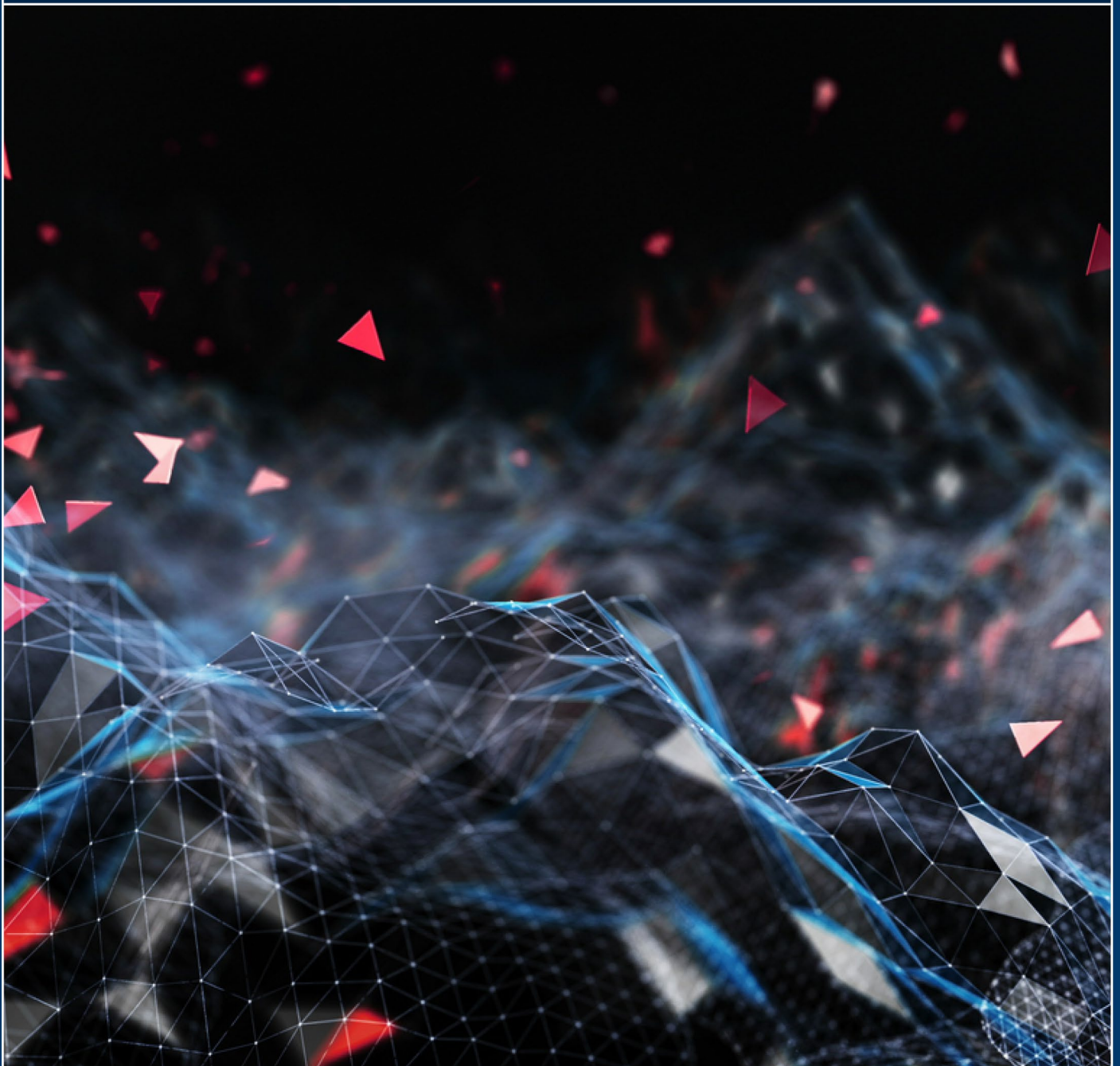


POLICY BRIEF NO. 83

# TECHNOLOGICAL DETERMINISM AND CHALLENGES TO DETERRENCE IN SOUTHERN ASIA

RABIA AKHTAR



© 2022 Rabia Akhtar

This report is published under a 4.0 International Creative Commons License the terms of which are found [here](#).

The research described in this paper was supported by the Norwegian Institute of International Affairs (NUPI).

The views represented herein are the author's own and do not necessarily reflect the views of APLN and NUPI, their staff, nor their boards.

Please direct inquiries to:  
Asia-Pacific Leadership Network  
APLN Secretariat  
4th floor, 116, Pirundae-ro  
Jongno-gu, Seoul, ROK, 03035  
Tel. +82-2-2135-2170  
Fax. +82-70-4015-0708  
Email. [apln@apln.network](mailto:apln@apln.network)

This publication can be downloaded at no cost at [www.apln.network](http://www.apln.network).

Cover Photo: DKosig, iStock

# TECHNOLOGICAL DETERMINISM AND CHALLENGES TO DETERRENCE IN SOUTHERN ASIA

## SUMMARY

Southern Asian strategic stability is fragile with multiple challenges affecting crisis stability, deterrence stability, and arms race stability. With rapid scientific developments, technological advancements are translating into new advanced military capabilities at a much faster rate. As countries move to achieve technological superiority, they are exploring ways to exploit “gray zones” or areas where their adversaries’ deterrence is the most vulnerable across various domains. Cross-domain coercion adds to the fragility of deterrence. In this environment, India and Pakistan must initiate a bilateral dialogue to discuss South Asian strategic stability with a focus on minimizing the drivers of instability and strengthening mutual deterrence.

## CRISIS STABILITY

Strategic stability in Southern Asia rests on three pillars: crisis stability,<sup>1</sup> deterrence stability,<sup>2</sup> and arms race stability.<sup>3</sup> For the purpose of this brief, “crisis stability” here refers to the probability that low-level conflict will not erupt into a major war between India and Pakistan. Similarly, “deterrence stability” refers to the probability that both

India and Pakistan will not employ systems that would dilute or threaten the prevalent situation of stable mutual deterrence, avoiding incentives to strike first. “Arms race stability” here refers to a state of equilibrium between India and Pakistan whereby neither country indulges in a qualitative and quantitative arms race that generates a security dilemma for the other. At present, the strategic stability in Southern Asia is fragile, given that technological determinism is offsetting any gains accrued in the past twenty four years since the duo’s overt nuclearization in 1998. This will have grave challenges for strategic parity between India and Pakistan which is presently stable given that either state lacks strategic nuclear omnipotence.

Since the end of the Cold War, Deterrence has evolved both in concept and scope. While traditional deterrence prevents the risk of all out nuclear war between the South Asian dyad, emerging threats to traditional security interests of both India and Pakistan has broadened the concept of deterrence.

We have seen that during the Cold War, thinking around nuclear weapons influenced, and was influenced by, the rivalry between the United States and the Soviet Union, forcing evolution of deterrence. In Southern Asia, Pakistan and India have evolved together as nuclear weapons powers, and so have their

---

<sup>1</sup> Crisis stability is the probability that low level conflict will not erupt into a major war between two adversarial dyads.

<sup>2</sup> Deterrence stability is the Lack of incentive to strike first.

<sup>3</sup> Arms race stability is the state of equilibrium between two NWSs where no one country indulges in qualitative and quantitative arms race and generates security dilemma for the other.

deterrent responses towards each other. The one aspect that will remain true for all times to come when we talk about deterrence is the aspect of its failure and the unprecedented risk posed by that failure to the human species. That is the only constant.

When the world in general—and Southern Asia in particular—should be taking urgent steps towards preventing deterrence-failure, in fact the reverse is happening. States are trying to gain edge, adding to the destructive capacity of their nuclear weapons by developing weapons with smaller yield and those which can be used in the battlefield. They believe this would strengthen deterrence vis-à-vis their adversaries.

In the 21st century, nuclear dynamics in Southern Asia have become multipolar due to the presence of extra-regional forces like the United States and its allies forming military alliances to counter China. These multipolar dynamics only add to the complexity of deterrence in the region, unlike during the Cold War when symmetry and parity between the United States and the Soviet Union allowed for deterrence stability. Given the increasing asymmetry between the three nuclear states in the region—China, India, and Pakistan—there are fewer guarantees that deterrence will endure, remain stable and not break down.

Is an arms race, nuclear and conventional, deterministic in Southern Asia? The answer to this question can be gleaned from India's twin security dilemma of balancing nuclear Pakistan and

nuclear China on its contested borders with the two countries.

Pakistan's nuclear weapons program was conceived to be India-specific, and it remains so. India defines its threat matrix – which includes China, a bigger and more powerful nuclear adversary – to justify its nuclear and conventional military modernization. Pakistan's nuclear weapons program was conceived to be India-specific, and it remains so. India defines its threat matrix – which includes China, a bigger and more powerful nuclear adversary – to justify its nuclear and conventional military modernization. And since Pakistan is affected by India's military modernization, conventional and nuclear, its efforts to maintain strategic parity with India pushes Pakistan towards an arms race which is not of its own choosing.

For China, India's nuclear forces are not a factor affecting its military modernization— instead it is affected by the United States nuclear capability. China's nuclear capability, however, does determine India's nuclear trajectory, similar to Pakistan's security dilemma emanating from its larger neighbor and nuclear adversary, India. Trapped in this dangerous trilemma, Southern Asia, with its three nuclear neighbors, has all the makings of an overt nuclear crisis in the medium to long term from the time a crisis begins. Thus, an arms race can be said to be deterministic in Southern Asia, pushing the trio to mimic the technological

trajectories of the strategic chain<sup>4</sup> with the US at its head and Pakistan at its end, and China and India in the middle, in that sequence.

## TECHNOLOGY'S IMPACT

Technology is advancing at an unprecedented pace. With rapid strides in scientific discoveries affecting national security, countries are trying to enhance their security by investing more and more in emerging technologies to maintain military advantages over their adversaries. First and foremost, in this regard, is the aim to maintain technological superiority in warfighting equipment. The pressures of the strategic chain push India to compete with China in this domain, indirectly pushing Pakistan to catch up. While this linkage may be indirect, it has direct security implications for Pakistan given Pakistan's security dilemma vis-à-vis India. While Pakistan is not competing with India in matching the number of weapons or delivery systems, Pakistan will inevitably be impacted by how advancements in information technologies changes the battlefield. Electronics, cyber, software, machine learning, artificial intelligence (AI), robotics, material sciences, directed energy lasers, quantum computing, batteries, drones, and sensors are the few the technologies which will impact weapon's platforms, people, and weapons.

Between India and Pakistan, the weakest link of the strategic stability triad is crisis stability, and this is

element will be impacted the most by technology.

During the past twenty-four years since their overt nuclearization, India and Pakistan have experienced several crises with nuclear overtones. The stability-instability paradox<sup>5</sup> is deeply entrenched in the duo's strategic culture whereby there is parity between the two countries at the strategic level providing dyadic stability, while there is instability at the lower levels, pushing each country to test the other's thresholds at the lower rungs under the nuclear overhang without tipping things over. These nuclear crises have so far not escalated into a limited nuclear war between the duo. Most scholars attribute this to 'luck' more than anything. For South Asia watchers, however, leaving strategic stability to chance or luck does not engender much confidence.

With the advent of disruptive technology, South Asia is moving towards 'complexity plus'; it is in this zone that crisis stability in this dyad is most vulnerable.

## THE GRAY ZONE

In her brilliant essay "Wormhole Escalation," Rebecca Hersman defines the new nuclear paradox: "as states drive to compete and win at the sub-conventional level—in the gray zone—the risk of strategic crisis may increase, even as the risk of conventional conflict between nuclear-armed states declines." It's in this gray zone<sup>6</sup> between India and

---

<sup>4</sup> Robert Einhorn and Waheguru Pal Singh Sidhu, "The Strategic Chain: Linking Pakistan, India, China, and the United States," Arms Control and Non-Proliferation Series, Paper 14, March 2017

<sup>5</sup> Parity between two NWSs at the strategic level providing dyadic stability, and instability at the lower levels.

<sup>6</sup> Gray zone is the space beyond diplomacy and short of conventional war where hybrid threats exist and complicate deterrence between two adversaries.

Pakistan where the escalation dynamics (until now understood by the linearity of Herman Kahn's 44-rung escalation ladder) are challenged. In the India-Pakistan context, this gray zone is the space beyond diplomacy and short of conventional war where hybrid threats exist and complicate deterrence. This is the zone in which AI-generated deep fake news and digital soldiers operate and disobey the general rules of deterrence. India and Pakistan are no exception to this phenomenon of complex deterrence. Both countries have a wide range of sub-conventional options available to them to upset the escalation hierarchy in order to achieve strategic effects. The two countries do not need to challenge each other directly in the territorial domain. Information-based, non-nuclear, sub-conventional tactics have the potential to place them in coercion dominance, pushing the duo to contemplate their threshold boundaries.

Fluid and broad contours of Pakistan's nuclear thresholds rest on marking the red lines around spatial, military, economic, and social breaches. If India operates in the gray zone and uses disruptive technologies to achieve economic and social disruption in Pakistan, resulting in an existential crisis for Pakistan, then it achieves its strategic objectives without engaging in kinetic warfare with its nuclear adversary. Why, then, would these countries not engage in achieving such capabilities whereby they advance their strategic interests without engaging in conventional warfare or risking

escalation to a nuclear war? Such engagement, below the nuclear threshold, allows the countries to evade the escalation dynamics of traditional armed conflict and yet achieve their strategic objective. Such engagement with the adversary in the gray zone through, for example, information-based cyber-attacks, or the use of digital soldiers polluting the communications domain with disinformation, has the potential to upset the escalation hierarchy. Is Southern Asia ready for this 'complexity plus'?

Given the amount of uncertainty embedded in this 'complexity plus,' challenging the two countries' established credible deterrence mechanisms, crises between them are bound to become unpredictable. This unpredictability will generate hasty responses blurring the lines between conventional and nuclear use, and breaking the spine of cross-domain deterrence (CDD)<sup>7</sup> where the use of capabilities of one kind in a domain are used to deter attacks in another domain. An example of this would be the use of air power to deter cyber-attacks on nuclear command-and-control systems. Imagine if during the next Indo-Pak crisis India manages to disrupt Pakistan's communications ecosystem, loading it with disinformation and resulting in social chaos. This could lead to violent civil unrest with signs of subversion writ large, pushing Pakistan to think that it has only one move before it disintegrates and breaks into further pieces akin to the 1971 debacle. What, then, might Pakistan's response be? If India goes down this

---

<sup>7</sup> Cross-domain deterrence is the use of capabilities of one type in one domain are used to deter attacks in another domain.

route of using disruptive technology, it will still retain an asymmetric advantage in the cross-domain deterrence as well. Pakistan, therefore, must strategize for this new age of multi-domain conflict and complex deterrence.

## **NO COLD WAR SYMMETRY**

South Asia cannot mirror-image the symmetry and parity that existed between the Cold War nuclear rivals. This is the most dangerous characteristic of modern-day South Asia. That Cold War symmetry was the hallmark of stability and the Long Peace that ensued since the first and only use of nuclear weapons by the United States. That parity pushed the Cold War rivals towards exploring arms control approaches and mechanisms. South Asia lacks parity in arms control dynamics. The Cold War feature that is still the most applicable, however, is fear. The fear of mutual annihilation is still central, and will remain so. As long as countries have strategic pheromones in place, deterrence will live. Survive and thrive.

However, fear alone is no guarantor of peace in the region. The drivers of instability that would in time allow for a breakdown of deterrence are greater than the drivers of stability that would ensure that deterrence endures. That is the unfortunate reality of our region, but it is also the reality nonetheless.

Pakistan needs to rethink its deterrence strategy in the cyber-age, in the age of disruptive technologies, especially in times when Pakistan is politically unstable

and vulnerable to forces working towards challenging its sovereignty and territorial integrity from within. There needs to be a strategic dialogue between India and Pakistan to discuss the contours of complex deterrence; cross-domain coercion with well-defined thresholds and redlines to include cyber- and information-based attacks through digital proxies.

A disruptive technology-induced direction of progress<sup>8</sup> is inevitable. Since 1945, strategists have only theorized about deterrence failures or breakdown, without ever having experienced it. With the rapid advancements in technologies and their uses by states to offset and neutralize adversaries' strategic advantages, theorizing about deterrence failure demands an expansion of strategic thought to imagine the inevitable, especially in the gray zones. It is in this zone that deterrence risks failing without firing a single bullet or launching any missile.

The US Nuclear Posture Review (NPR) of 2018 has further complicated the scenario by preserving the United States' self-proclaimed right to retaliate with a first use of nuclear weapons in response to a non-kinetic, non-nuclear attack. Such non-nuclear attacks include biological and cyber-attacks. While a stated right to use nuclear weapons in response to non-nuclear attacks such as cyber lacks credibility and will weaken deterrence, it does open up space for other nuclear weapon-armed countries to think along the same lines about lowering their nuclear

---

<sup>8</sup> direction of progress can be positive (used for betterment or stability of deterrence) or negative (used for ensuring deterrence breakdown).

thresholds and include cyber-attacks to their lists of strategic retaliatory responses—however remote the possibility.

In Southern Asia, where strategic stability is already fragile in all three pillars—crisis, deterrence, and arms control—more discussion needs to center around devising mechanisms to strengthen deterrence.

The Indo-Pak interstate dialogue has been on halt since August 5, 2019 when India revoked the statehood of Jammu & Kashmir. Earlier in 2019, both countries were embroiled in a devastating Pulwama-Balakot crisis which had serious escalatory potential. In the absence of a strategic dialogue, India and Pakistan are not at that stage where either can afford to operate with ambiguities about their nuclear thresholds, amplified by their engagements with disruptive technologies. There is a need for dialogue on what the gray zones entail and its implications for bilateral deterrence before another crisis erupts, breaking the conventional pathways escalating to nuclear crisis.

## THE WAY FORWARD

This policy brief, therefore, proposes that **India and Pakistan develop a common lexicon** about what deterrence means to each country so as to understand clearly and without any ambiguity what is needed to strengthen it and to avoid what dilutes it. It is imperative that India and Pakistan hold discussions on **developing common codes and**

**norms on the conduct of information and cyber warfare.** And as a priority, India and Pakistan must move towards instituting bilateral restraints in conducting cyber operations against each other. They must declare a **“no first use” (NFU) in the cyber-domain, cyber warfare, or cyber espionage** assisted by disruptive technologies against each other, which would lead to the breakdown of deterrence. This should include the duo’s nuclear forces and C3I systems and the gray zones in which their public is the most vulnerable asset. Both countries need to understand that there are escalation risks that can be generated through disruptive technologies, and therefore any inadvertent escalation emanating from this form of asymmetric conflict would need to be managed.

Such management will only come about if redlines and thresholds are clearly defined and communicated. It is foreseeable that the traditional role of Indo-Pak crisis managers such as the United States, China, or the UAE will also change if the crisis has non-kinetic origins, giving much less time for back-channel diplomacy to avert a crisis or move towards crisis termination. Together, these crisis managers must engage India and Pakistan across all tracks of advisory or research forums to help them develop the right tools to engage in progressive discussions on the escalatory nature of disruptive technologies.



## ABOUT THE AUTHOR

Dr **Rabia Akhtar** is Director, Centre for Security, Strategy and Policy Research, University of Lahore. She is the founding Director of the School of Integrated Social Sciences, University of Lahore. She holds a PhD in Security Studies from Kansas State University. She is a Fulbright alumna (2010-2015). Dr. Akhtar received her Master's in International Relations from Quaid-i-Azam University, Islamabad and her Masters in Political Science from Eastern Illinois University, USA. She has written extensively on South Asian nuclear security and deterrence dynamics. She is the author of a book titled 'The Blind Eye: U.S. Non-proliferation Policy Towards Pakistan from Ford to Clinton'. Dr. Akhtar is also the Editor of Pakistan Politico, Pakistan's first strategic and foreign affairs magazine. Dr. Akhtar was a member of Prime Minister Imran Khan's Advisory Council on Foreign Affairs from December 2018 until April 2022. Dr. Akhtar is a Nonresident Senior Fellow at the South Asia Center, Atlantic Council, Washington DC.

## ABOUT NUPI

The **Norwegian Institute of International Affairs (NUPI)** was established by the Norwegian Parliament in 1959 and is a leading institution for research on international issues in areas of relevance to Norwegian foreign policy. NUPI is an independent institution undertaking basic as well as applied research and advisory services and is committed to excellence, relevance and credibility in all its projects. A central principle is interdisciplinary collaboration, within the institute and with other institutions in Norway and abroad. NUPI aims to be relevant both for professionals in international politics and for the general public.

## ABOUT APLN

The **Asia-Pacific Leadership Network for Nuclear Non-proliferation and Disarmament (APLN)** is a Seoul-based organization and network of political, military, diplomatic leaders, and experts from across the Asia-Pacific region, working to address global security challenges, with a particular focus on reducing and eliminating nuclear weapons risks. The mission of APLN is to inform and stimulate debate, influence action, and propose policy recommendations designed to address regional security threats, with an emphasis on nuclear and other WMD (weapon of mass destruction) threats, and to do everything possible to achieve a world in which nuclear weapons and other WMDs are contained, diminished, and eventually eliminated.



@APLNofficial



@APLNofficial



aplن.network