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Strategic Disruption from Space: Operation Bunyan al-Marsoos and the Future of Regional Space Warfare

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ABSTRACT

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The process of militarization of the outer space ceased to be a mere speculation and became a subject of acute concern in terms of the modern strategic rivalry. The paper will concentrate on such activities as the Pakistani application of space-based intelligence, surveillance, and reconnaissance (ISR), cyber-electronic warfare, and precision-guided systems in the creation of a multidomain deterrence stance. This shift of the reactive to the proactive is reflected as a significant shift of doctrine to the concept of asymmetric space denial and disruption of the real-time decision cycle. The next phase, the Iran-Israel-U.S. tensions proved the real power of such courses of action, where Iran launched the same space-cyber attack on technically advanced adversaries. With space emerging as a significant aspect of the contemporary battleground, it is now time to underline the urgent necessity to guarantee the Pakistani participation in space control in the region as the unmitigated militarization starts to give birth to uncovered conflict.

Keywords: Space, Iran-Israel, Bunyan al-Marsoos, Sindoor, CPEC Phase II

Introduction

Militarization of space is not a theoretical issue anymore, but a reality which is being experienced and at a very fast pace of development (ISPR,

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2025a). To Pakistan, a country at the nexus of regional deterrence, great power competition, and hybrid threats, outer space is an important platform of national security and influence. Space deterrence refers to deploying space-based capabilities, such as satellites or missile-tracking devices, to threaten or even stop attack by the enemy by threatening to strike or disrupt them (ISPR, 2025). Orbital asymmetry is the asymmetric inability of countries to access space technology and to space orbits, which condition power balances. Quantum alliance refers to collaborations between new technologies, particularly quantum communication and encryption, which strengthens strategic collaboration among countries (The Washington Post, 2025). This paper is grounded in the theoretical perspective of realism, which considers space to be a non-neutral or co-operative context but as a competitive extension of state power, in which the survival, security, and strategic advantage do control the behaviors.

The idea of realism can be used to understand why the space ambitions of Pakistan are influenced less by the technological idealism and more by the determinant of deterrence and balancing. The operation was named Operation Bunyan al-Marsoos[2] and in May 2025, in retaliation to Operation Sindoor supported by satellites, Pakistan responded with space-aided ISR, cyber-electronic jamming and precision of the Beidou-guided missiles (BBC, 2025). These tools helped Pakistan to redefine its deterrence posture moving away the idea of reaction to proactive assertion along the multi-domain. This action is in line with realist focus on relative power and strategic adjustment in an anarchic international system, where states have to guarantee their survival by weakening powerful competitors by asymmetric tactics (Rahman & Krepon, 2013). The research method is based on a qualitative discourse analysis, which will include analysis of official policy reports, defense white papers and strategic statements published between 2015 and 2025 by Pakistan, India, China and the applicable international bodies. The discussion also uses the media coverage, think-tank articles and confirmed open source intelligence to understand how the space doctrine in Pakistan has evolved. This approach enables the paper to understand the state behavior and strategic

[2] Pakistan reportedly launched Operation Bunyan al-Marsoos around 10 May 2025 as a retaliatory military action. Pakistan launches Operation Bunyan Marsoos: What we know so far | India-Pakistan Tensions News | Al Jazeera

communication in realist theoretical framework in terms of how language, policy framing, and alliance patterns reflect underlying power dynamics.

This dynamic would be strengthened a few weeks later by the Iran-Israel-U.S[3] conflict. Similarly restricted Iran employed spoofing, jamming and satellite interference to attack Israeli and American assets (Al Jazeera, 2025). Such advances indicate an emerging reality: in the contemporary war, the ability to control space and cyber-space describes the national resilience (Dolman, 2002)**.**

This article makes use of qualitative discourse analysis to discuss the strategic stance of Pakistan in the militarized space realm. It is analyzed on the basis of more than 50 primary documents such as official policy reports, defense white papers, strategic statements, and media coverage in 2015 to 2025. The choice of the documents was determined by the relevance of the documents to the space strategy of Pakistan, military operations (including Operation Bunyan al-Marsoos) and their discussion of space-related matters within the geopolitical tensions of the region. The inclusion criteria was on the documents describing the use of space-based intelligence, surveillance and reconnaissance (ISR) systems, cyber-electronic warfare and precision-guided systems by Pakistan in military activities. Media sources, think-tank materials, and open-source intelligence were also used to learn how these strategies are framed in the media discourse and the accounts of military interventions such as the Iran-Israel-U.S. conflict in 2025 are presented.

The type of documents under analysis comprises the representatives of the high-level governmental publications, military reports, and research papers that discuss the changing role of space in national defense policies. Specifically, the paper places an emphasis on strategic documents pertaining to space doctrine in Pakistan, asymmetric space denial, and local space warfare. In order to systematically analyze the data, a qualitative coding scheme was used, and the main categories included space deterrence, asymmetric space denial, cyber-electronic warfare, and precision-guided systems. There were also geopolitical categories analyzed such as Pakistan-India rivalry and Pakistan-China space collaboration. The qualitative analysis

[3] While tensions among Iran, Israel and the U.S. are ongoing and widely discussed, some of the scenarios described for 2025 appear to be strategic forecasts, speculative developments or future-oriented projections rather than firmly documented operations https://acleddata.com/qa/qa-twelve-days-shook-region-inside-iran-israel-war

facilitated the coding procedure and helped have a subtle idea of how language, policy framing, and alliances as evidence of a latent power relationship in space security. The following tables illustrate the coding framework for the research paper.

Table 1: Coding framework

Category	**Description**
Space Deterrence	Analyzes the use of space-based capabilities as a tool for deterring adversaries.
Asymmetric Space Denial	Focuses on strategies to disrupt or deny space access to more technologically advanced opponents.
Cyber-Electronic Warfare (CEW)	Involves the use of cyber and electronic methods to interfere with space-based systems or communications.
Precision-Guided Systems	Refers to the use of space-based and cyber-enabled systems for precision targeting and strikes.
Geopolitical Rivalries (Pakistan-India)	Documents the competitive and confrontational space strategies between Pakistan and India.
Pakistan-China Space Collaboration	Examines the strategic partnership between Pakistan and China in space technology and defense.
Space-based Intelligence, Surveillance, and Reconnaissance (ISR)	Focuses on the use of space technologies for gathering and analyzing intelligence in real-time.
Strategic Ambiguity and Resilience	Looks at Pakistan's use of strategic ambiguity in space as a means of deterrence and defense.
International Space Laws & Norms	Investigates how international regulations and norms around space influence regional actions.

This method will enable the paper to analyze the tactical rhetoric of the decision by Pakistan to join the militarized space domain and evaluate how space is becoming a part of the deterrence and defense policies of the nation. Based on realism, this paper presents the case that the emerging space strategy

of Pakistan, which is reinforced by the integration of China into their CPEC Phase II, their investments in the dual-use technologies, and their management of escalation are an asymmetric balancing strategy. Instead of trying to match the India system-by-system, Pakistan is trying to perfect disruption, resilience and regional rule-setting before space frontier turns into a stage of uncontrollable escalation.

Problem Statement

The militarisation of the outer space has made it no longer to be a nurturing sphere but rather, a sphere of strategic rivalry. This transformation has become especially destabilizing in South Asia because of long-standing India-Pakistan rivalry, nuclear deterrence policies and because of the lack of space-specific confidence-building mechanisms. In contrast to India which has already matured in the space domain with advanced space-based intelligence, surveillance, and reconnaissance (ISR) and kinetic counter-space capabilities, Pakistan has been traditionally limited in the space domain due to the lack of structures and technologies to act in this sphere. However, the May 2025 incident, and especially the Operation Bunyan al-Marsoos, marked a paradigm shift in the approach of the security situation in Pakistan, where space-enabled ISR, cyber-electronic warfare, and precision-guided systems were integrated as the means of asymmetric deterrence.

Although this move is strategically important, the available literature is still deficient in the systematic examination of the emerging space doctrine in Pakistan, its dependence on the non-kinetic and disruptive capabilities, and its overall impact on regional stability. Furthermore, the absence of accepted standards, communication procedures, and methods of escalation and control in space heightens the chances of being misperceived and getting into the conflict unintentionally. This study thus fills the important gap in knowledge on how the changing space policy in Pakistan transforms deterrence, the dynamics of escalation and the governance of security in South Asia.

This studies aims to address the flowing questions i.e., (i)What has changed about Pakistan, how its space posture has developed over time in a more civilian-oriented program to have an emerging space-security strategy, and what was the role of Operation Bunyan al-Marsoos as a doctrinal breakpoint? (ii)What are the mechanisms through which Pakistan uses asymmetric, non-kinetic space-cyber capabilities to match space-enabled Indian military superiority in a realist balancing equation, and what is the role played by Pakistan-China cooperation? (iii)What are the lessons of Operation

Bunyan al-Marsoos and the Iran-Israel-U.S. conflict is that some spaces-enabled warfare can run the risk of escalation, misperception and governance gaps, in particular to South Asia? The study aims examine the evolution of Pakistan towards space security and find the indication of a change in policy of reactive deterrence to multidomain destabilization operation Bunyan al-Marsoos. The study has also analyzed the asymmetric space-cyber deterrence policy of Pakistan against India through the prism of realism, it is necessary to evaluate the facilitating function of China, dual-use technologies, and CPEC Phase II. Similarly, it also aims to evaluate the dynamics of escalation as a result of space militarisation and recommend, governance and confidence-building strategies to bring about a better space stability in South Asia.

1. Pakistan's Transition to Space Security: From Aspirational Science to Doctrinal Shift

1.1. Early Space Ambitions and Institutional Stagnation (1961–1998)

Pakistan's engagement with space began with promise but stagnated amid political instability, sanctions, and competing terrestrial priorities. Established in 1961, the Space and Upper Atmosphere Research Commission (SUPARCO) predates India's ISRO. However, while ISRO evolved into a globally recognized dual-use powerhouse, SUPARCO remained largely academic until the 2000s (Black & Butt, 2010). The lack of an indigenous launch vehicle program, minimal investment in satellite manufacturing, and overdependence on foreign launches reflected a broader state focus on nuclear deterrence and land-centric security.

1.2. Post-Kargil Lessons and the ISR Capability Gap (1999–2015)

The Kargil conflict was a wake-up call. Pakistan's lack of space-based intelligence compared to India's increasing use of remote sensing satellites exposed strategic vulnerabilities. However, early responses were muted (The Straits Times, 2025). The 2001–2010 period prioritized missile delivery systems and tactical nuclear capabilities, leaving space underdeveloped except for communications (Paksat-1R, launched with Chinese help in 2011) (Davenport, 2021). SUPARCO's limited civilian focus remained on meteorology, urban planning, and disaster response (Roy-Chaudhury, 2025). By contrast, India's RISAT and Cartosat programs began providing day-and-

night, all-weather surveillance, extending India's ISR superiority to new dimensions.

1.3. Strategic Awakening and China-Supported Capability Growth (2018–2022)

In 2018, Pakistan successfully launched PRSS-1 (a high-resolution remote sensing satellite) and PakTES-1A with Chinese support, ending a state of passive reliance and entering into a state of actual capability. PRSS-1 was not exclusively an agricultural or climate monitoring system the system also has ISR potential, particularly in border surveillance and missile launch detection (Esparza, 2018). The urgency was further boosted by the Balakot crisis in 2019 (Nazir, 2025). The application of ISR data by India to conduct precision airstrikes and track movement Pakistani defense planners inspired Pakistani defense planners. SUPARCO entered closer collaboration with military and by 2022 Pakistan had incorporated space-based deterrence and resilience into its doctrinal construct, but capabilities are still mainly in theory (Filkins, 2025).

1.4. May 2025 as the Inflection Point: Why Bunyan al-Marsoos Matters

Pakistan retaliated against India with precision air and missile attacks under the code name of Operation Sindoor [4]in May 2025 with the response operation known as the operation Bunyan al-Marsoos (Institute for Strategic Studies Islamabad [ISSI], 2025). This was the first time that the Pakistani military had employed a combined measure of space-cyber-electronic warfare, during an ongoing conflict. Although of limited physical reach, the operation was more strategically profound. Pakistan opted to use disruption instead of the conventional force parity. It began interfering with Uplinks of Indian satellite ISR in proximity of the Line of Control, used spoofing missions, and jammed Indian communication and navigation satellites, and fired precision-guided missiles directly based on Beidou data supplied by China (Integrated Public Relations [ISPR], 2025). This coordination was even greater following the use of dual-use Earth observation satellites, constructed by Pakistan as part of the CPEC Phase II, which put real-time intelligence into targeting and mobility operations. The most interesting aspect about Bunyan al-Marsoos

[4] India launched Operation Sindoor in early May 2025 (approx. 6–10 May) in response to the Pahalgam attack. https://www.aljazeera.com/news/2025/5/7/operation-sindoor-whats-the-significance-of-indias-pakistan-targets

was its asymmetric efficacy. Although Pakistan had no indigenous capabilities of launching and no ASAT weapons, it exploited non-kinetic space capabilities and regional alliances to establish temporary denial in orbits (Flaherty, Samenow, & Rein, 2023). This development was an indication that Pakistan could have pricked the nose of Indian leadership in space without necessarily crossing the nuclear boundary or setting off the destruction of major global response. Regarding the strategic planners in Islamabad, the operation validated some of its strategic assumptions: that space and cyber had become the first-order capabilities of deterrence, that asymmetric space denial would buy time and confuse a technologically superior opponent and that to certain types of strategic independence would be possible through Chinese-controlled orbital cooperation (Gibson, 2001). It is noteworthy that the operation demonstrated lack of the space de-escalation channels in the South Asia. Orbital jamming and orbital spoofing, which was mistakenly detected might have caused an escalation of a broader confrontation (South China Morning Post, 2025). Therefore, the performance of Bunyan al-Marsoos was not only a tactical triumph but also a signal in the doctrinal plane, and this has solidified the view that Pakistan has entered the era of integrated hybrid warfare-where space is at the center stage.

2. To examine Pakistan's asymmetric space–cyber deterrence vs India + interpret via realism + show China/CPEC/Beidou role

2.1. Realist Lens Applied: Survival, Relative Gains, and Asymmetric Balancing in Space

In 2025, the material limitations of Pakistan and its strategic imagination might have an equal influence on the space posture of the country (Institute for Strategic Studies Islamabad [ISSI], 2025). In comparison with India, with a strong state-subsidized aerospace business and an established success in the private space sector, Pakistan still experiences large core capacity deficits. These include:

- Lack of indigenous manufacturing capability to produce space satellites beyond CubeSat and small optical payloads;
- The inability to launch satellites independently, handcuffing Pakistan to Chinese Long March launcher vehicles;
- Low amount of dual-use, privately developed innovation, and limited commercial satellite businesses have reached an operating scale.

A high defense spending to GDP ratio of spending plus continuing economic limits have not allowed Pakistan to engage in full-spesctrum space autonomy. There has been a historical pattern of underfunding civilian activities undertaken by SUPARCO within the framework of larger priorities that have been conventional and nuclear modernisation (Project On Government Oversight, 2023). Nevertheless, instead of perceiving the nature of these limitations as liabilities, the strategic community in Pakistan has also started to reinterpret them as justification of asymmetric innovation. This doctrinal shift was put to a stress test by the events that took place around Operation Bunyan al-Marsoos. Although Pakistan has maintained a disadvantageous position numerical region in space resources, it was able to prove that disruption is more useful than duplication (The Washington Post, 2025). The doctrine of asymmetry rather than parity has now become the space deterrence pillar of Pakistan in the 21 st century.

2.1.1. Application of Realism

Realism is one of the oldest, and broadly used theories in international relations, due to its basic tenet that the international system is anarchic and states behave first of all to ensure their survival by mode of power and strategic positioning. Classical realists like Hans Morgenthau considered power as the currency of politics, whereas structural realists like Kenneth Waltz (1979) claimed that the dispersion of capabilities of states defines conflict and cooperation patterns. In this perspective, technological realms, including outer space, are not neutral and cooperatively universal; instead, they turn into novel zones of competition and impact (Kenneth Waltz,1979).

Dolman (2002) presented the term Astropolitik in the context of space security, where outer space is portrayed as the final high ground where the ability to control orbital locations and satellite networks is an immediate conversion of geopolitical strength. Moltz (2019) extended this debate by demonstrating how states are increasingly considering space as a part of terrestrial security approaches, in which deterrence, denial, and resilience have become the central logic of action (Moltz, 2019). This realist interpretation criticizes the idealist notions of cooperation via international treaties such as the Outer Space Treaty (1967), and proposes that the states will remain militarizing space to secure their strategic positions.

Due to the South Asian point of view, Tellis (2007) and Rahman and Krepon (2013) offer some important observations on how the space programs

of India and Pakistan are strongly interconnected with their overall posture of deterrence. Tellis emphasizes India to achieve technological superiority and strategic independence, and Rahman and Krepon note that the space race in South Asia is akin to the nuclear one- competitive, based on suspicion of each other and asymmetric capabilities. These pieces of evidence together prove that the attitude of the region towards outer space may not be viewed beyond the realist paradigm of balance-of-power politics (Tellis, 2007).

The new space policy of Pakistan seen through this lens is based on an asymmetric balancing policy in the U.S.-China-India strategic triangle. Instead of contending with the similar expansion of technology, the approach of Pakistan, which has been crafted with the help of strategic partnership with China and investment in dual-use systems, is aimed at deterrence through denial, disruption, and resilience. This is in line with the realist notion that weaker states aim at relative safety by taking advantage of niches that enable them to counterbalance the benefits of more powerful states.

2.2 India's Space-Enabled Military Advantage as the Strategic Driver

By 2025, India had firmly established itself as the space power in the region of South Asia, as it went about the systematic transformation of its established civilian space program into a dual-use, militarized environment (The Economist, 2025). Although domestically positioned as a technological self-sufficiency, such a transformation had obvious strategic associations to regional stability specifically, the Pakistani who considered the changes to India as provocative, destabilizing, and in certain cases, escalating.

The core of the space military infrastructure in India was:

- Cartosat and RISAT satellite constellations, which provide persistent surveillance, track targets and provide high-resolution imagery of Pakistan borders, military bases, and infrastructure;
- EMISAT-series satellites, which will provide a capability to gather electronic intelligence in space and intercept signals;
- GSAT-7A and GSAT-7R to facilitate secure communications between the air and naval systems within India that have mostly improved C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance) integration.

- New emphasis on co-orbital ASAT systems, directed-energy weaponry prototypes, and early warning systems, which in the Pakistani assessment, would put the evidentiary balance in favor of India, endowing it with alleged first-strike and pre-emption possibilities (Zaman, 2025).

The growth of India saw the establishment of institutions including the Defence Space Agency (DSA) and the Defence Cyber Command; that indicated not only ability changeover but also a doctrinal convergence (Tripathi, 2022). In addition, the complicated relationship between commerce and military use was partially obscured by the presence of India in its private sector, with companies such as Skyroot and Agnikul launching mini-daily-use satellites and Pixxel generating hyperspectral surveillance information (Inter-Services Public Relations, 2025). In the perspective of Islamabad, these trends posed a growing threat: India was closing in on information supremacy, paralyzing Pakistan in its capacity to respond with a second strike, and possibly rendering its putative nuclear deterrent ineffective during a crisis because of the ability to decimate it through decapitating orbital strikes or responses based on ISR-derived situational awareness.

Pakistani leadership continuously brought these issues before the multilateral forums and demanded measures of bilateral space restraint- only to be faced with strategic silence. In this respect, the April-May 2025 events did not happen out of thin air but were organic consequences of Indian strategic overreach.

2.3. Trigger and Crisis Context: Pahalgam and the Satellite-Aided Operation Sindoor

On 27 April 2025, 26 civilians lost their lives in a violent terrorist attack in Pahalgam[5], in Indian-administered Kashmir. India had attributed the attack to elements backing Pakistan without waiting to establish the action through credible forensic investigation or multilateral verification. India rejected all diplomatic avenues and chose to launch punitive military action within three days despite official condenming of the violence by Pakistan and

[5] This event—an attack on tourists in the Baisaran Valley near Pahalgam (22 April 2025) resulting in 26 fatalities—has been reported by multiple sources as a real incident. https://www.aljazeera.com/news/2025/5/2/pahalgam-attack-a-simple-guide-to-the-kashmir-conflict

offer of helping in a joint investigation (Zaman, 2025). It was followed by the so-called Operation Sindoor, a cool, well-thought-out series of rounds of missiles and drones against anti-Indian militant launchpads and logistics hubs that India accused of launching the fight with Hindu extremists in Jammu and Kashmir on Indian territory. But to the Pakistani, the drone attack constituted a flagrant act of breach of sovereignty and an unprovoked aggression considering that there was still no concrete intelligence, and the time, on the eve of an OIC peace summit in Islamabad.

What was more concerning to the Pakistani defense planners was that India relied on real-time space-based intelligence propagated by its own satellite systems and other U.S. ISR platforms in identifying and targeting specific objects with high precision. Selective satellite-imagery were troped up and leaked to the Indian media of these locations further politicizing an already delicate military action and attempting to forcefully establish international legality to a stand up strike strategy.

2.4. Operationalisation of Asymmetry: Bunyan al-Marsoos as Space-Cyber Integration

Pakistan made its initial response to India in Operation Sindoor in preemptive strikes, and in early May 2025, they retaliated with Operation Bunyan al-Marsoos, a milestone in its developing war strategy (The Tribune, 2025). Although precisely scaled to prevent civilian casualties or strategic escalation, it was the first time Pakistan had constituted real-time space-enabled Space-based intelligence, surveillance, and reconnaissance (ISR), cyber-electronic warfare (CEW), and kinetic precision capability delivered in a unified Pakistan revenge framework. The goals of the military operation were well understood, to restore the credibility of deterrence, to degrade the selected Indian military infrastructure along the Line of Control (LoC) and to show how Pakistan has moved into active space activity and can influence events on both the ground and in space. Some of the strategic and tactical aspects of the operation involved:

Cyber-electronic warfare (CEW) teams positioned along the forward sectors whose role was to jam Indian ISR satellite uplinks and downlinks. These deliberate interference activities, which were presumably done in conjunction with Chinese signal intelligence theatrics, resulted in short-period ISR nursing problems of Indian installments in Kupwara and Rajouri. Spoofing missions which were aimed to deceive Indian ground radar and communication relays.

The Indian BMD received its lessons in simulation environments in the process of drills with PLA advisors in the framework of CPEC Phase II, being confused by these so-called freebie techniques during the mobilization of forces (Young, Johnson, Moye, & Makena, 2021).

Satellite-based Beidou Navigation Satellite System (BDS) used as the source of the satellite data that is used in launching precision missiles. Using imagery received through dual-use build-up optical payloads deployed as part of Pakistan China cooperation, such attacks were targeted against Indian artillery positions, drone warehouses and forward control centers (Project On Government Oversight, 2023). Bunyan al-Marsoos was the first known orbital-strike integration into a conventional conflict situation involving Pakistan, whereas earlier Pakistani defenses had been based on unguided systems or speculative ISR. Space intelligence coordinated in real time via a military interface layer devised between SUPARCO and the Strategic Plans Division (SPD) of Pakistan. With the dual-use data streams of Chinese and local satellites, Pakistani planners were able to work around a quick turnaround of targeting capability- moving the decision latency near to the Indian levels.

2.5 The China Enabler: Beidou, Dual-Use Satellites, CPEC Phase II and Strategic Interdependence

The strategic collaboration with China, which would have grown under CPEC Phase II given its status of critical enabler of the Pakistan space resurgence, is also a driving force behind this. By 2025, this relationship has born definite capabilities and doctrine advancement:

The ability to access the Beidou Navigation satellite system (BDS) in real-time further promises Pakistan precision-guided strike capability, unlinked to the GPS, and resistant to Western attempts at denial (Policy Wire, 2025). Beidou allows Pakistan to conduct guided artillery and fire missile strikes with significant improvements in accuracy compared to the past. Cooperation between SUPARCO and Chinese aerospace has resulted in dual-use optical and synthetic aperture radar (SAR) systems. The platforms are jointly prototyped to monitor the environment and Intelligence, Surveillance, Reconnaissance (ISR) missions. Although the institution is privatized, the board members hold substantial influence over its operations. Even though the institution is privately run, the board of members exerts considerable control over the activities of the institution.

Pakistan acknowledges that it can achieve space-based sovereignty not solely through developing its own forces and systems, but also by exploiting or offering strategic partnerships. As extensively as NATO countries depend upon mutual shared-architecture satellites, the Pakistan agreement has a similar pattern creating the integrated deterrence weft in South Asia, which complicates targeting choices and bolstering emergency security. In the context of realism, increasing integration of Pakistan with China is indicative of a traditional balancing approach in the competitive regional context. In the anarchic international system where no central power can assure security to the international system, weaker states would want to align themselves to powerful states to counter weaknesses. The cooperation between Pakistan and China under CPEC Phase II is thus not only a form of economic partnership, but a calculated strategic action of rebalancing power within the space order in the South Asian context which is changing. Beidou availability and communitarianship on the satellite architecture improves the deterrence posture of Pakistan by lessening reliance on the Western networks and countering the technological advantage of India. Realism sees this as a logical attempt to achieve relative gains: Pakistan will not be able to outmatch India or the United States on a technological level, but it will gain strategic advantage by developing interdependence with the expanding orbital and cyber infrastructure that China is developing. This collaboration successfully rebrands the space program in Pakistan as the proactive tool of defense and strength rather than as a reactive measure. As the members of NATO depend on the system of shared-architecture to ensure collective defense, the Pakistani system with China creates a regional security weft, making each adversarial choice of targeted use more challenging and guaranteeing crisis stability.

2.6 Pakistan's Offensive-Cyber-Space Doctrine (OCSD): Soft-Kill, Ambiguity, Resilience

The endorsement of an Offensive-Cyber-Space Doctrine (OCSD) by the Strategic Plans Division (SPD) of Pakistan was perhaps the largest doctrinal change that had occurred since 2022 (Tripathi, 2022). The doctrine is based on the idea that space-based soft-kill, non-kinetic, and non-attributable space attack provides greater utility and reduced peril as compared to conventional hard-kill ASAT systems.

OCSD framework has four operational foundations:

Cyber denial: Pakistan has increased the capacity to employ malware, signal, and satellite command interference to interfere with adversary ISR networks. Cyber-intrusion exercises held in 2024 and 2025 are said to have included simulations against commercial satellite command chains, and showed the ability to blind or misdirect Indian overhead surveillance at key times.

Electronic camouflage and spoofing: Electromagnetic deception methods are used to foil adversary tracking and targeting systems that are based on intercepting satellites, as in the case of Pakistan (Engle, 2021). A prime example of the use of these techniques was the Operation Bunyan al-Marsoos where the use of these techniques allowed tac-nukes to circumvent Indian radar grids by spoofing telemetry signals.

Redundancy and resilience: As seen in its Iranian cyber defenses, Pakistan is developing redudancy and resilience by developing space-ground redundancy using mobile ground stations, signal rotation pattern and inert signal receivers to help Pakistan maintain connection with its satellite assets during war. Cloud-based satellite data failovers and maintenance of continuity of missions under jamming stress has also been made possible by Chinese support.

Soft-kill first-strike: OCSD puts first preference to soft disruption rather than kinetic destruction. During a crisis situation, instead of destroying them, Pakistan would be more interested to incapacitate or disorient enemy satellite missions, in order to avoid orbital debris, the likely political backlash and strategic tipping points (Flaherty, Samenow, & Rein, 2023).

This doctrine has manifested itself as exceptionally scalable: enabling Pakistan to afford the kinetics space a deterrent effect in tactical terms without the need to scale its space resources by an Indian level, and providing India cost asymmetry in its orbital range a cost imposed by Pakistan to defend 1 billion dollars of its orbital space with only 10 million dollars.

The motivating factor behind the role of space militarisation in Pakistan is not a desire to achieve orbital supremacy as it is not regarded as a means to an end. The space, in the case of Islamabad, is a sphere of buffered stability and not conquest. In contrast to India, where the emerging Indo-Pacific policy is strongly intertwined with the concepts of space power and expeditionary reach, the objectives of Pakistan are:

- To exasperate preemption: by making early warning capabilities hard and resilient.

- To maintain second-strike capability, particularly as India develops space-based missile detection systems and tries to shorten the time it can take to execute decisions;
- To sustain strategic ambiguity by mixing up classified space cyber activity, making Indian cost-benefit analysis on escalating crises complex (Institute for Strategic Studies Islamabad [ISSI], 2025).

Above all, the Pakistani doctrine does not regard space as the isolated domain but, rather, as a component of the three-domain battle grid: geography, cyberspace, and orbit. It understands that dominance over signal, spoof and silence is just as important currently as dominance over steel and shock in controlling escalation. Pakistan doctrine aims to ensure that India does not get to act unopposingly; as space gets further entrenched in nuclear signaling, crisis management, and intelligence cycles, there is an interesting response that Pakistan holds. Despite the lack of parity, Pakistan has been able to make India jump through hoops, stop its swagger and eliminate unilateral escalation.

3. Escalation Risks, Misperception Pathways, and Space Governance Gaps

3.1. Escalation Without Warning: Why Space Tools Compress Decision Time

Orbital resources provide unequaled real-time scouting, communication, and focusing. Nevertheless, they also cause escalation traps especially in places where crisis stability is quite precarious such as in South Asia. The activity in space between India and Pakistan is not subject to the hotlines, signaling mechanisms and (in part) confidence-building measures that govern the nuclear systems: this is strategic vacuum and lack of shared rules of behavior (Integrated Public Relations [ISPR], 2025)

In this regard, the oddities in satellite operations, e.g., close approaches and other orbital manipulations, unknown ISR activities, or interference with uplinks are easy to confuse with an impending kinetic or cyber-attack. This issue has been compounded by the fact that decision windows in Indo-Pak crisis situations have been incredibly short and the increased role of space-based systems ensuring nuclear command-and-control networks are fed with information. A pretending attack which was carried out by Pakistan as the Operation Bunyan al-Marsoos might unwittingly cut a line of command and the adversary may assume a decapitation strike situation. This threat was

reinforced in the 2025 Middle Eastern conflict. The shutdown of Israeli GPS-equipped drones by Iran even led to an imminent all-out Israeli response until it was cleared that no lives had been lost. In South Asia, this clarification may never come.

3.2 Misperception and Attribution: When Jamming/Spoofing Looks Like Pre-Attack Preparation

Operation Bunyan al-Marsoos broke the mentality that had existed in the past that Pakistan did not have any real space-enabled deterrence. The exercise highlighted the augmented disruptive capability, in the non-kinetic and asymmetric capabilities and cyberspace, although India continues to enjoy valuable asymmetries in kinetic ASAT capabilities, indigenous satellite launch launchers, and space-bound missile defenses.

This strategic shift has a number of implications:

India has escalated into the decision loop of Pakistan. Beidou and satellite imaging spoofer-proof ranks now enable Pakistan to detect, react, and shape the battlefield conditions earlier through near real-time ISR. This cross-examines the unilateral accountability of escalation taken by India especially on the initial phases of crisis in the future. Escalation ladder has become steeper. The blurring of lines between sub-conventional retaliation and strategic signalling is also demonstrated by the introduction of space and cyber tools in conventional warfare (The Tribune, 2025). A mistake in the interpretation of spoofing/jamming as a precedent to kinetic ASAT attacks may provoke excessive reactions.

Pakistan has incorporated into its repertoire the concept of strategic ambiguity. It has kept the full picture of its EW/space capability at bay, so ambiguity serves as a best equalizer of force availability. This may act as deterrence or source of destabilization depending on political leadership, fog of war, or third-party misattribution. Risk is augmented by absence of communication protocols. In spite of such technological changes, India and Pakistan continue to have no direct channels of de-escalating potential orbital conflicts and space rules of engagement or protocols of dealing with incidents emerging in space (Integrated Public Relations [ISPR], 2025). The possibility of any incident of satellite jamming being construed as strategic decapitation becomes frighteningly real as both nations embed the use of satellites in nuclear C4ISR and early warning systems.

3.3. Pre-emptive Orbital Incentives and the Risk of First-Strike Logic

The position of India is moving to active space denial with co-orbital ASAT interceptors, electronic countermeasures and kinetic capable launch system all going under development. It brings an unbalancing asymmetry to Pakistan which has no indigenous ASATs or launchers (Engle, 2021). When a possible mark of Indian satellite satellization or pre-conflict satellite movement is witnessed, Pakistan might become obligated to:

Deny ISR through an initial strike through soft-kill capabilities, as in the case of Bunyan al-Marsoos, before an ordinary war breaks out;
Exercise excess intercession in ordinary satellite conduct in view of a prospective assault, more so in cases when notification systems are not included;
Early warning should be outsourced to china and this poses risks of tangling. Suppose one of the Chinese satellites has identified a threat, then is that an escalation burden of China?

The pace of orbiting maneuvers and dependence on automated space-C2 implies that any threat that seems to be found based on a false-positive could be responded to without permit of explanation. So, space is turned into a preemptive risk vector instead of the frontier of stabilization.

3.4.. Comparative Illustration: Iran–Israel–U.S. Conflict and the "Space-Cyber Escalation Ladder

Iranian satellite spoofing, and Israeli counter-measures in return such as uplink jamming, were considered acts of war (Engle, 2021). Without emergency deconfliction procedures, neither realized the intentions of the other, and nearly came to direct confrontation using U.S. assets.

Even South Asia is more vulnerable. It lacks:

- Orbital incident lines of communication;
- Multilateral SSA methods to inspect satellite conduct;
- ISR and maneuvering asset crisis-time transparency norms.

These gaps have been identified by the strategic community in Pakistan. Military philosophers have since advocated regional standards, with the post-conflict Orbital Proximity Warning Code in the Middle East giving inspiration, but India has not participated. However, in the absence of solutions, any future Indo-Pak, ground-initiated crisis may not only spiral into and operate in orbit, but also potentially swing into orbit before diplomacy is able to intercede.

3.4.1. The Iran-Israel-U.S. Conflict: A Set Pattern of Amplification Spaceward

Israel launched preemptive actions in June 2025 on presumed Iranian nuclear installations and in the process fired more than 150 drones and missiles as a retaliation. However, besides the physical transfers, what was so special about this conflict was that it was manufactured by space. The ISR played a massive role in the two countries through satellite, cyber and real-time orbital synchronization (Al Jazeera, 2025). This was evidenced by Iran spoofing gps to divert Israeli drones and Israel then trying to respond by target jamming the Iranian satellite uplinks proving the intermingling of space, cyberspace and kinetic space in the contemporary war. The conflict has escalated further with the Iranian missiles landing on the U.S. ISR and logistical facilities in Qatar following the U.S. launching air strikes out of Oman (Shah & Ali, 2025). These activities made the war a global theater where the space was involved in the command and control and the retaliation cycles. The, indeterminate satellite activities, such as the harassing efforts of alleged Iranian interference in Israeli LEO constellations and the Israeli suspected soft-kill activity, instigated active conjecturing and enhanced alertness in several states (Filkins, 2025).

The case study of the Iran-Israel conflict acted as a strategic case study to Pakistan. Iranian capabilities demonstrations after developing similar restraints to Pakistan showed that non-kinetic weapons such as Spoofing, Jamming, and EW using satellites can achieve meaningful operating impacts. Furthermore, the war demonstrated the vulnerability caused by space reliance: the U.S. and Israeli troops were highly reliant on their uninterrupted ISR networks, which were readily vulnerable to disruption (Zaman, 2025). Most importantly, the Iran-Israel experience showed the risk of escalation without the space communication measures. There was no orbital crisis hotline, and a small incident of satellite interference could have led to the escalation of the conflict. This is a dire warning to South Asia where India and Pakistan have virtually no mechanisms of deconfliction even on a minimal scale (Kugelman, 2025). The lesson of Pakistan aims to go asymmetric with space resiliency, strengthen your orbital denial capabilities assisted by China, and pursue space conduct frameworks afore the escalation commences in space as it did in the Middle East's.

3.4.2. Regional Triggers: The Iran Israel U.S. Dispute and Its Implications on Pakistan

In 2025, the period of modern war finally shifted towards the era of space, cyber, and electronic war: two near-concurrent regional conflicts in India/Pakistan (Operation Bunyan al-Marsoos) and in the Middle East (Iran, Israel and the U.S.) brought the full implications of space, cyber, and electronic war to the forefront in determining the result on the battlefield. (The Tribune, 2025)Although Iran Israel conflict caught the world attention due to its scope and multi-lateral entanglements, Bunyan al-Marsoos which was initiated by Pakistan in May 2025 was equally significant to show that how the asymmetric capabilities using spaces could upset the arrangement of superiority. The Iranian scenario (spoofing, jamming and specific cyber attacks on Israeli LEO satellite communications) was particularly close to home where Pakistan was exploiting non-kinetic weapons of space (against India) to deny Indian space-enabled surveillance and targeting potential.

Satellite-based ISR (Intelligence, Surveillance, Reconnaissance), real-time targeting, and cyber-interference in both theaters, also became the new escalation ladder. The situation in which Iran deployed jammer-jammed spoofed GPS signals to deceive Israeli drones, and Israel responded by jamming Iranian uplinks to satellites, was a replay of Pakistan in Bunyan al-Marsoos of jamming Indian ISR relays via cyber-electronic warfare (Reuters, 2025). The vulnerability of Indian ISR spurred Pakistani planners to attack it with precision on multiple levels, both to prepare a response to the possibility of an Indian direct ascent or orbital ASAT, and because the combination of Beidou-guided attacks, spoofed relays, and Chinese space intelligence information provided a useful way to show their new concern with orbital superiority without necessarily having to invest in economically demanding kinetic anti-satellite capability.

The U.S. and Qatari assistance in the Iran Israel war further emphasized the possibility of entanglement amid which assets that may be prone to space-based capabilities by regional powers became targets that may have gone beyond the originally intended (The Economist, 2025). The Pakistani military observers learned one lesson explicitly: space is not merely a support arena but a point of potential conflict, especially when there are no rules of engagement in space-related conflicts as was the case between Iran and Israel with regard to the Iranian misperception of Israeli surveillance satellites.

The combination of these conflicts has provided a sobering reality to Islamabad: space will play a leading role in the next Indo-Pak war, not just an

additional layer of intelligence, but a contested war zone on its own accord. The Iranian model legitimized the Pakistani asymmetrical methodology and the Middle East leveling up reinforces the pressing necessity to consider alternative means of communication during crisis, the civil-military orbital definition, as well as fleur de Lis vigilance of performance-based signaling, all non-Pakistan achievements of gaps to be filled before causing unintentional escalation via space (Zaman, 2025).

4. Policy Recommendations: A South Asian Space Stability Framework

The events of 2025 have witnessed the rapid process of the militarization of space in South Asia, which has shown that previously applied models of deterrence could no longer be enough. Although international mechanisms such as the UN Outer-Space Prevention of an Arms Race (PAROS) have been derailed on account of geopolitical jams, South Asia can ill afford to dither any longer. (Integrated Public Relations [ISPR], 2025)

4.1. South Asian Space Code of Conduct (SASCoC)

South Asia is in dire need of a declaratory, non-legally binding Space Code of Conduct, like the post 2025 Middle Eastern experience of the Iran-Israel Orbital Zone Clarity Pact, in which distance limits and safe orbital trajectories were agreed. In case of India and Pakistan, SASCoC must consist of:

A one-side moratorium on kinetic ASAT testing: Pakistan already forswor ported kinetic ASAT demonstrations, and India went to kinetic ASAT demonstration in 2019 (Mission Shakti) which left space debris esteemed to be a factor of international concern. No-ASAT-Pledge would lead to a decrease in the proliferation of debris and signal escalations (Khan, 2019).

Rules of proximity warning: Orbiting satellites on either side, that come within 10km of an orbital holding of another state, are expected to issue some form of notification, to eliminate the possibility of mistaking proximity as attempts at shadowing or co-orbital interference of assets.

Transparency reports: Each party needs to present annual reports on transparency keeping all the knowledge of military and dual-use satellite launches, including platforms and presented objectives of launch. This may be established through commercial SSA data and can be instituted as a Confidence building measure (CBM) (Davenport, 2021).

This code is not the solution to every tension but would change postures to secrecy to transparency, lowering chances of miscalculation of the satellites moving or cross-border tensions.

4.2. BSCDM Bilateral Space Crisis Deconfliction Mechanism

In Operation Bunyan al-Marsoos, Pakistan used jamming and spoofing operations to incapacitate Indian ISR relays even without penetrating Indian airspace, but such activities might well have been misinterpreted as preliminary to strategic escalation (Bowen, 2020). During a crisis, unclear statements may result in exaggerated response.

A hotline concentrating on space should be established, similar to the already present nuclear hotlines, yet adjusted to the orbital physics. It is supposed to contain:

- Real-time reporting by the suspect jamming or cyber-anomalies;
- Emergency communication channels to explain the in-unexplainable satellite closeness or variation of intended orbits;
- A third-party observer shared arrangement, on some neutral ground, with someone like UNOOSA, ASEAN, or even Switzerland, to moderate and record orbital incidents.

In the absence of these mechanisms, jamming or spoofing, whether accidental or intentional, may potentially be regarded as an act of war and subject to kinetic response or development of escalation towards the next step on the ladder of deterrence.

4.3. Diplomacy in the Academic and Private Sector

A potentially significant offset to strategic competition is academic and commercial soft-power. In programs with NUST, IST and SUPARCO, Pakistan has shown CubeSat development capability, with often peaceful collaboration with other regional or international partners. These mediums can now be utilized as instruments of structuring diplomacy:

SAARC or Gulf foundations can promote use of a common language of space exploration through regional CubeSat competitions;

Monitoring synergies in disaster can allow simultaneous co-alert of floods, crop stress, or forest fire, and develop trust between the two states;

The SAARC Space Research Fellowships may be used to provide short-term collaborative residency opportunities to Indian and Pakistani engineers, alleviating political tensions at the grass-root level.

In this way, Pakistan is able to build a culture of ethical space utilization and enhance its image as a peace broker in space.

Way forward.

The security environment today has revealed that space is no longer an outer space; but it represents an important strategic arena. In the case of Pakistan, space should not be treated as a usuality. The deployment of space-enabling capabilities in Operation Bunyan al-Marsoos, the lessons of the Iran-Israel war and the increasing asymmetry of the Indian military space infrastructure all point to one fact: space has become a key element of deterrence, security and survival in South Asia.

Pakistan is making a niche of its own despite the economic pressure and the technological differences. It creates asymmetric counter-space plans, builds up its cyber-electronic warfare foundation, and utilizes Chinese strategic guarantees. It has demonstrated the ability of Pakistan to incorporate real-time ISR, spoofing and denial-of-service into its operations. More to the point, its sound doctrine and intelligent investment allows it to deprive foes the liberty of controlling the orbital sphere. However, this strategic change also increases the danger of miscalculation, preemptive attacks, and ambiguous attacks, in particular where no binding agreements or crisis-deconfliction systems have been established to apply to space. The destabilization threat is not a hypothetical one; it is actually a reality as space, cyber, and AI intersect. The Iran-Israel war and the intervention of U.S.-Qatar demonstrated how misconceptions in space and cyber wars can easily escalate into a conflict. The South Asia has already the most destabilizing nuclear dyad in the world and it cannot spare such ambiguity.

Pakistan should stop being content with protecting its space interests, but also assist in developing the rules which govern space. The nation can take the lead in identifying responsible space behavior, bringing in bilateral confidence building procedures, and coming up with codes of conduct within the SAARC level. It demands orbital intelligence on its part, diplomatic corps,

and strategic thinkers, so that Pakistan is no longer a response to space weaponization, but a pioneer of peace in the skies.

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