schedule should also be

⁵² Gundert, Chohan, and Lesnewich. n.d. "Iran's Hacker Hierarchy Exposed." *Recorded Future Blog*, May 9, 2018, Available at: [https://vxug.fakedoma.in/archive/APTs/2018/2018.05.09\(1\)/Iran's%20hacker%20hiearchy%20exposed.pdf](https://vxug.fakedoma.in/archive/APTs/2018/2018.05.09(1)/Iran's%20hacker%20hiearchy%20exposed.pdf) (Accessed December 16, 2022).

⁵³ George I. Seffers, "National Security Agency Program Fills Critical Cyber Skills Gaps," *Signal Magazine*, June 1, 2014, Available at: <https://www.afcea.org/content/national-security-agency-program-fills-critical-cyber-skills-gaps> (Accessed December 16, 2022); Chris Krebs, "Why So Many Top Hackers Hail from Russia," *Krebs on Security*, June 22, 2017, Available at: <https://krebsonsecurity.com/2017/06/why-so-many-top-hackers-hail-from-russia/> (Accessed December 16, 2022); "Cyber Intelligence: Preparing Today's Talent for Tomorrow's Threats," *Intelligence and National Security Alliance*, September, 2015, Available at: https://www.insaonline.org/wp-content/uploads/2017/04/INSA_Cyber_Intel_PrepTalent.pdf (Accessed December 16, 2022); "Cybersecurity Skills Gap Analysis," *Workforce Intelligence Network for Southeast Michigan*, July, 2017, Available at: <https://winintelligence.org/wp-content/uploads/2017/07/FINAL-Cybersecurity-Skills-Gap-2017-Web-1.pdf>; Laura Lee, "Circadence responses to NIST RFI on Cybersecurity workforce education or training," *NIST*, August 2, 2017, Available at: <https://www.nist.gov/sites/default/files/documents/2017/08/02/circadence.pdf> (Accessed December 16, 2022).

established to motivate individuals to join these programmes. Regarding retention, it should be noted that rather than salary and benefits, cyber professionals rate employers on their ability to offer continuous learning/training opportunities and an exciting work environment. This is especially true for employees working in the cyber operations area, as they require constant certifications and training to keep their skills up to date.⁵⁴ For this purpose, public-sponsored certification programmes should also be designed and offered to high-performing individuals.

The public and military sectors should also draw some inspiration from the private defence contractor model in the U.S. This will again entail a needs analysis of the software, tools, and IT platforms required by Pakistan, such as CERTs, Cyber Threat Intelligence (CTI) Platforms, Information Sharing, and Action Coordination Platforms, Sensors, Early Warning Systems, Cyber Deception Platforms, Pen-Testing Tools, Vulnerability Disclosure Platforms etcetera. These needs should be converted into contracts awarded to the private sector. IT firms should be vetted and then motivated to execute these projects. These actions will kick-start the process of including the private sector in the cyber landscape of Pakistan. Once such contracts are filled, the private will have a direction to work in and continue developing more effective and efficient products and services. Pakistan must take several such steps to ensure a cyber-effective private sector. However, the process can only be initiated through changes at the policy level and by ensuring that the public sector finances policy implications.

⁵⁴ Timlin, Katrina, and Franklin S. Reeder. n.d, "Recruiting and Retaining Cyber security Ninjas," CSIS, Available at: <https://www.csis.org/analysis/recruiting-and-retaining-cybersecurity-ninjas> (Accessed June 23, 2022).

Conclusion

As a nation, we need to realize that cyberspace is a very dynamic environment with one critical trend in recent years: The rise of the private sector in developing, maintaining, and protecting national computer assets while also affecting the full range of cyber operations - offensive and defensive. Pakistan's "cyber power" cannot be wielded by one sector, but it must be propagated through different sectors that are tirelessly creating and maintaining Pakistan's cyberspace. Pakistan must escape the deterrence mindset and develop a new strategic perspective for cyberspace. This new perspective must identify the implications of constant contact and interconnectedness. The objective of such a strategy should be to gain the initiative in cyber strategic competition.

We observe boundaries between the public and private sectors. We recognize that these boundaries make sense because they are foundational to our constitution. We must realize that these boundaries are artificial, and our adversaries do not acknowledge these constraints. We also tend to have an intellectual mindset that views peace and warfare as a binary construct. Peace is normal, whereas warfare is an aberration. Pakistan's adversaries view this as a seamless struggle across the entire cyberspace continuum, which will inhibit our ability to act. If we do not follow the trends and the workforce retention and investment patterns of nations that have developed advanced cyber capabilities, we will be excluded from this competition for good. Comprehending these factors and implications will play a pivotal role for Pakistan's government and industry in the coming days. We must overcome the challenges and employ private sector actors to take on more significant roles in offensive cyber operations.

Nuclear Weapons' Security and Pakistan: Theoretical Analysis

Dr. Tahir Mehmood Azad¹ and Dr. Muhammad Sadiq²

Abstract

This research highlights numerous theoretical assessments to postulate a frame for evaluating Pakistan's security of nuclear weapons and management systems. This paper strives to establish relevance and thoroughly analyzes these theories to explain the subject at hand. While management of nuclear weapons is a highly complicated matter, no particular theory can describe the complete mechanism. In recent years, nuclear weapons security has been a subject of forethought for the worldwide public in several mediums. Nuclear weapons technology is quite difficult and comprises a high-risk method; therefore, no single social science theory can explain the complexity of nuclear weapons technology and its safeguard setup. However, this research has struggled to inspect and analyze the issue through an available set of pertinent theories in accord with accessible knowledge. Pakistan has various reasons to sustain a safe and secure nuclear weapons system. The main theories implied in this research are normal accident theory, high reliability

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theory, organizational theory, realism, deterrence theory, and constructivist school of thought. A safe and secure nuclear weapons programme is in the best interest of Pakistan. It has established a robust and advanced nuclear management system based on highly advanced international practices that are verifiable and credible.

Keywords: Nuclear Weapons, Threats, Theories, Pakistan, Nuclear Security.

Introduction

This paper presents various theoretical perspectives to provide a framework for the analysis of ground realities as well as the international perception of nuclear weapons security arrangements and structures implemented by Pakistan. Meanwhile, nuclear weapons security is a complicated subject; it is impossible to describe the whole mechanism through a single precise theory. Though "nuclear safety" was taken as a grave test for nuclear weapon states during the Cold War, "nuclear security" had not emerged as alarming apprehension by the security experts. The notion of nuclear security has loomed large, subsequently the breakdown of the former Soviet Union causing a state of alarm in the world community because of the division of its nuclear assets and installations.³

In recent years, almost all international forums have been used to stress and highlight the issue of nuclear security as a serious threat to the world peace; due to the emergence of well-organized trained terrorist groups, the increasing intensity of conflict between nuclear

³ Dmitry Kovchegin, "International Nuclear Security Forum Country Update: Russian Nuclear Security," *Stimson Centre*, May 12, 2021, Available at: <https://www.stimson.org/2021/international-nuclear-security-forum-country-update-russian-nuclear-security/> (Accessed on December 17,2021).

states that may cause accidental or intentional use of a nuclear weapon, the illegal proliferation of nuclear technology, cyber and physical threat to attack nuclear arsenals both by state and non-state actors. Owing to the complex nature of nuclear weapon mechanisms, it is hard to dissect the technical aspects of this issue. However, a social scientist can put the policy arrangements and political part of this capability under scrutiny. This research attempts to inspect the concerned issue with relevant theories appropriate to existing material. The concerned scientists struggled to discourse political and strategic features of this complex technology through the postulates formulated by various schools of thought. There is a wide misperception that Pakistan's nuclear weapons are not safe and secure, and its safety and security mechanisms are not adequate.

The High reliability theorists (HRT) and normal accident theorists (NAT) are two essential schools of thought that have discoursed the organizational features of nuclear [weapons] safety and security. HRT highlights the efficient task of an organization.⁴ A productive organization preserves the system in a decent working situation by displaying extraordinary professionalism. NAT recommends that in any system, catastrophes are predictable. It contends that no organization can maintain proper safety and security of the nuclear weapons twenty-four seven.

Conceptual Framework

Western analysts and authors mainly construct the existing literature on this subject. Some work of Indian researchers and analysts added to the prevalent bias on Pakistan's nuclear weapons programme and lacked the primary data resources. Observations based on assumptions

⁴ Scott D. Sagan, *The Limits of Safety: Organizations, Accidents and Nuclear Weapons*, (New Jersey: Princeton University Press, 1995), 55. See also, Karl E. Weick, "Organizational Culture as Source of High Reliability," *California Management Review*, Vol. XXIX, No.2 (winter1987),39.

are politically driven. On the other hand, Pakistan's perspective has been inadequately shared with the world; due to the opaque nature of nuclear programme and being ineffective in countering Indian frequent, organized, and relatively massive propaganda campaigns against Pakistan's nuclear programme. However, biased literature and research have enormously spoiled the international perception of Pakistan's nuclear weapon programme. Pakistan stayed preoccupied with politically annoyed in its more significant portion of life. The lack of access to primary data resources relating to Pakistan's nuclear programme and being unable to counter Indian negative publicity and propaganda with effective and persistent countermeasures; has failed Pakistan's view to disseminate and convince the world that Pakistan's nuclear programme is as secure as that of any developed nuclear state.

Indian lobbyists are instrumental in spreading the wrong perception of Pakistan's nuclear safety and security. Moreover, as nuclear technology is considered a complex and sensitive subject, the world community is doing everything to stop its proliferation in the Non-nuclear Weapon States (NNWS) and its further development in the Nuclear Weapon States (NWS). The concerns raised about Pakistan and other NWS, in general, are a way to curtail any further proliferation of this technology. Then, the spread of nuclear technology has been mainly in a confidential environment; no state or international organization knows about the exact situation of the nuclear programme of any state because of the general lack of trust in this regard.

However, Pakistan has a well-defined control and command structure that not only stops any weapon misuse but also work to stop technological proliferation. In 1987, Charles Perrow in *Normal Accidents: Living with High Risk Technologies* and Scott D. Sagan in *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons*, expansively debated the non-technical features of the nuclear

technology. Sagan investigated numerous features of the safety of nuclear weapons with the support of organizational safety structures. Sagan utilized standard accident theory and high reliability theory. HRT explains the organizational usefulness and its role in maintaining a robust system. So, according to this theory, no organization can work effectively without a logical set of rules and protocols, making it too naive to think that Pakistan owns a highly developed nuclear programme without ensuring its smooth working and security.⁵ Whereas NAT is concerned, it anchors on the unavailability of accidents for multiple reasons.⁶ The researcher finds this theory relevant as the fear of accidents helps any organization to get well equipped and address all potential threats involved in the process.

In Pakistan's subjective situation, added pressure is always present because of the clandestine beginning and carrying out of its nuclear weapons programme. The scrutinizing eyes of the IAEA and other nuclear watchdogs are always set on finding loopholes in the safety mechanisms of Pakistan. So, this theory makes Pakistan even better prepared than the rest of the nuclear world. A cursory analysis through the lenses of the Realist Perspective, Concept of Deterrence, and Constructivism, provides the logic that Pakistan's nuclear weapons security is an essential part of Pakistan's national security; it is, therefore, imperative to ensure the security of nuclear weapons. Any security lapse would challenge the credibility of nuclear deterrence, which is the source of strategic stability in the region.

Normal Accidents Theory (NAT)

NAT usually deals with technical as well as administrative staff. NAT indicates that mishaps are predictable in any organization, and it is also required to recognize the difference between nuclear safety and

⁵ Sagan, *The Limits of Safety: Organizations, Accidents and Nuclear Weapons*, 55-56.

⁶ Charles Perrow, *Normal Accidents: Living with High-Risk Technologies* (Princeton, N.J.: Princeton University Press, 1999), 15-16.

security, which are two diverse notions. For example, NAT indicates that catastrophes and faults are constant within any system and organization because nuclear technology is highly complicated and hard to operate without highly efficient management. "Nuclear power plants are safety-critical organizations," said by Reiman and Oedewald.⁷ Several kinds of internal and external expansions lead to novel encounters for safety management."⁸ Charles Perrow initially formulated NAT after the disaster of a nuclear power plant in 1979 at Three Mile Island.⁹ This event elevated various queries over the organizational competencies of the concerned authorities. Perrow explained that "systems with interactive complexity and tight coupling will confront accidents that cannot be foreseen or prevented, and he named them system accidents."¹⁰

Enforcing the same point, Sagan promoted nuclear weapons safety concerns by advocating that no organization or system is free from committing mistakes and mishaps that could cause due to countless reasons and could result in threats to nuclear safety. The same argument is presented by NAT theorists, who argue that accidents and faults are interlinked with technology; they are predictable within every system or organization. They further recommend that it would be hard to imagine a hundred percent productivity from any system, institute, or its associates. Sometimes, an organization or system confronts unpredicted actions because of technical or political causes. Self-interest or an individual's conduct can also produce surprising circumstances.

⁷Ibid.2.

⁸ Ibid.

⁹ K. Marais, N. Dulac, and N. Leveson, "Beyond Normal Accidents and High Reliability Organizations: The Need for an Alternative Approach to Safety in Complex Systems," This paper was presented at the Engineering Systems Division Symposium, MIT, Cambridge, MA, (March 29-31, 2004), 1.

¹⁰ Ibid. 2.

Pakistan's history of nuclear programme offers adequate statistics concerning nuclear safety and security. It is on record that there has not been a single event of nuclear accident or incident in Pakistan.¹¹ Furthermore, Pakistan keeps nuclear devices in de-mated form, with warhead and fissile cores placed separately, and they are designed to avoid any accidental or an authorized launch.¹² Mubarakmand advocates that all these precautionary measures have been taken after several experimentations to secure nuclear material and facilities; therefore, he emphasizes that Pakistan has trustworthy nuclear safety and security system.¹³

Pakistan's situation can be tested in the light of normal accident theory. Pakistan has solid track record of maintaining a reliable, safe and secure nuclear weapon programme. Its nuclear weapons programme has not faced any major or minor incident.¹⁴ To sustain a credible and consistent command and control system, Pakistan has established a robust system under highly trained staff, ensuring a strong nuclear safety culture is in place at its nuclear complex. Pakistan has several nuclear institutes, regulatory authorities, and training sites that ensure nuclear safety in Pakistan as Nuclear Regulatory Authority (PNRA) is responsible for carrying out safe nuclear operations and protection of workers from radiation, and employing effective regulations.¹⁵ Furthermore, within the PNRA, the National Institute of Safety and Security (NISAS), the Nuclear Security Training Centre

¹¹ T. M. Azad and H. Shahid, "Evolution of Pakistan's Nuclear Weapon Programme," *Global Strategic & Security Studies Review (GSSSR)*, Vol. VI, no. I (Winter 2021), 7.

¹² Zafar Ali, "Pakistan's Nuclear Assets and Threats of Terrorism: How Grave is the Danger?," *The Henry L. Stimson Center Washington*, (July 2007), 12.

¹³ Samar Mubarakmand (a prominent Pakistani nuclear physicist), in an interview with Tahir Mahmood Azad, Islamabad, (August 06, 2014).

¹⁴ Ibid.

¹⁵ "Pakistan Nuclear Regulatory Authority (PNRA) Report," *PNRA*, 2014, Available at:<http://www.pnra.org/pnrarpt/PNRA%20Annual%20Report%202014.pdf>

(Accessed on December 17, 2021).

(NSTC), and School for Nuclear and Radiation Safety (SNRS) have been established.¹⁶

These arrangements play a significant role in maintaining a credible, safe and secure system. Furthermore, Pakistan has also signed safeguards agreements with the IAEA. Pakistan has endorsed and rectified several global legal resolutions and conventions.

These binding mechanisms contain diverse safety and security conventions, treaties, and regimes; Such as United Nations Security Council Resolution (UNSCR) 1373, UNSCR 1540, The convention on the Physical protection of nuclear material (CPPNM), Physical Protection of Nuclear Material and Nuclear Facilities, the IAEA code of conduct, Nuclear Summit at Washington 2010 and Seoul 2012 and Nuclear Threat Initiative (NTI) Index 2020.¹⁷ However, these international legal tools are related only to the civilian nuclear-related programme:

¹⁶Pakistan's National Statement in Nuclear Security Summit 2014 at Hague, Netherlands, 2. See also, Pakistan Nuclear Regulatory Authority (PNRA) Report," *PNRA*, 2014, Available at:<http://www.pnra.org/pnrarpt/PNRA%20Annual%20Report%202014.pdf> (Accessed on December 17,2021).

¹⁷ Tahir Mahmood Azad, "Pakistan's Evolving Nuclear security Culture," *South Asian voices*, November 15, 2021, Available at: www.Stimson.org/2021 (Accessed on December 17,2021).

Table: 1- Pakistan's Safeguards Settings/ Agreements with the IAEA.¹⁸

S. No.	Facilities	Agency Publication	Date of Signing
1.	Pakistan Research Reactor-1 (PARR-1)	INFCIRC/34	March 05, 1962
2.	Karachi Nuclear Power Plant (KANUPP)	INFCIRC/116	Jun 17, 1968
3.	Karachi Nuclear Power Plant (KANUPP)	INFCIRC/135	October 17, 1969
4.	Fuel Reprocessing Plant	INFCIRC/239	March 18, 1976
5.	Hawks Bay Depot	INFCIRC/248	Mar 02, 1977
6.	Pakistan Research Reactor-2 (PARR-2)	INFCIRC/393	September 10, 1991
7.	Chashma Nuclear Power Plant-1 (C-1)	INFCIRC/418	February 24, 1993
8.	Chashma Nuclear Power Plant-2 (C-2)	INFCIRC/705	February 22, 2007
9.	Chashma Nuclear Power Plant-3 & 4 (C-3/C-4)	INFCIRC/816	April 15, 2011
10.	Karachi Units 2 & 3	INFCIRC/920	May 3, 2017

Source: S. Khan and M. Saeed Mulla, "Safeguards in Pakistan-State-Agency Cooperation," IAEA, Paper No. IAEA-CN-220-xx, (2014), 2.

¹⁸ S, Khan and M. Saeed Mulla, "Safeguards in Pakistan – State-Agency Cooperation," IAEA, Paper No. IAEA-CN-220-xx, (2014) 2, Available at: <http://www.iaea.org/safeguards/symposium/2014/home/e proceedings/sg2014-papers/000371.pdf> (Accessed on December 17, 2021).

These commitments replicate Pakistan's assurance of nuclear safety and security. Additionally, Pakistan is committed to several international safety conventions and export control laws and contributes to all international determinations against nuclear terrorism. Particulars of the concerned activities are given below:

Table: 2- Pakistan's International Nuclear Arrangements

Sr. No.	International Nuclear Arrangements
1	Convention on the Physical Protection of Nuclear Material, 1980 (CPPNM), including an amendment adopted in 2005. The Physical Protection of Nuclear Material and Nuclear Facilities INFCIRC/225/Rev.4 (INFCIRC/ 225).
2	Convention on Early Notification of a Nuclear Accident, 1986 (CENNA).
3	Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, 1986 (CACNARE).
4	Convention on Nuclear Safety.
5	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management 2001.
6	Convention on Suppression of Acts of Nuclear Terrorism, 2005.
7	Code of Conduct on the Safety of Research Reactors on 8 March 2004.
8	Guidance on the Import and Export of Radioactive Sources.
9	United Nations Security Council resolution 1540.
10	The Global Initiative to Combat Nuclear Terrorism (GICNT).

11 IAEA Illicit Trafficking Database (ITDB).

12 Nuclear Security Summit 2010, 2012 and 2014.

Source: Tahir Mehmood Azad and Hina Shahid, "Evolution of Pakistan's Nuclear Program," *GSSR*, Vol.6, No.1 (Winter 2020), 4.

High Reliability Theory (HRT)

The HRT explains Pakistan's position on nuclear safety and security. The organizational structure, whether military or civil, is entirely in its place and working flawlessly.¹⁹ This theory's postulates are effectively promulgated by Pakistani organizations responsible for the smooth working of nuclear setup. The effectiveness of the working mechanism of any organization can avert or control accidents occurring within its realm. The pessimists of normal accident theory, Reiman and Oedewald, maintain that "the complexity of modern organizations, combined with typical human characteristics, makes them inherently unreliable."²⁰ Humans can cause to generate a stimulating condition in any organization. HRT suggests that "organizational management and leadership can overcome human and organizational tendencies."²¹

G. Rochlin, K. Weick, K. Roberts, T. La Porte and P. Consolini are Intellectuals who have commonly mentioned the high reliability theory or organizations (HROs). These experts acknowledge and clarify the position of HROs. They have attempted to investigate the ways used by an organization to thwart or control accidents, mishaps, or unapproved actions. They examined each feature of "studying such organizations

¹⁹ Mubarakmand (a prominent Pakistani nuclear physicist), in an interview with Tahir Mahmood Azad.

²⁰ Teemu Reiman and Pia Oedewald, "Evaluating Safety-Critical Organizations- Emphasis on the Nuclear Industry," *VTT, Technical Research Centre of Finland*, Report No. 2009:12, (April 2009), 28.

²¹ *Ibid.*

managing and operating complex and intrinsically hazardous technical systems.”²² La Porte, who recognized several topographies of HRO, has given internal and external descriptions of HRO.²³ Current theoretical literature regarding organizational nuclear security and its management is incapable of sophisticated discourse on nuclear weapons security.

An organization's function in any nuclear facility is significant. The safety and security of nuclear weapons and fissile material are highly sophisticated and delicate matters. Sagan has developed his theoretical framework carefully by describing nuclear safety qualities and emphasizing particular practical examples of the Cold War era to enhance validity of his theories. Instead of the fixed uncertainty of pessimist theorists about nuclear safety and security, the optimists of HR theory support the idea that accidents can be controlled by competent management and decent organizational arrangements. Sustaining safety in the system is in favor of every organization that it can ensure through several safety implementations and reliability culture. Every good organization corrects itself through self-accountability by omission and correcting its errors and faults. Furthermore, Sagan indicated that "organization theory has been highly appropriate in several essential areas of international relations, illuminating crisis behaviour, alliance politics, weapons procurement, military doctrine, and nuclear weapons safety.”²⁴

Additionally, high reliability organizations theorists elucidated that better professional organizational features can deliver outstanding

²² Gene I. Rochlin, "Reliable Organizations: Present Research and Future Directions," *Journal of Contingencies and Crisis Management*, Vol. 4, no. 2 (June 1996), 55.

²³ Todd R. La Porte, "High Reliability Organizations: Unlikely, Demanding, and at Risk," *Journal of Contingencies and Crisis Management*, Vol.4, No.2, (1996), 60-70.

²⁴ Scott D. Sagan, "The Perils of Proliferation: Organization Theory, Deterrence Theory, and the Spread of Nuclear Weapons," *International Security*, Vol. 18, No. 4 (Spring 1994), 73.

results even in the worst circumstances. They believe that an organization shall have a complete management system and professional skills from detecting a problem to its response to counter all possible challenges. Therefore, they have mentioned a multidimensional diverse, effective, and applicable pattern of management that they believe can ensure the functionality of the system and resolution of every challenge in all possible circumstances. In the case of the nuclear weapons security of Pakistan, the military has accomplished an adequate role. Sagan stated, "it has an effective control over nuclear weapons."²⁵

In nuclear weapon development and safety management, nuclear scientists and engineers have played a sufficient role. Gen. (R) Khalid Kidwai stated, "Credit goes to all those engineers and scientists and strategic organizations which helped Pakistan develop its infrastructure and deterrence capability."²⁶ Nuclear history of Pakistan unveils that nuclear weapons are safe and secure under the control of military organizations. The supreme authority in Pakistan that controls the nuclear programmes for civilian and military purposes is National Command Authority (NCA). One can observe a lot of propaganda against Pakistan's nuclear security. During a keynote address at the CISS conference on December 8, 2021, Gen. ® Khalid Kidwai stated, "Nuclear security is too serious a business to be used as a tool of political intimidation, point scoring or subjected to inadequately deliberated statements. Pakistan would expect that considered opinions must reflect objectivity, evidence, professionalism, and meet the high standards of confidentiality lest these become counter-

²⁵ Scott D. Sagan and Kenneth Waltz, *The Spread of Nuclear Weapons: A Debate Renewed* (New York: W.W. Norton, 2003), 91.

²⁶ Khalid Ahmed Kidwai, "Pakistan's Role in Nuclear Security Summit (NSS) Process," Inaugural statement in a Roundtable Discussion at ISSI, (March 25, 2016), Available at <http://issi.org.pk/wp-content/uploads/2016/03/Inaugural-statement-by-Lt-Gen-Khalid-Ahmed-Kidwai.pdf> (Accessed on December 17,2021).

productive.”²⁷ Sartaj Aziz stated that Pakistan's nuclear security regime is established on the national legislative, regulatory and administrative framework.²⁸ He added that the fundamentals of nuclear security in Pakistan comprise robust command and control system managed by the NCA rigorous regulatory regime, comprehensive export controls, and international cooperation. Additionally, people working in nuclear facilities have to clear various security steps such as Personnel reliability programme (PRP) and human reliability programme (HRP), also known as personnel security programme (PSP). These measures reduce the chances of human error in the nuclear facility. Pakistan has been constantly cooperation with the IAEA and its allies USA and China, to maximize nuclear security; even the Former Director-General has also appreciated Pakistan's cooperation and its efforts taken to ensure the security and safety of nuclear assets.²⁹

Organizational Theory

In national security issues, the military's functions have always been vigorous. Notably, in nuclear-armed countries, the military's role is more highlighted. The views of nuclear pessimists about military organization illustrate diverse characteristics. In the case of Pakistan, its nuclear weapons development programme has been founded under highly sophisticated safety and security measures taken by internationally existing parameters; Pakistan has been co-operating with IAEA, and it is co-operating with allies such as the US and China to

²⁷ Keynote address by Gen. © Khalid Kidwai at the CISS Conference (December 8, 2021). Available at: <https://strafasia.com/keynote-address-by-lt-general-r-khalid-kidwai-at-ciss-conference-8-dec-21/> (Accessed on December 24,2021).

²⁸ Sartaj Aziz, Advisor to the Prime Minister on Foreign Affairs, “Pakistan’s Non-Proliferation Efforts & Strategic Export Controls,” Inaugural address in a Seminar at ISSI, (May 03, 2016).

²⁹ Tahir Mahmood Azad, “Pakistan’s Evolving Nuclear security Culture,” *South Asian voices*, November 15, 2021, Available at: www.Stimson.org/2021(Accessed on December 24,2021).

maximize nuclear safety and security, it has established the number of regulatory bodies such as NCA, Pakistan Nuclear Regulatory Authority (PNRA), and Strategic Plans Division (SPD). Pakistan also adopted the 2005 Convention on the Nuclear Physical Protection of Nuclear Material (CPPNM).³⁰ Moreover, the preparation, skills, training, professionalism, and work beliefs of concerned personnel with nuclear administration and regulation are reliable, trustworthy, and dependable.

Organizational efficiency plays a constant momentous part in preserving, functioning, and keeping the system in order. Adam Smith is thought to be the inventor and advocate of the organization theory.³¹ Johan P. Olsen, Michael D. Cohen, and James G. March, who are optimists of organizational theory, have identified that "an organization is a set of procedures for argumentation and interpretations as well as for resolving complications and making conclusions."³² Debating the character of military organization, Sagan discussed two vital points. He stated, "Military organizations, because of common biases, inflexible routines, and parochial interests, display strong proclivities toward organizational behaviour that lead to deterrence failures."³³ NWS cannot allow such organizational encounters. Furthermore, Sagan concludes that if civilian control is lacking so the interest of the military would dominate.³⁴

³⁰ Ibid.

³¹ Mary Jo Hatch and Ann L. Cunliffe, *Organization Theory: Modern, Symbolic and Postmodern Perspectives* (Oxford: OUP Oxford, 2013), 21.

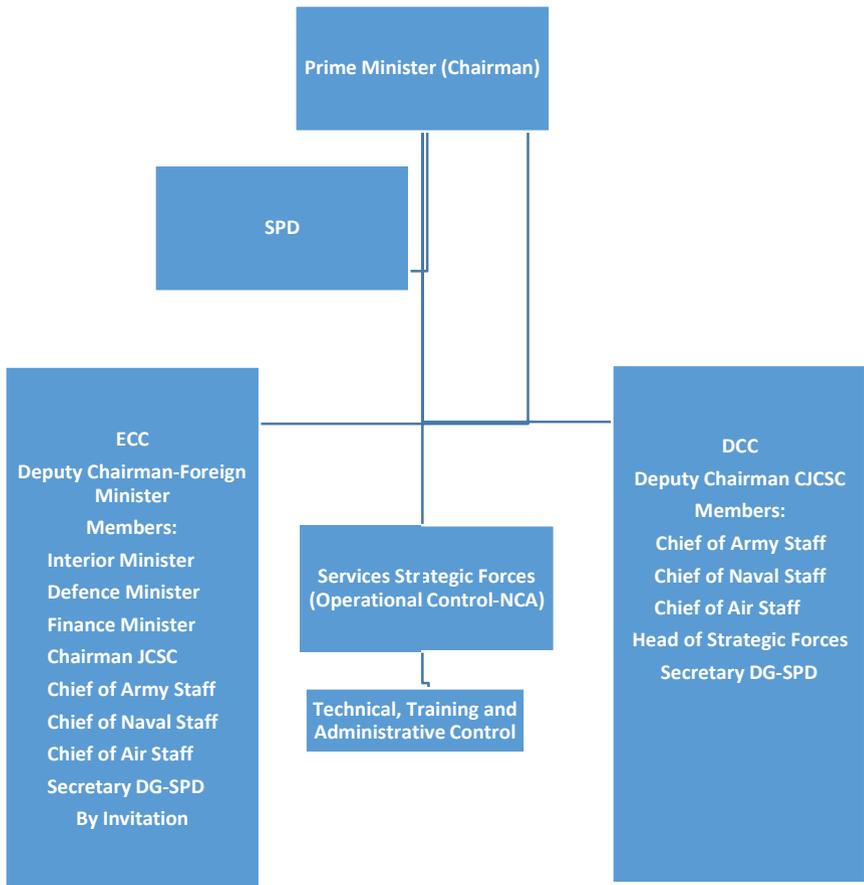
³² Michael D. Cohen, James G. March, Johan P. Olsen, "People, Problems, Solutions, and the Ambiguity of Relevance," in James G. March and Johan P. Olsen (ed.), *Ambiguity and Choice in Organization* (Bergen, Norway: Universitetsforlaget, 1976), 123.

³³ Sagan, "The Perils of Proliferation: Organization Theory, Deterrence Theory and The Spread of Nuclear Weapons," 68.

³⁴ Ibid.

Therefore, organizational disagreements could cause deterioration within the system that can generate fairly risky conditions. In contrast, Pakistan's civilian leadership enjoys the decision-making power regarding the use of nuclear weapons, which reduces the chances of misuse and early use of nuclear weapons and reduces the sole military dominance in the use of nuclear weapons.

Figure: 1- NCA: An Organizational Hierarchy Structure:



Source: Zafar Iqbal Cheema, *Indian Nuclear Deterrence, Its Evolution, Development, and Implications for South Asian Security* (Karachi: Oxford University Press, 2010), 184.

Above graph explains the power structure of NCA, the decision-making authorities, and the functions of each department.

Observing past practice, Pakistan's military has not faced any organizational disagreements. According to available data, in the nuclear safety security and management, there is no single event of organizational clash or mishap in Pakistan that is a sign of professionalism of related personnel and a proof that Pakistan's nuclear safety and security is reliable. "NCA, the top tier of the command and control structure, aims to ensure that the decision to deploy and release nuclear weapons rests in the hands of civilian and military leaders designated by the National Security Council (NSC) and the Constitution of Pakistan."³⁵ Development Control Committee (DCC) and Employment Control Committee (ECC) are the primary divisions of NCA, "The primary responsibility of these commands is to exercise technical, training and administrative control over the strategic delivery systems. The operational control, however, rests with the NCA."³⁶ The Strategic Plans Division (SPD) is the second division of NCA that is "accountable for keeping Pakistan's strategic programmes from insider and outsider threats, most prominently from theft or loss of nuclear material and against infiltration of the strategic organizations by ill-intentioned actors."³⁷ After the successful "Operation Zarb-e-Azb," "Operation Raddul Fasad," and "Combing operation," the terrorist organizations in Pakistan have been eliminated from Pakistan, and they are defeated, weakened enough that such terrorist organizations could hardly reorganize major attacks over civilian sights. Although there are

³⁵Sébastien Miraglia, "Deadly or Impotent? Nuclear Command and Control in Pakistan," *Journal of Strategic Studies*, Vol. 36, No. 6, (December 2013), 845.

³⁶Kenneth N. Luongo and Naeem Salik, "Building Confidence in Pakistan's Nuclear Security," *Arms Control Today*, December 2007.
<https://www.armscontrol.org/act/2007-12/features/building-confidence-pakistan's-nuclear-security>.

³⁷Clary, "Thinking about Pakistan's Nuclear Security in Peacetime, Crisis and War" 13

fewer chances for an organized terrorist attack or theft of nuclear assets in Pakistan nuclear security is a continuous process, and these threat perceptions will always remain. Throughout terrorist history in Pakistan; terrorists have never been able to be a material threat to Pakistan's nuclear assets, and today these terrorist organizations are in the weakest position during the last four decades, particularly after the Taliban government agreement with the USA; that Afghan land would be no more used against any state. Pakistan received most of the terrorist flow from Afghanistan due to instability and constant war in Afghanistan that remains no more an active war.

Realism

Securing national interest is the primary duty of every state; its policy makers and establishment try to adopt ways to overcome the challenges in optimizing national interest. Several realist thinkers such as H Morgenthau, K Waltz, G Kennan, and R Niebuhr have expressed their views regarding development of nuclear weapons, which is a step in their opinions to increase power and ensure the survival and security of a state and its national interest within anarchic international system.³⁸ According to the realist perspective, Pakistan would do whatever is mandatory for the safety and security of nuclear weapons because Pakistan realizes that there is no one to help Pakistan in this anarchic and powerful greedy world. Based on the principles of self-help, Pakistan would do its best to retain nuclear arsenal so that it could guarantee the country's security of national interest, and its survival.³⁹ Strategically, Pakistan considers self-help the proper means to protect a state and its interest. Even during the crisis, Pakistan did not receive help from other states except the Muslim world and China.

³⁸ T. Ogilvie-White, "Is There a Theory of Nuclear Proliferation? An Analysis of the Contemporary Debate," *The Nonproliferation Review*, (Fall 1996), 44.

³⁹ Bhumitra Chakma, *Strategic Dynamics and Nuclear Weapons Proliferation in South Asia: a Historical Analysis* (Peter Lang, 2004), 26.

After the fall of Dhaka in 1971, Pakistani politicians realized that the only option for the survival of Pakistan was the development of nuclear weapons. According to Chakma, "Pakistani political elites, particularly Bhutto, believed that only nuclear weapons could guarantee the national survival of Pakistan against India's conventional and nuclear threats."⁴⁰

To ensure the credibility of its nuclear deterrence, Pakistan is constantly modernizing its nuclear capability, including nuclear safety, nuclear security, delivery, and command and control system; To ensure nuclear safety and security, Pakistan has been co-operating with IAEA and endorsing the IAEA protocols, it is co-operating with allies such as the US and China to maximize nuclear safety and security, it has established the number of regulatory bodies such NCA, PNRA, SPD, and Pakistan also adopted 2005 and endorsed convention on the Nuclear Physical protection of Nuclear Material (CPPNM).⁴¹ Nuclear weapons are a prominent and most important part of Pakistan's defence plan that Pakistan would not give up at any cost. ⁴² Therefore, Pakistan works hard to ensure security and safety of nuclear weapons, its installations, radioactive and fissile material, and apparatus. ⁴³

Based on the principles of self-help in this anarchic international system securing national interest and ensuring the state's survival is a major issue for Pakistan. Pakistan's only aggressive and nuclear enemy, India, cannot be countered through conventional means that could prove counterproductive for Pakistan. India being conventionally

⁴⁰Bhumitra Chakma, "The Pakistani Nuclear Deterrent," in Bhumitra Chakma (ed.), *The Politics of Nuclear Weapons in South Asia* (Burlington: Ashgate Publishing Ltd., 2011), 42.

⁴¹ Tahir Mahmood Azad, "Pakistan's Evolving Nuclear security Culture," *South Asian voices*, November 15, 2021, Available at: www.Stimson.org/2021(Accessed on December 24,2021).

⁴² Itty Abraham, *South Asian Cultures of the Bomb: Atomic Publics and the State in India and Pakistan* (Bloomington: Indiana University Press, 2009), 138.

⁴³ Singh, *Pakistan Nuclear Disorder: Weapons, Proliferation and Safety*, 50-51.

superior is a severe threat to Pakistan. Therefore, nuclear weapons are necessary for the defence of Pakistan, and it has successfully deterred Indian aggression; that is why nuclear weapons are the best cost-effective defence for the security of national interest and survival of Pakistan

Theory of Deterrence

Pakistan's political and military leaders believe that its nuclear weapons offer credible minimum deterrence in the subcontinent. Affirming nuclear weapons importance for Pakistan, R. Basur stated: "to ensure the survivability and credibility of the deterrent, Pakistan will have to maintain, preserve and upgrade its capability."⁴⁴ It is well understood in Pakistan that to deter the enemy, Pakistan must have a safe and secure nuclear arsenal. Nuclear security is globally a vibrant issue particularly. A robust and effective, and credible nuclear deterrence is difficult in the absence of safe and secure nuclear arsenal. Therefore, to keep deterrence in effect, Pakistan has been upgrading its nuclear safety and security measures. P. Lavoy presenting his views about Pakistan's nuclear arsenal pointed out the following key factors: 1) An effective conventional fighting force and the demonstrated resolve to employ it against a wide range of conventional and sub-conventional threats; 2) A minimum nuclear deterrence doctrine and force posture; 3) An adequate stockpile of nuclear weapons and delivery systems to provide for an assured second strike; 4) A survivable strategic force capable of withstanding sabotage, conventional military attacks, and at least one enemy nuclear strike; 5) A robust strategic command and control apparatus designed to ensure tight negative use control during peacetime and

⁴⁴ Rajesh M. Basur, *South Asia's Cold War: Nuclear Weapons and Conflict in Comparative Perspective* (New York: Routledge, 2008), 65.

prompt operational readiness (positive control) at times of crisis and war.⁴⁵

A minimum nuclear deterrence doctrine, force posture, and secure second-strike capability are ensured by adequate nuclear warheads and delivery systems. A strategic arsenal is sufficient to survive at least a single nuclear enemy strike and respond to any conventional or nuclear aggression. Strong command and control system ensures high readiness in wartime and excludes chances of any accident, mishap, or unauthorized misuse of nuclear assets.

Indian development of nuclear weapons and modernization forced Pakistan to go for countermeasures. Even the Cold Start doctrine compelled Pakistan to develop tactical short-range nuclear ballistic missiles to make nuclear deterrence more credible. In the views of Adil Sultan, to counter each type of Indian attack, "Pakistan developed and tested its short-range missile system 'NASR' (Hatf IX) in April 2011, to have 'assured deterrence' for a full spectrum threat, i.e., tactical, operational and strategic levels."⁴⁶ These short-range missiles are developed with credible and diverse safety protocols. Mubarakmand stated that these missiles are outstanding in assessing standards and mechanism.⁴⁷ They are very secure and retained by a very skilled, trained, and professional crew. They were operationalized after running multiple successful experimental tests and ensured their ability to hit objectives accurately.

⁴⁵ Peter R. Lavoy, "Islamabad's Nuclear Posture: Its Premises and Implementation," in Henry D. Sokolski (ed.), *Pakistan's Nuclear Future: Worries beyond War* (United States Army War College: The Strategic Studies Institute Publications Office, 2008), p.131.

⁴⁶ Adil Sultan, "South Asian Stability-Instability Paradox: Another Perspective," *IPRI Journal*, XIV, No.1, (Winter 2014), 14.

⁴⁷ Mubarakmand (a prominent Pakistani nuclear physicist), in an interview with Tahir Mahmood Azad.

Constructivist

Every state has a diverse identity, history, and interests. Its culture and values transform with time. To maintain the identity and social constructs is the duty of each state. Prominent constructivists M. Zehfuss, A. Wendt, N. Onuf, and F.V. Kratochwil described “the continued prevalence of nuclear weapons and states’ dominance in the nuclear arena constitutes social facts.”⁴⁸ After adopting nuclear capability, a state modifies its strategic approach. The social composition of a state characterizes national necessities, requirements, needs, and demands. In contrast, nuclear assets determine something different such as “states’ commitment to their constructed social purpose, namely, maintaining power and prestige (i.e. identity), and dominance (i.e., identity and interests) – despite the possibility of non-state actors’ access and application of nuclear technology and weapons.”⁴⁹ According to Sagan, “state behaviour is determined not by leaders’ cold calculations about the national security interests or their parochial bureaucratic interests, but rather by deeper norms and shared beliefs about what actions are legitimate and appropriate in international relations.”⁵⁰

The sole purpose of nuclear weapons development in Pakistan is to assure its survival, identity, national interest, and sovereignty against enemy aggression. Van Wyk stated, “Pakistan’s nuclear programme emanates from that country’s insecurity as regards India, while India’s programme is a response to its insecurity as regards

⁴⁸ Jo-Ansie van Wyk et al., “The International Politics of Nuclear Weapons: A Constructivist Analysis,” *Scientia Militaria, South African Journal of Military Studies*, Vol. 35, No.1, (2007), p.23.

⁴⁹ Ibid.

⁵⁰ Scott D. Sagan, “Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb,” *International Security*, Vol. 21, No. 3, (1996-97), 73.

China.”⁵¹ Although developing nuclear weapons is very expensive and technically challenging. But after their development by a state, its progress is inevitable such as introducing further improvements in its nuclear programme, increasing number of warheads and delivery systems, conducting experiments to test safety, security, and efficiency of the weapon. It even includes using a weapon in a war-like situation.⁵² Pakistan, a responsible nuclear-armed state, recognizes that effective deterrence can only be assured through reliable, safe, and secure nuclear weapons controlled by trained, skilled, skilled, and professional command and effective control system.

Pakistan's Nuclear Security

Since nuclear tests in 1998, Pakistan has effectively advanced in nuclear security management. In Nuclear Threat Initiative's (NTI) report “2020 Nuclear Security Index,” it is stated that “Pakistan is the most enhanced country in the theft ranking for countries with weapons-usable nuclear materials, improving its overall score by 7 points.”⁵³ According to NTI 2020, Pakistan's major progress is in its Security and Control Measures category (+25) because it approves of new regulations.⁵⁴ Pakistan also advanced in the Global Norms category (+1). Its developments in the Security and Control Measures category are considerable because reinforced laws and regulations result in durable boosts in Pakistan's score and provide justifiable security

⁵¹ Van Wyk et al., “The International Politics of Nuclear Weapons: A Constructivist Analysis,” 26.

⁵² Ibid.

⁵³ Nuclear Threat Initiative, “2020 NTI Nuclear Security Index: Theft / Sabotage / Radiological (Fifth Edition),” (July 2020), 35-36, Available at: https://media.nti.org/documents/2020_NT-Index_Report_Final.pdf (Accessed on December 24, 2021).

⁵⁴ Ibid.

assistance.⁵⁵ A detailed analysis and findings are available in that report.

In Pakistan, the military has demonstrated an effective and satisfying role in ensuring nuclear security and its management through credible and reliable command and control system. Kidwai states that along with safeguarding nuclear arsenal and conventional forces, nuclear security also includes vigilance, threat assessment, and response mechanism.⁵⁶ Mubarakmand highlighted that Pakistan's track record of military in nuclear security management is highly significant.⁵⁷ Pakistan has sustained a safe and secure nuclear programme, free from any error, accident or unauthorized use of technology, stealing of fissile material in Pakistan. Additionally, Mubarakmand has added that Pakistan had implemented vigorous safety techniques to evade an accident. Through cold testing, command, and communication delivery system, the accuracy of missiles, and safety measures are perceived as the best quality standards.⁵⁸ The IAEA Former Director General, Yukia Amano, has also appreciated Pakistan's cooperation and its efforts taken to ensure security and safety of nuclear assets.⁵⁹

Additionally, Pakistan's nuclear arsenal is controlled by very skilled and professional military personnel, equipped with effective command and control system. Daniel S. Markey, while commenting on the performance and function of the military of Pakistan in the management of the nuclear arsenal, has praised the role of this

⁵⁵ Ibid.

⁵⁶ Kidwai, "Pakistan's Role in Nuclear Security Summit (NSS) Process."

⁵⁷ Mubarakmand (a prominent Pakistani nuclear physicist), in an interview with Tahir Mahmood Azad.

⁵⁸ Ibid.

⁵⁹ Tahir Mahmood Azad, "Pakistan's Evolving Nuclear security Culture," *South Asian voices*, November 15, 2021, Available at: www.Stimson.org/2021 (Accessed on December 24, 2021).

organization: Although nuclear weapons are risky by their nature, however, America would have reasons to trust Pakistan because Pakistan's military has firm command and it has been disciplined and trained.⁶⁰

To screen or examine the people, civilian or military-related to a nuclear arsenal, Pakistan has introduced Human Reliability Programme (HRP) and credible Personnel Reliability Programme (PRP).⁶¹ These programme PRP and HRP are universally acknowledged as trustworthy programmes in dealing with nuclear security subject. The military organization is made responsible due to the delicate nature of nuclear technology, the value of nuclear weapons and fissile material, and their importance for the defence of Pakistan. Although Pakistan has a reliable well equipped, highly trained considerable number of Army, Naval, and Air force to defend its territory from any internal and external, conventional or unconventional threat, nuclear weapon holds a key role in Pakistan's security to deter enemy, particularly a nuclear-armed enemy, and secure the territory without engaging in war and make him stand as a secure and robust nuclear state in this anarchic world.⁶² From its own and other past experiences, better training, highly disciplined and professional military engraved its importance and dependability on military for nuclear safety and security.

Pakistan's nuclear organizational control is under SPD, headed by a joint-staff organization. It has taken effective measures to ensure Pakistan's deterrence by ensuring effective, robust command, control, and safety of nuclear assets, and these arrangements strengthen the

⁶⁰ Daniel S. Markey, *No Exit from Pakistan: America's Tortured Relationship with Islamabad*, (New York: Cambridge University Press, 2013), 18.

⁶¹ Christopher Clary, "Thinking about Pakistan's Nuclear Security in Peacetime, Crisis and War," *Institute for Defence Studies and Analyses (ISDA) Occasional paper*, No.12 (September 2010), 14.

⁶²C. Christine Fair, et al., *Pakistan: Can the United States Secure an Insecure State?* (Santa Monica: RAND Corporation, 2010), 27.

control of the army over nuclear assets.⁶³ The importance of nuclear arsenal is acknowledged and realized by Pakistan's military. Pakistan relies on full-spectrum nuclear deterrence for its security which can only be ensured through effective and reliable robust command and control system.

Conclusion

Islamabad needs nuclear weapons to deter belligerent New Delhi from any conventional or nuclear misadventure. Pakistan's military has always been a highly acknowledged, well-trained, disciplined, credible, and highly professional institution of Pakistan. Pakistan's armed forces are fully capable of ensuring the safety and security of nuclear weapons from any internal, external, and technical threat. The encouraging history of nuclear safety and security of Pakistani nuclear assets with no single accident or unauthorized use encourages the military organization to maintain its dominance over the nuclear management system. All discussed theories, i.e., HRT, NAT, Realism, and Constructivism, share the sense that Pakistan's nuclear weapons security is a crucial part of Pakistan's national security. Being conventionally inferior to India, Pakistan must maintain a nuclear stockpile to ensure its defence against enemy aggression. Pakistan believes that in the current anarchic international system, a nuclear arsenal is the only effective means for Pakistan to deter the enemy and maintain strategic stability in South Asia to secure its sovereignty, identity, and dignity.

⁶³ Ibid.

Indian Cruise Missile Misadventure: Malfunction or Malafide Intentions?

Dr. Rizwana Abbasi¹ and Muhammad Saeed Uzzaman²

Abstract

On March 9, an Indian BrahMos class, nuclear capable, a supersonic cruise missile with no warheads, landed in Mian Channu, around 80 miles inside Pakistan's territory. Pakistan, in turn, rationally responded to the incident by de-escalating the situation. The Indian missile fire in Pakistan's territory has brought to the spotlight a set of puzzling questions: Was it an accidental or unauthorized fire or a deliberate act to test the readiness of Pakistan's missile defense systems? Why did India fail to notify Pakistan of this missile launch immediately? If it was an accidental launch then does it not undermine accuracy of Indian BrahMos class missiles, credibility of its Command and Control (C2) system, and international aviation and safety protocols? What does Pakistan's restraint mean? How has this cruise missile fire led to creating renewed escalation risks? The study ponders on the above questions, offering some guiding posts for both the nuclear weapon states on risk management and avoidance of future

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misadventures, unauthorized use, or malfunctions. The study's main argument is that launching the BrahMos cruise missile into Pakistan's territory from India serves as a reminder of renewed threats to strategic stability in South Asia and points toward nuclear risks associated with the Indian nuclear program. The study concludes that whether the incident was an accidental, unauthorized or deliberate incursion, by all dimensions, it questions India's irresponsible behavior. Further, the study offers a mechanism for both the states to renew/initiate new agreements and make certain compromises to implement risk reduction measures to avoid such misadventures, thus evading misperceptions, accidents, and inadvertent escalation.

Keywords: Nuclear South Asia, Missile Launch, Crisis Instability, Risks Reduction, Malfunction, Unauthorized or Advertent Use.

Introduction

The world missed one of the significant events amidst the Ukrainian conflict³ which could have led to serious crisis in the nuclear armed South Asian region. On March 9, an Indian BrahMos class, nuclear capable, supersonic cruise missile, while carrying no warheads, landed in Mian Channu, around 80 miles deep inside Pakistan's territory.⁴ The Indian missile launch of the BrahMos missile received restrained

³ See "Global Conflict Tracker," *Council on Foreign Relations*, April 4, 2022, Available at: <https://www.cfr.org/global-conflict-tracker/conflict/conflict-ukraine> (Accessed on April 13, 2022).

⁴ Daryl G. Kimball, "India: Accidentally Fires Missile into Pakistan," *Arms Control*, April 1, 2022, Available at: <https://www.armscontrol.org/act/2022-04/news/india-accidentally-fires-missile-into-pakistan>. (Accessed on April 13, 2022).

response from Pakistan. India failed to notify Pakistan immediately after the launch of this projectile. The Directorate Generals of Military Operations (DGMO) hotlines of the two countries were not used. India used no military, diplomatic or political channel to notify Pakistan of this fire until Pakistan's Inter-Services Public Relations (ISPR) held a public press conference asking India for an explanation of the incident.⁵ Regardless of whether it was a malfunction or guided by malafide intentions to test Pakistan's readiness, the Indian missile landing in Pakistan's territory led to a flagrant violation of the latter's air space, United Nations (UN) Charter, international aviation rules, and safety protocols.⁶ In addition, the missile launch carried a huge escalation potential between two nuclear weapon states, endangered human life and property besides risking the broader regional peace and stability.

The Indian missile launch in Pakistan's territory raises a set of spontaneous questions that demand transparent deliberation: Was it Indian advertent action to test the readiness of Pakistan's missile defense systems? Was it an accidental or unauthorized launch? Why did India fail to notify Pakistan of this missile launch immediately? If it was an accidental launch then does it not undermine the accuracy of Indian BrahMos class missiles, credibility of its C2 system, and international aviation and safety protocols? What does Pakistan's restraint mean? How has this cruise missile launch led to creating renewed escalation risks? The study's main argument is that launching the BrahMos cruise missile into Pakistan's territory from India serves as a reminder of renewed threats to strategic stability in South Asia and points toward nuclear risks associated with the Indian nuclear program. The study answers the above questions, offering some learning

⁵ See "India to Explain What Happened in Mian Channu," Says DG ISPR after Indian Projectile Falls in Pakistan," *Dawn*, March 10, 2022.

⁶ See "Rules of International Civil Aviation Organization (ICAO)," *ICAO*, Available at: <https://www.icao.int/about-icao/Pages/default.aspx> (Accessed on April 13, 2022).

outcomes for both the nuclear-weapon states to manage risks and avoid such recurrence in the future.

The study adopts qualitative and explanatory approaches while adhering to both primary and secondary data sources to build rational analysis. Primary data mainly includes in-depth interviews with experts in the relevant field and a range of memoirs, diplomatic documents, and speeches. Secondary data is drawn from the existing body of knowledge, covering sources such as research, newspaper articles, and books to enrich and broaden the scope of analysis. The thematic analysis technique analyzes the data to understand the phenomenon under study comprehensively. Lastly, deductive reasoning is employed to analyze the Indian cruise missile misadventure. Further, three different scenarios are developed to build a comprehensive understanding of the phenomenon, thereby devising a mechanism to ensure peace and stability in the nuclearized South Asia.

Conceptual Framework

Deterrence is generally understood as an ability to dissuade a state from embarking upon a course of action prejudicial to one's vital security interests based on demonstrative capability. The nuclear deterrence theory, as propounded by Brodie,⁷ Which is grounded in political realism and enriches our thought process to comprehend the potential character of nuclear weapons. Bernard Brodie propagated that the invention of the atomic bomb had fundamentally altered the nature of war, and a strategic revolution had occurred. Brodie rightly asserted, 'thus far, the chief purpose of our military establishment has been to win wars. From now on, its chief purpose must be to avert them. It can have almost no other useful purpose'.⁸ Here Brodie means that the

⁷ Bernard Brodie ed., *Absolute Weapons: Atomic Power and World Order*, (New York, Harcourt, Brace, 1946) ,76.

⁸ Ibid.

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possibility of 'destruction' inherent in the use of nuclear weapons has made victory unachievable but at the same time he taught us that through risks of retaliation, states could psychologically manipulate an adversary's mind. On a similar note, Robert J. Art contended that 'balance in the nuclear age is the power to hurt, not the power to defeat.'⁹ Thomas C. Shelling reminded us that 'victory is no longer a prerequisite for hurting the enemy,' which later modified and constrained states' behavior towards a more rational direction. The above notions contextualize what we now refer to as Deterrence Theory.¹⁰ Deterrence is generally understood as an ability to dissuade a state from embarking upon a course of action prejudicial to one's vital security interests based on demonstrative capability. Thomas Schelling, one of the master thinkers along with Herman Kahn¹¹ and Albert Wohlstetter, as well as Henry A. Kissinger, became fascinated with the complexities of nuclear strategy. In the Cold war era, the world experienced a constant fear of nuclear war between the United States (US) and Russia. Few scholars warned about the risks of inadvertent nuclear war between the US and Russia.¹²

Recently declassified documents suggest that the two Cold War rivals were dangerously near to initiating an inadvertent nuclear conflict in 1983. The Russian leaders supposedly misinterpreted North Atlantic Treaty Organization (NATO) military exercise reckoned as *Able Archer* and planned to carry out nuclear strikes against it.¹³ During the

⁹ Robert J., "Between Assured Destruction and Nuclear Victory: The Case for the 'Mad Plus' Posture," *Ethics*, Vol.95, No. 3, (April,1985), 497-516.

¹⁰ Patrick M.Morgan, *Deterrence Now* (Cambridge: Cambridge University Press, 2003), 8.

¹¹ See Herman Kahn, *On Escalation* (New York: Praeger, 1965), 36.

¹² Quoted in Anthony M. Barrett, "False Alarms, True Dangers? Current and Future Risks of Inadvertent U.S.-Russian Nuclear War," *RAND Corporation document PE-191-TSF, DOI 10* (2016).

¹³ See Nate Jones, Tom Blanton, and Lauren Harper, eds., "The 1983 War Scare Declassified and for Real, in National Security Archive Electronic Briefing Book No. 533, October 24, 2015, Available at: [https://nsarchive2.gwu.edu/nukevault/ebb533-The-Able-Archer-War-Scare-Declassified-PFIAB-Report-\(Accessed on April 13, 2022\). Released/#:~:text=Washington%20D.C.%2C%20October%2024%2C%202015,1983%20War%20Scare%20was%20real](https://nsarchive2.gwu.edu/nukevault/ebb533-The-Able-Archer-War-Scare-Declassified-PFIAB-Report-(Accessed%20on%20April%2013,%202022).Released/#:~:text=Washington%20D.C.%2C%20October%2024%2C%202015,1983%20War%20Scare%20was%20real) (Accessed on December 15, 2021).

Cold war era, nuclear risk reduction remained a top priority and continuous concern of the US and Russian leaders. Washington and Moscow put a considerable amount of effort into building a mechanism to prevent the use of nuclear weapons.¹⁴ Significantly, the US and Russia never indulged in direct confrontation with each other due to fear of the use of nuclear weapons. In his *Meteors, Mischief, and War*¹⁵ Schelling debated the notion of accidental war. For Schelling, decisions cause war, and accidents can trigger decisions. He gave remedies not just for preventing accidents but constraining decisions. In parallel, Herman Kahn, in his *On Escalation* offered lessons to limit a potential risk of war to a certain level through escalation control strategies maintaining a degree of uncertainty to make deterrence credible.¹⁶

Cold war thinkers focused on understanding the underlying reasons that had led to crises and the mechanisms to prevent such crises. They dedicated their attention to understanding the compromising process, as a degree of compromise can prevent or resolve conflicts.¹⁷ The two superpowers got past the brink of confrontation to enter an era of détente. US President Richard Nixon and Soviet leader Leonid Brezhnev pledged to limit their countries' offensive nuclear arsenal permanently. Thus, arms control

¹⁴ Michael Krepon, Chris Gagne, Henry L and Harinder Baweja, "Nuclear Risk Reduction: Is Cold War Experience Applicable to Southern Asia? The Stability-Instability Paradox: Nuclear Weapons and Brinkmanship in South Asia," *Stimson Center paper* 38 (2001), Available at: <https://www.stimson.org/2001/stability-instability-paradox-nuclear-weapons-and-brinkmanship-south-asia/> (Accessed on December 15, 2021).

¹⁵ See Schelling, T. *Meteors, Mischief, and War*, *Bulletin of the Atomic Scientists*, 16 (7), 1960.

¹⁶ See Kahn *On Escalation*.

¹⁷ "Address by Secretary of State Henry Kissinger," *Office of the Historian*, Available at: <https://history.state.gov/historicaldocuments/frus1969-76v38p1/d19>, (Accessed on April 2, 2022).

mechanisms, a negotiating toolkit, regulated some aspects of US and Soviet military capabilities or potential. These arrangements were applied to the location, amount, readiness, and types of military forces, weapons, and facilities to reduce war risks. They forged some form of cooperation or joint actions regarding their military programs. This is how deterrence stability was achieved and accidents prevented during the Cold War.

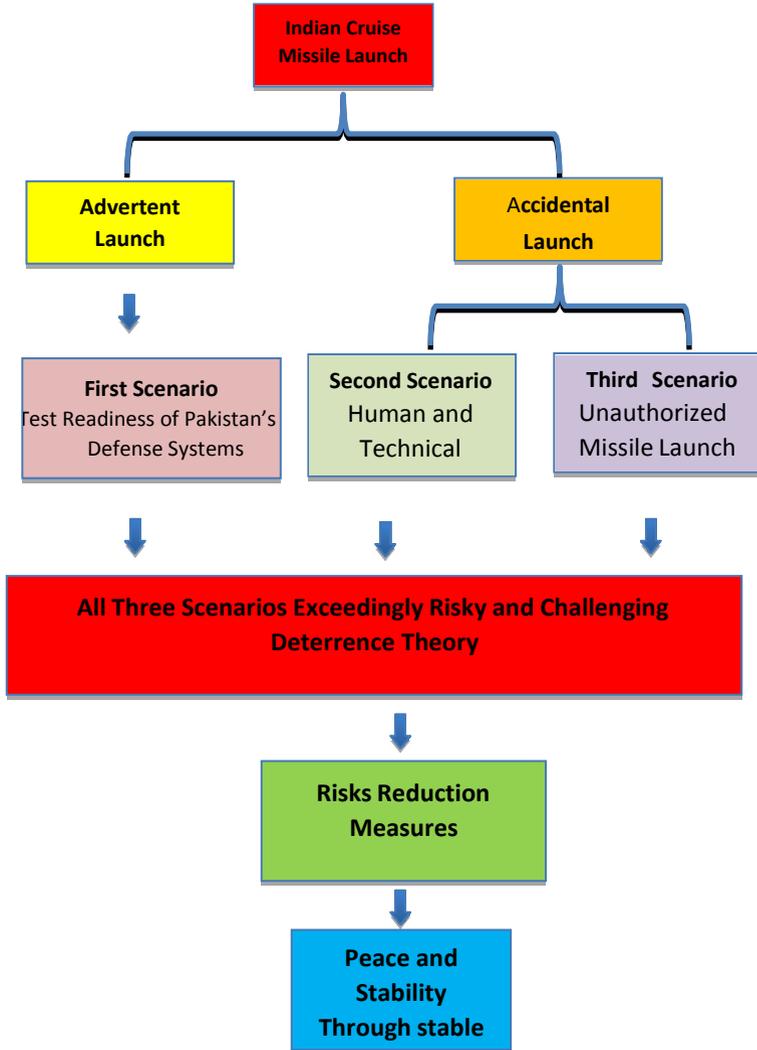
The lexicon of nuclear deterrence theory is not exactly applicable to India and Pakistan, where both rival countries, even after overt nuclearization, are found to be involved in fighting a limited war, sub-conventional warfare, and phenomena such as surgical strikes in the recent times. India is continuously modernizing its nuclear stockpiles and operationalizing a blossoming triad. India is on the road to developing cruise missiles at a faster rate. Cruise missiles have speed, precision, stealth capabilities, and multiple launch platforms, making them appropriate weapons for counterforce posture and preemptive strikes.¹⁸ Further, India's force modernization demands enhanced safety and security protocols to avoid accidents. Scott D. Sagan maintains that, at times, accidents occur despite best safety and security practices because of limitations.¹⁹ Nevertheless, India's opacity regarding safety and security issues is incompatible with its ambitious force modernization. Christopher Clary also highlighted his concerns about India's safety and security protocols.²⁰ India's recent missile fire indicates severe loopholes in the safety and security mechanism to

¹⁸ Kulsoom Belal, "Cruise Missiles in South Asia: Implications for Regional Strategic Stability," *Policy Perspectives*, Vol. 13, No. 1, (2016), 115, <https://doi.org/10.13169/polipers.13.1.0115> (Accessed on April 2, 2022).

¹⁹ See Scott Douglas Sagan, *The Limits of Safety, Organizations, Accidents and Nuclear Weapons* (Princeton University Press, 1995), 65.

²⁰ Christopher Clary, "India in Transition, Guarding the Nuclear Guardians," *Centre for Advanced Study of India*, July 15, 2013, Available at: <https://casi.sas.upenn.edu/iit/clary> (Accessed on April 2, 2022).

handle sophisticated new technologies. Further, the missile launch had all the potential to reach severe escalation, endangering peace and stability in the region.



Conceptual framework devised by the authors

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Keeping in view the nature of the study, this conceptual framework is devised to analyze the Indian cruise missile misadventure concerning three scenarios. Further, it laid out the strategy to mitigate the risk to ensure peace and stability in nuclear South Asia.

Indian Cruise Missile Launch - What happened?

Pakistan's ISPR, through a press briefing, revealed that an Indian 'supersonic missile,' which was not armed, had landed in Pakistan, thus hitting private property.²¹ Pakistan's Air Force stated that it had tracked the missile's flight path right from its launching site, Sirsa in Haryana, India. Subsequently, the missile altered track and maneuvered towards Pakistani territory while landing near Mian Channu after traveling around 80 miles inside Pakistan's territory.²² Pakistan circulated a map displaying missile track that remained airborne for less than seven minutes while it flew in the Pakistani airspace for 3 minutes and 44 seconds and traveled 124 km deep inside Pakistan's territory.²³



Source: *Annotated map of the missile's flight path shared by Pakistani military officials*

²¹ See "India to Explain what Happened in Mian Channu," says DG ISPR after Indian Projectile Falls in Pakistan,' *Dawn*, March 10, 2022.

²² Kamran Yousaf, "India Admits to 'Accidentally' Firing Missile into Pakistan," *The Express Tribune*, March 11, 2022.

²³ Matt Korda, "Flying Under The Radar: A Missile Accident in South Asia," *Federation of American Scientists*, April 4, 2022, Available at:

<https://fas.org/blogs/security/2022/04/flying-under-the-radar-a-missile-accident-in-south-asia/> (Accessed on April 8, 2022).

Pakistan's armed forces' spokesman highlighted the lethality of the missile incident and stated that the projectile has 'endangered many international and domestic flights in both Pakistani and Indian airspace.'²⁴ The missiles carried the possible risks of hitting the population and property on ground.²⁵ Nevertheless, the timing of missile incident makes the situation more suspicious, as a week earlier; Pakistan's Navy detected the entry of the Indian Navy Submarine into the Exclusive Economic Zone. Pakistan exercised a restraint response and behaved rationally on this occasion, thereby minimizing space for any unpleasant political interaction or escalation of the situation. Pakistan's immediate response is reckoned as mature and responsible inwardly and outwardly. India's diverse voices from different sectors of society, such as former diplomats, journalists, and others, have appreciated Pakistan's rational response in the wake of the missile fire.²⁶ However, Pakistan asked India for an explanation of this incident. Pakistan's Ministry of Foreign Affairs (MFA) summoned the Indian envoy and expressed discontent.²⁷ More so, the ISPR conveyed Pakistan's strong protest of the blatant violation of international law and 'cautioned against recurrence of any such incident in the future.'²⁸ Two days later, on March 11, Indian authorities stated, 'in the course of

²⁴ See "India to Explain What Happened in Mian Channu."

²⁵ Debak Das, "Not much Happened after India's Accidental Cruise Missile Launch into Pakistan—This Time," *Bulletin of the Atomic Scientists*, March 25, 2022, Available at: <https://thebulletin.org/2022/03/not-much-happened-after-indias-accidental-cruise-missile-launch-into-pakistan-this-time/> (Accessed on April 8, 2022).

²⁶ "Indians Call Pakistani Response "Very, Very Mature" on Accidental Indian Missile in Pakistani territory," *The Current*, March 12, 2022, Available at: <https://thecurrent.pk/indians-call-pakistani-response-very-very-mature-on-accidental-indian-missile-in-pakistani-territory/> (Accessed on April 8, 2022).

²⁷ See "Pak Summons Indian Envoy Over Alleged Violation of its Airspace by Missile," *Business Standard*, March 11, 2022, Available at: https://www.business-standard.com/article/current-affairs/pak-summons-indian-envoy-over-alleged-violation-of-its-airspace-by-missile-122031101036_1.html (Accessed on April 8, 2022).

²⁸ See "Missile 'Accidentally' Fired into Pakistan, admits India," *Daily Times*, March 12, 2022.

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a routine maintenance, a technical malfunction led to the accidental firing of a missile' – saying that the incident was 'regrettable.'²⁹ Indian authorities also stated that 'the Government of India has taken a serious view and ordered a high-level Court of Enquiry.'³⁰

This development was followed by a counter-response from Pakistan's MFA, with a long list of binding technical questions asking India to respond.³¹ Pakistan's then-National Security Advisor, Moeed Yusuf, lambasted India on social media, questioning the safety of India's 'nuclear and other high-end systems and asking if this was an 'inadvertent launch or something more; intentional.'³² Pakistan announced that 'the Indian decision to hold an inner court of inquiry is insufficient since the missile ended in Pakistani territory. Pakistan demands a joint probe to establish the facts surrounding the incident accurately.'³³ This incident certainly questions India's international obligations mentioned in the United Nations Charter under the Article 2 (4), in which it is stated that 'all Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any State, or any other manner inconsistent with the purposes of the United Nations.'³⁴ In this sense, the missile launch has blatantly violated Pakistan's air space and

²⁹ See "India says it accidentally fired missile into Pakistan," *Aljazeera*, March 11, 2022, Available at: <https://www.aljazeera.com/news/2022/3/11/india-says-it-accidentally-fired-missile-into-pakistan> (Accessed on April 8, 2022).

³⁰ *Ibid.*

³¹ Naveed Siddiqui, "Why did India Fail to Inform about Accidental Missile Launch Immediately? Asks Pakistan," *Dawn*, March 12, 2022.

³² See "NSA Yusuf Calls for Investigation to Know Real Reason behind Indian Missile Incident," *The News*, March 11, 2022.

³³ See "Pakistan Demands Joint Probe into 'Accidental' India Missile Fire," *Reuters*, March 12, 2022, Available at: <https://www.reuters.com/business/aerospace-defense/pakistan-demands-joint-probe-into-accidental-india-missile-fire-2022-03-12/> (Accessed on April 8, 2022).

³⁴ See "Charter of the United Nations," *Codification Division, Office of Legal Affairs*, latest updated on March 10, 2021, Available at: <https://legal.un.org/repertory/art2.shtml> (Accessed on April 8, 2022).

undermined the global aviation rules and protocols, thus endangering commercial flights, human life, and property. India's silence and the cold response have led to building misperception in the mind of Pakistani leadership as to why India is not coming up openly on this incident. Pakistan's MFA demanded 'a joint investigation.'³⁵

Amusingly, after the conduct of Court Inquiry at the unilateral level, the Indian authorities came up with a new narrative propagating that it was an accidental launch that involved human errors.³⁶ It seems that the Indian human-error narrative over malfunction was projected to defuse set-back on BrahMos' technical efficiency and effectiveness as India struck a deal on export of BrahMos worth \$374.96 million with Philippines.³⁷ The government of the Philippines inquired from the Indian authorities about the technical efficiency of the BrahMos missile.

By all dimensions, the Indian missile launch could have prompted Pakistan to conduct retaliatory strike. India's irrational behavior could have led to a nuclear escalation in the already fragile security situation between India and Pakistan.³⁸ The recent missile incident again validates the vulnerability of deterrence theory and the fragility of strategic stability in the nuclear-armed South Asian region. However, the international community and, more specifically, the U.S. remained almost aloof. During a press conference for comments, a question was

³⁵ See "Pakistan Demands Joint Investigation into India's 'Accidental' Missile Fire," *TRT World*, March 12, 2022, Available at: <https://www.trtworld.com/asia/pakistan-demands-joint-investigation-into-india-s-accidental-missile-fire-55466> (Accessed on April 10, 2022).

³⁶ See Matt Korda, 'Flying Under the Radar: A Missile Accident in South Asia,' *Federation of American Scientists*, April 4, 2022, Available at: <https://fas.org/blogs/security/2022/04/flying-under-the-radar-a-missile-accident-in-south-asia/> (Accessed on April 10, 2022).

³⁷ *Ibid.*

³⁸ Muhammad Saleh Zafar, "India's Irresponsible Attitude Could Lead to Nuclear Escalation in South Asia," *The News*, March 23, 2022.

posed to the U.S. Department of State's spokesman, Ned Price. He stated, 'we have no indication, as you also heard from our Indian partners, that this incident was anything other than accident. We refer you, of course, to the Indian Ministry of Defence for any follow-up.'³⁹ There was a muted response from the international community or institutions, presumably as the entire world is focused on Ukraine crisis and South Asia is not a priority region. Significantly, the missile launch incident between nuclear-armed countries demanded severe attention from the global community and institutions. However, the world community missed the missile incident, which could have escalated another crisis between the two nuclear rivals. More specifically, even the U.S., which remained a significant peace broker in the region, did not give due consideration to the occurrence. The U.S. role as a crisis manager has diminished in South Asia because of the global power shift and its strategic partnership with India.⁴⁰ This puts to question the U.S. standing as an honest broker between India and Pakistan.

Pakistan, instead of looking outwardly, successfully convinced the Council of Foreign Ministers (CFM); to participate in 48th session of the Organization of Islamic Cooperation (OIC) that was held in Pakistan between 22-23 March to discuss challenges being faced by the Muslim world and emerging opportunities, to adopt a resolution emphasizing peace and stability in the region.⁴¹ The resolution expressed deep concerns about this missile incident 'which constituted multiple violations of international law, the UN Charter, Articles on the

³⁹ See "The U.S. declares India's Missile Fire into Pakistan 'Nothing but an Accident,'" *The News*, March 15, 2022.

⁴⁰ See Rizwana Abbasi and Zafar Khan, *Nuclear Deterrence in South Asia: New Technologies and Challenges to Sustainable Peace* (Oxford: Routledge, 2019), 45.

⁴¹ See "OIC Endorses Pakistan's Call for a Joint Probe into March 9, 2022, Missile Incident," *Ministry of Foreign Affairs, Government of Pakistan*, March 23, 2022, Available at: <https://mofa.gov.pk/oic-endorses-pakistans-call-for-a-joint-probe-into-the-9-march-2022-missile-incident/>(Accessed on April 10, 2022).

Responsibility of States for Internationally Wrongful Acts, civil aviation rules and safety protocols, and endangered human life and property, besides posing a grave threat to regional and international peace, security and stability.⁴² The OIC Foreign Ministers endorsed Pakistan's position and demanded that India conduct a joint investigation to ascertain the facts that led to the missile incident.⁴³ The envoys of the P-5 countries were also briefed about the developments, and Pakistan's representatives abroad have been asked to raise the matter in relevant international forums.⁴⁴ The OIC Foreign Ministers, in the resolution, called on India 'to fully abide by its international obligations,'⁴⁵ as the duty to protect dangerous arsenals, materials, and systems related to Weapons of Mass Destruction (WMD), as well as nuclear security, is a state's strict liability under international law.⁴⁶

Accidental or advertent launch

Thus, Thus, this incident warrants a deeper assessment of whether this was an accidental launch, as claimed by India, or an advertent act. Three possible scenarios help draw plausible findings on this incident and each one brings a set of troubling questions to the spotlight. One likely scenario is that the Indian missile landing during peacetime was an advertent move to test the readiness of Pakistan's defense systems, probing the latter's monitoring and tracking systems and its response level, precipitating a crisis. Naeem Salik contends that India has built a

⁴² Anadolu Agency, "OIC Supports Pakistan's Call for Joint Probe into India Missile fire," *Pakistan Today*, March 24, 2022.

⁴³ "OIC Endorses Pakistan," *Ministry of Foreign Affairs*, Available at: <https://mofa.gov.pk/oic-endorses-pakistans-call-for-a-joint-probe-into-the-9-march-2022-missile-incident/>, (Accessed on April 2, 2022)

⁴⁴ Author's Interview with Kamran Akhtar, Director General of Arms Control and Disarmament, *Ministry of Foreign Affairs, Pakistan*, March 16, 2022.

⁴⁵ "OIC Endorses Pakistan," *Ministry of Foreign Affairs*, Available at: <https://mofa.gov.pk/oic-endorses-pakistans-call-for-a-joint-probe-into-the-9-march-2022-missile-incident/>, (Accessed on April 2, 2022)

⁴⁶ Ibid.

'fabricated story.'⁴⁷ Salik asserts that 'the story India came out with doesn't make sense and is a cover-up because militaries do maintenance of weapons and equipment during daylight and not in the dark.'⁴⁸ He further stated,

If it were an accidental launch, it would have flown in a straight path, and the sharp turn into Pakistan is inexplicable unless there was a technical malfunction and the control of the weapon was lost. Doing such a thing deliberately to test Pakistani reactions is too dangerous because they couldn't have anticipated how Pakistan would react. What if Pakistan had launched one of its missiles in response?

Zamir Akram also holds a similar view,⁴⁹ that the chances of deliberate incursion seem high as India wanted to probe Pakistan's response. He gave three reasons to expose India's cover story: a) the missile systems are always programmed under specific protocols that are routinely observed. This happens during routine maintenance, and missiles are not kept in a ready-to-launch state for routine maintenance. Accidents do not happen like this if the procedure is in place; b) what barred Indians from notifying Pakistan by using DGMOs or any other hotlines if it was a malfunction, Akram asked? The Indian took forty-eight hours to make a lame apology that too after Pakistan revealed the incident publicly; c) India's fascist Modi government is also pursuing the strategic doctrine of a preemptive first-strike against Pakistan, with its adventurism being encouraged by the Indo-U.S.

⁴⁷ Author's Interview with Brig (Retd.) Dr. Naeem Salik, Senior Research Fellow (Non-Resident), *Center for International Strategic Studies*, March 23, 2022.

⁴⁸ Ibid.

⁴⁹ Author's Interview with Ambassador (Retd.) Zamir Akram, *Advisor to the Strategic Plans Division, Pakistan*, March 23, 2022.

strategic partnership which has significantly enhanced India's military capabilities. Akram reasserts that it seems deliberate intrusion as we witnessed such incursions by Indian submarines a few weeks ago and earlier during the 2019 Balakot crisis,⁵⁰ these submarines were testing Pakistan's detection and interdiction capabilities.⁵¹

Another expert, Naeem Khalid Lodhi, when approached for comments, opined that 'modern missile systems have 'fail-safe,' multilayered 'negative controls,' 'positive controls,' and 'self-destruct' arrangements. So, this drama of an 'accidental launch' and then 'turning' at a specific waypoint towards a hostile country, defying all controls, is a farce.'⁵² He further argued, 'the technical and strategic communities, the world over, understand what is being said very well. The intentions were to 'map the response parameters' and an attempted 'escalation dominance.'⁵³ Akram further stated that we are waiting for India to make it clear. Consequently, Pakistan will have to make its assessment of the incident, whether it was indeed 'accidental' or a deliberate incursion. Indeed, if this is the case, Pakistan will move to a more ready mode, creating further heightened risks in the nuclearized region.⁵⁴ When Naeem Salik was asked to comment on the consequences of such deliberate incursion, he also agreed, 'this

⁵⁰ Muhammad Saeed Uzzaman, Azhar Waqar and Muhammad Amin, "India's Quest to Establish Surgical Strikes as a New-Normal against Nuclear Pakistan: A Self-Deception or New-Reality?," *Global Strategic and Security Studies Review*, Vol. VI (June 2021), 107-116.

⁵¹ Author's Interview with Ambassador (Retd.) Zamir Akram, *Advisor to the Strategic Plans Division, Pakistan*, March 23, 2022.

⁵² Author's Interview with Naeem Lodhi, *Lt. Gen. (Retd.) and Former Deference Secretary of Pakistan*, March 23, 2022.

⁵³ *Ibid.*

⁵⁴ Author's Interview with Ambassador (Retd.) Zamir Akram, *Advisor to the Strategic Plans Division, Pakistan*, March 23, 2022.

[incident] will lead to hair-trigger readiness postures and immediate response in kind.⁵⁵

The second scenario is that it was indeed a malfunction involving human and technical errors. One, India revealed that the accidental launch of the missile took place during a military exercise supervised by a Directorate of Air Staff Inspection (DASI) at one of the Indian Air Force (IAF) bases located in the north of India. This could be possible since India's supersonic missile development is still incomplete, and its accuracy is indeed not as robust as expected. Lapses in the Indian missile systems and their lack of accuracy are largely apparent. The machines are always prone to error. Zamir Akram argues,⁵⁶

Even if the launch was accidental, it raises concern over the Indian fail-safe measures and procedures in place to prevent such accidents; while also indicating that Indian missiles are kept primed for launch even under routine maintenance. Such procedures were not observed, which, at the very least, underscores Indian irresponsibility, inefficiency, and incompetence.

Two, Pakistan immediately perceived it as an accidental fire as Pakistan claims to have tracked it from the point of launch to the location it landed. Thus, Pakistan preferably chose a restraint and rational response to minimize escalation risks.

Such accidental failure has also occurred in the past. For instance, many 'false alarms' and accidents have been reported on the U.S. side, ranging from minor to grave, in the Cold War era. To prevent

⁵⁵ Author's Interview with Brig (Retd.) Dr. Naeem Salik, Senior Research Fellow (Non-Resident), *Center for International Strategic Studies*, March 23, 2022.

⁵⁶ Author's Interview with Ambassador (Retd.) Zamir Akram, *Advisor to the Strategic Plans Division, Pakistan*, March 23, 2022.

reputational cost, numerous incidents remained unreported to the common masses and even to the relevant field experts. Further, the Soviet side is also not an exception to mishaps and accidents. Scott D. Sagan, in his volume, *The Limits of Safety*, illustrates all such cases.⁵⁷ On June 3, 1980 a false alarm created by a defective computer chip in a communication devised at North American Air Defence Command (NORAD) led to an erroneous warning in the U.S. The false alarm was perceived as that the Soviets had launched two hundred and twenty missiles, alerting Americans for a counterattack.⁵⁸ Eric Schlosser in his '*Command and Control*,'⁵⁹ Assesses how systems instituted to regulate nuclear weapons, like entire new technologies, are flawed as they are designed, manufactured, fitted, and maintained by humans. He shares how failure in C2 system can lead to eradicating humanity inadvertently. The dangerous risks were attached to the Cold War model, and the dangers still exist. The workforces operating these systems often suffer from low morale or inadequate training. While working with any new technological system, the probability of false alarms is high. Andrew Futter stated, 'I am not sure we can draw much about the missile from this incident. Tests do go wrong. But it does raise questions about command and control, security protocols, and operational practices, and certainly challenges the narrative that weapons systems with possible strategic applications are carefully controlled.'⁶⁰ He further stated, ' this is not an isolated incident -

⁵⁷See the work of Scott Douglas Sagan, *The Limits of Safety, Organizations, Accidents and Nuclear Weapons* (Princeton University Press, 1995), 38.

⁵⁸ Eric Schlosser, "World War Three, By Mistake," *The New Yorker*, December 23, 2016, <https://www.newyorker.com/news/news-desk/world-war-three-by-mistake> (Accessed on April 10, 2022).

⁵⁹See the work of Eric Schlosser, *Command and Control: Nuclear Weapons, the Damascus Accident, and the Illusion of Safety* (New York: Penguin Group, 2013), 74.

⁶⁰ Author's Interview with Andrew Futter, Professor of International Relations at the University of Leicester, U.K., March 16, 2022.

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history is full of accounts of accidents with hazardous weapons systems, including missile launches.⁶¹

Futter comments, 'this is potentially a dangerous incident that could easily have led to misperception and escalation. We have probably been lucky that this didn't happen during a crisis or that the missile didn't kill many people or destroy something.'⁶² Futter further commented, 'I have been surprised that this hasn't gained more attention in Western media (which is almost completely focused on the war in Ukraine) given the seriousness.'⁶³ Indeed, the communication gap, ineffectiveness of hotlines, and mistrust - of both the states have deepened after India striped Kashmir of its semi-autonomous status, which could have created a considerable probability of an unintended conflict.

The second scenario raises questions on the effectiveness, credibility, accuracy, and reliability of the Indian BrahMos class missile regiment. This also raises questions about robustness of the Indian C2 system. This proves the Indian neglect of aviation safety protocols and questions their program's technological prowess and credibility. Restrained response of Pakistan has averted the escalation of the missile incident into a crisis, but India's credentials as a responsible nuclear weapons state are under a big question mark. Indian such behaviour has undermined the notion of deterrence theory and its applicability in South Asia. Frank O'Donnell,⁶⁴ stated that 'India would need to take corrective measures, to reassure its own citizens and the world of the security of its missile forces such as a suspension of missile

⁶¹ Ibid.

⁶² Ibid.

⁶³ Ibid.

⁶⁴ Deputy Director of the South Asia program at the Washington-based Stimson Center.

tests and a review of the command-and-control procedures as first steps.’⁶⁵

Under these circumstances, the Pakistani leadership's approach to waiting and ascertaining that the missile was fired intentionally or unintentionally was highly mature and rational. Under such pressing circumstances, the temperaments of the leader are equally important as the information being offered by the system or surveillance made. Such an Indian mistake could have escalated into a major confrontation.

The third scenario is that it was an unauthorized missile launch. The reports suggest that the IAF personnel are involved in the missile incident.⁶⁶ Even one of the Congress leaders raised questions on the involvement of the IAF personnel in the missile launch and asked the relevant authorities of the IAF to share the requisite details of how and why its personnel fired the missile.⁶⁷ According to the Indian media reports, the IAF investigation of the technical standard operating procedures points towards the Group Captain for firing an unarmed BrahMos Supersonic Missile into Pakistan’s territory. The IAF personnel under scanner was in charge of the Mobile Command Post when a missile was fired.⁶⁸ Even the Indian government is constructing a

⁶⁵ Quoted in Nirupama Subramanian, “Pakistan Seeks Joint Probe after India Misfires Missile,” *The Indian Express*, March 13, 2022.

⁶⁶ Riaz Khokhar and Asma Khalid, “The Indian Missile Launch in Pakistan: A Skeptical View,” *Atlantic Council*, April 5, 2022, Available at: <https://www.atlanticcouncil.org/blogs/southasiasource/the-indian-missile-launch-in-pakistan-a-skeptical-view/> (Accessed on April 10, 2022).

⁶⁷ Manvendra Singh, “IAF has a lot to Answer on BrahMos Firing. It has Dented India’s Image of being Responsible,” *The Print*, March 16, 2022, Available at: <https://theprint.in/opinion/iaf-has-a-lot-to-answer-on-brahmos-firing-it-has-dented-indias-image-of-being-responsible/874765/> (Accessed on April 10, 2022).

⁶⁸ “IAF Group Captain under Investigation for Firing Missile into Pakistan,” *Pakistan Today*, March 24, 2022, Available at: <https://en.dailypakistan.com.pk/24-Mar-2022/iaf-group-captain-under-investigation-for-firing-missile-into-pakistan> (Accessed on April 10, 2022).

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narrative on human error or unauthorized missile launch instead of technical malfunctioning to legitimize BrahMos exports. On January 28, 2022, India concluded a deal worth \$374.96 million with the Philippines to export the BrahMos missile as the attribution of a missile incident with technical error could end-up in cancellation of India's most significant military export deal.⁶⁹ What makes an unauthorized missile launch probability more specific and not accidental? One group of nuclear scientists categorizes launches as unintentional or accidentally caused by a technical malfunction. It is important to note that if the missile were fired by other than officially authorized personnel who have access to the missile system codes, it would come in the domain of unauthorized launch.⁷⁰

Vipin Narang maintains that India in the past practiced keeping its warheads and their respective delivery systems separated from each other, including the *Super Permissive Action Links (PALs)* designed to avoid accidental and unauthorized launches. Nevertheless, there is a need for strict safety and security measures with the increasing state of readiness of Indian conventional and strategic forces.⁷¹ One of the technical experts maintained that an accidental missile launch does not generally travel an optimal distance and hit a foreign country.⁷² While reviewing past accidents, Christopher Clary indicated that in the event of accidental missile fire, the clamps remained attached to the missile,

⁶⁹ Matt Korda, "Flying Under the Radar: A Missile Accident in South Asia," *Federation of American Scientists*, April 4, 2022, Available at: <https://fas.org/blogs/security/2022/04/flying-under-the-radar-a-missile-accident-in-south-asia/> (Accessed on April 10, 2022).

⁷⁰ Bruce G. Blair, Harold A. Feiveson and Frank N. von Hippel, "Taking Nuclear Missiles Off Hair-Trigger Alert," *Scientific American*, Vol. 277, No. 5 (1997), 74-81.

⁷¹ Vipin Narang, "Five Myths about India's Nuclear Posture," *The Washington Quarterly*, Vol.36, No.3 (2013), 143-157.

⁷² One of the Authors' interviews with a Pakistan military Strategist.

leading to the falling of the missile at a shorter distance.⁷³ With increased safety and security measures compared to previously installed PALs, it is assumed that in charge of the post might have detached the locks and employed the requisite codes to launch the missile. Probably, there could be no other causes for the missile fire except lacking requisite safety and security measures of Indian sophisticated missile technology. The missile incident indicates that Indian military personnel of lower ranks know the codes required for missile launching. A propose, if the missile is mated with warheads (and other relevant permanently armed cannisterized missiles), it could lead to a hazardous situation. More so, this also shows the lack of professionalism and training of the Indian military personnel in handling such weapons and raises questions regarding their intentions as well. A Pakistani serving strategist, when asked for comments, stated,⁷⁴

Besides, it is believed that the launch occurred during an exercise rather than during maintenance. The fact is that the missile was armed with an 'inert' warhead lends credence to the 'exercise' context, rather than the maintenance one, as an utterly unarmed missile will not follow the trajectory and other flight data due to a mismatch of the weight-to-power ratio. This gives birth to the third possibility, that of an unauthorized launch.

Regardless of whether it was an advertent, accidental, or unauthorized launch, by all dimensions, the incident was exceedingly

⁷³ Christopher Clary, "The Curious Case of the Accidental Indian Missile Launch," *War on the Rocks*, March 17, 2022, Available at: <https://warontherocks.com/2022/03/the-curious-case-of-the-accidental-indian-missile-launch/> (Accessed on April 10, 2022).

⁷⁴ One of the Authors' interviews with a Pakistani serving senior military official wanted his name to be kept anonymous.

risky and carried the enormous potential to invite a more significant crisis, thus endangering humanity.

Why hotlines failed?

Does the question arise as to why India failed to use hotlines to inform Pakistan about this missile accident? The DGMO's hotlines of the two countries were not used. India used no other military, diplomatic or political channel to notify Pakistan of this fire until Pakistan's ISPR held a public press conference asking India for an explanation of the incident. The Foreign Secretaries Hotline which was established as a part of the nuclear CBMs between the two countries is reportedly dysfunctional following Indian refusal to maintain any engagement with Pakistan. This failure of diplomacy can be squarely blamed on Indian hubris and its belligerence marked by refusal to engage with Pakistan contrary to the practice of the nuclear powers like the U.S. and Russia which at the height of their tensions during Cold War and even in the present Ukrainian conflict still continue to maintain channels of communication. As proposed by the deterrence theory that stable deterrence leads to secure peace and open communication channels minimize mistrust and reduce risks. This scenario seems to be misplaced in South Asia.

Why joint probe?

A joint probe is required to establish the facts surrounding the incident accurately.⁷⁵ It has violated the air space of Pakistan, the spirits of the bilateral agreements (highlighted below), and international aviation protocols. A one-sided fact may not satisfy Pakistan or overcome the

⁷⁵ See "Pakistan Demands Joint Probe into 'Accidental' India Missile Fire," *Reuters*, March 12, 2022, <https://www.reuters.com/business/aerospace-defense/pakistan-demands-joint-probe-into-accidental-india-missile-fire-2022-03-12/> (Accessed on April 10, 2022).

latter's misperceptions. The joint probe may mitigate misperception, build bilateral confidence and trust, and mitigate future risks/accidents. The joint investigation may minimize space for arms readiness and deployment of arsenals in South Asia.

Eruption of renewed risks

Despite all the precautions on both sides, the prospects for an eruption of unintentional war because of a random sequence of incidents continues to be a lethal threat to South Asian rivals in particular and the world in general. Due to their geographical proximity, India and Pakistan do not have enough space and time for rational decision-making with airborne missiles launched from either side. Imagine that the whole flight time of the missile was less than seven minutes, and this narrow time slot is all that the leaders in either country have to verify and respond. Within six minutes, the two leaders in Islamabad and New Delhi have to determine whether it is an accidental launch or an actual attack and the need to retaliate amid such a crisis. This time, there was no collateral damage, which led to Pakistan's restraint response, thereby reducing the risks of any escalation had there been any cost of human lives, or destruction of economic or critical infrastructure, that would have introduced possibly different outcomes. Frank O' Donnell said, 'had the Pakistani side chosen to retaliate to the breach of its airspace, the outcome could have been 'very different.'⁷⁶ Akram also commented, 'If Pakistan's air defense had judged the unguided missile to be the start of an Indian missile attack, Pakistan would not only have shot down the missile but could have launched its missiles against Indian targets. Such deterrence breakdown between two nuclear powers could have escalated into a

⁷⁶ Quoted in Nirupama Subramanian, "Pakistan Seeks Joint Probe after India Misfires Missile," *The Indian Express*, March 13, 2022.

major confrontation.⁷⁷ Both nuclear states have devised confidence-building and nuclear risk-reduction measures in the past. These initiatives include an agreement signed in 1988 to avoid attacking nuclear installations, including the exchange of designated facilities details on an annual basis; an accord signed in 1991 to intimate each other about the major military exercises and also to limit its geographical space; an arrangement to pre-notify the conduct of ballistic missile flight-tests;⁷⁸ An agreement was signed in 2007 to intimate about the nuclear accidents immediately. The cruise missiles are not included in the existing nuclear CBMs regime. The exclusion of intimation regarding the flight tests of a cruise missile creates space for the risk of misapprehension regarding the launch of a cruise missile.

Broken communication channels, inactive hotlines, and no high-level officials' communication to conduct deliberation on conventional or nuclear confidence-building measures made this accident very difficult. This incident may drive both the states towards other arms racing, arms readiness, and deployment of arsenals. As for the future, Salik, while refereeing to hair trigger readiness postures argued that this development has led to creating renewed consequences, especially during crises and periods of high tension.⁷⁹ Indeed readiness of arsenals will lead to multiply risks and endanger deterrence stability and efficacy of deterrence theory.

⁷⁷ Author's Interview with Ambassador (Retd.) Zamir Akram, *Advisor to the Strategic Plans Division, Pakistan*, March 23, 2022.

⁷⁸ Under this Accord, India and Pakistan agreed to inform each other of a planned five-day period within which a ballistic missile test will take place, with three days' notice of the initiation of this window. The notification includes warning the air and naval areas to be affected by the test. India and Pakistan have also pledged that missiles will not overfly the international border or Line of Control and that their trajectories will remain at least 40 km away and land at least 75 km from these boundaries.

⁷⁹ Author's Interview with Brig (Retd.) Dr. Naeem Salik, Senior Research Fellow (Non-Resident), *Center for International Strategic Studies*, March 23, 2022.

Risks reduction measures

The two states have achieved nuclear learning and enough nuclear efficiency and sufficiency to harm each other. Both should work on minimizing the risk of unauthorized or accidental launch or detonation, misperceptions, and miscalculations. A most urgent need is to reactivate strategic communication channels and establish additional ones for crisis management. Some risk reduction measures may include: one and both countries should urgently and formally expand the scope of the ballistic missile test pre-notification agreement that was signed in 2005 to include cruise missiles. Futter also suggests, 'If there isn't already, then missile test and launch notifications for each side would be a good idea, and immediate notification via a secure high-level hotline if accidents like this ever happen again. It would also be a good idea not to test missiles near the India-Pakistan (or India-China border).⁸⁰ Salik also argued, 'There is also a need to bring into missile test notification agreement the notification of cruise missiles, including air-launched and sea/sub-sea launched cruise missiles.'⁸¹ Two, restraint measures should be taken against the deployment of destabilizing systems, which could seriously impact crises and arms control stability and initiate talks between both sides to clarify the nature of different missiles as which ones are conventional and which are assigned with the strategic role. Three, keep the DGMOs hotlines under all the circumstances open despite their ongoing mistrust and differences developed in the backdrop of the Balakot crisis and the Indian striping of semi-autonomous status of Kashmir. Naeem Khalid Lodhi stated, 'this incident also indicates a great vulnerability in the Indo-Pak situation, and that is the missing hotlines and prompt communication channels between two nuclear neighbors. This should

⁸⁰ Author's Interview with Andrew Futter, Professor of International Relations at the University of Leicester, U.K., March 16, 2022.

⁸¹ Author's Interview with Brig (Retd.) Dr. Naeem Salik, Senior Research Fellow (Non-Resident), *Center for International Strategic Studies*, March 23, 2022.

be corrected on priority; otherwise, one and a half billion human lives will remain in jeopardy.¹⁸² Indeed, reactivation of the hotlines will help minimize the potential risks during crises. Four, the India-Pakistan 2007 agreement on prevention of accidental and unauthorized launch of nuclear weapons needs to be amended to mention delivery systems explicitly, or there could be a new agreement to cover inadvertent/accidental firing of missiles.¹⁸³ Reactivating dialogue on all the issues, including Kashmir, will minimize growing uncertainty and mistrust. Six, introducing a code of conduct on media use during crises as media plays a sensational role in escalating the problem, not de-escalating.

Finally, nuclear states should lead to further-reaching arms control or stabilization initiatives, including nuclear force and infrastructural reductions. The missile launch also points to the severe need to clarify the alert status of missiles and targeting practices between the two countries. However, in the absence of any diplomatic process providing for such discussions, the threat of misperceptions and inadvertent escalation will continue to loom large. The two nuclear-armed states cannot continue to allow failure of diplomacy put the whole region and beyond at risk. Thus, total applicability of deterrence theory is needed by stabilizing deterrence, inducing rational behavior, and resuming communication channels.

Conclusion

Whether the incident was an accidental, unauthorized, or deliberate incursion, in all dimensions, it questions India's irresponsible behavior. If India has taken such a move based on malign intentions, it has undertaken a substantial risky misadventure to test Pakistan's national resolve while violating United Nations Charter, international aviation

⁸²Author's Interview with Naeem Lodhi, *Lt. Gen. (Retd.) and Former Deference Secretary of Pakistan*, March 23, 2022.

⁸³ Author's Interview with Brig (Retd.) Dr. Naeem Salik, Senior Research Fellow (Non-Resident), *Center for International Strategic Studies*, March 23, 2022.

rules, and safety protocols. India would be gravely mistaken if it drew some wrong conclusions from this misadventure. Given the absence of hostilities and other instances, Pakistan acted with prudence. However, it would be dangerous and unfair to assume that an actual crisis might evidence similar restraint from Pakistan. If the incident was a malfunction, it questions the credibility of the Indian Cruise missiles regiment, its C2 system and safety procedures, and the workforce's efficiency. Luck has been on the side of the states that lack collateral damage and restrained Pakistan's retaliation. Testing a nuclear weapon state's tolerance and patience level is always risky/ catastrophic and against the spirit of deterrence theory. Both states should have no illusion that uncontrollable escalation risks are attached, given the geographical proximity and time involved in nuclear use decisions. More so, role of any outsider player as a facilitator in crisis management is exceedingly limited. Both should act rationally as emotional and intolerant behavior is not commensurate with the responsibility of a nuclear weapon state as is guided by deterrence theory.

The two states should urgently extend the 2005 ballistic missile test pre-notification agreement, initiate a deal on the deployment of de-stabilizing systems, and start talks between both sides to clarify the nature of other missiles. Which ones are conventional and assigned with strategic role; amend the 2007 agreement to include delivery systems; initiate a new deal to cover inadvertent/ accidental firing of missiles and fully activate all the hotlines and strategic communication channels even during peacetime or crises. Both should make certain compromises to implement risk reduction measures to avoid such misadventures, thus evading misperceptions, accidents, and inadvertent escalation as is guided by deterrence theory. Finally, the international community has a role in preventing a crisis, upholding

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strategic stability in South Asia, and shunning policies that accentuate asymmetries and threaten regional balance.

BOOK REVIEWS

Nuclear Weapons and American Grand Strategy

Francis J. Gavin, ISBN: 978-0-8157-3791-9: (Brookings Institution Press, 2020)

Reviewed by Dr. Rabia Akhtar¹

In his 1957 classic *Nuclear Weapons and Foreign Policy*, Henry Kissinger wrote about the ramifications of nuclear weapons on Washington's policy and strategy. Identifying how the United States should have navigated the dilemmas of the nuclear age, Kissinger argued that the urgent task for the U.S. Policymakers were to balance their country's power with the enormous sets of challenges it faces. Kissinger made two important points. One, Washington's accurate understanding of the nature and effects of nuclear weapons were critical to maintaining that balance. Two, apropos of Moscow's acquisition of nuclear weapons, the balance of power was greatly affected. He contended that, "not even the occupation of Western Europe could have affected the strategic balance as profoundly as did the Soviet success in ending our atomic monopoly."(pg.10) Kissinger advocated for the adoption of a strategic doctrine that not only gave Washington the greatest freedom of action but also opened up opportunities for it in a risk-prone first nuclear age.

These ruminations were published at a time when the United States' nuclear academy and policymaking community not only refined the theoretical foundations of what Bernard Brodie called the *Absolute Weapon* but also explored viable arms control pathways. Though the debate on the influence of nuclear weapons on policy, and warfare continues to dominate the nuclear academy, the nuclear factor has always been a vital cog in Washington's grand strategy since 1945.

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Washington's nuclear arsenal not only acts as a direct deterrent against its principal adversaries but also extends deterrence to its major allies. Nuclear weapons, therefore, have also been used to project U.S. power throughout the world.

One needs to understand the enhanced utility and relevance of nuclear weapons in Washington's grand strategy today more than ever. At present, the strategic competitions emanating from China and Russia have been termed as the biggest threats to U.S. national security. With a view to encountering these competitors and strengthening Washington's alliances, the U.S. has added to the list of goals it wants to achieve through modernizing its nuclear deterrent. The 2018 Nuclear Posture Review was the clearest policy expression of Washington's discomfiture with its position within its nuclear-tinged rivalries. The release of the Nuclear Posture Review coincided with two contradictory developments: the unilateral evisceration of arms control agreements by Washington and nuclear parleys between Pyongyang and Washington. The U.S. withdrawal from the Joint Comprehensive Plan of Action (JCPOA) and the 1987 Intermediate-Range Nuclear Forces (INF) Treaty, coupled with efforts to first coerce and then convince North Korea to denuclearize, informs us of the concerns U.S. has about proliferation of nuclear weapons which are shaping its strategic choices. All this alludes to the significance of ensconcing nuclear weapons-related decisions taken by the United States in its broader, grander strategic mosaic. In his new book *Nuclear Weapons and American Grand Strategy*, one of the most eminent U.S. nuclear historians, Francis Gavin, juxtaposes U.S. nuclear weapons and its grand strategy, with a view to assessing the role nuclear weapons play in the latter. After challenging axioms about nuclear weapons in his magnum opus *Nuclear Statecraft*, Gavin brilliantly parses the drivers of U.S. grand strategy, to fully analyze the political effects of nuclear weapons while establishing a basis of interaction between the two

connected phenomena. However, before making nuclear weapons converse with Washington's grand strategy, Gavin revisits U.S. nuclear history, with a view to addressing some of the questions whose answers are not as straightforward as we believe. Gavin contends that there are two reasons why "less has been learned than might have been hoped for..." (pg, 3) First is the wrong assumption that the core questions relating to nuclear weapons have already been answered. And second is the set of methodological challenges that keep scholars from getting right and good answers.

Gavin's efforts to make us rethink about many of the fundamental underpinnings of our nuclear knowledge are important. He is right in urging us to bring modesty in how we think and talk about nuclear weapons, simply because there are no definitive answers to some of the most important questions surrounding them. Gavin concedes that the task of writing about something that has not happened "is a methodological nightmare, a situation that eludes a definitive answer from even our most powerful and sophisticated social sciences methods." (pg.6) Indeed, the utility of nuclear weapons in ensuring what John Lewis Gaddis dubbed "the Long Peace" is open to question. After carrying out an extensive archival research, Gavin asserts that absent nuclear weapons, some of the most dangerous crises of the Cold War era would not have occurred. Engaging with how Gavin looks at Cold War crises not only helps us reevaluate our understanding of what nuclear crises are but also enables us to add nuances in the overall discourse on inadvertent and accidental escalation. This, coupled with Gavin's cautionary approach in ascribing textbook definitions to the concepts of deterrence and compellence, could enable the strategic practitioners of today to reassess the efficacy of nuclear modernization programs. If Gavin's advocacy for intellectual humility is accepted, policymakers will likely deride the ideas of tailoring deterrence and developing low-yield nuclear

weapons. If anything, a careful analysis of Gavin's book should push policymakers to redirect and broaden intra-governmental nuclear debates. If one were to step back and agree to look at deterrent and compellent threats as Gavin does, it could help reduce a visible doctrinal rigidity. Also, it could open up more policy options for strategists who wish to bolster deterrence stability in Washington's dyadic relations with other nuclear states. At a time when the arms control architecture is in need of resuscitation, intellectual contributions like Gavin's will greatly help policymakers cogitate about matters they had been long eschewing.

Gavin's insistence on bringing politics and strategy back in the overarching nuclear disquisitions scaffold makes sense, especially when he sheds light on how and why Washington stops allies and adversaries alike from acquiring nuclear weapons. In a full chapter, Gavin makes a compelling argument about how the policies of containment and openness do not fully explain why the U.S. has prioritized "slowing, reversing, and mitigating the spread of nuclear weapons." (pg.80) Gavin's identification of a set of five puzzles in U.S. nuclear policy and diplomacy is apt, primarily because they relate to some of the most intricate nuclear conundrums the world faces today. The anomalies that pester Gavin are akin to those that trouble other actors. Gavin rightly questions Washington's constant focus on achieving strategic nuclear primacy since 1945. This is a significant point, especially when the desire to seek nuclear superiority undercuts its positions on various issues, including arms control and non-proliferation. Further, it is fair to look askance at Washington exploring a series of punitive actions against nascent, non-threatening nuclear states, with a view to rolling back their nuclear programs. Answering this question is critical to understanding how members of the nuclear club cling to their deterrents while trying to shape the contours of the global nuclear non-proliferation regime.

Gavin does a great job in enunciating seven reasons that have pushed Washington to disallow the spread of nuclear weapons. By analyzing them, Gavin reinforces his principal critique of the nuclear revolution theory. He writes that, "U.S. policymakers have demonstrated less enthusiasm for the supposedly stabilizing aspects of nuclear weapons for international relations."(pg, 84) As outlined by the author, the U.S. fears that a nuclear-possessor could launch a nuclear strike on its homeland. This worry is a repudiation of the main tenet of the said theory which suggests that nuclear weapons and mutual second-strike capabilities make states more secure, as they significantly eliminate the security dilemma. The fact that the U.S. does not think of nuclear weapons as revolutionary is enough to make pundits wary of the course that the country's nuclear policy could take. This factor would strengthen Washington's resolve to maintain the status quo and continue seeing nuclear weapons as instruments of influence and agency. Indeed, Gavin is cognizant of the fact that the U.S. sees its weapons as influential. The bomb has complemented Washington's diplomatic heft. Also, what has allowed it to retain its position within the nonproliferation regime is the support it gets from allies that are under its extended deterrence umbrella. All this has many repercussions, with at least two being interconnected. One, the U.S. values the bomb as a plank of its grand strategy. Two, the U.S. wants to continue eking out the advantages that the bomb brings to the table by ensuring that both allies and enemies are denied the same. Gavin is right in arguing that, "the United States recognized the potential for nuclear weapons to become the great equalizer, "weapons of the weak," allowing states with far inferior conventional, economic, and other forms of power to prevent the United States from doing what it wanted to do."(pg.86)

What does Gavin's scholarly appraisal of the logics that drive Washington's strategies of inhibition portend? Can it help us predict

how the U.S. will navigate its nuclear equations with nemeses like North Korea and Iran, and allies? If Gavin's findings are taken as any indication, at least three predictions can be made about how the U.S. will conduct its nuclear diplomacy and alter its nuclear posture. One, it is reasonable to state that, come the next Review Conference (RevCon) of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), the U.S. will pass the buck on the non-nuclear weapon states (NNWS), again, blaming them for not being able to "Create an Environment for Nuclear Disarmament (CEND)." Washington's privileged place within the NPT not only allows it to garner much-needed backing from 'protected allies' but also helps it ameliorate its own arsenal.

Two, the U.S. will try to squeeze, reassure, and punish Iran, with a view to ensuring that it does not go nuclear. An inveterate enemy of the U.S. possessing nuclear weapons is the last thing Washington wants. A nuclear-armed Tehran would open the floodgates of proliferation in the Middle East, an eventuality that would hurt the U.S. Similarly, despite the difficulty of denuclearizing North Korea, the U.S. will explore options to rid the Korean Peninsula of nuclear weapons that are in possession of a reclusive, anti-U.S. regime. Allowing Pyongyang to keep the bomb would be risky. Kim's bomb curtails Washington's freedom of action, subverts its regional alliances, and creates proliferation pressures. While scholars have advised U.S. policymakers to enter into arms control arrangements with North Korea, showing deference to that would not align with U.S. grand strategy. Here, it is noteworthy that Gavin has deftly analyzed how the U.S. wants its nuclear weapons to also perform tasks other than deterring adversaries.

Three, Washington's nuclear postures will correspond to the ever-expanding role of nuclear weapons in its grand strategy. The U.S. will want to continue thinking about nuclear weapons as if they are conventional weapons. This would mean that the U.S. will poise itself

to seek continued nuclear superiority at all levels. This quest for increasing the gap will only increase with the introduction of disruptive technologies that could upset the hierarchy of escalation by providing possessors with new conduits to coerce their adversaries.

All this does not augur well for great-power strategic stability. Gavin's treatise challenges the explanatory power of the nuclear revolution theory, and asks scholars to continue to challenge the complacency of nuclear deterrence. Gavin's book is an important contribution, especially at a time when the U.S. is looking to reintroduce full-spectrum stratagems to counter a plethora of threats and challenges.

Pakistan-Afghanistan Relations: Pitfalls and the Way Forward

Dr Huma Baqai and Dr Nausheen Wasi (Eds) (Islamabad: Friedrich Ebert Stiftung, 2021, 242 pages)

Reviewed By: Safia Malik¹

The geopolitical landscape of South Asia has gained more prominence after the withdrawal of the US military from Afghanistan. The country, once again, has gained importance, where regional and extra-regional powers are eager to play their role. On 30 August 2021, US-led NATO military forces withdrew from Afghanistan, and the Taliban became the official political face of the country. The US war in Afghanistan cost the lives of 240,000 Afghan people and 2,500 American soldiers and USD 2.3 trillion in military expenses. But, everything is not hunky-dory for the Taliban either. They are facing many challenges regarding their legitimacy, recognition, and humanitarian crisis in the country. Such is the authors' analysis in the book *"Pakistan-Afghanistan Relations: Pitfalls and the Way Forward."* It comprises twelve chapters, including an introduction, *Chronology of Afghanistan Conflict and Pakistan-Afghanistan Relations 2001 to 2021*, and a preface by Dr. Jochen Hippler, Country Director Friedrich Ebert Stiftung (FES), and Pakistan. The book, in a broader context, addresses four themes: Pakistan-Afghanistan relations, the peace process in Afghanistan, politics of proxies, and conflict management.

The contributions are well-researched and provide essential inputs to academics. Different chapters provide invaluable analysis of Afghan politics, governance, and Pakistan-Afghanistan relations on a

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micro and macro level. The introduction of book gives an overview of the US military withdrawal from Afghanistan and the Taliban's return to power. The intellectual discourse observes Pakistan-Afghanistan relations through a historical perspective, economic potential, and integration. It also discusses proxy wars, border terrorism, the role of regional and extra-regional powers in the Afghan peace process, and sheds light on options for Pakistan based on crisis management and conflict resolution mechanism

The first part of the book addresses the broader theme of Pakistan-Afghanistan relations, which includes five chapters: (i) *Pakistan-Afghanistan Relations: Emergence of the New Nation States and the Search of Identity* by Hameed Hakimi and Zalmay Nishat; (ii) *Pakistan-Afghanistan Relations: Towards a New Horizon* by Aizaz Ahmed Chaudhry; (iii) *Pakistan-Afghanistan Relations* by Bettina Robotka; (iv) *Cultural, Religious and Economic Integration: Future of Afghanistan-Pakistan Relations* by Ali Maisam Nazary; and (V) *Pakistan-Afghanistan Economic Relations: Basis for Cooperation* by Vaqar Ahmed. It comprises contributions of scholars from Pakistan and Afghanistan, where authors from both sides have provided their perspectives on bilateral ties. Authors have analyzed the bilateral ties through historical, economic, cultural, and religious perspectives. The historical conflict between both states has eroded their potential for growth and stability. Still, now available options are to intensify the cultural integration - pave the way for regional integration - and jointly hold the hands against radicalization. Ali Maisam Nazary argues, "A Strategic cooperative partnership between Afghanistan and Pakistan is the only win-win situation that can be achieved through cultural, religious, and economic integration and end the 74-year rift between the two states" [page 88].

Hameed Hakimi and Zalmai Nishat added Pakistan's security approach towards Afghanistan in the context of its experience of Indian aggression that often shapes Pak-Afghan relations. Authors have agreed that Kabul and Islamabad need a new approach towards their ties to benefit from changing global geopolitical and geo-economic order. Scholars from both states, especially Vaqar Ahmed, stressed engaging in TAPI, CASA-1000, and China's BRI project rather than in conflicts. Bettina Robotka argued that both states should throw away historical baggage and territorial nationalism. Robotka and Aizaz Ahmed Chaudhry have proposed a win-win approach for both states in a globalized and interconnected world where Pakistan and Afghanistan should engage with China, Iran, and Russia for their economic development. On the theme of Pak-Afghan peaceful ties under the crisis management and conflict resolution mechanisms, Moonis Ahmar proposed some valuable options in his chapter *Conflict Management Mechanisms in Pakistan-Afghanistan Relations*. He highlighted Pakistan's efforts for peace in Afghanistan and has outlined its positive role in conflict transformation.

The book deals with the peace process in Afghanistan in a very comprehensive manner that contains three chapters which include: (i) *Afghanistan Peace Process: Missed Opportunities* by Maleeha Lodhi; (ii) *Afghanistan peace Talks: Envisioning a Political Settlement* by Shabnum Nasimi; and (iii) *Afghanistan peace process and Involvement of Outside Powers* by Zahid Hussain. The authors stressed that both neighbors could take advantage of the presently unfolding discourse as a missed opportunity. Zahid Hussain factored in the stakes of China, Russia, Iran, and Central Asian Republics (CARs) in the Afghan peace process based on their security and economic perspectives. Maleeha Lodhi has highlighted Pakistan's stance on the peaceful settlement of the Afghan crisis. She has adopted a scenario-based approach that emphasizes the possibilities of peace in Afghanistan after US withdrawal. The best

scenario approach, according to Lodhi, is that the exit of foreign troops compels the war-weary Afghan parties to negotiate and ask for humanitarian assistance from the international community to save Afghanistan from economic collapse [page 160]. Furthermore, if war is prolonged in Afghanistan, that would have negative impacts on Pakistan.

Shabnam Nasimi has compared the Afghan peace process with the Bonn agreement of 2001. She argues that the Afghan peace process serves the interests of the Taliban while the Bonn agreement of 2001 served the interest of the US. She added that the international community has been raising an Afghan-led, Afghan-owned plan, but the Doha peace talk was not inclusive, were some elite decided the country's fate. She believed that the Doha agreement would have no impact if it lacked implementation from both parties. All three chapters have a debate on the peace process in Afghanistan, but none of them talks about efforts comprehensively made by Pakistan. Pakistan not only took measures for peace and stability in Afghanistan but also suffered due to the spillover effect of conflict in the neighborhood.

Two chapters are dedicated to proxy politics between Pakistan and Afghanistan: (i) *Proxy Politics – Working towards Dead End* by Mushtaq Muhammad Rahim and (ii) *Politics of Proxy Wars and Terrorism* by Rahimullah Yusufzai. Muhammad Rahim has viewed Pakistan-Afghanistan relations in proxy politics as having mutually hurting agendas. He has drawn a biased view of Pak-Afghan relations by questioning the Durand Line. Afghan writer also alleged Pakistan for playing the double game by supporting the US in 2001 and backing Afghan jihad. He writes, “US used the country [Pakistan] routes for the US logistic and military supplies. However, covertly, Islamabad continued to pursue its proxy politics against the newly established government of Afghanistan. Pakistan offered sanctuaries to the

Taliban, similar to the 1970s-80s along the Durand Line. It allowed them to re-launch militancy across Afghanistan” [page 127]. Author, by neglecting Pakistan’s peace efforts in Afghanistan, conversely wrote, “The menace of extremism and radicalism used against Afghanistan has turned its face towards Pakistan” [page 129].

Whereas Pakistani writer Rahimullah Yusuf Zai in his chapter *Politics of Proxy Wars and Terrorism*, gave a brief analysis of proxy wars and outrightly rejected the Afghan perspective on them. He highlights that bilateral relations are dominated by Afghan grievances and Pakistan’s sensitivities and securitization. He has cited several statements of Afghanistan’s previous government’s leaders bashing Pakistan, showing the depth of emotional animosity against Pakistan. Despite calling the Durand line border a line of hatred between two brothers by Afghan officials, Pakistan refrained from passing any reciprocal comments. Yusuf Zai was of the view that Pakistan funded the establishment of schools, hospitals, healthcare, roads, and various faculties in universities in Afghanistan. Afghan officials ignored most of the developmental projects in Pakistan, and were not even officially inaugurated. Concerning security concerns, the Pakistani writer added, “Pakistani Taliban and their allies and Baloch separatists have been enabled to have sanctuaries in Afghanistan and plan attacks against Pakistan” [page 144]. Furthermore, the Indian RAW, in cooperation with the National Directorate of Security (NDS), supplied weapons to anti-Pakistan militant groups to destabilize Pakistan. Although the two authors hold contradictory views, both agree to take advantage of opportunities unfolding now and develop stable ties through regional integration and trade promotion.

A chapter on *Governance, Nation-ness, and Nationality in Afghanistan* by Omar Sharifi discusses the ethnic factor of Afghanistan “Ethnic Groups in Afghanistan were always open to cross-ethnic

alliances and felt no obligatory solidarity with their co-ethnics at the national level. For them, politics was approached like an arranged marriage, not a love match, so practicalities were more important than primordial affiliations which are key to ethnic nationalism” [page 74]. The author pitches that, even before the invasion and interference of extra-regional powers, Afghanistan had failed to include all ethnic groups in the government. This geo-ethnic factor and less inclusive leadership of Afghanistan impacted its relationship with Islamabad.

The compilation is interesting to read and contains well-researched chapters. The last chapter, *Chronology of Afghanistan Conflict and Pakistan-Afghanistan Relations 2001 to 2021* by Wajahat Rehan, provides information in detail about developments in Afghanistan and Pakistan-Afghanistan relations in the past twenty years. The reader may find some information outdated and irrelevant, as it lacks updates about the post-US withdrawal scenario. Several chapters of the book were finalized before the Taliban took control of Kabul. However, the book provides a historical picture of Pak-Afghan relations from a broader perspective that is informative for historians, decision-makers, foreign policy experts, and peace and conflict studies students. While compiling the book, the editors have adopted a balanced approach by incorporating views from Pakistan and Afghanistan.

Understanding Contemporary Asia Pacific

Edited by Katherine Palmer Kaup, (Publishers: Lynne Rienner, USA, 2021, 521 pages)

Reviewed by Dr. Muhammadi¹

“Understanding contemporary Asia Pacific,” edited by Katherine Palmer Kaup, is inclusive and includes vital information about the Asia Pacific region. It is a significant overview of a vibrant and increasingly important region. The multi-authored book discusses all aspects, including geography, history, politics, economy, security, environment, and socio-economic and cultural issues. Furthermore, the book draws attention to Asia Pacific’s significance with respect to the wider geopolitical and global landscape. In the introductory Chapter, Katherine Palmer examined the ‘degree of interdependence of the states in the region, including the Association of Southeast Asian Nations (ASEAN) states, China, Japan, the South, North Korea, and East Timor. These states discovered interdependence based on mutual interest, making their bonds strong, and also strengthening regional alliances. Their close cooperation continued even during the financial crisis in 1997. The regional countries also established ASEAN Plus to further strengthen multilateral relations in the region further. The author underscores economic and political development in the region while discussing rapid economic development. The author specifically discusses the rise of China, which she considers a threat to the international community, especially to the US. However, these claims are not supported by credible evidence. China has demonstrated that it believes in win-win cooperation with other countries. It strictly adheres to the policy of non-interference, especially its mission of a “Shared future for mankind”

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Regarding the region's geography, Ron D. Hill argues that the region has a vast variety of land from deserts to forests, rivers, valleys, and high mountains. As geography is an essential factor in shaping the states' defense and foreign policy as well as the socio-economic development of any nation. Therefore, the author has included an overview of the major geographical features of the region which helps the readers to understand the policy orientation of these countries in the Asia Pacific region. The Asia Pacific region faces some emerging issues such as climate change, deforestation, and shortage and water in the region. China and Japan, two major countries in the region, play an influential role in environmental protection. For instance, China has completed more than ten forest ecological projects on 120 million hectares since 1978. Japan is also playing its part in global environmental protection, such as the US-Japan agreement on environmental protection in the 1975 Hatoyama Initiative for reducing greenhouse gases in Japan.

Collin Mackerras examined the historical context of the Asia Pacific the periods of imperialism and colonization, and the rise of nationalism in the region. As "nationalism demands the supreme loyalty of the people with the state. The nationalism factor is prominent throughout history in different movements, such as the anti-colonial movements of the nineteenth century and the twentieth century in the region. The other examples of nationalism are Korea's uprisings of 1919 against Japan for independence, Sun Yet Sen's revolution of 1911 against the Manchu dynasty, Chairman Mao's revolution, and the establishment of PR China in 1949, etc. Commerce and exploration are also an important topic of the discourse of chapter as the author especially focused on the significance of the "Silk Route." The Silk Route under the Han Dynasty linked China to the Roman Empire through Central Asia and was the main route through which the Silk trade was carried out. In contemporary times China's Belt and Road

(BRI) is a revival of the old Silk Route, which will connect China to the rest of the world through land and sea.

Katherine Palmer assessed the political systems of countries of Asia Pacific in the post-WW-II era, mainly focusing on the communists' regimes, state-building, nation-building, economic development, and the democratic and military regimes in the region. The author presented data from the 1980s showing that China's 650 million citizens lived below the poverty line. However, since 1979 the economic reforms in PR China and various policies for poverty alleviation have raised their standards of living. In this regard president, Xi Jinping in this country adopted the policy of eliminating this massive poverty that had been eradicated in China. In 2021 President Xi announced that extreme poverty and that 98.99 million rural residents had been taken out of poverty in the last eight years. The liberalization and decentralization of economy, politics, and societies were also observed in most of the region's countries since the 1980s.

Khandke highlighted the role of different regional organizations in the region's economy, i.e., ASEAN, Asia-Pacific Cooperation (APEC). He argued that ASEAN had played its part in filling the gap between domestic and foreign savings. Due to the regions' rapid economic development, World Bank also granted the status of High Performing Asian Economies (HPAEs) to Japan, South Korea, China, Singapore, Malaysia, Thailand, and Indonesia. However, the author neglected to mention China's economic opening up and modernization and its membership of international organizations, including the World Bank and IMF, which played a crucial role in China's rapid economic development and its output for the global economy in trade liberalization policies.

On international relations of the Asia Pacific region, McDougall analyzed the ASEAN's role in regional identity. He argued that ASEAN

somehow failed to maintain this. It illustrates this assertion by giving examples of, the financial crisis of 1997 and the East Timor Issue. The author also assessed the evolving nature of international relations in the region, mainly focusing on the cold war era and post-cold war era. During the Cold War era, the significant events included the global role of China, Japan, and the US, the decolonization of Southeast Asia, and China-US rapprochement in the 1970s. Pakistan played a vital role by arranging the secret visit of Henry Kissinger to China, which paved the way for the establishment of China-US relations. Jongseok Woo examines the domestic relations of the region especially focusing on civil-military relations in the Asia-Pacific region. The author then explored the impacts of international relations on civil-military relations throughout the region. Civil-military relations in the region have been a contested issue for many years. However, most countries have adopted a democratic form of government, and the position of the military in politics remains vague. For instance, during a military coup in Myanmar in 2021, the Aung San Suu Kyi government was toppled on several law breach charges by the military.

The Asia Pacific faces some significant issues such as global warming, industry technology, and the environment. However, the author has neglected the problems associated with climate change and governance. The evolving environmental situation in the Asia Pacific has attracted increasing attention since the 1980s when rapid industrial development began in the region. Other issues which affect climate change include deforestation and desertification. The chapter missed some significant initiatives taken by different stakeholders in the region, such as the signing of the Kyoto Protocol, China's efforts to reduce desertification and ecological forestation, etc. As Asia Pacific is one of the most populous regions of the world. Policymakers and regional and international organizations need to take concrete steps for improving the quality and sustainability of the environment.

Dean Forbes discussed the issues related to the population, such as fertility and family planning, population morbidity and mortality, aging and population, poverty, migration, etc. The Asia Pacific is the most populous region in the world. The author also discusses rapid urbanization in the region as many people migrate from rural to urban areas. Fundamental economic structures also come under stress. Population aging issues concern the region, especially in China and Japan. For example, China adopted the 'one-child policy' to control population growth. However, due to the increasing population of older people, it had to ban the one-child policy. The repercussions of the pandemic, such as those produced by AIDS, SARS, and the COVID-19, etc. will make the policymakers a high priority in the countries of the Asia Pacific region. Especially after the COVID-19 pandemic, all the countries took strict measures to overcome the issue, which had badly affected the economy, trade, and health, in these countries like in the rest of the world.

On ethnicity in the Asia Pacific, Katherine Palmer argued that after the Cold War, an ideological conflict between the US and the USSR hopes had risen that the peace and stability in the post-1991 era would prevail but inter-state tensions somehow ethnic conflicts emerged. Ethnic conflict, the Asian financial crisis, and the post-9/11 era are quoted as examples of this phenomenon. In combating global terrorism, China effectively played its role in diminishing the three evils, namely extremism, terrorism, and separatism in its Western regions. According to the Chinese authorities, the anti-terrorism operations in the Western part of China were not against any specific ethnic community but against terrorist groups and to eradicate terrorism from within the region. The ethnic repression of Muslims has also been highlighted in this chapter. Millions of Rohingya Muslims had to flee from Myanmar to neighboring countries due to extrajudicial killings, gang rape, and arson, especially during Aung San Suu Kyi's

tenure. The author identified some primary ethnic groups within the region, including the Han, Japanese, Koreans, Malay, Kenh, and Tai. Han is the dominant ethnic group in PR China among the various ethnicities. The other groups are located in other countries such as Japan, Malaysia, Thailand, etc. The ethnic montage in the Asia Pacific portrays a multifaceted network of groups and individuals meeting one another in diverse settings.

Rodgers and Tanjeem added a very important chapter on the role of women in the Asia Pacific region. The author brought the readers the fact that women in the Asia Pacific made immense strides in filling the gender gap in health, education, labor market, political and social sectors, etc. Globalization has impacted the Asia Pacific economies since the 1960s and brought significant transformations in the economic milieu that women face in routine life. With rapid economic development and enhancing integration, women in the Asia Pacific have also achieved better social status, gender equality through legal reforms, and political representation. According to a World Bank report, in 2001, 20 percent of parliamentary seats were held by women in the Asia Pacific from 1985 to 1995. Sam Britt examined various religions in the region, mainly focusing on Buddhism, Confucianism, Christianity, and Islam. Islam is also a prominent religion in the region, such as in Indonesia and Malaysia. Muslims are in the minority in China, Thailand, and the Philippines. Similar to Buddhism and Christianity, Islam was also spread to the region's countries through missionaries/preachers, mainly by the Middle Eastern Merchants through the Silk Route in the seventh century. In this context, Silk Route played a significant role in the spread of Islam in the Asia Pacific region.

In the concluding chapter Katherine Palmer presented a futuristic study of the region. Since 1945 Asia Pacific region has experienced a remarkable transformation. The trends and prospects which impact the

region include varying conditions of interactions due to its geography, global warming, increase in the utilization of alternative energy sources, increasing population, and rapid economic development, especially China's rise, balancing and globalization, etc. The other trends and prospects of the 21st Century in the Asia Pacific are the COVID-19 Pandemic and measures taken by the regional countries to control the pandemic. For instance, China's vaccination preparation and provision to many countries worldwide. Belt and Road (BRI) is another trend and has prospects for economic development in the region. BRI is China's mega-project aiming to connect China to the rest of the world via land and sea aiming to have 'win-win cooperation' and 'a shared future for humankind.' China-Pakistan Economic Corridor (CPEC) is also an integral part of the BRI.



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