

Book Reviews

Book Title: **Hacking the Bomb: Cyber Threats and Nuclear Weapons**

Author: **Andrew Futter**

Publisher: Georgetown University Press: Washington DC, 2018, 216.

Andrew Futter's *Hacking the Bomb* explains the threats evolving from the latest technological domain of cyberspace, a domain of conflict, and its implication on safety, security and reliability of nuclear weapons, support systems and operations. The book and research work by the author is in itself a remarkable piece of study and research of its kind covering a totally new dimension and canvas of cyber-nuclear nexus and security unlike most of the existing literature and research studies which substantially focus on military, legal, and technical facets of cyber studies.

The book comprises of four parts. Apart from the introduction and conclusion, each section consists of two chapters. The main argument of the book is twofold: first, the approach, manner and way of thinking about management and control of nuclear weapons is being transformed by the burgeoning cyber age. Cyber technology is driving broader nuclear security and strategy arrangements. Second, the dangers, uncertainties and risks involved in the cyber-nuclear nexus are amply detailed in the book. The scope and range of these challenges are diverse, such as the safety, security and reliability of nuclear forces as well as command and control systems and operations; intensified nuclear mistakes and accidents; new issues related to information systems security and protection of sensitive or classified information; the cyber-nuclear security dilemma and obstacles; and the set of complications for strategic and cross domain deterrence.

To comprehensively unpack these associated challenges, the author highlights and outlines eight key dynamics and vital themes that flow throughout the book to give depth and context to the author's overarching arguments. First, nuclear weapons and cyber capabilities are two essentially different and distinct concepts. Second, the management of nuclear weapons has always been difficult; and nuclear weapons as well as command and control, and support systems have always been vulnerable to attacks and interference. That said, there is no ultimate solution. Third, there may not be an involvement of cyber-attacks or attackers at all in some of the evolving cyber challenges given the risks of complexity involved in the utility of cyber technology and systems which might go wrong or fail by themselves. Fourth, a range of diverse and distinct cyber threats related to kinds of cyber operations are posed by evolving cyber technologies. Fifth, the capabilities and intensions of actors vary in the cyber-nuclear realm given the two distinct and plausible goals of cyber-attacks: (1) *disabling* nuclear weapons from being used and operations

planned accordingly; and (2) *enabling* nuclear weapons directly or indirectly to be used, launched or detonated. Sixth, cyber domain and operations must not be viewed as a separate domain apart from other traditional military domains of operation but considered part of other kinetic, conventional military or even nuclear operations. Seventh, during nuclear crises, the impact of cyber threats and challenges will be exacerbated and magnified given the time constrained environment and high trigger/alert situation of adversaries located at close geographical proximities like India and Pakistan, and the pressure on decision makers when the nuclear information space is fogged and clouded by misinformation and broader interruptions thereby creating a more complex digitized or cyber-enabled 'fog of war'. Finally, nuclear modernization is a double-edged sword. This is primarily in connection with the rise and emergence of new challenges, issues and vulnerabilities with the development and modernization of nuclear systems and infrastructure; particularly the nuclear command and control, and support systems. Simply put, the more nuclear systems are sophisticated and digitized, the more they are vulnerable to cyber threats and attacks; and the simpler the design and apparatus of nuclear systems, the safer and more secure they might prove to be.

In the evolving and burgeoning cyber age; to highlight, examine, assess and address the multiple challenges to nuclear weapons and systems; this book adapts a four-part framework that focuses on the distinct dynamics and facets of the cyber-nuclear nexus. In doing so, these numerous cyber dynamics and facets are placed in a broader and historical context to consider what is evolving and changing and what is not, how and why that evolution is taking place, what is latest and what is obsolete etc; thereby providing the foundational grounded basis for analysis, understanding and policy recommendations. The Book under review boasts of a high degree of applicability not only at the global level, but also at the regional level like in nuclear armed South Asia. Future conflicts between the nuclear armed South Asian rivals might involve highly sophisticated cyber technologies and weapons as force multipliers to conventional offensive tools, as well as a source and domain of conflict in itself to target the adversary's national security infrastructure and information structure. Cyber capability might be used simultaneously with kinetic conventional operations or as a stand-alone capability which could be launched at a place and in time of a state's own choosing. That said, in either scenario, there is a greater risk and chance of escalation up to the nuclear level which might involve tactical or even strategic nuclear weapons depending upon the death and destruction caused by a cyber-attack.

Notwithstanding, each of the aforementioned scenarios will pose significant challenges to the overall strategic stability of the South Asian region and will have grave consequences for strategic thinking and policy

making keeping in view perceptions, fears, uncertainties regarding the opponent's cyber capabilities and intentions. This in turn, would drastically increase concerns, tensions, and perceived vulnerabilities on both sides, consequently affecting the existing notions and thinking on escalation (complicated escalation ladder leading to inadvertent deepening of crisis), as well as signalling and overall nuclear crisis management.

Reviewed by Sirtaj Khan, MPhil Scholar, Department of Strategic Studies, National Defence University, Islamabad.

Title: Line on Fire: Ceasefire Violations and India-Pakistan Escalation Dynamics**Author: Happymon Jacob****Publisher: Oxford University Press, New Delhi, India, 2019, 401.**

Line on Fire is a book that furnishes an extensive understanding of the dynamic forces at play across the Line of Control (LoC) between Pakistan and India. It attempts to debunk prevalent ideas regarding the reasons of ceasefire violations (CFVs) in Jammu and Kashmir (J&K) and problematizes prevalent wisdom about crisis escalation. The author establishes a causative linkage between CFVs and India-Pakistan escalatory dynamics.

Jacob is an academic and teaches disarmament studies at the School of International Studies, Jawaharlal Nehru University, New Delhi, India. His participation in numerous closed-door track-two dialogues on CFVs and escalation dynamics persuaded him to further investigate the matter. Jacob in this broad study adopts an objective approach and gauges the ingrained stances and attitudes on both sides of the LoC with pragmatism and reason. He examines vital facets of the India-Pakistan relationship within the context of the predominant subject of Kashmir. The author has also deliberated on the causes of the breakdown of the ceasefire. His visit to Pakistan gave him a fresh perspective, allowing him to refine his viewpoint and opinions.

The book is based on the postulation that incorrect identification by New Delhi and Islamabad about the reasons of CFVs and the link between CFVs and escalatory dynamics have resulted in the adoption of flawed policies by the two sides for catering to frequent CFVs and worsening relations. Such an incorrect identification is brought about by insufficient understanding of the grounds of CFVs. The book provides an array of reasons for the failure of the ceasefire. Jacob questions the prevailing understanding regarding crisis escalation in the region and also gives an outline of the evolving borders between India and Pakistan through history. The main study however is delimited from the year 2003 to 2017. The 2003 ceasefire agreement was different from the earlier two since it was not a war-termination agreement rather a consensus between the two sides to avoid firing. The book explains why the agreement fell apart every once in a while.

The author has divided the book into seven chapters including introduction and conclusion. The second chapter furnishes a theoretical basis for the book. It closes by emphasizing the capacity of CFVs to elicit escalation on both sides of the LoC. The third chapter studies the managing of the boundary running across J&K. The fourth chapter presents an analysis of CFVs based on statistics and history. The fifth chapter is relatively lengthy. It reveals various triggers of CFVs in J&K which have not been examined previously. Political influences and

autonomous military factors (AMFs) are investigated in further subsections. The sixth chapter provides empirical data to indicate how India-Pakistan escalatory dynamics and CFVs in J&K are interrelated.

Jacob points out how the existing conventional literature about escalation follows remarkable events, and the subsequent collective national choices regarding undertaking or forsaking escalation, degree of escalation and time of retreat and negotiating peace. He, however, focuses on the ability of AMFs to cause the crisis to escalate, at times in the absence of an approval from the political leadership in both the states. The analysis is thus ingenious in numerous ways. Despite the fact that the conventional justification provides a rather orderly archetype to decipher escalatory undercurrents, the description in this book rather complicates the orthodox wisdom.

Another aspect further worsening a crisis situation between Pakistan and India is the piercing narrative espoused by the political leaders in both the countries, in the case of violations of the ceasefire line. The statements made during such a scenario usually hint at a nuclear standoff. The political standpoints of both the states regarding the disputed territory are practically manifested in the happenings along the LoC. In the view of New Delhi, such cross-border skirmishes allow Islamabad to infiltrate terrorists across the Indian border. From the standpoint of Islamabad, New Delhi violates the armistice and undertakes escalation, causing diversion from the matters of global concern that meanwhile take place within Indian-held Kashmir. Moreover, the national atmosphere in the two states is wrought with jingoistic narratives and media propaganda, affecting their policies. Even stabilization of the conflict turns out to be an issue, much less managing the conflict or working to resolving the matter.

The conflicting political dynamics and subsequent CFVs result in escalation, which may spiral drastically into inadvertent consequences. The recent Pulwama attack in Indian-occupied Kashmir and the crisis that ensued could not be reckoned by the international powers. The undervalued danger of CFVs leading to alarming levels of escalation further emphasizes the importance of understanding the escalation dynamics between the two nuclear powers. Such an understanding might facilitate policymakers in the two states to solemnize a wide-ranging ceasefire agreement.

In such a scenario, the absence of a formal ceasefire agreement (CFA) between Islamabad and New Delhi is highlighted by the author. He has defined escalation as sudden intensification of political, military, and diplomatic tensions between countries in general atmosphere of adversarial relations that may or may not lead to a war. The definition allows the reader to consider escalation taking place as a result of autonomous military factors. These factors range from personality features of military leaders to emotional condition of the forces on duty.

The role of such factors is vividly analysed with the help of interviews with military individuals from both the countries. Jacob suggests that political leaders have permitted AMFs along the LoC to turn into the primary reason of crisis escalation. He also vouches for a resolution in the form of a formal ceasefire agreement, compounded with improved interaction between the two militaries. Such an agreement will also help in facilitating the bilateral dialogue process.

Line on Fire is based on exhaustive research as the author benefitted from field trips and meetings with pertinent civilian and armed personnel belonging to either side of the boundary. The book is a must read for anyone in search of an impartial insight on the situation of ceasefire alongside the LoC and the manner it affects the scenario of skirmishes eclipsing Islamabad and New Delhi.

Reviewed by Fareha Iqtidar Khan, M.Phil IR, National Defence University, Islamabad.

