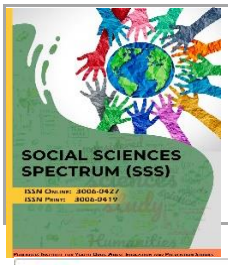

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Space Security and South Asia: A Critical Evaluation of Prevention of Arms Race in Outer Space (Paros) and Emerging Threats

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Abstract

This research paper evaluates the Prevention of Arms Race in Outer Space (PAROS) issue from a South Asian perspective. It critically focuses on emerging threats in space and the debate on legally binding and non-legally binding instruments on PAROS. It suggests the rapid weaponization of space amid increasing congestion, contestation, and dependence on space-based assets for civilian and military purposes. It offers an overview of historical and on-going multilateral efforts on PAROS, concentrated in the Conference on Disarmament, UN General Assembly, Groups of Governmental Experts, and Open-Ended Working Groups on PAROS. The paper highlights persistent stalemate of negotiating a legally binding treaty on PAROS, driven by geopolitical rivalries among major powers. Situating the analysis in South Asia, the paper critically analyses India's rapidly growing military space capabilities, including its 2019 ASAT test and its strategic implications. It also highlights a shift away from India's stated policy of negotiating a binding treaty on PAROS to favour Western led norm building approach. The paper also evaluates Pakistan's consistent opposition to space weaponization and advocacy for a legally binding treaty on PAROS. The paper answers why no single approach is suitable for PAROS. The paper concludes that South Asia is witnessing rapid development in counterspace capabilities and a legally binding instrument on PAROS would lower the risks of counter space asymmetry, threats to strategic stability. Moreover, the paper concludes that in the absence of binding constraints risks to space assets would further destabilize regional and global strategic stability.

Keywords: PAROS, Pakistan, India, Anti-Satellite Weapons, Legally Binding Instrument, Open-Ended Working Group.

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1. Introduction

Space is a congested, contested and competitive domain. It is increasingly witnessing transformative change. Technological developments in the space sector are critical to national growth of states. Space science, technologies and applications are vital components of national economies and defence of states, offering essential support to terrestrial infrastructure including navigation, communication and weather monitoring. Modern day life is heavily dependent on these services. The majority of road-and-rail network, financial services, communication services, and navigation used in air and sea travels are dependent on space systems. Approximately, there are around 12,000 satellites in different orbits around the earth linked with the terrestrial systems (Zhang, Cai, Xue, Xue, & Cai, 2022). Therefore, peace in space will ensure peace and stability on earth. Any attempt to intentionally or non-intentionally damage the sustainable operations or functions of the space system would endanger national security of states as these have added value to modern day life (Handel-Mazzetti, 2025).

Space offers infinite resources, significant for humanity. However, these resources have associated risks and concerns about their sustainability. It is a fact that the dependency of states on any domain germinates challenges. States would ensure rivals or non-state actors would not exploit their dependency. The ultimate objective of any state is to ensure maximum access to this province of mankind or Common Heritage of Mankind (CHM) (Nnadozie & Sule, 2022). It is a shared belief that the space sector must be fully harnessed to seek maximum benefits without witnessing any conflict in this peaceful domain.

Space is no longer a peaceful domain and major powers have strategic priorities to protect space assets from any intentional or non-intentional damage. 130 states have aspired for exploration and use of space (UNOOSA, 2003). Consequently, space has witnessed congestion, contestation and competitiveness. Space is no longer a distant reality for even smaller states. Major space faring nations already have capabilities to explore, exploit and use space for civil and defence purposes. However, that has not restricted smaller states to stop aspiring to utilize the vast resources offered by space (Hurova, Does Dual Use of Satellites Challenge the Future Space Governance?, 2023). This also vividly suggests smaller states' aspiration to see further democratization of space resources for achieving socio-economic development but limited to national security (Baiocchi & Welser, 2015). The space economy is growing, offering immense opportunities for developed as well as developing countries to make use of it for their national well-being. The global space economy has swelled to US $ 600 bn (The Space Foundation, 2025). However, the potential of space is being undermined by geopolitical tensions and rising numbers of space debris.

Conflict in space is inevitable (Peoples, Assuming the inevitable? Overcoming the inevitability of outer space weaponization and conflict, 2008). Under the future possibilities of conflict in space, the paper answered some of the pressing questions posed to space security. What is the meaning of space security? What is the difference between arms control and norm-building on PAROS? Why do multilateral arms control forums repeatedly fail to negotiate an arms control treaty on PAROS? What power asymmetries shape outcomes? Did the institutional design e.g. consensus rules, agenda overload, structural flaws impede the progress on PAROS? The paper assessed the need for a binding treaty on PAROS or norm-based approaches that are genuinely transitional or strategically diversionary. What are the implications for regional and international security of space weaponization? However, the most important aspects are what efforts are underway to address gaps in legal and normative domains to avoid conflict in space. In this connection, this paper is an effort to map and assess these questions from a South Asian perspective.

Negotiating a multilateral arms control treaty on PAROS has been underway for the last four decades. However, except the stalemate nothing fruitful has been realized on the UN arms control and disarmament forums. There are five UN mandated space treaties, which only ban the placement and detonation of Weapons of Mass Destruction (WMDs) in and around earth. However, a major legal challenge has been there since the first anti-satellite weapon was to ban conventional space weaponization. The diplomatic battle is still going on at the UN arms control and disarmament forums to negotiate a treaty on PAROS. However, the progress has been gradual and a lack of urgency due to geopolitics and chances of emergence of conflict in space (Ortega, Disarmament and nonproliferation, 2025). Some initiatives on PAROS to negotiate a UN mandated treaty did not advance and insufficiently met emerging threats and challenges in space. Consequently, discussions on normative approaches gained increased prominence. The multilateral arms control forums witnessed states' preferences for normative approaches over binding instruments on PAROS (Handel-Mazzetti, 2025). The long and unresulting pace of negotiating a binding treaty on PAROS gave impetus to major space powers to retain strategic capabilities and set preferences by looking toward norms setting by behaviour (Meyer, Restraining an Arms Race in Outer Space, April-May 2022). However, PAROS is still not able to witness even a set of principles or rules that can avoid conflict in space.

South Asia stands at a critical juncture of history, marked by strategic and geopolitical transformations. Two nuclear powers, India and Pakistan, reside in this part of the world. India is a space faring nation with advanced Space Launch Vehicle (SLV) and Space Launch Facilities (SLF). Its space assets for civil and military purposes are growing. Over the years, it has established defence space agencies. Pakistan is an emerging space power and its space assets in number are growing.

India and Pakistan are engaged in the multilateral efforts on negotiating a treaty on PAROS. Their point of view highlights their concerns for space security. However, their respective positions are marked with the choices they have. India became the fourth nation in the world that has tested and intentionally destroyed a satellite in Low Earth Orbit (LEO) by testing Prithvi Defence Vehicle MKII missile (Stroikos, Still lost in space? Understanding China and India's anti-satellite tests through an eclectic approach, 2023). The paper is an effort to see what effects these points of views are on PAROS. What difference can South Asia make on the progress of PAROS? What approaches are being adopted by India and Pakistan on norms and principles in space as well as negotiating a legally binding treaty on PAROS?

In the coming parts, the paper sheds light on present day threats emanating from space with a focus on efforts to define space weapons. Moreover, the distinction between space militarization and weaponization still needs better explanation. For that purpose, critical analysis of existing literature review is done for understanding PAROS in its essence. Lastly, the paper sheds light on the future of legally binding instruments versus non-legally binding instruments on PAROS.

2. Conceptual Understanding and Research Methods

The paper is theorized to understand three core aspects concerning space security. These are: -

a) Why do states continue to develop counter space capabilities?

b) Why did the multilateral forum fail to negotiate a treaty on PAROS?

c) Why do norm-building approaches emerge and how do these approaches compete with legally binding approaches?

Theoretically, all these core aspects related to space are views from structural realism, institutional liberalism, and constructivist norm contestation. All these approaches are studies to explore capability-commitment gaps, institutional paralysis and strategic instability in space, especially in asymmetric regions like South Asia.

Structural realism, institutional liberalism, and constructivist norm contestation are employed in this paper to under why legally binding approaches remain elusive. How the institutional paralysis at the UN forced states to give preferences to norm-based approaches, and how counter space capabilities are affecting the regional strategic stability.

Structural realism suggests that space is an extension of the existing anarchic political structure. States tend to ensure their survival and shift the balance of power in their favour (Glaser, 2003). From a realistic perspective, it is in the interest of states not to commit to binding treaties that limit their military capabilities (Walt, 2010). Space has now become a critical enabler of national powers. Space technologies are dual-use and rapidly integrating with terrestrial military systems. Major space powers consider that a legal ban on counter space capabilities would limit their military power, which is not feasible in a technologically advanced global environment. As far as South Asia is concerned, India's testing of Anti-satellite (ASAT) missile in 2019 can be viewed as fostering its deterrence credibility vis-à-vis regional adversaries. Pakistan supports legally binding instruments on PAROS. This position reflects not only its normative preferences but also strategic interests. Pakistan wants to limit the development of counter space capabilities in South Asia through international law.

Institutional liberalism explains the role of multilateral forums to mitigate space security dilemmas (Keohane, 2012). Liberal perspectives support negotiating arms control treaties in space (Nuruzzaman, 2008). Confidence Building Measures (CBMs) and transparency mechanisms can end the vicious cycle of misunderstanding and misperception between rival states. The progress on PAROS at the UN forum is plagued with stagnation of discussion on legally binding instruments on PAROS (Abdullah, 2024). This reflects institutional inadequacy in resolving the looming challenges to space security. Theoretically, institutional liberalism can better explain why states preferred to non-legally binding instruments as pragmatic responses to institutional paralysis.

The role of norms, ideas and discourse in reshaping behaviour is better explained by constructivist norm contestation theory (Hoffmann, 2010). The norms setting in space advocate responsible behaviour and adopting voluntary commitments. Rather than replacing legal instruments, responsible behaviour competes with formal regulation. In the contemporary era, norm-building is not recognized as a neutral approach. Major Powers influence others and in this way their behaviours are framed as irresponsible. However, capability development remains permissible. India and Pakistan see responsible behaviour differently primarily due to their divergent threat perceptions and existing conventional and nuclear capabilities. Constructivist norm contestation theory explains why consensus on norms does not necessarily translate into legal ban on counters pace capabilities (Orchard & Wiener, 2023).

The paper employs qualitative analysis based on document analysis, offering assessment to examine PAROS from a South Asian perspective. The qualitative analysis draws on a triangulated set of official, secondary and tertiary sources. Official documents are studies from UN archives including reports of Group of Governmental Experts (GGE) on PAROS, and Open-Ended Working Groups (OEWG). Reports published by think tanks and research groups as well as research papers are also studied. The study is analytical in nature and avoids predictive outcomes.

The methodology is adequate for evaluating arms control stalemate, normative contestation, and strategic capabilities along with perception in space.

3. Threats from Space

Identifying threats to sustainable operations of space systems is the foremost exercise being conducted by states. The conceptualization and identification of space threats cannot work in isolation as the spectrum of threats in space is widening, multidimensional and multifaceted. The multidimensional aspects of threats germinate complexity in ensuring sustainability of space operations. This also tells that there is a fine difference between space systems for civil and military uses. Space systems are inheritedly dual use systems (Koplow, 2008). There are systems being used for dual purposes. There is a realization that the difference between dual-use and dual-purpose satellite systems needs to be understood to end operational ambiguity in identifying the nature of threats posed to space systems (Ortega, 2023).

Dual-use of space systems refers to space objects that offer civil, commercial and military services (Ortega, 2023). The performance of these objects can be realized at the same time or alternatively. States often use satellites with dual-use aspects to achieve civil, commercial and defence benefits. The dual-purpose objects in space are designed to achieve "benign objectives. (Ortega, 2023)" States deny dual-use operations in space and stick to highlight the original purpose of the payload launched in space. Moreover, sometimes these systems also "overlap between the two is possible. (Ortega, 2023)" The distinction between dual-use and dual-purpose objects is a tough job to ask for satellite operators. A continuous monitoring satellite in different orbits is not as easy as it is advocated (Ortega, 2023). This suggests the complexity of the problem the states are facing to negotiate a universally accepted treaty with all possible restrictions on banning the development of counter space capabilities.

In addition to this existing operational ambiguity of dual-use and dual-purpose space objects, another complexity also exists. The definition of space militarization and weaponization has not been universalized. States often tend to confuse space militarization with weaponization. Space militarization happened when the first satellites became operational in 1957 (Sönnichsen, 2021). Since, satellites were built for dual-use therefore, the militarization of space has happened with the launch of Sputnik-I. It was also sent for civil and military uses (Khalid, 2021). Whereas, space weaponization is the active employment of space systems that can damage, destroy, hamper, despair or degrade the functions of a satellite system. Space militarization refers to passive utilization of space objects for military uses. For that purpose, dual-use space objects are being utilized for passive defence including intelligence, reconnaissance, surveillance (ISR) of the adversary. On the other hand, space weaponization is the employment of ASAT weapons (Peoples, 2011). Lack of clarity of differentiating militarization from weaponization germinates operational ambiguity of recognizing the characteristics of space systems for passive and active defence purposes. It is essential to understand what the characteristics of space systems are before entering any legally binding instrument on PAROS (Shabbir & Saroach, 2018).

As per international law, an objective or system that may be used for active or passive defence purposes is a legitimate target. Under the International Humanitarian Law (IHL), dual-use objects for passive and active defence purposes represent legitimate military targets. However, the targeting still depends on the principles of distinction and proportionality. Since, there is an operational ambiguity between dual-use and dual-purpose, targeting satellites with civil purpose may become legitimate targets during conflict situations due to no clear distinction. Therefore,

attacks on satellites in armed conflict come under the IHL: distinction and proportionality (Mawdsley, 2020).

Due to the dual-use of satellites, distinction becomes harder. Likewise, in case of a kinetic attack on satellites there are fears that large numbers of hazardous space debris may be generated, putting severe risks to the sustainability of space operations. This violates the principle of proportionality (Freeland, 2006). The principle of distinction strives to keep civil and military space objects separate but the operational ambiguity combines civil, commercial and military satellites. The majority of states still do not enjoy consensus on applying principles of distinction and proportionality in space. In view of major space powers, any object in space whose characteristics, location and purpose, giving definite military advantage for passive and active defence, is a legitimate military target under Article 52 of Additional Protocol I (Hurova, 2023). Some treated dual-use objects as legitimate targets due to their military advantage during conflict. For some virtually all objects are dual-use to some effect. Therefore, States are diplomatically competing at the UN arms control and disarmament forums to end this operational ambiguity and clarify: -

a) What actually space militarization and space weaponization are?

b) What are legitimate military targets in space?

c) How the principles of distinction and proportionality of the IHL are going to be applied in space?

Understanding different types of space weapons further necessitates negotiating a legally binding instrument on PAROS. Space weapons can be categorized in four different vectors. Earth-to-Earth space weapons refer "to ground segments by capabilities and/or techniques, which originate from Earth. (Working Paper submitted by Australia and Singapore, 2025)" Space-to-Space weapons refer to "the targeting of space segments by capabilities and/or techniques which originate from other space objects. (Working Paper submitted by Australia and Singapore, 2025)" Space-to-Earth space weapons refer to "the targeting of assets located on Earth or within Earth's atmosphere by capabilities and/or techniques which originate from space. (Working Paper submitted by Australia and Singapore, 2025)" Finally, Earth-to-Space weapons refer to "the targeting of space segments by capabilities and/or techniques which originate from Earth. (Working Paper submitted by Australia and Singapore, 2025)" All these definitions are not universally accepted and not part of any UN adopted document. These understandings are suitable for international advocacy but in reality, major space powers do not adhere to these. The whole debate on space weapons also suggests that most of the space systems are dual-use, and only one percent of the entire spaces systems is repurposed, the remaining 99 percent are dual-use. The operational ambiguity of dual-use and dual-purpose cannot be leeched off the space systems (Ortega, 2023).

The distinction of civil, commercial and military satellites is difficult. This leaves no choice for rival states to assess every satellite of another as a potential target. As a result, negotiating a legally binding instrument on PAROS addressing all the inadequacies of differentiating between dual-use and dual-purpose has become a hard nut to crack. Space weapons are primarily anti-satellite weapons (Ortega, 2023).

A broad and concise definition of ASAT weapons may be preferable. An ASAT weapon refers to space-based or ground-based systems with characteristics of damaging (permanently or temporarily) or destroying satellites in and around earth orbit. These can be divided into kinetic and non-kinetic ASAT weapons. Kinetic ASAT weapons can permanently destroy a satellite while in orbit. The only outcome of such an attack results in creating a huge chunk of artificial debris,

putting the satellite operation in jeopardy. Whereas, non-kinetic ASAT weapons can temporarily interfere, disrupt, damage or hamper the normal functions of satellites while in orbit (Mueller, 2003).

Language in the international system does matter. Defining ASAT weapons may generate more consensus to negotiate a treaty on PAROS rather than bringing almost every space system as dual-use that would legitimize targeting space systems during conflict. Although, a weapon is a recognized term in the international law, and states prefer to negotiate on the recognized terms. These ambiguities do exist around Chemical and Biological weapons, but states did not surrender to such legalities and were able to negotiate Chemical Weapons Convention and Biological Weapon Convention (Walker, 2024). Anti-Ballistic Missile (ABM) Treaty generalized the overall understanding of Anti-Ballistic Missile and hence a bilateral treaty was entered into force in 1971 (Kimball & Reif, 2020). It was abrogated in 2001.

Some believe that comparison between PAROS, CWC, BWC and ABM Treaty should be treated with caution. There are challenges to verification in arms control agreement, multilateral and bilateral. But, space is a different domain as far as the centrality of dual-use space systems, difficulty of monitoring space objects, rapid reversibility of effects and global accessibility are concerned. This makes the treaty on PAROS almost unviable. These further necessitate a hybrid governance system, with legally binding and non-legally binding instruments along with CBMs to monitor behaviours and capabilities. A hybrid governance system will avoid a false dichotomy between 'law' and norms.' A hybrid governance approach combines risk-reduction and CBMs, while legally binding instruments on PAROS should aim to prohibit counter space capabilities. A hybrid approach reflects the realities of space security, offering a credible framework for balancing between norms and law, ensuring sustainable space operations.

Operational and understandable meanings of things under the Non-Proliferation Treaty (NPT) offer a way forward for a hybrid governance (normative and legal) approach in space. The same approach may be adopted when it comes to ASAT weapons to end the operational ambiguity around dual-use or dual-purpose space objects. The characteristics of the ASAT weapons can be instrumental in the distinction of the system from civil to military uses (Blatt, 2020). The characteristics of space objects prior to the launch may be published or clarified. This may serve as a Transparency Confidence Building Measures (TCBMs).

The definition of ASAT weapons significantly overlaps the definition of space weapons in view of broader conceptualization (Mueller, 2003). However, ASAT weapons mark an intensifying shift in how states see space as the next battlefield. ASAT weapons are designed to disrupt, degrade or destroy rivals' space critical infrastructure. Within existing technical taxonomies, ASAT weapons are generally categorized into (Khan & Sadeh, Sabre Ratlling in Space: A South Asian Perspective, 2024):-

a) Isotropic Nuclear Weapons

b) Kinetic-Energy Weapons

c) Direct Energy Weapons.

This broadly suggests what states have so far possessed without going into details of dual-use and dual-purpose space objects. Each category presents distinct risk profiles and operational implications.

Has space weaponization occurred? Many scholars argue that although there are threats to sustainable space operations. But the employment of space weapons has not occurred thus

assuming that it has not occurred (Samson & Cesari, 2025). Many believe that space weaponization has occurred as many states have tested ASAT weapons (Khan & Ullah, 2021). Academic debate around space weaponization has matured beyond definitional disputes to grapple with deeper normative and structural questions: whether the deployment of space weapons is an unavoidable consequence of great power competition, or a choice states should constrain to deterrence-oriented postures under robust legal frameworks (Khan & Sadeh, Sabre Ratlling in Space: A South Asian Perspective, 2024). Recent analyses emphasize that the traditional dichotomy between peaceful and military uses of space has become increasingly opaque, complicating the formulation of effective arms-control regimes and TCBMs.

4. Why does the Institutional Process on PAROS face Stalemate?

The stalemate on PAROS at the multilateral forums (the CD and First Committee) is explained by institutional paralysis (Meyer, 2021). This syndrome is rooted in structural flaws instead of diplomatic engagement (Meyer, Does the Conference of Disarmament Have a Future?, 2021). The CD's working is plagued by the consensus rule. This procedural anomaly has held hostage the states to reach a consensus. The overload agenda is another obstacle in reaching consensus (Meyer, 2021). PAROS is currently competing with FMCT, ND and NSA. This competition has diluted political attention and negotiating deals. The procedurally flexible GGE and OEWGs are only producing reports and recommendations that are sent back to the CD or the First Committee without enforcement authority. As a result, the non-binding resolutions, reports and recommendations are not being translated into binding instruments.

A major challenge faced by PAROS in the multilateral arms control and disarmament forums is the states' lack of interest in shaping power asymmetries (Wright, 2023). The major space powers with advanced counter space capabilities are not ready to accept any binding constraint to limit their capabilities (Elefteriu, 2024). Thus, preferring technological uncertainty, definitional ambiguity, and verification challenges, that has impeded progress on PAROS. The states without counter space capabilities prefer to discuss a legally binding instrument on PAROS to limit existing asymmetry in capabilities (Khan & Sadeh, Sabre Ratlling in Space: A South Asian Perspective, 2024). These divergent approaches have transformed PAROS into an arena of strategic positioning rather than problem solving matter (Meyer, 2021). Hence, the procedural reports and recommendations under the garb of "advanced" and "further" practical measures have substituted substantive disarmament discussions.

The progress on PAROS in the multilateral forum has suffered institutional fragmentation (Mehdi & Su, 2020). Major powers have adopted a behaviour of forum shopping. The discussion on PAROS is at a stalemate in the CD. States directed discussions to the First Committee, establishing GGEs and OEWGs to highlight their narratives of behaviours versus capabilities (Khan & Sadeh, Sabre Ratlling in Space: A South Asian Perspective, 2024). Western countries preferred norms, rules and principles based approaches as these have bypassed consensus rule. In all of these, the diplomatic energy got wasted and weakened momentum on PAROS.

Another obstacle toward progress on PAROS is the non-acceptance of norms by advocates of binding instruments (West, The UK process on norms and space security, 2021). Norm-based approaches lack enforcement and do not present as a substitute for binding instruments on arms control. But these approaches are politically expedient mechanisms. Legally binding instruments are not a panacea. Binding instruments are facing the rising challenges of verification, dual-use, attribution and treaty compliance by major space powers (Kalyan, December 2025). Norm building in space can reduce immediate risks and socialize expectation of restraint (Dickey, July

2021). The constraints of legally binding instruments on PAROS are structural features of space and may not diminish by enforcing legal bars. However, the advocates of binding instruments on PAROS still consider that norm-building approaches are strategically diversionary (Dickey, July 2021). It has allowed states with advanced counter space capabilities to mature capabilities. However, the competition between behaviours and capability approaches still cannot discount the fact that norms can also be practiced and can manage perception (West, The UK process on norms and space security, 2021).

5. South Asia and Space Security

This section offers critical analysis on space security, less of declaratory positions on PAROS. The analysis distinguishes between counter space capability development, strategic incentives, and threat perceptions of India and Pakistan. The assessment gauges' national choices on space security and PAROS in view of regional and global space security dynamics, through a uniform assessment approach.

The peace and stability in South Asia is fragile. This is because of an unresolved territorial issue of Jammu and Kashmir. The region gains global attention due fear of breakout of a full-scale war between two rivals that can escalate to nuclear exchange (Khan & Ashan, 2016). The recent May 2025 conflict presents a small glimpse of global fear (Narejo, Khan, & Khan, 2025).

India has 60 operational satellites. The Military Balance 2025 indicates that India has 26 military satellites. These include eight Indian Regional Navigation Satellite System (IRNSS) satellites that form the space segment of India's indigenous navigation system, officially known as NavIC (Navigation with Indian Constellation). India has two advanced communications satellites, GSAT-7, GSAT-7A and GSAT-7R. These communication satellites provide critical military grade communication to naval assets (International Instiute of Strategic Studies, 2025). India has 15 dedicated satellites for ISR, including nine Cartosat and six RISAT satellites, which are advanced imagery and remote sensing platforms, equipped with Synthetic Aperture Radar and Israeli made X-SAR technologies, exclusively for passive military defence purposes (Khan & Sadeh, Sabre Ratlling in Space: A South Asian Perspective, 2024).

India showcased its counter space capability by testing its DA-ASAT missile in 2019. India has also "showcased its ability to manoeuvre civilian space assets in orbit, marking an important step toward developing rendezvous and docking technology for space assets. (Samson & Cesari, 2025)" India is making efforts to develop co-orbital ASAT capabilities by testing a prototype for a Reusable Launch Vehicle Autonomous Landing Mission (RLVALM). Earlier the test was conducted in 2016 (Samson & Cesari, 2025). This suggests that India will soon have a capability that "may have a latent counter space capacity. (Samson & Cesari, 2025)" India is also doing Research and Development (R&D) in Directed Energy Weapons (DEWs) and Electronic Warfare (EW). According to the DRDO Chief in 2019, India is working on multiple projects to develop offensive counter space capabilities including Electromagnetic Pulse (EMP) weapons, DEWs, and co-orbital weapons. DRDO Chief highlighted that India wants to safeguard its satellites by creating counter space capabilities. It has made significant R&D in tracking and Space Situational Awareness (SSA)." India and the US have also signed bilateral agreements to cooperate in SSA (Samson & Cesari, 2025).

India has made significant R&D that suits its national security objectives in space (Davis, 2019). It has integrated its space infrastructure with a terrestrial military system to prepare its military for multi-domain operations. Indian tri-services along with civilian and academic representatives

simulated a war in space to map and assess India's military responses (Awan, Khan, & Jathol, A New Star Wars between Eagle and Dragon: Implication for South Asia, 2021). India has limited SIGINT/ COMINT/ ELINT capabilities (Khan & Sadeh, Sabre Ratlling in Space: A South Asian Perspective, 2024). India has limited SSA capabilities but it has increased it, but not least through international cooperation (Samson & Cesari, 2025). However, India has advanced its SLV capabilities, aiming to launch bigger SLVs with capability to carry heavier satellites (Ahmed, Arif, & Maik, 2020). The development of these capabilities enhances India's ability to foster its deterrence against Pakistan and China.

India has been integrating its space assets with its Ballistic Missile Defence (BMD), Air Defence (AD), and Unmanned Aerial Systems (UAS) (Khan & Sadeh, Sabre Ratlling in Space: A South Asian Perspective, 2024). It is in a hot pursuit of integrating space systems with terrestrial systems for information dominance and survivability (Awan & Javaid, 2020). India's point of view is that the space system will simultaneously enhance the credibility of its deterrence and crisis management. Its efforts to integrate the space system with the terrestrial system introduces stability-instability trade-offs in South Asia.

India's Joint Doctrine Indian Armed Force-2017 and Land Warfare Doctrine-2018 have indicated space as a fourth medium of warfare and as a next battlefield (Khan & Sadeh, Sabre Ratlling in Space: A South Asian Perspective, 2024). India's counter space capabilities are viewed as a response to China's counter space capabilities including its ASAT missiles, DEWs and EW capabilities. Chinese counter space capabilities have shaped India's strategic choices in space. These choices are reflected from its military doctrines suggesting counter space capabilities as critical enablers of deterrence against its rivals. India tested DA-ASAT missile but its operational use is still limited. The test was more like a signalling act than an operational capability against rivals, Pakistan and China. The test was more like a demonstration of technological maturity and strategic resolve. These incremental developments by India have destabilized fragile peace and stability in South Asia (Khan & Sadeh, Sabre Ratlling in Space: A South Asian Perspective, 2024).

Pakistan's approach to space security is demonstrated by lack of counter space capabilities and political interest coupled with consistent diplomatic emphasis on PAROS. Pakistan's view of space security should not be interpreted solely as normative preference (Ahsan & Khan, 2019). It has showcased restraint to preserve crisis stability in South Asia. It advocated against space weaponization in all its manifestation at the multilateral arms control and disarmament forums. Its advocacy is against the development, stockpiling and testing of DA-ASAT missiles and co-orbital ASAT weapons. The preference to negotiate binding treaties at the multilateral forums offers Pakistan a diplomatic means to limit destabilizing and superior capabilities. This legalist posture is tantamount to Pakistan's foreign policy objectives that reinforces Pakistan's image as a support of rule-based global order in space. It is the only nuclear weapon possessor state that has ratified all UN mandated space related treaties. It has ratified Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water (NTB) (Khan, Khalil, & Imam, 2020). It is a member of International Telecommunication Union (ITU), Agreement Relating to the International Telecommunications Satellite Organization (ITSO), and IMSO Convention on the International Mobile Satellite Organization (Status of International Agreements relating to activities in Outer Space as at 1 January 2025, 2025).

Pakistan has seven operational satellites. These include PakSat-IR, PRSS-1, PakTes-IA, PakSat-MM1, PRSC-EO1, Electro Optic (EO-1), and Hyper spectral Satellite (HS-1) (Khan & Sadeh, 2024). It has launched four satellites in 2025, making 2025 the most significant year in the history

of its space program. Three satellites including PRSC-EO1, EO-1 and HS-1, are owned, and operated by Pakistan's premier national space agency, SUPARCO. PAUSAT-1 is operated by another government entity. Although its imagery satellites are dual-use assets, official press releases indicate that they are being exclusively for civilian and commercial purposes. Pakistan's national space policy was released in 2023 indicates its vision to explore space for civil and commercial purposes (Natioanl Space Policy Paksitan, 2023). However, Pakistan's National Security Policy-2022 under defence and territorial integrity indicates to "strengthen space-based technology and its application to meet future challenges. (National Security Policy of Pakistan, 2022)"

Pakistan is increasingly dependent on space capabilities to provide services for civil and commercial purposes (Awan, 2019`). This creates incentives for Pakistan to preserve space for sustainable operation and lower the risks of space debris. Presently, Pakistan does not have counter space capabilities, but it faces threats to its space assets from India. This also underscores the urgency of legal and normative constraints in space, addressing rising counter space asymmetry in South Asia (Khan & Khan, 2019).

India's ISR satellites are the eyes and ears of its tri-services. India's development of counter space capability is largely driven to counter China, a secondary implication for Pakistan. Pakistan's view point on space security is to address rising counter space asymmetries in South Asia (Khan & Ullah, 2020). It has articulated its vision in the National Space Policy to bolster space technologies for socio-economic development and national security. Pakistan's National Security Policy also highlighted space security as a challenge. Therefore, the comparative analysis suggests that both positions are not purely normative considerations. India's strategic motivations are to counter China in space. Pakistan's advocacy on space weapons is its response to address rising counter space asymmetry and vulnerability rather than intrinsic opposition to space weaponization (Khan & Sadeh, 2019).

The rising misperception between both countries can legitimize targeting space assets. India has the capability and Pakistan doesn't. But the distinction between dual-use (civil, commercial and military purposes) and managing of the aftermath (creation of space debris) of targeting a dual-use object in space pose major challenges for a military commander, prior to authorizing use or threat of use of force. The absence of a legally binding instrument on PAROS further incentivizes for pre-emption against rivals, which may be managed if mechanisms are implemented through binding agreements complemented by TCBMs.

6. UN Based Efforts on PAROS

The Conference on Disarmament is the UN mandated permanent multilateral disarmament body to negotiate arms control and disarmament related treaties. Primarily, the CD is independent of the UN. However, its secretary is appointed by the UN Secretary-General. The CD requires considering recommendations from the UN General Assembly. It submits its annual reports to the UNGA. The CD has a permanent agenda, well known as the Decalogue. The permanent agenda items deal with a variety of issues concerning arms control and disarmament matters in nuclear, chemical, biological, space and conventional domains. These items are discussed in ad hoc committees. The main rule of the CD is based on consensus. PAROS is the core agenda item of the CD along with Nuclear Disarmament (ND), Negative Security Assurances (NSA), and Fissile Materials Cut-off Treaty (FMCT) (Conference on Disarmament, 2025).

The formal discussion on PAROS was started in the CD in 1982. Subsequently in 1985, an ad hoc committee was established in the CD. Over the past four decades, the CD has taken steps to foster discussions on PAROS. A Subsidiary Body was established in CD on PAROS. The SB was previously established during 1985 to 1994 (Working Paper submitted by Australia and Singapore, 2025). It was again established in 2009, 2018, 2022 and 2024 to strengthen discussion on PAROS (Working Paper submitted by Australia and Singapore, 2025). More recently, in 2025, four meetings of SB-3 were held under the Chairperson (Coordinator) of E. Mr. Carlos Mario Foradori, the Ambassador of Argentina. But no report was adopted by consensus due to disagreements among major space powers over whether to prioritize discussions on legally binding or non-legally binding instruments on PAROS. The discussions in the CD on PAROS have suffered from institutional paralysis. The failure to negotiate a treaty on PAROS in CD is also because of its institutional design to yield consensus. Since, all 65 members of the CD are significant military powers. Therefore, a binding treaty that could put legal constraints on their military powers may not be a judicious diplomatic effort. Discussions on PAROS FMCT, NSA and ND have all met a similar fate of stalemate.

The tenth Special Session of the United General Assembly Devoted to Disarmament held its first meeting from May 23 to June 30, 1978 and a consensus reached on its report (UNGA, 23 August 2024). It suggests that "in order to prevent an arms race in outer space, further measures should be taken and appropriate international negotiations held in accordance with the spirit of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies. (Resolutions and Decisions adopted by the General Assembly during the Tenth Special Session, 23 May-30 June 1978)" To make progress on this agreement, PAROS was made the core agenda item of the CD and discussion kicked off onward to discuss possible elements of the treaty on PAROS.

However, no significant progress has been made in the CD on PAROS but not limited to tabling of two drafts of Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force against Outer Space Objects (PPWT), co-sponsored by China and Russia (Conference on Disarmament, 29 February 2008). First draft was tabled in 2008, with an updated text re-submitted for discussion in 2014. The drafts were aimed to discuss a legally binding instrument to prohibit states from placing any kind of space weapons in and around earth, including, inter alia, the threat or use of force against space objects (Conference on Disarmament (a), 14 September 2015).

The drafts did not get Western traction. Objections were raised on the definition of weapons in space and provision of verification. The US and the Western countries considered both provisions of the draft treaty not feasible. Consequently, discussions were stalled without reaching any consensus. In another substantive move, Russia again tabled an initiative in CD in 2014 by taking commitments from states not to be first to put weapons in space. The No First Placement of Weapons in Outer Space initiative was aimed to unblock discussion on PAROS. However, it faced a similar fate to the PPWT (Conference on Disarmament (b), 11 December 2014).

The UN First Committee resolutions on PAROS were aimed to unblock the deadlock. The UN First Committee has gradually developed substantive discussion on PAROS through adopting resolutions. In 1981, UNGA adopted two significant resolutions on PAROS. These include Resolution A/RES/36/97C, which highlighted the ASAT system and affirmed the protection of space objects. The second Resolution A/RES/36/99 highlighted the issue of weapons in space. Both were adopted and the momentum continued with the further discussion on PAROS through

adoption of Resolution A/RES/37/83. In the same year, Resolution A/RES/37/99D focusing on the prohibition of ASAT was adopted.

Despite realization of rising concerns of space weaponization, the non-binding resolutions did not get into negotiating a treaty on PAROS. The states did agree to pace up the discussion through bringing resolution on TCBMs. The First Committee has continued to adopt non-binding resolutions on TCBMs since 2005. In 2012, a GGE on PAROS was established under the Resolution on TCBMs. The GGE on TCBMs adopted a consensus report (UNGA (a), 29 July 2013). But, long-drawn and resulting discussion on legally binding instruments created a roam for discussion of responsible behaviour approach through norm setting. The discussion of prohibiting the development of offensive counter space capabilities shifted toward a middle way, with the Western countries increasingly favouring non-legally binding instruments on PAROS.

Since 2011, the UN First Committee has annually adopted a resolution on PAROS. In 2017, a resolution on Further Practical Measures on PAROS was adopted in the First Committee. A GGE was established for two years to outline elements of a treaty on PAROS. The GGE met from 2017 to 2019 but unfortunately no report was adopted. The consensus was not reached due to the US objection, as the report was a replica of the China-Russia co-sponsored PPWT draft treaty.

In 2020, a major resolution was adopted by the First Committee on reducing space threats through norms, rules and principles of responsible behaviours, sponsored by the UK. An OEWG was established for two years from 2022-23. It held three substantive sessions. The report was not adopted primarily due to Russia and Chinese objections. Meanwhile, a US sponsored resolution on moratorium on DA-ASAT testing in space was adopted in the First Committee, and Weapons of Mass Destruction in Space.

In 2022, a second GGE was established by the UN Secretary General adopted under the resolution on Further Practical Measures on PAROS to outline possible elements of a binding treaty on PAROS. The Group met for two years from 2023-24. This time a compromise was reached between major space faring nations that both legally binding and non-legally binding approaches was accommodated in the final consensus report. It was a significant milestone achieved in the last forty-year on PAROS. The report highlighted both possible elements of a binding treaty on PAROS and emphasized the role of adopting responsible behaviour approaches. The report was submitted to the UN Secretary General and further transmitted to the CD to start negotiation on PAROS (UNGA, 23 August 2024).

In 2023, the resolution on Further Practical Measures for PAROS established an OEWG to meet from 2025. The UK sponsored resolution also called for establishing an OEWG. However, NAM countries tabled a resolution to merge the two OEWGs led by the UK and Russia into one OEWG, scheduled to meet from 2025-28.

Pakistan has been favouring resolutions on PAROS, TCBMs, No First Placement of Weapons in Outer Space, and Further Practical Measures on PAROS. However, Pakistan has abstained from voting on the Resolution led by the UK. Its explanation of vote indicates that the resolution has not discussed PAROS and only reaffirmed non-binding instruments through norms setting approach on PAROS. Therefore, Pakistan abstained from voting. Pakistan also abstained from voting on a US led resolution. Its explanation of vote cited that the resolution did not highlight banning of future production of DA-ASAT and existing stockpiles and research and development. Pakistan also abstained from US sponsored resolutions on WMDs in outer space. It also abstained from voting on the decision to merge two OEWGs into a single OEWG on PAROS in all its

aspects. Pakistan was part of the first and second GGE on Further Practical Measures on PAROS. It has actively participated in the three sessions of OEWG held from 2022-23 (West, 2024). It has also actively participated in the two sessions of OEWG on PAROS in all its aspects held in 2025.

India voted in favour of resolutions on PAROS, TCBMs, NFPOWS, Draft decision on merging two OEWGs in single OEWG, WMDs in outer space, and Further Practical Measures on PAROS. However, India abstained from voting on UK sponsored resolution and destructive DA-ASAT missile testing. India has also participated in two GGEs on PAROS. It has actively participated in three sessions of OEWG (2022-23) and two sessions of OEWG on PAROS in all its aspects.

7. PAROS from South Asian Perspective

From a South Asian perspective, PAROS is treated as a hybrid instrument. China, Russia and Pakistan favoured legally binding instruments on PAROS. Pakistan advocates that non-legally binding instruments lack enforcement mechanisms and provide time for further development of counter space capabilities. Pakistan believes that India is increasing its counter space capabilities without any check and balance. Pakistan advocates that non-legally binding instruments approaches may complement legally binding instruments but these steps cannot substitute legally binding instruments on PAROS. Pakistan is a strong supporter of negotiating a treaty in the CD on PAROS that includes focus on addressing the key challenge of rapid development of counter space capabilities. Discussion on behaviour in space less of negotiating a binding treaty on PAROS does not serve as the best pathway for future progress. Pakistan argues that the non-exhaustive list of TCBMs in space may foster negotiating a binding treaty on PAROS. Although, norms can lead to binding agreement but historically these did not offer as a substitute.

Pakistan fears that there has no urgency shown by the major powers to start negotiations on PAROS in the CD. Presently, major space faring nations are increasingly investing in R&D in counter space capabilities. Likewise, significant military powers have integrated space assets with their terrestrial military systems, and are taking advantage of such integration in the battlefield. Space has now become the fourth medium of warfare. States have announced offensive space policies, strategies and doctrines to fight a war in space. All these offensive military developments have destabilising effects on strategic stability. Advancement in DA-ASAT weapons, DEWs and cyber tools can disturb the sustainable operations in space. Pakistan believes that on-going divergent and parallel efforts in the space concerning PAROS are a challenge to negotiate a binding treaty. Pakistan argues that there has been little progress on the promises to address the conventional weaponization of space since the consensus on the SODD-1 document.

The hybridity of PAROS comprises normative and legal dimensions. A single interpretation is a challenge to PAROS, either it is normative or legal. Normative position can lower risks and misperceptions. Legal approaches can manage capabilities through constraints. Space is for peaceful purposes and a CHM. It is a normative framework and requires arms control as an unfinished agenda to constraint counter space capabilities. Hence, PAROS functions as a bargaining chip for states to pursue legal and normative approaches to limit capabilities in line with their relative power and threat perceptions.

PAROS is a strategic tool for Pakistan to manage counter space capabilities. Pakistan's legal and normative position is that to make substantive progress on PAROS, a comprehensive picture space threats be mapped. For normative point of view, the current discussion in the on-going OEWG on PAROS in all its aspects serves as a suitable forum. Two substantive sessions of the OEWG held in 2025 had already collapsed but not limited to adopting the agenda for 2026-2028 sessions. The

future of OEWG depends on the consensus report of GGE that can serve as a foundation stone to balance normative and legal approaches. The consensus document highlights possible elements for a binding treaty as emphasized normative approaches on PAROS. From a legal point of view, Pakistan strongly supports early negotiation on PAROS in the CD. The SB-3 on PAROS report should be adopted with consensus and the GGE report is also a precursor for such consensus.

From a legal point of view, the discussions on intricacies of verification and definition of space weapons should not impede consensus on binding a treaty on PAROS. Negotiations can proceed on PAROS without having a comprehensive verification process. The consensus report of the non-exhaustive list of TCBMs devised in the GGE report serves the purposes. The same approach can be applied when it comes to defining space weapons. However, some states argue that a verification mechanism is necessary to negotiate a treaty because the example of Biological Weapons Convention (BWC) entered into force without having a comprehensive verification mechanism and later on states faced challenges when it came to the implementation of BWC. The definition of space weapons may bring the majority of dual-use space systems, legitimizing targeting them under IHL during conflict. Such an approach runs counter to the spirit and corpus of space law, which recognizes space as CHM and a province of all mankind subject to the principle of non-appropriation.

Pakistan has repeatedly favoured restarting discussion on draft PPWT in the CD over the past several years. The definition of space weapons and verifications can be resolved during the negotiation process. Pakistan is also concerned about diverting space programs in South Asia. India is blurring the distinction between civilian, commercial and military space assets. The lack of space traffic management in LEO and rapid development of mega constellations in LEO for economic gains have put the looming challenge of space debris under the carpet. Such developments have also given impetus for establishing a rule-based governance system.

In sum, Pakistan's position on PAROS favours negotiating a binding treaty in the CD and SB on PAROS sessions. Its normative and legal advocacy on PAROS is highlighted in the first and second GGE on PAROS, OEWGs, and SB-3 on PAROS in the CD.

India also supports the hybrid approach on PAROS. But, its threat perception in space has resulted in a growing imbalance in its hybrid position. India wants to maintain its counter space capabilities and also adopt a legal position. However, in the past couple of years, the rapid space development emphasis on normative position rather than legal approaches on PAROS. Rajagopalan stated that India has traditionally opposed space militarization and weaponization and adopted a policy of favouring efforts to prevent deployment of weapons in space (Rajagopalan R. P., 2011). India considers space as a global commons and sought a permanent ban on weapons in space. Rajagopalan also stated that the Chinese DA-ASAT test in 2007 has prompted New Delhi to re-evaluate its policy and considered developing ASAT weapons as a response to Beijing (Rajagopalan R. P., 2022). Ganguly argues that India is cognizant with the rapidly expanding Chinese counter space capability and wants to hyphenate its military space capability with Chinese development (Ganguly, 2023). Lele suggests that India has concerns about the security of its space assets primarily due to regional geopolitics challenges and threats from China. He argues that India needs a Space Force that could be an appropriate measure to safeguard India's space assets and address threats to space assets (Lele, 2023). Establishing a Space Force by India would further blur lines between dual-use space objects. Rajagopalan and Stroikos argue that India's space policy is now guided by national security objectives and pragmatism. It faces a shift from a previous emphasis on morality and principles regarding space arms control (Rajagopalan & Stroikos, 2024).

Sullivan writes that India during the proceedings of the CD argued that any extension of an arms race in outer would have ramifications for strategic stability and the CD should take resolute measures on negotiating a treaty on PAROS. Ahmad contradicts India's policy of banning ASAT missile tests in space by viewing India's 2019 ASAT test as an impetus to strengthen its deterrence capability. He argues that the ASAT test by India negated its earnest adherence to international space law. India's ASAT test has increased the possibility of arms in space, thereby undermining efforts on PAROS (Ahmad, 2021). Hussain and Shahzad argue that the timing of India's ASAT test is crucial. India tested ASAT when there was a rising global realization about the implications of space weaponization. They believe that India's ASAT test places it in a strong position to influence discussions on PAROS. Likewise, both also note that India's aspiration to achieve this strategic capability was not new, and it lacks a concern regarding the implications of provoking a regional arms race in outer space (Hussain & Shahzad, 2023). Khan and Khan argue that India opposes PAROS due to its strategic interests in space. They note that the space program offers critical support to Ballistic Missile Defence, Air Defence and developing counter space capabilities to neutralise the satellites of enemy states (Khan & Khan, 2019).

Sachdeva writes that India should assure compliance with the normative body of space law, even if not legally binding, provided it is technologically expedient, economically viable, and aligns with national strategic interests (Sachdeva, 2016). Stroikos also argues that India criticised subjectivity involved in interpreting space threats at the OEWG meeting in August 2023. In parallel, India supported negotiation on PAROS but did not favour norms building and voluntary approaches in space (Stroikos, 2023)

Likewise, it is also worth noting that India has an advanced SLV program with promise of commercialization offering low price launches to states and non-states entities. Commercialization of space technologies and services is the cornerstone of India's space policy. India sees itself in the leagues of space faring nations with advanced space technologies. In this perspective, an arms race free space is the requirement for India to make its space financially beneficial for overall economic growth. But India's testing of ASAT missiles is no doubt a worrisome development for regional powers. In view of India' s rising space commercialization and international cooperation, it has taken a dual approach on PAROS. There is another shift in India's stated policy of supporting negotiating a treaty on PAROS. It has now started favouring norms, principles and rules in space as well as taking sides of states which promote legally binding measures. It is simultaneously supporting both the behaviour approach as well as the capability approach in space. But India is also building its counter space capability which eventually leads to space weaponization.

8. Conclusion

The research paper offers perspective on PAROS from a South Asian angle. The paper concludes that the dual-use aspects of space assets making space security linked to strategic stability and crisis management. In South Asia, space security is inseparable from regional dynamics, threat perception and escalation risks, prompting both countries to adopt a hybrid approach on PAROS. The paper assesses Pakistan's position as inclined toward supporting legal measures on PAROS as a means to constrain counter space technologies in South Asia. Pakistan has also participated in normative processes discussed under GGE and OEWGs. Pakistan supports hybridity on PAROS but emphasizes legal measures. As far India is concerned, their threat perceptions are unaddressed from its stand point. Its space program is rapidly increasing, and as a consequence, it wants to maintain its counter space capabilities but also advocate both normative and legal approaches on

PAROS. It is also a hybrid approach but more inclined toward normative since the 2019 ASAT test.

Space is recognized as a CHM and province of all mankind by India and Pakistan. However, both have divergent practical approaches. India has tested DA-ASAT missiles in space for security and prestige purposes. Pakistan has neither demonstrated any ASAT capabilities nor shown any political intention to develop ASAT in future. The paper concludes that a treaty banning counter space capabilities can address challenges to regional stability. However, debate on multilateral arms control forums is heavily politicized and the emergence of consensus on PAROS seems like a distant mirage. The institutional processes are suffering paralysis. However, the possibility of consensus on a treaty on PAROS in the CD cannot be totally ruled out, despite its structural and procedural flaws. Likely that consensus will come with a compromise. A compromise to accommodate rules-based, non-legally binding approaches and legally binding instruments on PAROS. States will try to find a middle ground between behavior adopting approaches and binding agreement on PAROS. An incremental compromise designed to bridge both approaches. A binding treaty on PAROS favours Pakistan as it will bring a legal bar on its arch rival's counter space capabilities. However, India will continue to advocate binding treaties while, in parallel, developing its offensive counter space capabilities and integrating space systems with its NC^3 architecture, BMD system, AD, and UAS.

The paper concludes that UN efforts have witnessed substantive discussion on arms control in space. However, real progress required a combined approach, a balance between norms setting and prohibitions on offensive capabilities in space. The paper assesses the effectiveness of the CD in dealing with arms control in space. The CD is facing challenges of institutional paralysis and agenda-overload, pitching PAROS against FMCT, NSA and NA. However, it is the only multilateral forum where states can discuss arms control matters. Therefore, the hybrid approach on PAROS comprising normative and legal approach at multilateral forums, the CD, the First Committee, and GGE and OEWG is the recipe to make space conflict free.

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