Review Journal of Social Psychology & Social Works

http://socialworksreview.com

ISSN-E: 3006-4724 Volume: 4

ISSN-P: 3006-4716 Issue: 1 (January - March, 2026)

From Deterrence to Disequilibrium: Rethinking Nuclear Proliferation in a Multipolar World

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DOI: https://doi.org/10.71145/rjsp.v4i1.562

Abstract

This article theorizes the transformation of nuclear deterrence under conditions of emerging multipolarity, arguing that the contemporary nuclear order is increasingly characterized by strategic disequilibrium rather than stable deterrence equilibrium. Classical deterrence theory, predicated on bipolarity, rational actor assumptions, and relatively stable escalation ladders, inadequately accounts for the proliferation incentives and crisis instability generated by today's fragmented strategic environment. The study contends that multipolar nuclear politics are shaped by asymmetric force modernization, selective and contested norm enforcement within the non-proliferation regime, and the entanglement of nuclear dynamics with dual-use technological domains, including cyber and space systems. Methodologically, the article employs a qualitative comparative design combining process tracing and thematic analysis across three analytically diverse cases: South Asia (India–Pakistan dyad), the Korean Peninsula (North Korea's nuclear consolidation), and great-power triangularity (United States–China–Russia strategic relations). Empirical material is drawn from official policy documents, IAEA and NPT regime archives, elite interviews, and authoritative policy and think-tank assessments. The analysis identifies three interlocking mechanisms assurance deficits, normative asymmetry, and technological diffusion—that systematically mediate the shift from deterrence stability to disequilibrium. The article advances a mid-range theoretical framework integrating neorealist structural logics with constructivist insights on norm contestation, offering a refined conceptualization of deterrence dynamics under multipolarity. It concludes that strategic disequilibrium is not episodic but structurally embedded in the evolving nuclear order, with significant implications for regime legitimacy and crisis stability.

Introduction

The theoretical foundations of nuclear deterrence were formulated under the bipolar strategic environment of the Cold War. Two superpowers, relatively symmetrical arsenals, the establishment of second-strike capability, and codified escalation ladders underpinned the stability of deterrence. Deterrence is conceptualized as effective when rational actors perceived retaliation as credible and first use as suicidal (Schelling, 1960/1980; Brodie, 1959). However, the assumptions embedded in this framework are increasingly strained. However, nuclear capabilities are diffusing; delivery systems are diversifying; alliances are shifting; normative and institutional arrangements originally designed for bipolar conditions are weakening; and novel domains cyber, space, and autonomous systems have complicated signaling and escalation dynamics (Michaels, 2024; Bolt, 2025). Contemporary scholarship, however, emphasizes the

transformation of the nuclear order from bipolarity toward multi-polarity in which several nuclear-armed states possess significant strategic influence. Futter and Zala (2024) argue that the strategic discourse has shifted from concerns about non-state actors and rogue proliferation toward renewed great-power nuclear competition, particularly among the United States, Russia, and China, where doctrinal ambiguity and modernization trajectories are central (Futter & Zala, 2024). Moreover, Complementary analyses, such as Strategic Stability in a New Era, suggest that asymmetric modernization and opaque doctrines have eroded the conditions of strategic stability—defined as mutual recognition of nuclear risks, constraints on first use, and reliable command-and-control (Bolt, 2025). Further, the Council for Strategic and Defence Research (2025) calls for adapting deterrence strategies to multipolar asymmetries, recommending doctrinal innovations such as No-First-Use (NFU), de-alerting, and greater transparency. Therefore, the evolving context challenges the adequacy of classical deterrence frameworks for explaining state behavior, trust deficits, and proliferation risk. Dembinski and Polianskii (2024) contend that Russia's war of aggression has accelerated shifts in nuclear threat perception, undermined restraint regimes, and exacerbated institutional erosion. They argue that bilateral arms control regimes—conceived under relatively stable superpower relations are poorly adapted to managing the challenges of a multipolar system (Dembinski & Polianskii, 2024).

These empirical and theoretical developments create critical analytical puzzles. Why do some states, despite facing comparable threats and possessing similar capabilities, adopt divergent nuclear strategies—ranging from restraint to doctrinal revision and proliferation while others refrain? How do emergent technological domains such as cyber, artificial intelligence, and autonomous systems contribute to escalation dynamics and misperceptions under multipolarity? What role do institutions, including the Nuclear Non-Proliferation Treaty (NPT), International Atomic Energy Agency (IAEA), and Nuclear Suppliers Group (NSG), play in stabilizing or destabilizing asymmetric environments marked by normative exceptionality? Finally, under what conditions does multipolarity generate stability rather than disequilibrium for instance, through credible extended deterrence or reciprocal adoption of restraint practices?

Research Questions

1) How does multipolarity create strategic disequilibrium in nuclear politics?
2) Through which mechanisms does strategic disequilibrium affect proliferation trajectories and crisis stability?
3) How do nuclear regimes such as the NPT, IAEA, and NSG respond to these dynamics, and how do their responses influence legitimacy and perceptions of normative erosion?

Problem Statement

The central problem, this study addresses, is the growing theoretical and empirical mismatch between deterrence theory largely formulated under Cold War conditions of bipolarity—and the evolving realities of a multipolar nuclear environment. Within the bipolar system, deterrence was widely regarded as robust. Escalation pathways were relatively predictable, arms control could be institutionalized through bilateral treaties, and normative frameworks functioned on the basis of shared expectations between two superpowers. The diffusion of nuclear capabilities, however, has disrupted this stability. Multipolarity, therefore, has introduced a greater number of actors with heterogeneous arsenals, doctrines, and threat perceptions, including states that operate outside the established institutional regimes. This dynamic challenges the core assumptions upon which classical deterrence theory was established. A central dimension of this transformation lies in capability asymmetries. Advanced missile systems, hypersonic glide vehicles, stealth technologies, and autonomous weapons platforms have introduced significant disparities in both

regional dyads and great-power competition. These innovations recalibrate balances of power by eroding survivability, compressing decision-making timelines, and complicating calculations of credible retaliation. The result is an increased risk of arms racing, misperception, and pre-emptive incentives that destabilize deterrence dynamics. Equally destabilizing are normative exceptions. Practices such as granting NSG waivers, divergent commitments to No-First-Use (NFU) or first-use doctrines, and persistent ambiguity in extended deterrence guarantees undermine perceptions of fairness and reciprocity. Instead of reinforcing norms of mutual restraint, these exceptions privilege certain states while constraining others and resultantly producing legitimacy deficits within the broader nuclear order. The erosion of normative consistency adds to distrust among states, fuels hedging strategies, and accelerates pressures for proliferation.

A further complication arises from domain entanglement and ambiguity. The integration of cyber capabilities, space-based assets, and artificial intelligence into nuclear decision-making architectures introduces profound risks of escalation. Cyber intrusions may be misinterpreted as preparations for nuclear disablement, space weaponization threatens the survivability of early-warning systems, and AI-assisted decision-making raises questions about inadvertent escalation and loss of human control. These dynamics blur traditional boundaries of deterrence thereby, making signaling less reliable and crisis management more precarious. Additionally, Institutional challenges compound these risks. Arms control treaties and non-proliferation regimes, originally designed on assumptions of shared interests and bilateral manageability, have become less effective under multipolar stress. Norm erosion, selective compliance, and inconsistent enforcement weaken institutional credibility. As regimes fail to adapt, their ability to constrain destabilizing behavior diminishes, further undermining stability. Cumulatively, these dynamics create what this article conceptualizes as strategic disequilibrium. This condition arises when structural asymmetries, normative breakdowns, and technological ambiguities combine to create unstable incentives for proliferation, doctrinal revision, or escalation. Rather than reinforcing stability, multipolarity amplifies systemic vulnerabilities and undermines crisis management, thereby heightening the risks of miscalculation and strategic instability.

Theoretical Framework

Classical deterrence theory and its limitations in multi-polar world

Classical deterrence theory, particularly as developed during the Cold War, heavily relies on several core pillars; Mutual Assured Destruction (MAD), credible threats, and a clear understanding of escalation ladders. It posits that if two states have the capacity to inflict devastating retaliation after a first strike then neither has an incentive to initiate a nuclear attack (e.g., Waltz, 1981). Credibility in deterrence refers to not only having the capabilities (second-strike, survivable forces, command and control) but also demonstrating the willingness to use them if necessary. Escalation ladders are the structured steps through which conflict could escalate to nuclear use; classical theory assumes relatively well-known steps, controlled environments for signaling, and stable mutual perceptions. In recent literature, these principles are being re-examined. Unal, Borrie, and Afina (2020) argue that a growing multipolarity in international security competition challenges previous understandings about nuclear deterrence and strategic stability. They point out that assumptions about rationality, clarity of red lines, and stable escalation control are strained in a world where more actors, varied doctrines, and new domains (cyber, space, AI) create ambiguity in both signaling and retaliation. As more states acquire or modernize nuclear arsenals, a multipolar nuclear order emerges in which multiple nuclear dyads (for instance, U.S.–Russia, U.S.–China, India–Pakistan) co-exist. Each dyad has

its own doctrines, thresholds, geography, and interdependencies. The diversity in doctrines such as variations in first-use vs no-first-use policies, alert levels, delivery systems, and force posture creates asymmetries in what constitutes credible threats and responses. Moreover, escalation control is blurred: in the classical bipolar model, escalation steps are relatively clear between two well-understood adversaries, but in multipolarity, indirect signaling, third-party involvement, overlapping alliances, and multiple security dependencies muddy the waters. Deterrence failures become more likely when states misperceive doctrines, intent, or red lines. Michaels (2024) emphasizes how recent strategic competition and power shifts make older models of deterrence less reliable, particularly because threats are less predictable and the credibility of deterrence commitments is harder to maintain. Unal et al. (2020) note that even some staunch proponents of nuclear weapons as a deterrent capability have lately come to express doubts about their efficacy in multipolar environments which signals the limitations of assumption that possession alone guarantees deterrence.

Strategic Disequilibrium in a multi-polar world

Given these limitations, the concept of strategic disequilibrium helps capture the missing debris in classical deterrence theory. Strategic disequilibrium refers to the systemic instability or imbalance produced when capability asymmetries, selective norm enforcement, and cross-domain risks (cyber, space, AI) combine to weaken deterrence, create proliferation incentives, and raise chances of unintended escalation. When one state or alliance significantly leads in nuclear force size, survivability, or advanced delivery systems (e.g., hypersonic, autonomous capabilities), it can upset the symmetry assumed in deterrence theory. The weaker side may feel vulnerable and pursue countermeasures or proliferation to restore balance, or adopt more aggressive postures. Unal et al. (2020) argue that emerging strategic technologies make such asymmetries more consequential. Similarly, norms under the non-proliferation regime (e.g., NPT, NSG) are sometimes applied unevenly. For instance, elite-driven norm contestation is visible in India–US nuclear cooperation agreements that many see as exceptions to nonproliferation norms (Lantis, 2018). Additionally, Carranza (2019) cautions that while the nuclear nonproliferation norm remains strong in its core, contestation occurs in "organizing principles" and "standardized procedures"—areas where norm erosion might be slower but significant. Moreover, Classical deterrence theory mostly focused on nuclear and conventional domains. However, cyber operations, AI, autonomous systems, and space capabilities introduce new vectors for preemption, signaling ambiguity, and miscalculation. For example, Horowitz, Scharre, & Velez-Green (2019) analyze how autonomous systems and AI undermine nuclear command and control and increase risk of escalation, particularly when second-strike capability are questioned under new threats. Thus, in strategic disequilibrium, the combination of these forces makes deterrence less stable: the weaker side may hedge or proliferate; the stronger side may feel pressure to act preemptively; norms face erosion; new domains increase uncertainty.

Structural or Neorealism

There might be multiple theoretical perspectives through which shifting nature of world order can be sifted, nonetheless, Neorealism or structural realism best helps reflect upon the pressure states face in multipolar systems to ensure survival by balancing, deterrence, or acquiring nuclear capability. It predicts that rising powers will seek peer status, middle powers will hedge, and great powers will guard their relative positions competition. Neorealist logic also underpins many arguments about why capability asymmetries lead to instability: when one power gains the capacity to threaten another's second-strike ability, deterrence credibility breaks down. Structural realist logic is strongly reflected in contemporary U.S.–China and U.S.–Russia relations, where systemic pressures of an emerging multipolar order drive competition, balancing, and deterrence

behavior. The United States, as the status quo hegemon, seeks to preserve its relative dominance by externally balancing against the rise of China through alliances and strategic groupings such as AUKUS and the Quadrilateral Security Dialogue, while China, consistent with neorealist expectations, pursues peer status via military modernization and regional assertion (Feng, 2025). Simultaneously, Russia, a comparatively declining power, relies on nuclear deterrence and asymmetric strategies to offset conventional weakness, as illustrated by the Russia-Ukraine War, which reflects preventive and balancing motives against NATO expansion. Across both dyads, the erosion of secure second-strike capabilities due to technological advancements (e.g., missile defense, hypersonics, cyber capabilities) reinforces neorealist concerns that shifting capability asymmetries undermine deterrence stability, increasing the risk of miscalculation and strategic instability in great power politics (Menjón, 2025).

Constructivism

Similarly, constructivist scholarship shows that norms of nuclear nonproliferation, taboo against use, and appropriate behavior in the nuclear order affect what states feel are acceptable paths. A constructivist reading of the current geopolitical environment highlights how nuclear behavior is mediated not only by material capabilities but by norms, legitimacy, and identity within the global nuclear order. Lantis (2018) frames the U.S.–India nuclear cooperation as a case of elite-driven norm contestation, showing that actors can redefine norms and shift what is seen as legitimate. The U.S.–India civil nuclear agreement continues to exemplify what Lantis terms elite-driven norm contestation, where powerful actors, particularly the United States, have reinterpreted nonproliferation norms to accommodate India as a responsible nuclear state despite its non-signatory status to the Nuclear Non-Proliferation Treaty. In the same vein, British or French nuclear capabilities are not threatening to the US but the North Korean have been difficult to absorb for the West. Therefore, this selective legitimation contrasts sharply with the treatment of North Korea, whose nuclear program is framed as deviant and illegitimate, reflecting how identity and regime type shape normative acceptance rather than capability alone. Furthermore, Carranza (2019) argues that while some normative structures are deeply entrenched, exceptions undermine perceptions of fairness and equality, thereby affecting legitimacy: when non-nuclear states believe that nonproliferation norms are applied asymmetrically, it weakens the normative order's ability to constrain behavior. In the contemporary context of intensifying rivalry between the U.S., China, and Russia, this erosion of normative consistency risks undermining the nuclear taboo and nonproliferation regime, making it more difficult to sustain collective restraint as great powers themselves engage in norm reinterpretation and selective enforcement.

Literature Review

Contemporary nuclear politics is undergoing a profound transformation accelerated by structural shifts in global power, technological innovation, and the weakening authority of long-standing non-proliferation norms. The Cold War framework of nuclear stability, anchored in bipolar deterrence, mutually assured destruction, and robust arms-control regimes, is increasingly incompatible with an emerging multipolar nuclear environment. Recent scholarship shows that deterrence structures, non-proliferation regimes, and technological dynamics are mutually reinforcing in creating strategic disequilibrium, a systemic condition in which states face intensified security dilemmas, accelerated arms racing, and heightened proliferation incentives (Nautilus Institute, 2019; Lawrence Livermore National Laboratory, 2025). The literature review synthesizes these developments through four interrelated themes: (1) deterrence and instability in multipolarity, (2) the erosion of non-proliferation regimes, (3) new technological drivers of proliferation risk, and (4) gaps in qualitative, mechanism-focused scholarship.

Classical deterrence theory emerged from a strategic context in which two superpowers possessed relatively symmetric arsenals and well-understood escalation ladders. Under these conditions, stability largely depended on credible second-strike capability and predictable rationality. However, as recent scholarship argues, the diffusion of nuclear capabilities across regions and the rise of new nuclear states make these assumptions less tenable (Nautilus Institute, 2019). In a multipolar environment, deterrence dynamics shift from stable dyads to complex geometric configurations in which each actor must simultaneously deter multiple adversaries while managing asymmetric threats, alliance commitments, and regional crises. Therefore, Contemporary analyses foresee not stability but strategic disequilibrium: a state of persistent uncertainty created by overlapping rivalries, qualitative arms modernization, and normative inconsistencies in global nuclear governance (Lawrence Livermore National Laboratory, 2025). Unlike Cold War bipolarity, where escalation patterns were deeply studied, the multipolar system lacks stable mutual expectations. States such as India, Pakistan, China, North Korea, Israel, and potentially Iran operate with divergent doctrines ranging from full-spectrum deterrence to counterforce postures—making the risks of misperception, inadvertent escalation, and first-strike incentives more acute (Schwartz & Horowitz, 2025). Moreover, multipolarity disrupts extended deterrence. U.S. allies in East Asia, particularly Japan and South Korea, increasingly question the credibility of American nuclear guarantees in the face of expanding Chinese and North Korean capabilities. This credibility gap stimulates hedging behaviors, including latent proliferation and increased investments in missile defense and advanced conventional systems (Council on Foreign Relations, 2023). In South Asia, India's rapid nuclear modernization—particularly development of MIRVs, BMD systems, and hypersonic technologies—creates additional pressure on Pakistan, which responds through tactical nuclear weapons and enhanced full-spectrum deterrence. These developments risk shortening escalation ladders and introducing unpredictable thresholds at multiple conflict levels (CISS, 2025). Thus, recent security scholarship agrees that multipolarity erodes the conceptual foundations of deterrence theory: uncertainty replaces predictability, regional adversaries replace superpower dyads, and doctrinal opacity replaces strategic transparency. The very structural shift forms the analytical context for the challenges facing non-proliferation regimes.

The international non-proliferation architecture consisting of the NPT, IAEA safeguards, and export-control bodies such as the NSG emerged during a period of U.S.–Soviet dominance. It relied on clear distinctions between nuclear-weapon states (NWS) and non-nuclear-weapon states (NNWS), a distinction that, critics argue, institutionalizes nuclear apartheid (Sohail, 2025). Structural inequalities inherent in the NPT have long been debated, but recent developments have intensified these tensions. Although the NPT remains the cornerstone of non-proliferation, its credibility suffers from persistent non-compliance by nuclear-weapon states regarding Article VI commitments to disarmament. As noted, the modernization programs pursued by the United States, Russia, China, India, and Pakistan signal a long-term reliance on nuclear deterrence which contradicts normative promises of disarmament (ISSI, 2019). For many Global South states, the NPT appears less a universal security framework and more a mechanism for regulating access to advanced technologies while protecting the strategic advantages of powerful states. As an instance, the 2008 NSG waiver granted to India is widely cited as the most consequential recent example of regime erosion. It allows India, a non-NPT state with an active weapons program, to engage in civilian nuclear trade, access dual-use technologies, and expand its nuclear infrastructure without undertaking disarmament obligations (CISS, 2025). Scholars argue that the exceptionalism undermines the moral authority of the non-proliferation system by privileging geopolitical alignment over universal norms. China's objections to India's full membership in the NSG further illustrate the contested nature of nuclear norm-making. Beijing

insists that NSG membership requires NPT adherence, a requirement India rejects. According to MP-IDSA (2016), China views the India waiver as a destabilizing precedent that could encourage other non-NPT states to seek selective benefits without accepting the treaty's restrictions. Moreover, Pakistan and other South Asian analysts contend that India's exceptional treatment effectively legitimizes nuclear revisionism while creating strong incentives for neighboring states to respond through vertical or horizontal proliferation. The NSG waiver has been linked to India's significant expansion of fissile material production, which would allow a substantial increase in its warhead inventory (CISS, 2025; Centre for Pakistan & Gulf Studies, 2025). Critics argue that such asymmetry drives Pakistan toward tactical nuclear weapon deployment and diversified delivery systems in order to compensate for India's growing capabilities. The unraveling of the Joint Comprehensive Plan of Action (JCPOA) following the U.S. withdrawal in 2018 and subsequent regional tensions represents another major blow to non-proliferation efforts. Despite Iran's verified compliance for several years, the U.S. exit undermined trust in negotiated nuclear settlements, according to analyses by the International Crisis Group (2022) and the Council on Foreign Relations (2023). The reinstatement of sanctions, increased enrichment activities by Iran, and regional polarization reduce the viability of diplomatic solutions and may incentivize proliferation across the Middle East. Saudi Arabia's public statements on pursuing nuclear technology, alongside Turkey and Egypt's renewed interest, demonstrate how the collapse of a single agreement can reverberate across a region already characterized by security dilemmas. The JCPOA crisis thus exemplifies how multipolar competition involving the U.S., Iran, Israel, Gulf States, and external actors like China and Russia interacts with institutional fragility to produce proliferation-enabling environments.

Moreover, technological change significantly complicates the nuclear landscape as new capabilities, particularly in cyber operations, artificial intelligence, advanced delivery systems, and civilian nuclear technology, alter strategic calculations and undermine traditional stability models. Nuclear command, control, and communications (NC3) systems are increasingly vulnerable to cyber intrusions. According to the Nautilus Institute (2019), in a multipolar world where cyber operations are intensifying, states would pursue more automated, redundant, or ambiguous NC3 architectures to ensure survivability. It contributes to a dangerous paradox: efforts to enhance resilience may simultaneously reduce transparency and increase the likelihood of misperception or inadvertent escalation. Cyber threats will also lead states to adopt preemptive postures, fearing that an adversary could disable nuclear forces or compromise early-warning systems. The complexity of attributing cyber-attacks further undermines crisis stability. The integration of artificial intelligence into nuclear systems has prompted both optimism and alarm. Automated nuclear systems might inadvertently increase perceived threat credibility, as AI reduces human discretion and signals a state's willingness to respond automatically under specific conditions (Schwartz & Horowitz, 2025). The experimental findings show that observers often consider AI-backed systems more reliable and less ambiguous than human-controlled ones. However, scholars warn that automated systems heighten escalation risks by reducing opportunities for diplomatic intervention or last-minute restraint. States can perceive AI-enabled adversaries as more likely to misinterpret signals, increasing incentives for preemptive action. Moreover, Breakthroughs in space-based sensing, precision-guided munitions, and hypersonic delivery vehicles further destabilize deterrence. Hypersonics, in particular, compress decision time and make it difficult to distinguish between conventional and nuclear payloads, which could trigger rapid escalation in a crisis. The diffusion of these technologies across nuclear and near-nuclear states accelerates vertical proliferation and challenges verification mechanisms. Additionally, the global expansion of civil nuclear infrastructure particularly in the Middle East, South Asia, and parts of African creates new opportunities for latent nuclear proliferation. Dual-

use technologies associated with enrichment, reprocessing, small modular reactors (SMRs), and fast-breeder programs provide states with the technical means to develop weapons capabilities under the guise of civilian use (ISSI, 2019). The issue has become more pronounced as major powers compete for nuclear energy markets. China, Russia, and the United States increasingly use nuclear exports as tools of geopolitical influence, enabling recipient states to acquire sophisticated technologies with limited oversight. Despite the extensive literature on nuclear proliferation, a critical analytical gap persists in the form of qualitative, mechanism-focused research capable of tracing the causal pathways through which multipolarity translates into concrete proliferation outcomes. Much of the existing scholarship largely informed by neorealist structural models—relies on quantitative correlations between proliferation behavior and systemic variables such as external threat levels, polarity, or regime type. While neorealism offers valuable insights into how shifts in the distribution of power generate security dilemmas, its parsimonious focus on structure often obscures the processual dynamics through which states interpret and respond to these pressures. Consequently, such models struggle to explain divergent nuclear trajectories among states facing comparable structural constraints, particularly in regions marked by asymmetry and historical rivalry. In response to these limitations, constructivist perspective argues that proliferation outcomes are not merely dictated by material threats but are mediated by elite perceptions of normative inclusion or exclusion within global nuclear governance regimes. For example, while the neorealist lens explains India's NSG waiver in terms of strategic alignment and balance-of-power politics, a norm-constructivist reading highlights how selective nuclear legitimacy undermines the perceived fairness of the non-proliferation regime, thereby shaping Pakistan's strategic self-conception and sense of insecurity. Yet, despite acknowledging these normative effects, relatively few studies empirically trace how such perceptions are debated, internalized, and translated into doctrinal or procurement choices by Pakistani policymakers.

Research Design & Methodology

This study employs a qualitative, comparative case study design to examine how the transition to a multipolar nuclear order produces proliferation incentives and strategic disequilibrium. A qualitative approach is analytically appropriate given the study's central objective: to uncover causal mechanisms and processual dynamics through which systemic shifts are interpreted and translated into state behavior. Unlike large-N quantitative studies that prioritize generalizable correlations, this research emphasizes context-sensitive explanation, enabling a deeper understanding of how structural pressures, normative considerations, and technological changes interact within specific geopolitical settings. The study is structured around a comparative case study framework, drawing on a most-different systems design to maximize variation across cases while identifying common causal patterns. Three cases are selected: South Asia (India–Pakistan), the Middle East (Israel–Iran), and the Korean Peninsula. These cases differ significantly in terms of regime type, alliance configurations, doctrinal orientation, and integration into the global non-proliferation regime. At the same time, all three are embedded within a broader multipolar context marked by shifting power balances and contested norms. Therefore, the comparative design serves two purposes. First, it allows for within-case analysis, enabling detailed reconstruction of how each state responds to changes in its strategic environment. Second, it facilitates cross-case comparison, allowing the study to identify recurring mechanisms such as perceived inequality, alliance uncertainty, or technological adaptation that operate across different regional contexts. This dual-level analysis strengthens both the explanatory depth and the analytical generalizability of the findings. The research relies on a diverse set of qualitative data sources to ensure analytical depth and empirical grounding. Primary materials include official documents and archival sources, such as reports and statements from the Nuclear Non-

Proliferation Treaty (NPT), the Nuclear Suppliers Group (NSG), Arms Control Association, Congressional Research Service, U.S. Department of Defense, and the International Atomic Energy Agency (IAEA). These sources provide insight into the formal structure of global nuclear governance, as well as state positions on issues of compliance, legitimacy, and reform. In addition, the study draws on national defense white papers, strategic doctrines, and policy statements, which offer valuable information on state threat perceptions, doctrinal evolution, and capability development. These documents are particularly useful for tracing shifts in official narratives and identifying how states articulate their nuclear strategies in response to changing systemic conditions. The research also incorporates think tank analyses such as Council on Foreign Relations, Crisis Group and Centre for Pakistan & Gulf Studies and scholarly writings include J. Lantis, M. Carranza researches, which provide context, interpretation, and expert assessment of nuclear developments. Such sources were essential in understanding policy debates, strategic signaling, and emerging trends that may not yet be reflected in official documentation. Finally, credible media sources are used to capture real-time developments, leadership statements, and crisis dynamics, particularly in rapidly evolving contexts such as the Korean Peninsula or Middle East.

Last but not the least, the selection of cases is guided by a variation-based logic, ensuring representation across different regional security complexes and levels of systemic interaction. Each case reflects a distinct configuration of strategic dynamics, allowing the study to explore how multipolarity operates under varying conditions. South Asia (India–Pakistan) represents a case of intense regional rivalry, characterized by historical conflict, nuclear parity, and ongoing doctrinal competition. It is particularly relevant for examining the impact of normative asymmetries such as the NSG waiver and their implications for strategic stability. The Middle East (Israel–Iran) illustrates a different dynamic, marked by nuclear opacity, preventive security logic, and regime contestation. Israel's undeclared nuclear status and Iran's contested nuclear program create a unique environment in which proliferation is shaped by both regional rivalries and global diplomatic interventions. The Korean Peninsula highlights the role of alliance structures and regime survival strategies in shaping nuclear behavior. North Korea's nuclear program reflects a combination of deterrence, coercive diplomacy, and internal legitimacy, while also testing the credibility of extended deterrence commitments by external powers.

Case Studies

South Asia (India–Pakistan): Nuclear Mainstreaming and Regional Disequilibrium

South Asia represents one of the most analytically revealing cases for examining how multipolarity generates strategic disequilibrium through a combination of normative exceptions, technological asymmetries, and doctrinal adaptation. The 2008 waiver granted to India by the Nuclear Suppliers Group (NSG) constitutes a critical inflection point in this regard. By enabling India a non-signatory to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) to engage in global civilian nuclear commerce, the waiver effectively mainstreamed India into the global nuclear order without requiring adherence to the treaty's core obligations. Scholars widely interpret this development as a form of selective nuclear legitimization, reflecting geopolitical alignment rather than universal normative standards (Kapur, 2016; Tellis, 2017). From a neorealist perspective, the waiver can be understood as a strategic move by the United States to strengthen India as a counterweight to China, thereby altering the regional balance of power. However, such a structural explanation alone is insufficient to capture its full implications. A constructivist reading highlights how the waiver undermined the perceived legitimacy of the non-proliferation regime, particularly from Pakistan's standpoint. Pakistani analysts have consistently framed the waiver as evidence of normative discrimination, reinforcing perceptions of strategic marginalization and insecurity (Sagan, 2011; Paul, 2018).

Pakistan's response has been both doctrinal and material. Doctrinally, Pakistan has operationalized a policy of Full Spectrum Deterrence (FSD), aimed at countering India's evolving conventional and nuclear capabilities across the entire conflict spectrum. This includes the development of tactical nuclear weapons (TNWs) such as the Nasr missile system, designed to offset India's "Cold Start" doctrine and deter limited conventional incursions (Kidwai, 2015). Materially, Pakistan has expanded its fissile material production and diversified its delivery systems, reflecting a shift toward greater survivability and flexibility. These developments exemplify strategic disequilibrium, wherein asymmetrical advancements by one state facilitated in part by external legitimization generate reactive proliferation dynamics in another. As Buzan and Wæver (2003) argue in the context of Regional Security Complex Theory (RSCT), security interdependence in South Asia is highly intense, meaning that even incremental changes in one state's capabilities can trigger significant responses in the other. The India–Pakistan dyad thus illustrates how normative asymmetry, technological modernization, and regional rivalry interact to produce persistent instability in a multipolar setting.

Korean Peninsula (North Korea): Defiance, Survival, and Asymmetric Deterrence

The Korean Peninsula offers a contrasting yet equally instructive case, characterized by regime defiance of non-proliferation norms and a unique combination of isolation, external patronage, and deterrence asymmetry. North Korea's withdrawal from the NPT in 2003 and subsequent nuclear tests represent a direct challenge to the authority of global non-proliferation institutions, including the International Atomic Energy Agency (IAEA). Unlike India, whose nuclear status has been partially normalized, North Korea remains an outlier, subject to extensive international sanctions and diplomatic isolation. From a neorealist standpoint, North Korea's nuclear program is primarily a response to existential security threats, particularly from the United States and its regional allies. Nuclear weapons serve as the ultimate guarantor of regime survival, deterring external intervention and enhancing bargaining power. However, this explanation must be complemented by constructivist insights, which emphasize the role of ideology, identity, and historical memory in shaping North Korea's strategic behavior. The regime's narrative of resistance against imperialism and its emphasis on self-reliance (Juche) reinforce its commitment to nuclear development as both a security and symbolic asset (Cha, 2012). The role of external patronage, particularly from China, further complicates the picture. While Beijing officially supports denuclearization, it has also provided economic and diplomatic support that mitigates the impact of sanctions, thereby enabling North Korea to sustain its nuclear program. This reflects the broader dynamics of multipolar competition, where great-power rivalries can weaken collective enforcement of non-proliferation norms. Sanctions, while extensive, have had mixed effectiveness. As Haggard and Noland (2017) note, sanctions regimes often fail to induce compliance when the target state prioritizes regime survival over economic welfare. In North Korea's case, sanctions have neither halted nuclear development nor compelled denuclearization, instead reinforcing the regime's perception of external hostility. The Korean case also highlights deterrence asymmetry, where a relatively weak state leverages nuclear weapons to offset conventional inferiority. This asymmetry complicates crisis stability, as North Korea may adopt risk-acceptant strategies to signal resolve. At the same time, the credibility of U.S. extended deterrence is tested, raising concerns among allies such as South Korea and Japan about the reliability of security guarantees.

Great Power Nuclear Politics (U.S.–China–Russia): Systemic Disequilibrium

At the systemic level, the evolving nuclear relationship among the United States, China, and Russia represents the most consequential dimension of contemporary nuclear politics. The transition from a predominantly bipolar U.S.–Russia framework to a triangular nuclear order

introduces new convolutions in deterrence, arms control, and strategic stability. China's ongoing arsenal expansion is a central feature of this transformation. Recent assessments indicate that China is rapidly increasing its number of nuclear warheads, developing new missile silos, and enhancing its second-strike capabilities through submarine-launched ballistic missiles and hypersonic systems (Kristensen & Korda, 2023). While China officially maintains a No First Use (NFU) policy, debates persist regarding the credibility and future of this doctrine, particularly in light of its modernization efforts. From a neorealist perspective, China's expansion can be interpreted as a response to U.S. missile defense systems and strategic encirclement. However, it also reflects a desire for status parity and greater influence in global nuclear governance. The United States, in turn, faces increasing challenges in maintaining extended deterrence commitments across multiple theaters. The need to simultaneously deter Russia in Europe and China in the Indo-Pacific places significant strain on U.S. strategic resources and credibility. As Acton (2020) argues, the erosion of arms control agreements and the emergence of new technologies have complicated the traditional logic of deterrence, increasing the risk of miscalculation. Recent U.S. assessments indicate a significant transformation in China's nuclear posture, shifting from a traditionally minimalist deterrent toward a more expansive and sophisticated force structure. The U.S. Department of Defense's China Military Power Report 2024 estimates that China now possesses over 600 operational nuclear warheads and is on track to reach approximately 1,000 by 2030, alongside the rapid development of a full nuclear triad encompassing land-based intercontinental ballistic missiles, submarine-launched ballistic missiles, and strategic bombers (U.S. Department of Defense, 2024). Subsequent assessments suggest that this expansion is not merely quantitative but increasingly qualitative, emphasizing survivability, mobility, and diversification of delivery systems, which enhances China's second-strike capability and complicates adversary targeting (Federation of American Scientists, 2025). Complementary analyses from the Arms Control Association highlight that Beijing's sustained arsenal growth and technological advancements are designed to ensure credible deterrence against potential U.S. intervention, particularly in high-stakes regional contingencies. Collectively, these U.S. reports frame China as transitioning into a near-peer nuclear competitor, with implications for strategic stability as improved counterforce capabilities and escalation options risk undermining traditional deterrence equilibria (U.S. Department of Defense, 2024; Federation of American Scientists, 2025; Arms Control Association, 2025).

Russia's nuclear posture further contributes to systemic instability. Its doctrine of "escalate to de-escalate" though contested suggests a willingness to use limited nuclear strikes to terminate conventional conflicts on favorable terms (Oliker, 2016). Additionally, Russia's strategic signaling, including nuclear rhetoric and exercises, introduces ambiguity that can heighten tensions and reduce predictability. Current U.S. assessments portray Russia as maintaining the world's largest and most diverse nuclear arsenal, while increasingly relying on nuclear capabilities to offset conventional limitations and sustain great power status. According to the U.S. Department of Defense and broader U.S. intelligence community reporting, Russia retains approximately 5,000–5,500 nuclear warheads (including deployed and non-deployed), with a fully operational triad comprising silo- and mobile-based ICBMs, submarine-launched ballistic missiles, and long-range strategic bombers (U.S. Department of Defense, 2024). The Office of the Director of National Intelligence further emphasizes that Moscow continues to modernize all legs of this triad while developing novel systems such as hypersonic glide vehicles and nuclear-powered delivery platforms intended to evade U.S. missile defenses and ensure second-strike credibility (ODNI, 2024). U.S. analyses, including those by the Congressional Research Service, also highlight Russia's doctrinal evolution toward greater reliance on non-strategic (tactical) nuclear weapons and its controversial "escalate to de-escalate" concept, reflecting concerns

about conventional inferiority in a prolonged conflict, particularly following the Russia-Ukraine War (CRS, 2025). Collectively, these assessments frame Russia as a nuclear peer competitor that places heightened strategic value on nuclear signaling and flexible escalation options, raising concerns within U.S. policy circles about deterrence stability, crisis miscalculation, and the erosion of traditional arms control frameworks (U.S. Department of Defense, 2024; ODNI, 2024; CRS, 2025).

Cross-Case Analysis

The comparative analysis across South Asia (India–Pakistan), the Middle East (Israel–Iran), and the Korean Peninsula reveal a set of recurring causal mechanisms through which multipolarity generates proliferation pressures and strategic instability. These mechanisms assurance deficits, normative erosion, technological diffusion, and domain entanglement operate both independently and interactively, producing what this study conceptualizes as strategic disequilibrium.

Recurring Mechanisms in Multipolar Nuclear Dynamics

First, assurance deficits emerge as a central driver of proliferation behavior. In a multipolar environment, states face uncertainty not only about adversaries' capabilities and intentions but also about the reliability of security guarantees. As extended deterrence becomes more complex and potentially diluted, allied states increasingly question the credibility of external protection. This dynamic is particularly evident on the Korean Peninsula, where North Korea's advancing capabilities challenge the credibility of U.S. assurances to South Korea and Japan, thereby stimulating debates on indigenous nuclear options and hedging strategies (Sagan, 2011). Similarly, in South Asia, India's pursuit of advanced capabilities such as ballistic missile defense and counterforce doctrines generates insecurity in Pakistan, prompting doctrinal and arsenal diversification. From a neorealist perspective, such dynamics reflect the intensification of the security dilemma under conditions of multipolar uncertainty (Waltz, 1979). Second, norm erosion within the global non-proliferation regime contributes significantly to strategic disequilibrium. The selective application of non-proliferation norms illustrated by the differential treatment of states within the Nuclear Non-Proliferation Treaty (NPT) framework and exceptions such as the NSG waiver undermines perceptions of legitimacy and fairness. Constructivist scholars argue that when norms are perceived as inconsistent or discriminatory, they lose their constraining power over state behavior (Finnemore & Sikkink, 1998). In the Middle East, for instance, Israel's undeclared nuclear status coexists with intense scrutiny of Iran's nuclear program, reinforcing perceptions of normative asymmetry and incentivizing hedging behavior. Similarly, in South Asia, India's exceptional integration into global nuclear commerce without NPT adherence has been interpreted by Pakistan as a form of selective legitimization, thereby weakening normative restraint (Sohail, 2025).

Third, technological diffusion acts as a multiplier of proliferation incentives by lowering barriers to entry and expanding the range of strategic options available to states. Advances in missile technology, cyber capabilities, and dual-use nuclear infrastructure enhance both the feasibility and attractiveness of nuclear programs. As Sagan (1996) argues, organizational and technological factors play a critical role in shaping nuclear behavior beyond purely structural considerations. In contemporary settings, the spread of cyber capabilities particularly those targeting nuclear command, control, and communications (NC3) introduces new vulnerabilities that states attempt to offset through redundancy, automation, or force expansion. This, in turn, exacerbates instability by increasing uncertainty and reducing decision time during crises.Fourth, domain entanglement the interaction between nuclear and non-nuclear domains such as cyber, space, and conventional precision-strike capabilities further complicates deterrence relationships.

The integration of these domains blurs the distinction between conventional and nuclear conflict, increasing the risk of inadvertent escalation. For example, cyber operations targeting early-warning systems or satellite infrastructure may be misinterpreted as preparatory steps for a nuclear strike, thereby triggering preemptive responses. As Acton (2018) notes, such entanglement undermines crisis stability by creating ambiguity and compressing escalation timelines. Across all three cases examined, domain entanglement intensifies the complexity of strategic interaction, making deterrence less predictable and more prone to failure. While these mechanisms are broadly observable, their effects are conditioned by specific boundary variables that determine whether multipolarity leads to proliferation or containment. One key factor is the strength and credibility of institutional constraints, including international agreements, verification mechanisms, and diplomatic engagement. In contexts where institutions retain legitimacy and enforcement capacity, such as certain aspects of the global safeguards regime, proliferation pressures may be mitigated despite systemic instability. A second critical variable is regional security architecture. Regions characterized by entrenched rivalries and low levels of trust—such as South Asia and the Middle East are more susceptible to proliferation cascades, as states respond to perceived threats through competitive accumulation. In contrast, regions with stronger alliance frameworks and integrated security arrangements may exhibit greater resilience, although this is increasingly contested in East Asia due to evolving threat perceptions. A third factor is domestic strategic culture and leadership perception. States interpret external pressures through internal lenses shaped by historical experience, institutional preferences, and ideological commitments. For example, North Korea's nuclear program is deeply embedded in a regime-survival logic that prioritizes deterrence and coercive leverage, whereas Iran's approach reflects a combination of strategic hedging and normative contestation. These variations highlight the importance of integrating constructivist and organizational perspectives into the analysis of proliferation dynamics.

The cross-case findings suggest the need to move beyond classical deterrence theory toward a more nuanced conceptualization of nuclear stability in multipolar contexts. While neorealism effectively captures the structural drivers of competition and insecurity, it does not fully account for the role of norms, perceptions, and technological change. Conversely, constructivist approaches illuminate the importance of legitimacy and identity but often underplay material constraints. Regional Security Complex Theory (RSCT) adds further explanatory value by situating these dynamics within geographically bounded systems of interaction. Integration of these perspectives, this study advances the concept of strategic disequilibrium as a more appropriate framework for understanding contemporary nuclear politics. Strategic disequilibrium refers to a condition in which structural multipolarity, normative inconsistency, technological transformation, and regional interaction combine to produce persistent instability and adaptive proliferation behavior. Rather than assuming equilibrium through deterrence, this framework emphasizes fluidity, contingency, and constant recalibration in state strategies.

Conclusion

The findings of this study carry important implications for both policy and theory in an evolving multipolar nuclear order. There is an urgent need to reform global non-proliferation regimes, particularly the Nuclear Non-Proliferation Treaty (NPT) and the Nuclear Suppliers Group (NSG), to enhance their legitimacy, inclusivity, and credibility by addressing entrenched inequalities and reducing perceptions of selective norm enforcement. Strengthening assurance and crisis stability is equally critical, requiring improved communication mechanisms, doctrinal clarity, and robust safeguards for nuclear command and control systems in the face of emerging cyber vulnerabilities. In this context, minilateral arms control arrangements and confidence-

building measures offer pragmatic alternatives to stalled multilateral efforts by enabling targeted risk-reduction and trust-building among key actors. Substantively, the study demonstrates that multipolarity produces strategic disequilibrium, which generates adaptive proliferation incentives and complicates traditional deterrence logic. Theoretically, it advances a reconceptualization of deterrence beyond bipolar assumptions by integrating structural, normative, and technological dimensions. Nonetheless, the analysis is constrained by limitations related to data accessibility and challenges of causal attribution in complex security environments. Future research should expand comparative regional analyses and further investigate the implications of emerging technologies particularly cyber capabilities and artificial intelligence for nuclear stability and proliferation dynamics.

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