



Centre for Air Power Studies

**Report on**  
**CAPS-IISS Joint International Seminar**  
**on**  
**Mapping Contemporary Nuclear Strategies and Capabilities,**  
**Understanding Implications**

(Organised by Centre for Air Power Studies (CAPS) on 26 June 2024 at Conference Hall, Air Force Auditorium, Subroto Park, New Delhi)

CAPS-IISS Joint International Seminar on “**Mapping Contemporary Nuclear Strategies and Capabilities, Understanding Implications**” saw widespread participation of serving and retired armed forces members, the strategic community and academics. In his opening remarks, Air Vice Marshal **Anil Golani (Retd), Director General, CAPS**, pointed out how nuclear weapons had been put to political use right from the start of the Russia-Ukraine conflict in February 2022. He also highlighted that while the global total of nuclear warheads has fallen as Cold War-era weapons have been gradually dismantled, there is nevertheless year-on-year increase in the number of operational nuclear warheads. Under Article VI of the Nuclear Non-proliferation Treaty (NPT), the N-5 have a legal obligation to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament. But, their refusal to engage at the negotiating table, combined with building an even greater nuclear destructive capacity, violates this core NPT tenet. He also mentioned how the impact of emerging technologies on the future of international security has become a topic of policy consideration. He emphasized the need for proactive international leadership in countering such challenges, besides underscoring the role of strategic communities in fostering dialogue and garnering support.

General **Anil Chauhan** PVSM UYSM AVSM SM VSM, **Chief of Defence Staff**, inaugurated the seminar and highlighted the changing nature & characteristic of warfare in which nuclear weapons had once again come to occupy centre stage in the geopolitical landscape. He recounted nuclear developments around the world: Russia-Ukraine conflict which had showcased the dimension of nuclear brinkmanship; ongoing nuclear and missile capability build up in north Korea which was impacting security thinking in Japan and South Korea; China’s nuclear expansion, including deployment of some nuclear systems at higher levels of readiness, and its refusal to undertake any arms control with USA; and Pakistan’s full spectrum deterrence including its relationship with China. Amidst such behaviour, India’s nuclear trajectory premised on the principles of ‘No First Use & Massive Retaliation’ stands out for its maturity and uniqueness. He emphasised the need for deeper thought on doctrines of deterrence and the safeguarding of nuclear C4I2SR infrastructure in wake of emerging technology developments. He also emphasised the need to hold the nuclear taboo from eroding. Steps were needed to disincentivize nuclear use, re-imagine nuclear disarmament, and ensure better adherence to treaties.



## Session I: Contemporary Nuclear Strategies in Vogue

Dr **Sanjay Baru**, Founder- Trustee, Forum for National Security & Distinguished Fellow, CAPS underscored India's display of nuclear maturity in his remarks as chair and even exhorted the need for India to be the voice of nuclear sanity and take initiatives towards nuclear disarmament given its good relations with several countries

### *1. Nuclear Brinkmanship – Now the New Normal?*

Dr **Shalini Chawla**, Distinguished Fellow, CAPS, highlighted the nuclear undertones of the ongoing war between Russia and Ukraine. She argued that though the Western world was witnessing nuclear brinkmanship for the first time, it was not new for the Indian sub-continent given the repeated crises between India and Pakistan. On the issue of nuclear thresholds, she mentioned how nuclear ambiguity on use of nuclear weapons was a central tenet of Pakistan's unwritten nuclear doctrine. Its first-use policy was primarily for war prevention; a low threshold keeps the potential use of tactical nuclear weapons alive. More importantly, she mentioned how Pakistan operationalises full-spectrum deterrence from the point of view of launch platforms and full-spectrum scenarios. The speaker concluded with a note about how Pakistan entangles its nuclear issues with conventional space and how global events are likely to embolden Pakistan's reliance on the threat of using nuclear weapons.

Mr **William Alberque**, Former IISS Director for Science, Technology and Arms Control, said that nuclear brinkmanship has been a part of Western discourse on nuclear deterrence, as was explained by Thomas Schelling articulation of "leaving something to chance". He recalled that the USA and Soviet Union had used it to deter each other with coercive signals during the Cold War. In the contemporary nuclear scenario, he mentioned how President Donald Trump had used nuclear brinkmanship to bring North Korea to the negotiating table and how Russia, under Vladimir Putin, was also using it to further Russia's strategic needs. But nuclear brinkmanship also brings in problems of escalation, an unaffordable arms race and strategic instability. Use of nuclear threats to coerce or compel an adversary, particularly a non-nuclear state, risks the possibility of proliferation at a later stage. So, it can be a dangerous tool.

### *2. Ambiguity – Pros and Cons*

Shri **Ashok K Kantha**, Honorary Fellow and former Director of the Institute of Chinese Studies, stated that all nuclear weapon states resort to some forms of nuclear ambiguity despite the attendant risks of misperception, misinformation and accidental escalation. While the USA and Russia have managed to maintain a fair degree of nuclear transparency so far, the recent crisis in arms control will impact their nuclear relations and may push them towards more nuclear ambiguity. China already is a 'champion' of nuclear ambiguity on the size of its nuclear arsenal, co-mingling of nuclear and conventional weapons, its no-first-use doctrine undermined by early counter-strike and posture moving towards higher alert. While ambiguity may be pursued for enhancing nuclear deterrence, it leads to an action-reaction loop, which can be very risky, especially in an environment where new domains of warfare



such as cyber, artificial intelligence and hypersonic are being integrated with nuclear deterrence.

Ms **Veerle Nouwens, Executive Director, IISS–Asia**, referred to the statement made by China at the recently concluded Shangri-La dialogue where it claimed that its nuclear policy is highly stable and committed to no-first-use. But, there are many unanswered questions about China's nuclear modernisation and increase in the number of warheads. China views nuclear capability as a key feature of its great power status and a matter of national rejuvenation in an uncertain external environment marked by a rivalry with the USA. China's growing nuclear profile also likely is meant to secure its core security issues, such as Taiwan and the Indo-Pacific. China is trying to show that it can match every level of escalation that the US may impose on it given their deep distrust despite some recent track-II dialogues. It seems to project the nuclear shield to use its conventional capabilities or indulge in nuclear coercion of the USA.

### ***3. Limited Nuclear War – Its Lure and Pitfalls***

Dr **Manpreet Sethi, Distinguished Fellow, CAPS**, traced the concept of limited nuclear war to the early 1960-70s to address the perceived limitation of deterrence based on mutually assured destruction. The idea of a limited nuclear war was then floated to make the use of nuclear weapons credible. She defined such a war as one envisaging use of a limited number of nuclear weapons, with limited or small yields, with a limited number of targets, to impact a limited geographical space and with limited objectives. But, while this may be the intention of one side, since a war involves two parties, there can be no guarantee that a nuclear war could be kept limited. In current times, US NPR 2018 has again brought back the idea of limited nuclear war, but operational challenges and uncertainty about adversaries' reactions could make it an unlimited war. Additional political challenges exist in projecting this as controllable nuclear use, which could tempt the leader to undertake a pre-emptive strike leading to breakdown of nuclear taboo and holding the prospect of making use of nuclear weapons normal in the future.

## **Session II: Emerging Nuclear Capabilities in the Region**

### ***1. Sea-based deterrence***

Vice Admiral **Sanjay Mahindru, PVSM AVSM, NM (Retd), Former Deputy Chief of the Naval Staff, Indian Navy**, focused on the sea-based deterrence strategies of China, Pakistan, India, and AUKUS. Regarding China, he noted that as an NFU country, while China recognizes the unique and critical role of sea-based deterrence, it has traditionally focussed more on its land-based rocket forces. He wondered whether this was because of internal institutional issues hindering the optimal development of sea-based deterrence? Or, a case of turf war between the PLA Army and the PLA Navy? Or concerns about issues related to custody and command, and control of nuclear weapons at sea? On AUKUS, he expressed concern that the partnership would lead to the proliferation of conventional submarines, potentially encouraging South Korea and Japan to pursue SSNs too. Regarding India, he



emphasised that the country's NFU policy is reflected in its sea-based deterrence force and the indigenisation of its deterrence capabilities, exemplified by the Arihant-class submarines..

Mr. **Antoine Levesques, Research Fellow for South Asia (IISS HQs, London)**, suggested that Pakistan could follow India's efforts to build a sea-based assured second-strike capability by using its conventional ships with nuclear missiles. Meanwhile, China's SSBN forces continue to grow, and with the range of their SLBMs means they would not need to enter the Indian Ocean region. He wondered whether India would opt for leasing a new SSN from Russia. The conflicts in Ukraine and Gaza are particularly relevant when discussing the role of missiles, as nuclear weapon states are involved in both cases. For instance, Russia is adopting integrated deterrence, which blurs the line between conventional and nuclear/strategic and non-strategic weapons.

## 2. *Missile Trends*

Mr. **Javed Alam, Research Associate, CAPS**, opined that major global powers, as well as the nuclear-armed states in Southern Asia are engaged in developing more capable missile systems to deter or coerce their adversaries. He observed several key trends in this regard. Firstly, mobility of missiles is increasingly important for countries like India, China, and Pakistan, leading to significant advancements in solid fuel missiles. Secondly, the ability of missiles to penetrate defences is exemplified by the development of Multiple Independently targetable Reentry Vehicles (MIRVs). Thirdly, there is a notable focus on developing and deploying hypersonic technologies, with China taking the lead with the deployment of the DF-17 missile. Another important trend visible in India and China is cannisterization to improve the storage and mobility of missiles. Additionally, there is an increasing dual-use aspect of missiles in China and Pakistan who embrace ambiguity and entanglement as part of their deterrence strategies. Furthermore, the development and accuracy of cruise missiles is seen with Pakistan's Babur series. Many of these advances contribute to regional imbalances, and fuel arms race dynamics.

## 3. *Technology and Cyber Strategies*

Dr. **Roshan Khanijo, Assistant Director, USI**, argued that technology has been weaponized, with advancements in tracking, sensing, and processing capabilities across all domains. The autonomy of weapons is increasing, transforming modern warfare. Traditional factors in warfare are shifting towards data superiority, computing power, algorithms, and system security. Artificial Intelligence and automation are now integral to nuclear early warning systems, emphasizing the importance of locating, tracking, and targeting mobile systems. Countries are increasingly integrating unmanned technology into their military operations, with possibilities such as autonomous weapons targeting high-value assets like submarines. For example, Russia is developing underwater drones. Hypersonic weapons, including Hypersonic Glide Vehicles (HGVs), are significant due to their high speed and manoeuvrability. Both Russia and China are developing these weapons for offensive and



defensive purposes. The combination of the Fractional Orbital Bombardment System (FOBS) and hypersonic glide vehicles poses a strategic challenge due to their high manoeuvrability.

**Ms Julia Voo, Senior Fellow for Cyber Power and Future Conflict (IISS Asia)**, argued that cyber operations and campaigns are no longer solely confined to conventional conflict. Non-state actors, including private companies, non-governmental organisations, and even activist groups, wield significant cyber capabilities. This necessitates a broader definition of cyber power encompassing the physical realm (infrastructure and systems) and the logical domain (software and data).

### **Session-III: Shaping the Nuclear Future**

#### ***1. NFU and 'back channels' as Nuclear Risk Reduction Measures-Desirable? Feasible?***

**Air Marshal Rajesh Kumar, PVSM AVSM VM (Retd), former C-in-C, HQ SFC**, emphasised the desirability of NFU. He highlighted its potential benefits such as reducing the risk of nuclear escalation and fostering trust among nations, which contributes to global stability and aligns with long-term disarmament objectives under the NPT. However, he acknowledged significant challenges to implementing NFU, citing increased operational warheads globally, and recently in China, which complicates transparency efforts. He noted that there has been limited international response to China proposing a multilateral NFU at UN meetings. Rather, some nuclear states like the US have considered NFU but found it unfeasible due to their strategic interests. Russia too has moved away from NFU-like principles amid geopolitical tensions like the Ukraine conflict. Additionally, nuclear policies of France, Pakistan, and North Korea too differ from NFU principles. He also discussed the role of backchannels in nuclear diplomacy, noting their utility in crisis management but emphasizing challenges such as lack of transparency and potential confusion with official channels.

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**Mr Desmond Bowen, Associate Fellow at IISS**, underscored that India had both a principled and a practical approach to NFU. But, he questioned whether it was seen as credible by the adversary since, as he explained, NATO had historically been sceptical towards Soviet NFU declarations. He did agree, however, that India's reliance on limited nuclear capabilities for deterrence, and focusing on the necessity of credible retaliation to deter aggression effectively showed consistency with NFU. He also wondered whether Pakistan's collusion with China, which could happen as a case of opportunism or deliberate design, would have any impact on NFU. He supported the role of backchannels in crisis communication, emphasizing their utility in managing nuclear risks and fostering diplomatic exchanges during tense periods. He opined that for effective backchannel operations, reliability, mutual trust, and the validation of outputs through corroborating intelligence and technical means was necessary to mitigate nuclear escalation risks effectively.



## *2. Re-envisioning the global nuclear order – what to prioritise and how?*

**Shri Rakesh Sood, Former Permanent Representative of India to the Conference on Disarmament, Former Special Envoy of PM on Non-Proliferation and Disarmament,** underscored the intertwined nature of nuclear arms control with global politics, noting its inception and evolution alongside significant geopolitical shifts. He identified the Cuban Missile Crisis as pivotal in establishing direct communication channels between nuclear rivals to prevent accidental escalation. He emphasized landmark arms control agreements like the Limited Test Ban Treaty and NPT as foundational in shaping global nuclear norms and limiting proliferation. He discussed the concept of strategic parity between superpowers for ensuring mutual deterrence and stability. Looking ahead, he identified challenges including the emergence of new nuclear players and the evolving definitions of nuclear deterrence amidst geopolitical complexities. He concluded by advocating the preservation of the 'nuclear taboo' as crucial for preventing the use of nuclear weapons, emphasizing the importance of strengthening international norms to maintain global stability.

**Mr. Wyn Bowen, Director of the Freeman Air and Space Institute at King's College London,** addressed the complex challenges to strategic stability, highlighting pressures from modernization efforts by China and Russia, NATO's nuclear advancements, and US responses. He underscored escalating competition in space and growing threats to space control, particularly between the US and China. Bowen expressed concerns about nuclear threats in regional conflicts, citing Russia's rhetoric on Ukraine and potential Taiwan scenarios. He emphasized the instability exacerbated by the lack of dialogue between major nuclear powers like the US and Russia, and the absence of conventional arms control in Europe. Bowen stressed the need for a comprehensive approach to strategic stability, considering political dynamics and efforts by China and Russia to reshape the international order. He cautioned against risks of miscalculation in space and cyber domains due to ambiguous red lines and emerging technologies. Amongst the priorities he outlined for the future were measures to reduce the risk of deliberate nuclear escalation, minimizing unintended escalation, and curbing nuclear proliferation. He advocated continuous dialogue, transparency, and norms in cyber and space to maintain global stability. Bowen also highlighted the importance of security assurances to non-nuclear states and investment in intellectual capital for strategic thinking and collaboration.