Tripolarity, Resolve, and Nuclear Risks

Deye (Kevin) Li

A Paper Presented for PONI 2024 Fall Conference and IS-ISSS 2024 Conference

Introduction

We now live under a US-China-Russia nuclear tripolarity. Mutually Assured Destruction (MAD) has been firmly established in the US-Russia and Russia-China dyads and is rapidly developing in the US-China dyad. "How does the US-Russia-China tripolarity affect nuclear escalation risks in the international system" will be a perennial question for our generation.

Tripolar Instability Thesis is the conventional wisdom from the theoretical inquiries of deterrence under tripolarity. It posits that the triad is the most unstable power structure and coordinated revisionism is the primary source of escalation risk. Randall Schweller's *Deadly Imbalance* is the definitive study of conventional deterrence under tripolarity. Although profoundly insightful, Schweller's theory of tripolar alignment is built on two doubtful premises. First, for his theory to work, some states must have higher intrinsic value in a unit of non-security values than in a unit of security value. Secondly, Schweller's theory built the calculus of revisionism on the electoral conception of war under which the marginal advantage of one vote can flip defeat into victory.[1] However, in military operations, "defensive victory" is a meaningful concept and the force requirements for the two kinds of victory are often wildly different. Frank Zagare's recent article "Two Against One" is the first theoretical examination of tripolar deterrence under MAD. Zagare correctly pointed out that highly resolved challengers and defenders would persevere in coercive bargaining regardless of the third party. "The secondary challenger is most likely to have an impact on play only at intermediate levels of the defender's and the primary challenger's resolve."[2] However, like Schweller's theory, Zagare's models ultimately fall short since they rely on actors with extreme preferences: even under MAD, some actors would still prefer general nuclear escalation over losing a conventional war.[3]

Tripolar Instability Thesis is not completely incorrect. Tripolarity can be fairly unstable. Rather, assuming states as rational, strategic actors, I argue that certain kinds of tripolarity are much more stable than others. Indeed, the combination of nuclear capability is a real issue before MAD.[4]

---

[1] Randall L Schweller, *Deadly Imbalances: Tripolarity and Hitler's Strategy of World Conquest* (New York: Columbia University Press, 1998), 46.

[2] Frank C Zagare, "Two against One: Deterrence in the Triad," *Peace Economics, Peace Science and Public Policy* 30, no. 1 (January 2, 2024): 22-23, https://doi.org/10.1515/peps-2023-0050.

[3] Ibid, 3-4.

[4] Rational choice theory posits that actors affordably survey the environment and choose the strategy that best meets their complete set of subjectively defined and ranked preferences. A situation is strategic when an actor's ability to further its ends depends on what the other actors will do. States expect and weigh the potential external feedback of different strategies directing diplomacy and warfighting on their security prospect. They also update their assessment of the information relevant to bargaining once they becomes more salient in the external feedback.
David A Lake and Robert Powell, *Strategic Choice and International Relations* (Princeton, NJ: Princeton University Press, 1999), 6-8.
Charles L Glaser, *Rational Theory of International Politics: The Logic of Competition and Cooperation* (Princeton University Press, 2010), 63-72.

However, under MAD, the nuclear rug of coercive bargaining is determined by the balance of resolve. In the calculus of revisionism, only conventional capabilities add up but resolve doesn't. By this conventional logic, great powers under tripolarity jockey for a revisionist minimal winning coalition with intra-coalitional stalemate. Surprisingly, the specific 3.2:1.4:1 contemporary US-China-Russia triadic power disposition massively reduces the likelihood of nuclear escalation.

This paper's first section will define polarity, my independent variable, and offense-defense balance, my intervening variable and defend their enduring relevance. The second section will expand upon Proposition 1, the causal logic between polarity and the likelihood of war initiation via the mechanism of coalitional patterns. The third section will elaborate on Proposition 2, the causal logic between polarity and the likelihood of intra-war deliberate escalation via the mechanism of radical battlefield deterioration. The fourth section will double down on Proposition 3, the causal logic between polarity and the likelihood of intra-war inadvertent escalation via the mechanism of coalitional restraint. The final section will demonstrate the applicability of my theory on the contemporary US-China-Russia tripolarity and make a cautiously optimistic prediction on nuclear risk.

Instrumental Variables: Polarity and Offense-Defense Balance

Polarity portrays the distribution of material power in the international system. The operational definition of polarity is constructed upon the baseline of unipolarity. A system is unipolar if state A can impose a quick and decisive victory on a coalition between all other states in the international system. A system is bipolar if the coalition between the most powerful states in the system, A and B, can impose a quick and decisive victory on a coalition between all other states in the international system, and the weaker pole is strong enough not to suffer a quick and decisive defeat at the hands of the stronger pole. A system is tripolar if the coalition between the most powerful states in the system, A, B, and C, can impose a quick and decisive victory on a coalition between all other states in the international system and the coalition between the two weaker poles is strong enough not to suffer a quick and decisive defeat at the hands of the strongest pole. However, it is imperative to note that when the number of poles is larger than two, the balance of power between the poles is no less or perhaps even more important than the number of poles.

Despite the contrary claim made by the father of structural realism, Kenneth Waltz, the nuclear revolution does not make polarity politically irreverent.[5] First, obtaining and maintaining MAD is a difficult and costly task that is only affordable to at least major regional powers. Against two highly urbanized, continent-sized great powers as potential rivals, MAD requires the successful projection of the equivalent of as much as 100 megatons TNT.[6] A larger yield requires bigger warheads, which restrict the category of delivery platforms and increase the number of delivery platforms of any given kind. Siloed intercontinental ballistic missiles become difficult to protect, especially in the age of the information revolution in military affairs.[7] Transporter erector

[5] Kenneth Waltz and James Fearon, "A Conversation with Kenneth Waltz," *Annual Review of Political Science* 15, no. 1 (June 15, 2012): 6, https://doi.org/10.1146/annurev-polisci-020511-174136.
[6] Charles L Glaser and Steve Fetter, "Should the United States Reject MAD? Damage Limitation and U.S. Nuclear Strategy toward China," *International Security* 41, no. 1 (2016): 54–59, https://www.jstor.org/stable/24916871.
[7] Keir A Lieber and Daryl G Press, *The Myth of the Nuclear Revolution: Power Politics in the Atomic Age* (Ithaca, NY: Cornell University Press, 2020), 71-76.

launchers (TEL) and ballistic missile submarines are less vulnerable. The viability of a TEL ground-based deterrent requires a sophisticated transportation network over a large landmass, reliable anti-satellite capability, sophisticated early warning sensor and data-fusion network, and missiles combining solid-fuel and intercontinental range.[8] The viability of a seaborne deterrent requires a long coastline, large and quiet ballistic missile submarines, constant patrol readiness, missiles combining solid-fuel and intercontinental range, and naval aviation and surface fleet able to keep the hostile attack submarines, surface, and airborne anti-submarine warfare assets at least a hundred nautical miles distance.[9] Most crucially, even decades of priority efforts by nuclear superpowers could not make their strategic command, control, and communication reasonably survivable.[10]

Furthermore, the nuclear revolution does not render conventional power projection obsolete, and the simultaneous maintenance of MAD and conventional power projection capability is an even more difficult and costly task. The transportation and resupplying of army-sized (100k) mechanized ground forces, the minimum threshold for a major regional contingency, through continental landmasses or across high seas is a daunting logistical task.[11] Moreover, the movement of these combat forces requires a robust IADS to deny air supremacy around the ground line of communication from the adversary and a dominant navy to secure sea control around the sea line of communication from the adversary.[12] Building, training, and supplying a mechanized ground force, IADS, and blue water navy are (fiscal and human) capital-intensive endeavors that are cumulatively affordable only by great powers.[13]

I define Offense-Defense Balance (ODB) as the dyadic probability of quick, significant offensive success. Analysts can minimize the confounding effects of the dyadically relevant costs of arms buildup for theorizing system-level dynamics via Purchasing Power Parity (PPP) and other standardizations. In modern military operations, two-to-one theater-wide material superiority

---

[8] Christopher Clary, "Survivability in the New Era of Counterforce," in *The Fragile Balance of Terror*, ed. Vipin Narang and Scott D Sagan (Ithaca, NY: Cornell University Press, 2023), 169–75.

[9] Wu Riqiang, "Survivability of China's Sea-Based Nuclear Forces," *Science & Global Security* 19, no. 2 (May 2011): 91–120, https://doi.org/10.1080/08929882.2011.586312.
Owen R Cote, "Invisible Nuclear-Armed Submarines, or Transparent Oceans? Are Ballistic Missile Submarines Still the Best Deterrent for the United States?," *Bulletin of the Atomic Scientists* 75, no. 1 (January 2, 2019): 30–35, https://doi.org/10.1080/00963402.2019.1555998.

[10] Brendan R Green, *The Revolution That Failed: Nuclear Competition, Arms Control, and the Cold War* (Cambridge University Press: Cambridge; New York, 2020), 39–42.
Aaron Bateman, "The Weakest Link: The Vulnerability of U.S. And Allied Global Information Networks in the Nuclear Age," *Journal of Strategic Studies* 27, no. 4 (June 19, 2024): 1–30, https://doi.org/10.1080/01402390.2024.2360724.

[11] John J Mearsheimer, *The Tragedy of Great Power Politics* (New York: W.W. Norton & Company, 2014), 114-25.
Ryan T Baker, "Logistics and Military Force: Tooth, Tail, and Territory in Conventional Military Conflict" (Ph.D. Dissertation, 2020).

[12] Phil Haun, *Tactical Air Power and the Vietnam War: Explaining Effectiveness in Modern Air Warfare* (Cambridge, UK; New York: Cambridge University Press, 2024), chapters 8.
Julian Corbett, *Some Principles of Maritime Strategy* (London, New York: Longmans, Green and Co., 1911), 145-278.

[13] Mearsheimer, *The Tragedy of Great Power Politics*, 67-75.
Michael Beckley, "Economic Development and Military Effectiveness," *Journal of Strategic Studies* 33, no. 1 (February 2010): 43–79, https://doi.org/10.1080/01402391003603581.

usually secures victory for the attacker. This analytical baseline enjoys empirical support and frequent applications in conventional warfare.[14]

The theater force ratio is a good rule of thumb used for conservative planning. However, a necessary and sufficient explanation for military outcome must also account for intangible factors like civil-military relations, social cohesion, military inequality, military organizational design, and small unit leadership, all powerfully shape the military balance.[15] Organizational effectiveness is especially important for assessment when the military balance is not lop-sided in terms of the theater force ratio. Stephen Biddle convincingly proved that absent of lopsided material balance, the exchange between a well-organized attacker and a well-organized defender will result in a contained offensive. The exchange between a well-organized attacker and a disorganized defender will result in the latter's quick collapse. The exchange between a disorganized attacker and a disorganized defender will result in little change in the line of actual control.[16] This relation between dyadic balances of organizational effectiveness and combat outcomes is weaker yet still salient in naval warfare.[17] Table 2 lays out a composite measurement of offense-defense balance that accounts for both the material balance and the military-organizational effectiveness. I assume that states assess their military prospects using similar standards. The biggest challenge for states' ODB assessment is that, although the material balance is nicely correlated with the level of military resources, and therefore polarity and coalition, the balance of organizational effectiveness is not.[18]

---

[14] John Mearsheimer posited: "The defender would probably be in serious trouble if the overall balance of Armored Division Equivalents (ADEs) in a theater favored the attacker by 2:1." Christopher Lawrence's exploration of an up-to-date battle datasets indicates that 20th-century attackers, regardless of effectiveness, terrain context, and force employment schemes, often succeed with a roughly 2:1 theater FFR. The "precision revolution" has greatest impact on air-sea operations since the waterbodies are comparatively terrainless. The salvo model of missile combat suggests that "attacking effectively first" is very likely to overwhelm even a preponderant adversary. However, 2:1 attacker-to-defender preponderance ensures that even against an organizationally effective defender who are able to counterattack before the arrival of incoming missiles, the attacker can annihilate the defender with a sizable friendly force survived ex-post.
John J Mearsheimer, "Numbers, Strategy, and the European Balance," *International Security* 12, no. 4 (1988): 176, https://doi.org/10.2307/2539001.
Christopher A Lawrence, *War by Numbers: Understanding Conventional Combat* (Lincoln: The University Of Nebraska Press, 2017), 9–11.
Jeffrey R Cares and Anthony Cowden, *Fighting the Fleet: Operational Art and Modern Fleet Combat* (Annapolis, MD: Naval Institute Press, 2021), 150-51.
Wayne P Hughes and Robert Girrier, *Fleet Tactics and Naval Operations*, the 3rd edition (Annapolis, MD: Naval Institute Press, 2018), 182-87.

[15] Risa Brooks and Elizabeth A Stanley, *Creating Military Power: The Sources of Military Effectiveness* (Stanford, CA: Stanford University Press, 2007).
Dan Reiter, *The Sword's Other Edge: Tradeoffs in the Pursuit of Military Effectiveness* (Cambridge, England; New York: Cambridge University Press, 2017).

[16] Stephen Biddle, "Rebuilding the Foundations of Offense-Defense Theory," *The Journal of Politics* 63, no. 3 (August 2001): 750–56, https://doi.org/10.1111/0022-3816.00086.
Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton; Oxford: Princeton University Press, 2006).

[17] Stephen Biddle and John Severini, "Military Effectiveness and Naval Warfare," *Security Studies*, August 8, 2024, 1–23, https://doi.org/10.1080/09636412.2024.2363533.

[18] Stephen Biddle and Robert Zirkle, "Technology, Civil-Military Relations, and Warfare in the Developing World," *Journal of Strategic Studies* 19, no. 2 (June 1996): 171–212, https://doi.org/10.1080/01402399608437634.

Material Balance between State A/B	A:B>2:1	2:1>A:B>1:2 2:1>B:A>1:2	B:A>2:1
	A's Offense Favorable	Denial Favorable Given Effectiveness Parity	B's Offense Favorable

Organizational Effectiveness of State A/B	High	Low
High	Denial Weakly Favorable	B's Offense Favorable
Low	A's Offense Favorable	Denial Strongly Favorable

Table 1: Assessing ODB Using Balances of Military Assets and Organizational Effectiveness

Dependent Variable 1: Likelihood of War Initiation

Since the scenario of two poles ganging up against the isolated third pole lies at the core of the Tripolar Instability Thesis, it is imperative to first revisit the social choice logic underpinning coalitional patterns. There can be three possible coalition patterns: revisionist coalition formation, status quo coalition formation, and no coalition formation. Since the "trophy of victory" is a private good, the more diversified the revisionist coalition membership, the more diluted the "trophy of victory" would be for any coalition members. The smaller the size of the revisionist coalition's opponent, the thinner the "trophy of victory" would be for any coalition members.[19] Since the "dividend of deterrence" is a public good, the larger the size of a status quo coalition, the more incentive there will be for any coalition member to engage in free-riding and buck-passing, the opportunism of the weak.[20] *Therefore, agents would prefer a minimal winning coalition over a cumbersome winning coalition.*

The importance of conventional capability incentivizes agents to prefer independent revisions over a revisionist winning coalition over a status quo winning coalition over a losing coalition. The preference for independent action over coalition runs against Glenn Snyder's famous "primary alliance security dilemma" and therefore warrants explanations.[21] Rational revisionists would not go on offensives unless expecting a quick and decisive victory. This means that they do not expect coalitional warfare to be a repeated game. Without much shadow of the future, the coalitional commitment would be vulnerable to alliance incitement and bait-and-bleed, the opportunism of the powerful.[22]

Crucially, an ex-ante winning coalition shall not put any coalition members into an ex-post losing position. *Therefore, forming a revisionist coalition also requires any member to be capable of blocking an offensive from its partner*.[23] However, status quo coalition formation does not delimit the internal structure. The stronger coalition member will not attack the weaker coalition member. Such an attempt will only hamper the initiator's security because the third party the coalition is trying to deter or defend against will seize this opportunity and take on either coalition member.

---

[19] William H Riker, *The Theory of Political Coalitions* (Westport, CT: Greenwood Press, 1962), chapter 2.
[20] Mancur Olson and Richard Zeckhauser, "An Economic Theory of Alliances," *The Review of Economics and Statistics* 48, no. 3 (1966): 267–68, https://doi.org/10.2307/1927082.
[21] Glenn H Snyder, *Alliance Politics* (Ithaca, NY: Cornell University Press, 1997), 17-20.
[22] Deye Li, "Passive Aggression: Explaining the Cause and Consequences of Bait-And-Bleed Strategy," *2024 Annual Meeting of American Political Science Association* (Philadelphia, PA, 2024), 21–22, 48.
[23] Theodore Caplow, "A Theory of Coalitions in the Triad," *American Sociological Review* 21, no. 4 (August 1956): 489–90, https://doi.org/10.2307/2088718.

Coalition Patterns and Systemic Stability

Polarity (IV)	Bipolarity	"Deterrence Tripolarity" A>2B, A>2C A<2(B+C)	"Coup Tripolarity" B<2C, C<2B, B<2A, C<2A, B+C>2A	"Chaotic Tripolarity" A>2B, C>2B, A<2C, C<2A	Multipolarity
Agent resolve	At least medium	At least medium	At least medium	At least medium	At least medium
Coalition strategy	Independent action	Defensive coordination	Offensive coordination	Independent revision	Independent revision/Offensive coordination
Coalition pattern (DV1)	No coalition formation	B-C status quo coalition formation	B-C revisionist coalition formation	No coalition formation	Underdetermined
Systemic Instability	Very Low	Very Low	Low	Medium	Medium
Historical Example	Cold War, US/USSR	Early Modern Europe, Hubsberg/ Ottoman/ France	WWII, Germany/US/ USSR	Interwar Far East, USSR/Japan/ China	Modern Europe, Britain/France/ Russia/Germanies

Table 2: Polarity, Coalition Pattern, and Escalation Risks

The coalition pattern profoundly affects the viability of general deterrence.[24] The most peaceful type of tripolarity shapes agent beliefs on the conditionally high viability of the status quo. Oligarchic agents have substantial power to shape the market structure. In turn, the interaction of agents' belief-based strategic choices constitutes a negative feedback loop that makes the systemic structure more durable. It should be noted that for a coercive great power strategy to be plausible, agents must have a substantial resolve. Under nuclear bipolarity, no revisionist coalition is possible, and no status quo coalition is necessary. The two great powers will likely block each other's offensives due to the limited dyadic differential of military resources. Thereby, great powers could only independently contest each other on resolve and intangible capability elements but not on alignment maneuvers. Thus, the stability of a bipolar system is as robust as the most stable type of tripolarity since adversarial symmetry is structurally granted, and only highly asymmetric coalitions between great powers and regional powers form.[25]

---

[24] Paul K Huth and Bruce Russett, "General Deterrence between Enduring Rivals: Testing Three Competing Models," *American Political Science Review* 87, no. 1 (March 1993): 62, https://doi.org/10.2307/2938956.
[25] Kenneth N Waltz, *Theory of International Politics* (Boston, MA: Addison-Wesley Publishing Company, 1979), 168-70.
Snyder, *Alliance Politics*, 38.

Under the "Deterrence Tripolarity" of A>2B, A>2C, and A<2(B+C), the stronger pole enjoys decisive military superiority against either of the weaker poles. The two weaker poles would expect that maintaining the status quo is not viable without an alliance. However, with a coalition between the weaker poles, although the coalition is still incapable of revisionism, which requires a decisive military superiority against the stronger pole, it can maintain the status quo by denying the stronger pole the decisive military superiority. Therefore, both weaker poles will choose a defensive coordination strategy. A defensive coordination strategy maximizes the security prospect even when among the weaker poles, B has decisive military superiority against C. Even counting the cost of war, the successful conquest of C may still enable B to command an ex-post level of military resources to deny A's decisive military superiority. However, even quick conquest doesn't happen overnight. The subsequent consolidation and extraction necessary for fully absorbing C's military resources is also fairly time-consuming.[26] When B initiates an aggression against C, A would be more than happy to exploit this window of opportunity and throw its weight on C's back by massively attacking B. Expecting its opportunism to bring its destruction, B would not invade C in the first place. Therefore, when both weak poles choose the coalition strategy of defensive coordination, a status quo coalition between them will form. "Deterrence Tripolarity" would feature a low probability of war initiation. Forming a defensive coalition would not initiate a great power war, and the stronger pole would be deterred from embarking on revisions that it otherwise could be confident about. Even if the defensive coalition fails to eliminate wars, the interstate wars remaining under "Deterrence Tripolarity" would be limited, peripheral wars. Therefore, when both weak poles choose the strategy of defensive coordination, a status quo coalition between them will form. A prominent example of "Deterrence Tripolarity" is Early Modern Europe where the two weaker poles, France and the Ottoman Empire, formed a status quo coalition that successfully contained the stronger pole, the Habsburg Empire.[27]

Under the "Coup Tripolarity" of B<2C, C<2B, B<2A, C<2A, and B+C>2A, each pole is only able to defend itself against any other pole's individual attack. All poles would expect that without a coalition, only maintaining the status quo is viable for them. However, a coalition between the strong pole and any weak pole will be able to obtain a decisive military superiority against the third pole and confidently embark on revisions. Crucially, the trophy of war is divided along the pre-war balance of military potential between the two allied poles, and the ex-post balance of military potential would still enable the two remaining poles to defend themselves against each other's attack. Therefore, both weaker poles will choose offensive coordination as their best security strategy. When all poles choose the coalition strategy of offensive coordination, a revisionist coalition will form between the combination that constitutes the minimal winning coalition. "Coup Tripolarity" would primarily feature a higher probability of war initiation. A viable revisionist coalition can impose quick and decisive battlefield defeats on the singleton. However, some extents of coordination between the revisionist poles exist to lessen the risks of inadvertent war contagion. A prominent example of Coup Tripolarity is WWII, which is defined

---

[26] Peter Liberman, *Does Conquest Pay?: The Exploitation of Occupied Industrial Societies* (Princeton, NJ: Princeton University Press, 1998).

[27] Paul M Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500-2000* (London: William Collins, 2017), 14-24.
Ludwig Dehio, *The Precarious Balance: Four Centuries of the European Power Struggle* (New York: Alfred Knopf, 1965), 19-43.

by the revisionist coalition between the US and the USSR that rolled back Nazi Germany from the West Atlantic and Moscow to Berlin.[28]

Under the "Chaotic Tripolarity" of A>2B, C>2B, A<2C, and C<2A, both stronger poles would expect to be able to not only defend themselves and maintain the status quo but also wreck the weaker pole and revise the status quo with or without a coalition. A coalition will not make a unique contribution to its security. Therefore, both stronger poles will choose the coalition strategy of independent revision, and no coalition will form. The furthest extent of their coordination would be just to avoid accidents and set a tenable line of actual control amid the frictions and the fog of war in a fast-moving scramble to expand at the weaker power's expense. Even in the case of A+B>2C, although A would prefer to ally with B than C for more gain from initial conquest and alliance trophy division, such an alliance would not be plausible. Choosing a coalition with A will soon bring B's demise due to the division of war trophies along the pre-war balance that does not enable the weaker ally to deny a decisive military superiority from the attacker. If A forces B to join a revisionist coalition against C, the coalition option with C would become a more attractive alternative to B. "Chaotic Tripolarity" would feature the highest probability of war initiation. A revisionist coalition would not be necessary to impose quick and decisive defeats on the singleton. Yet the resulting "enemy disunity" can be "worse than a monolith." Autonomous expansions, fratricide, and escalation misattributions become more pressing dangers when the two militaries conduct non-coordinated combat operations in the theater vicinity.[29] A good example of escalation risks under chaotic tripolarity is the major skirmish battles in the 1930s between Japan, which encroached on China from the Manchurian direction, and the USSR, which encroached on China from the Mongolian direction.[30] The relation between polarity and war's onset is best presented as *Proposition 1: In a tripolarity between two poles of substantial resolve, when the status quo is non-viable without coalition and only the status quo is viable with a coalition, a status quo coalition that reduces the probability of war initiation would form.*

In a n-person MAD world, it may be possible for a great power to muster decisive military superiority over another great power without causing a status quo coalition involving the victim since all potential coalition partners may be preoccupied with revisionist endeavors. Under multipolarity, it could also be possible to have multiple minimal revisionist winning coalitions with intra-coalitional stalemate. Then, the balance of stake in the proposed coalition and side payments become important.[31] Resultantly, no concrete coalition can be meaningfully predicted

---

[28] Schweller, *Deadly Imbalances*.
Oleg Rzeshevsky, *War and Diplomacy: The Making of the Grand Alliance* (London, UK: Routledge, 2013), part 1.
[29] Thomas J Christensen, *Worse than a Monolith: Alliance Politics and Problems of Coercive Diplomacy in Asia* (Princeton, NJ: Princeton University Press, 2011), 2–8.
Nicholas D Anderson, "Push and Pull on the Periphery: Inadvertent Expansion in World Politics," *International Security* 47, no. 3 (January 1, 2023): 136–73, https://doi.org/10.1162/isec_a_00454.
Office of Technology Assessment, *Who Goes There: Friend or Foe?* (Washington, DC: U.S. Government Printing Office, 1993), 7–36.
Sandeep Baliga, Ethan Bueno De Mesquita, and Alexander Wolitzky, "Deterrence with Imperfect Attribution," *American Political Science Review* 114, no. 4 (August 3, 2020): 1–24, https://doi.org/10.1017/s0003055420000362.
[30] Anastasia Lozhkina, Yaroslav Shulatov, and Kirill Cherevko, "Soviet-Japanese Relations After the Manchurian Incident, 1931-1939," in *A History of Russo-Japanese Relations: Over Two Centuries of Cooperation and Competition*, ed. Dmitry Streltsov and Nobuo Shimotomai (Leiden, The Netherlands: Brill, 2019), 179–200.
[31] Snyder, *Alliance Politics*, 26-27.
Scott Wolford, *The Politics of Military Coalitions* (New York, NY: Cambridge University Press, 2015), 25–28.

by a parsimonious theory. Stakes in the proposed coalition are private information to individual agents, and information about side payments is shared among coalition negotiators only. However, a party of a specific coalition negotiation would have a strong incentive to manipulate the information about side payments vis-a-vis the members of alternative potential coalitions to mitigate the threat of wedging or to improve its bargaining leverage.[32] However, a party to a specific coalition negotiation would also have a strong incentive to manipulate information about its stake vis-a-vis the other parties to improve its bargaining leverage. The uncertainty multiplied by the additional number of major actors makes the system least peaceful.

Dependent Variable 2: Likelihood of Intra-war Deliberate Escalation

Once great powers select themselves into a shooting war, there are three logical options for deliberate nuclear escalation. The most obvious one is retaliation against the adversary's all-out strategic countervalue attack. After suffering the prompt and utter destruction of the homeland sanctuary, the defenders have nothing to lose. Short of this doomsday scenario, a belligerent with high resolve has two options of limited retaliation: theater counterforce strikes and strategic demonstration strikes. Exchanges of theater counterforce strikes and strategic demonstration strikes resulted from roughly symmetrical resolves operate under the core logic of limited retaliation: a second-price all-pay auction in which both bidders pay the second highest bid, and the prize is allocated to the bidder with the highest bid.[33] At each round, a player can choose either to respond or not to respond, and the contest could continue as long as both sides still have something to lose on that escalation ladder. Theater counterforce strikes differ from strategic demonstration strikes in the sense that coercive bargaining is the only logic underpinning the latter. The reader should be concerned about the initiation of a limited nuclear war no less than the winner of a limited nuclear war, as Powell's sequential equilibrium model suggested: "Limited exchanges seem to be difficult to start, but once started, they may be very destructive."[34] The relation between polarity and deliberate nuclear escalation is best presented as *Proposition 2: The lesser the capability asymmetry between the revisionist coalition and the singleton, the less likely an early decisive defeat will be for the singleton, therefore, the less likely deliberate escalation.*

The option of initiating theater counterforce strike packages against sub-strategic targets has three components. The first logic is to substitute long-range conventional precision strikes in effecting conventional denial.[35] The second logic is to coercively bargain with adversary B by revealing A's

---

[32] Timothy W Crawford, *The Power to Divide: Wedge Strategies in Great Power Competition* (Ithaca, NY: Cornell University Press, 2021).

[33] Erwin Amann and Wolfgang Leininger, "Asymmetric All-Pay Auctions with Incomplete Information: The Two-Player Case," *Games and Economic Behavior* 14, no. 1 (May 1996): 1–3, https://doi.org/10.1006/game.1996.0040.

[34] Powell's measurement uses "expected fraction of destruction (EFD)." A limited great power nuclear war directly causing more than 10% EFD, the bare minimum that would be inflicted in Powell's model, may well be waged with warheads each having more than 100 kiloton yield. However, a recent study shows that even a limited nuclear war that India and Pakistan waged with 15 kilotons warheads could cause 2 degree celsius drop in global temperature lasting 6 years, during which 50 million people will die from famine.
Robert Powell, *Nuclear Deterrence Theory: The Search for Credibility* (Cambridge, MA: Cambridge University Press, 1990), 165-66.
Alan Robock et al., "How an India-Pakistan Nuclear War Could Start—and Have Global Consequences," *Bulletin of the Atomic Scientists* 75, no. 6 (October 28, 2019): 273–79, https://doi.org/10.1080/00963402.2019.1680049.

[35] Kristin V Bruusgaard, "Russian Nuclear Strategy and Conventional Inferiority," *Journal of Strategic Studies* 44, no. 1 (October 14, 2020): 8-11, https://doi.org/10.1080/01402390.2020.1818070.

resolve that its behaviors cannot be restrained by the nuclear threshold on either weapons or targets and A's capability to disrupt B's limited nuclear operations. State B may realize not only that more of A's hyper-lethal warfighting moves could follow if it does not comply, but also that A's counterforce strikes have shifted B's response option from launching symmetrical limited attacks to launching larger, more destructive limited attacks.[36] The third logic is calibrating damage to avoid inadvertent escalation by only carefully targeting conventional and nuclear combat forces and combat support infrastructures of the adversary outside of its homeland sanctuary and strategic nuclear bastion.

The logic behind the option of launching a countervalue demonstration strike salvo against the adversary's homeland sanctuary is very simple: to reveal the resolve to risk substantial damage to friendly metropoles to reduce risk on the friendly interests other than survival.[37] However, there is still room for continued, slow-moving countervalue punishment before reaching the point at which the probability of losing survival equals the probability of losing other interests. The prospect of plausibly suffering such horrible damages that could make a vital difference between a "catastrophic blunder" and "the disaster beyond history" will strongly incentivize the adversary of high resolve to not leverage warfighting and comply with the strategic demonstrator's demands.[38] The higher the adversarial asymmetry of conventional military assets, the easier it is for the stronger side to impose decisive defeats on the weaker side on the battlefield. Therefore, the weaker side will assess a wider combat power gap having to be plugged first by non-strategic nuclear strikes and ultimately by "rocking the boat."

There are also two highly celebrated but illogical options for deliberate nuclear escalation. The first is strategic counterforce strikes. The advocates of counterforce developed two logics: splendid first strike and damage-limiting coercion.[39] Under MAD, even the combination of overwhelming nuclear superiority and maximal strategic surprise would still leave the victim with the retaliatory force capable of utterly smashing the initiator's society. A rational victim would not even massively retaliate against the initiator's metropoles and only need to ride out the ineffective all-out counterforce campaign and then order limited countervalue demonstration strikes. All nations value a unit of survival more than a unit of any other security interests. Since the initiator of a full counterforce campaign would put itself in a situation in which the probability of losing survival is higher than the probability of losing whatever other security interests the initiator is bargaining for, such a strategy is irrational. Damage-limiting coercion posits that even if a disarming strike is impossible, a state can still obtain bargaining power in diplomatic or military coercion by credibly threatening to reduce the damage from the adversary's second-strike potential from assured destruction to assured retaliation or even minimal deterrence or by credibly threatening massive escalation to frustrate the adversary's limited countervalue demonstration option. However, the

---

Stephen D Biddle and Peter Feaver, eds., *Battlefield Nuclear Weapons: Issues and Options* (Cambridge, MA: Center For Science And International Affairs, Harvard University, 1989), chapters 1, 5.

[36] Powell, *Nuclear Deterrence Theory*, 158.

[37] Robert Jervis, *The Illogic of American Nuclear Strategy* (Ithaca, NY: Cornell University Press, 1984), 129-46.

[38] McGeorge Bundy, "To Cap the Volcano," *Foreign Affairs* 48, no. 1 (1969): 1, https://doi.org/10.2307/20039419. Powell, *Nuclear Deterrence Theory*, 25-32.

[39] Herman Kahn, *On Thermonuclear War* (Princeton, NJ: Princeton University Press, 1960), 36-37.
Matthew Kroenig, *The Logic of American Nuclear Strategy: Why Strategic Superiority Matters* (Oxford; New York: Oxford University Press, 2018), chapter 1.

coercive threat, even backed by an effective yet limited counterforce salvo, lacks credibility because the escalatory option behind it is irrational: the damage cannot be meaningfully limited.

The second is brinkmanship strikes, backed by the postulation that deliberate elevations of the probability of cascading, uncontrolled escalation can incentivize the adversary to back down and seek de-escalation.[40] There are two reasons behind "the threat of leaving something to chance." The first is the probability of unauthorized launches from military accidents. The longer a belligerent keeps the intense crisis going, the higher the probability of mechanical failures due to the wear down from extended high operational readiness.[41] However, a leading scholar of safety, Richard Cook, wrote: "Catastrophe requires multiple failures, and single point failures are not enough."[42] Indeed, the extent to which the specter of full-blown strategic nuclear war would loom on military accidents depends on how country A's national command authority (NCA), country B's NCA, and B's military organization react to the accidents stemming from A's military organization. Given both national command authorities' respective control over the remaining nuclear forces, a reckless response from A's NCA or a massively escalatory response from B's NCA would be implausible because these acts exceed the point at which the probability of losing survival equals the probability of losing other interests. As Powell later recognized: "There is no risk of a purely accidental general nuclear attack."[43] The only occasion a full-blown strategic nuclear war might be accidentally triggered is when accidents from friendly military organizations coincide with uniquely catalytic accidents from adversarial military organizations, an extraordinarily remote possibility.

Next comes the probability of an all-out strike authorized by irrational leaders. It was asserted that amid an intense crisis's haste, fear, and anxiety, leaders may suffer from "misunderstanding, panic, madness, impulsiveness, and human failure."[44] Madman-based brinkmanship is faulty on two grounds. First, it is difficult to convince adversary B that not only "the leader suddenly becomes immune to consequence-based rational decision-making," but country A's entire command and control system that the mad leader is embedded in unmitigatedly failed in a nuclear crisis under MAD.[45] Little historical evidence exists of leadership losing control in the "haste" of the July Crisis, the "most favorable case" for the spiral model of crisis stability.[46] More crucially, given

---

[40] Thomas C Schelling, *The Strategy of Conflict* (Harvard University Press, 1960), 187-93.

[41] Robert Powell, "The Theoretical Foundations of Strategic Nuclear Deterrence," *Political Science Quarterly* 100, no. 1 (1985): 83–88, https://doi.org/10.2307/2150861.
Richard K Betts, *Military Readiness: Concepts, Choices, Consequences* (Washington, DC: Brookings Institute Press, 1995), 70–82.

[42] Richard I Cook, "How Complex Systems Fail," (Chicago IL: Cognitive Technologies Laboratory, University of Chicago, 1998).

[43] Powell, *Nuclear Deterrence Theory*, 124-25.

[44] Daniel Ellsberg, "The Political Use of Madness." Presented at the Lecture at Lowell Institute of the Boston Public Library, March 2, 1959.
Schelling, *The Strategy of Conflict*, 188.
Reid B Pauly and Rose McDermott, "The Psychology of Nuclear Brinkmanship," *International Security* 47, no. 3 (January 1, 2023): 9–51, https://doi.org/10.1162/isec_a_00451.

[45] Samuel Seitz and Caitlin Talmadge, "The Predictable Hazards of Unpredictability: Why Madman Behavior Doesn't Work," *The Washington Quarterly* 43, no. 3 (July 2, 2020): 34, https://doi.org/10.1080/0163660x.2020.1810424.

[46] Marc Trachtenberg, "The Meaning of Mobilization in 1914," *International Security* 15, no. 3 (1990): 143–50, https://doi.org/10.2307/2538909.

that moving second cannot be conceivably worse than moving first, what should leaders be anxious about? Even if B has bought the mad image that the leader of A tried to project, B has no logical reason to assume that the nuclear safety of A is dangerously degraded. As Cook argued, safety is an emergent property of systems: "It does not reside in a person, device, or department…This means that safety cannot be manipulated like a feedstock or raw material."[47]

Secondly, irrational leaders hamper rather than enhance coercion because the coercer cannot credibly reassure its adversary that if the latter yields, the former would deescalate.[48] Joshua Schwartz's survey experiments found that bargaining information theorized by this research, rational extreme resolve that only triggers extreme threat in extreme situations, reliably increases one's bargaining leverage. By contrast, the irrationality that could be passed on to all circumstances reliably undermines one's bargaining leverage.[49] The fallback position that the brinkmanship theorists would take is that for brinkmanship to work, A only needs to make B believe that A might do irrational acts. However, rationality is a shared assumption, and it is not credible to threaten something impossible. Limited brinkmanship strikes are not a logical strategy, as Joshua Rovnar succinctly summarized: "Threats leaving something to chance do not generate leverage, nor do they cause escalation."[50]

Mechanisms of deliberate escalation	The effect of minimal adversarial power asymmetry (IVa) on causal mechanism	Deliberate escalation likelihood (DV2)
Theater counterforce strike against sub-strategic targets	Adversarial conventional asymmetry–less need for nuclear substitution	Decreased
Limited strategic strike against homeland sanctuary	Adversarial conventional asymmetry–less need to "rock the boat"	Decreased
Retaliating against adversary's massive strategic nuclear first-use		Neutral

Table 3: The Impact of Polarity on Logical Deliberate Escalation Risks

Dependent Variable 3: Likelihood of Intra-war Inadvertent Escalation

Operational Military Choices and Rational Inadvertent Risks

Conventional weaponry's increasing range and precision make inadvertent escalation, defined as unintentional escalatory consequences of a combatant's intentional actions, the other source of

[47] Cook, "How Complex Systems Fail," 4.
[48] Roseanne W McManus, "Revisiting the Madman Theory: Evaluating the Impact of Different Forms of Perceived Madness in Coercive Bargaining," *Security Studies* 28, no. 5 (September 13, 2019): 984–89, https://doi.org/10.1080/09636412.2019.1662482.
[49] Joshua A Schwartz, "Madman or Mad Genius? The International Benefits and Domestic Costs of the Madman Strategy," *Security Studies* 32, no. 2 (March 15, 2023): 293–302, https://doi.org/10.1080/09636412.2023.2197619.
[50] Diana Labrosse, ed., "Policy Roundtable II-5: The Psychology of Nuclear Brinkmanship," H-Diplo|RJISSF, August 4, 2023, https://issforum.org/policy-roundtable/h-diplorjissf-policy-roundtable-ii-5-the-psychology-of-nuclear-brinkmanship#_ftn49.

grave danger in a shooting war.[51] This research recognizes that inadvertent escalation risks can stem from behaviors significantly deviating from the rational choice baseline. Decision-makers' misperceptions may exceed the level warranted by information availability. They can misinterpret the meaning of each other's behaviors due to doctrinal differences.[52] They can also misunderstand the military situation they face due to wartime information entropy and information overload.[53] Military organizations may also exhibit malpractices in balancing external and internal feedback. If a military organization's tactics, techniques, and procedures are "too fit" with the operational mission, it may normalize activism and resist restraint.[54] If a military seriously mismatches a "constrained operational mission" with an "organic organizational solution," problematic breakdowns tend to manifest in "interoperability failure, security compromise, accidental collision, and targeting error."[55]

Instead, this research focuses on the rational-strategic logic for states to take inadvertent risks: substituting deficient battlefield effectiveness by targeting homeland civilian-economic targets or dual-capable strategic assets with non-nuclear capabilities.[56] Strategic non-nuclear attacks are inherently dangerous. Due to the defender's deliberate ambiguity about its private information, the attacker may fail to recognize the nuclear usage of capabilities or the nuclear threshold for novel asymmetric capabilities (like Cyber). [57] These long-range precision attacks may be indistinguishable from military preparations for nuclear escalations, prompting limited preemptive responses.[58] Mere tactical commands could initiate these attacks yet unacceptably threaten the victim's vital intrinsic interests, which is where the threshold for deliberate nuclear escalation lies.[59]

Under MAD, inadvertent casualties of nuclear assets would not trigger massive strategic nuclear escalations. However, limited nuclear responses would still be plausible and undesirable from the initiator's point of view. Moreover, the degradation of the adversary's conventional capability could far exceed the initiator's expectation based on its ex-ante limited information, resulting in

---

[51] Forrest E Morgan et al., *Dangerous Thresholds: Managing Escalation in the 21st Century* (Santa Monica, CA: RAND Corps, 2008), 23.
[52] Christopher P Twomey, *The Military Lens: Doctrinal Difference and Deterrence Failure in Sino-American Relations* (Ithaca, NY: Cornell University Press, 2011), chapter 2.
[53] Barry R Posen, *Inadvertent Escalation: Conventional War and Nuclear Risks* (Ithaca, NY: Cornell University Press, 2014), 19-23.
[54] Jeffrey W Legro, "Military Culture and Inadvertent Escalation in World War II," *International Security* 18, no. 4 (1994): 138–40, https://doi.org/10.2307/2539179.
[55] Jon R Lindsay, *Information Technology and Military Power* (Ithaca, NY: Cornell University Press, 2020), 65-67
[56] Fiona Cunningham, *Under the Nuclear Shadow: China's Information-Age Weapons in International Security* (Princeton, NJ: Princeton University Press, 2024), chapter 1.
Alexander B Downes, *Targeting Civilians in War* (Ithaca, NY: Cornell University Press, 2011), chapter 1.
[57] Caitlin Talmadge, "Would China Go Nuclear? Assessing the Risk of Chinese Nuclear Escalation in a Conventional War with the United States," *International Security* 41, no. 4 (April 2017): 54-55, https://doi.org/10.1162/isec_a_00274.
Erik Gartzke and Jon R Lindsay, *Elements of Deterrence: Strategy, Technology, and Complexity in Global Politics* (Oxford; New York: Oxford University Press, 2024), 180–91.
[58] James M Acton, "Escalation through Entanglement: How the Vulnerability of Command-And-Control Systems Raises the Risks of an Inadvertent Nuclear War," *International Security* 43, no. 1 (August 2018): 67–73, https://doi.org/10.1162/isec_a_00320.
[59] Joshua Rovner, "Two Kinds of Catastrophe: Nuclear Escalation and Protracted War in Asia," *Journal of Strategic Studies* 40, no. 5 (February 28, 2017): 721, https://doi.org/10.1080/01402390.2017.1293532.

"catastrophic successes." A major reason why states assign conventional missions to nuclear assets is that the states place much higher weights on effectiveness and reliability in designing and procuring nuclear assets. If a state is only somewhat reliant on dual-capable assets for critical conventional missions, then losing those assets could degrade its conventional offense without radically degrading its conventional defense. However, if a state largely relies on its dual-capable assets for critical conventional missions, then losing those assets could seriously worsen its conventional defense.

Capabilities/Targets	Metropoles	Dual-use military assets	Pure military targets
Destructive	Highly destabilizing	Moderately destabilizing	Hardly destabilizing
Disruptive	Moderately destabilizing	Highly destabilizing	

Table 4: Operational Choices and Inadvertent Escalation Risks

To deepen our understanding of inadvertent escalation risks under the rational-strategic logic, I shall explore what operational choices in non-nuclear substitutions have high inadvertent destabilization potential and what kinds of non-nuclear attacks are less menacing. Two kinds of potential threshold targets can be conceived: civilian-economic targets in the homeland sanctuary and dual-capable strategic-military assets like early warning radar and medium-range ballistic missiles. Two kinds of non-nuclear capabilities can be employed for military effectiveness: destructive capabilities, like cluster bombs and precision-guided munitions, and disruptive capabilities, like cyber attacks and electromagnetic warfare. This research argues that applying destructive capabilities on metropolitan targets or disruptive capabilities on dual-use military assets is more destabilizing than applying disruptive capabilities on metropolitan targets or destructive capabilities on dual-use military assets.

This argument is grounded in two logics. The first logic is related to state preferences. Whereas destructive capabilities impact a constrained damage ground zero, disruptive capabilities impact the broader information network. The value of metropoles for a state is primarily intrinsic. A totally paralyzed population center is more acceptable than a half-destroyed population center, just as laying on a sickbed for six months is more acceptable than permanently losing a hand to a human. In contrast, the value of dual-use military assets for a state is primarily strategic. Their immediate usability may be more important than possession. In wartime, retaining half of the territorial airspace with 50 percent surviving IADS assets is more acceptable than conceding the entire territorial airspace for a month with a nationally degraded IADS network.

The second logic is related to the impact of information on bargaining. Attributing the initiator of destructive attacks is generally easier than attributing the initiator of disruptive attacks. Whereas strategic bombing risks punitive reprisal from the adversary, operational interdiction risks imposing unacceptably quick, decisive defeats on the adversary. If the countervalue attacker can be easily identified, the victim is more likely to summarily order punitive reprisal, increasing the escalation risk. If the countervalue attacker cannot be easily identified, the victim is less likely to

summarily order punitive reprisal, reducing the escalation risk. However, if the counterforce attacker can be easily identified, it would be easier for the defender to implement effective countermeasures, reducing the escalation risk. If the counterforce attacker cannot be easily identified, it would be harder for the defender to implement effective countermeasures, increasing the escalation risk.

Polarity and Coalitional Restraint

It should be emphasized that operational military choices are subjected to, if not dominated by, coalitional strategic restraint. A coalition member can demand its partner not to employ strategic non-nuclear capabilities at all, not to employ destructive capability on the singleton's homeland civilian-economic targets, and not to employ disruptive capability on the singleton's dual-capable strategic assets. Coalitional restraint in tripolarity stems from the degree of preference divergence and the balance of bargaining power between two coalitional partners. For coalition members to have a strong incentive to bargain, the degree of preference divergence must be medium since states only need coordination under low preference divergence, and states prefer coalition termination over coalitional bargaining under high preference divergence.[60] The higher the asymmetry of bargaining power between coalition members, the more lopsided the bargaining outcome would favor the preference of the "winner," be that escalation or restraint.

Think about the scenario of a slowly grinding military stalemate: the weaker coalition member faces the prospect of imminent exhaustion of military resources while the stronger coalition member has confidence in continued attrition. Under this scenario, the preference divergence between coalition members rises from low to medium because risky operational military choices of the weaker member may inadvertently cause nuclear escalations. However, the preference divergence would not become high because the possibility of non-occurrence of general nuclear escalation retains the importance of capability aggregation. In this case, the stronger coalition member could be strongly incentivized to restrain the weaker member from using risky strategic non-nuclear capabilities.

In a tripolar system, there is only one minimal offensive/defensive winning coalition, and alternative coalition offers are unavailable. Therefore, coalitional bargaining power primarily comes from relative strength. Bismarck famously reflected that "the best alliances are when one ally is the horse and the other is the rider, not when you have two horses."[61] The positive correlation between relative strength and coalition bargaining power holds for both status quo and revisionist coalitions. However, the causal mechanisms between strength and coalitional bargaining power in status quo and revisionist coalitions differ.

The maintenance of the status quo is primarily a public good. In a coalition providing public goods, the agenda-shaping leverage of a member's "voice" stems from the attractiveness of the "exit

[60] Paul Poast, *Arguing about Alliances: The Art of Agreement in Military-Pact Negotiations* (Ithaca, NY: Cornell University Press, 2019), 32–36.
Wolford, *The Politics of Military Coalitions*, 56-65.
[61] Paul Schroeder, *Systems, Stability, and Statecraft: Essays on the International History of Modern Europe* (New York: Springer, 2016), 242.

option," or non-alignment in the triadic context.[62] If a coalition member wants to restrain another member, it can either increase the attractiveness of its non-alignment option by internal balancing or reduce the attractiveness of the partner's non-alignment option by sharing more burden.[63] Since stronger power can better survive without the coalition and share more of the burden, the robustness of coalition restraint increases with the strength of the restrainer.[64]

For a revisionist coalition, the necessity of coordination adds public good elements, but military expansion, the ultimate purpose, is a private good. The size of the pool of spoils and the share in the pool for a revisionist coalition member depends on the effort it puts in. In a coalition providing private goods, the bargaining power comes from side payments.[65] Since stronger powers can afford higher side payments, the robustness of coalition restraint increases with the strength of the restrainer. The relation between polarity and inadvertent nuclear escalation is best presented as *Proposition 3: The greater the capability asymmetry between the revisionist coalition members, the more plausible the coalitional restraint on operational military choices due to a medium preference divergence and the restrainer's high coalitional bargaining power; therefore, the less likely an inadvertent nuclear escalation is.*

[62] Scott Gehlbach, "A Formal Model of Exit and Voice," *Rationality and Society* 18, no. 4 (November 2006): 395–418, https://doi.org/10.1177/1043463106070280.
[63] Alexander Lanoszka, *Atomic Assurance: The Alliance Politics of Nuclear Proliferation* (Ithaca, NY: Cornell University Press, 2018), 15–17.
[64] For strength and coercion in alliance bargaining, see:
James D Morrow, "Alliances and Asymmetry: An Alternative to the Capability Aggregation Model of Alliances," *American Journal of Political Science* 35, no. 4 (November 1991): 913–19, https://doi.org/10.2307/2111499.
Jeremy Pressman, *Warring Friends: Alliance Restraint in International Politics* (Ithaca, NY: Cornell University Press, 2008), 15, 121–23.
Brian D Blankenship, *The Burden-Sharing Dilemma: Coercive Diplomacy in US Alliance Politics* (Ithaca, NY: Cornell University Press, 2023), 27–29.
For strength and reassurance in alliance bargaining, see:
Victor D Cha, *Powerplay: The Origins of the American Alliance System in Asia* (Princeton, NJ: Princeton University Press, 2016), 27–32, 36–37.
Brian D Blankenship and Erik Lin-Greenberg, "Trivial Tripwires?: Military Capabilities and Alliance Reassurance," *Security Studies* 31, no. 1 (February 21, 2022): 1–26, https://doi.org/10.1080/09636412.2022.2038662.
[65] Wolford, *The Politics of Military Coalitions*, 67.

Mechanisms of inadvertent escalation	The effect of maximal intra-coalition asymmetry (IVb) on causal mechanism	The effect of maximal intra-coalition asymmetry (IVb) on causal mechanism	Deliberate escalation likelihood (DV3)
Applying destructive non-nuclear capabilities on homeland metropolitan targets to substitute battlefield deficiency	Intra-coalition asymmetry– restraint attempted due to medium preference divergence	Intra-coalition asymmetry– allied restraint more robust due to high coalitional bargaining power	Increased
Applying disruptive non-nuclear capabilities on strategic dual-capable assets to substitute battlefield deficiency	Intra-coalition asymmetry– restraint attempted due to medium preference divergence	Intra-coalition asymmetry– allied restraint more robust due to high coalitional bargaining power	Increased
Leader Misperception			Neutral
Organizational Malpractices			Neutral

Table 5: The Impact of Polarity on Inadvertent Escalation Risks

The Nuclear Tripolarity of Tomorrow

It would be reasonable to be cautiously optimistic about the point predictions made by the theoretical deductions from structural inputs to agent expectations to agent behaviors to structural feedback based on empirically realistic assumptions.

According to IISS, the balance of PPP-adjusted defense spending between the US, China, and Russia is 3.2:1.4:1.[66] This is a "deterrence tripolarity." The US can muster a decisive military superiority against China. The US can also muster a decisive military superiority against Russia. However, neither does the US possess a decisive military superiority against a coalition between China and Russia, nor does a coalition between China and Russia possess a decisive military superiority against the US. The existing comparative assessments of operational military capabilities corroborate my rough polarity assessment based on military resources. A recent survey of 12 major net assessments and wargames on the Taiwan scenario, China's most favorable campaign scenario against the US, found the outcome of a US victory in 4 studies, a US-China draw in 4 studies, and a US defeat in 4 studies.[67] Glaser and Fravel's threat assessment indicated that China's robust A2/AD capability makes its control of the northern part of the South China Sea relatively easy. However, despite the ongoing Chinese militarization efforts, the US can still deny China from successfully contesting the southern part of the South China Sea, where the Spratly

[66] IISS, *Military Balance 2024* (London, UK: Routledge, 2024), 14.
[67] Robert Kitchen, "Red Dragon Rising? Insights from a Decade of China Conflict Studies and Wargames," Center for International Maritime Security, February 28, 2024, https://cimsec.org/red-dragon-rising-insights-from-a-decade-of-wargames/.

Islands are located, with acceptable cost in a shooting war.[68] Barry Posen's 2020 campaign analysis model indicates that even NATO's European members can confidently halt a Russian invasion of Poland alone.[69] Even the defense of the Baltics, NATO's most difficult mission, is considerably strengthened by the increasing favorability of defense in contemporary large-scale combat operations revealed by Russia's war with Ukraine and the turning of the Baltic Sea flanks from a major Russian threat route to a major NATO logistical route after Sweden acceded to NATO.[70]

Under this "deterrence tripolarity," all three poles are likely to believe that there can be no minimal revisionist winning coalitions with intra-coalitional stalemate, and the only possible coalition is a minimal defensive winning coalition between China and Russia. Given that the status quo is non-viable without a coalition, according to Proposition 1, the probability of great power war initiation will be reduced by the formation of the status quo coalition. At the onset of an unlikely great power war between the US and the Russo-Chinese coalition, the singleton-coalition balance will be 3.2:2.4. All three poles are likely to believe that it is implausible that they will be quickly and decisively defeated. Therefore, according to Proposition 2, the probability of deliberate nuclear escalation will be minimized in the initial phase of war. If the war drags on, according to Proposition 3, the substantial 1.4:1 intra-coalitional imbalance could cause divergent preference in operational military choices and incentivize attempts on alliance restraint. This substantial intra-coalitional imbalance will also give the restrainer high coalitional bargaining power. These two conditions make it likely that the weakest state weighing risky non-nuclear operations and coalition politics would assess a high disincentive from executing conventional escalations. Thus, the probability of deliberate nuclear escalation will be moderated in the extended phase of war.

---

[68] M Taylor Fravel and Charles L Glaser, "How Much Risk Should the United States Run in the South China Sea?," *International Security* 47, no. 2 (2022): 111–17.

[69] Barry R Posen, "Europe Can Defend Itself," *Survival* 62, no. 6 (November 1, 2020): 7–34, https://doi.org/10.1080/00396338.2020.1851080.

[70] Stephen D Biddle, "Back in the Trenches: Why New Technology Hasn't Revolutionized Warfare in Ukraine," Foreign Affairs, August 10, 2023, https://www.foreignaffairs.com/ukraine/back-trenches-technology-warfare. Andrew Dorman, "Sweden Brings Benefits for NATO but Accession Delay Raises Difficult Questions," Chatham House, February 27, 2024, https://www.chathamhouse.org/2024/02/sweden-brings-benefits-nato-accession-delay-raises-difficult-questions.

US-China-Russia polarity: 3.2:1.4:1		
US>2 China US>2 Russia US<2(China+Russia)	3.2:2.4 singleton-coalition balance	1.4:1 intra-coalitional balance
Behavioral Prediction: Belief of only minimal defensive winning coalition possible	Behavioral Prediction: Belief of quick and decisive defeat implausible	Behavioral Prediction: Belief of allied restriction on risky non-nuclear operations firm
Systemic Prediction: High capability-induced probability of status quo coalition formation before war	Systemic Prediction: Low capability-induced probability of deliberate escalation in the initial phase of war	Systemic Prediction: Low capability-induced probability of inadvertent escalation in the extended phase of war
Overall Prediction: very low cumulative capability-induced risk of nuclear war, even lower cumulative risk if accounting for the resolve requirements		

Table 7: Security Dynamics in Contemporary Tripolarity

There is one caveat: we may still be half a decade from the MAD tripolarity described by this theory. China still does not have assured destruction against the United States due to the former's "dangerously confident" peacetime approach to nuclear operations and the latter's formidable counterforce apparatus.[71] China's Over-the-Horizon radars capable of monitoring low-altitude objects do not yet cover the sea of Japan. Conventional radars provide coverage of American SSBN missile launches from the Sea of Japan, but their warning time might only be 2 or 3 minutes.[72] Wu Riqiang's campaign analysis model suggests that even under full alert, given the current PLARF practice of keeping the dispersed mobile missiles in underground forward sites, there is only a 6% probability that 5 Chinese warheads would survive an American counterforce campaign.[73] Furthermore, Moreover, China's Jin-class SSBNs reportedly have noise levels comparable to those of Soviet submarines in the 1970s.[74] America's Integrated Undersea Surveillance System can reliably track them in real time and render them highly vulnerable to offensive anti-submarine warfare efforts by the US and its allies.[75]

In conclusion, based on bedrock assumptions on agent rationality, revealed information, and private information, this research constructs a parsimonious theory explaining how polarity affects great power strategy and nuclear risks. Contrary to the Tripolar Instability Thesis, my theory indicates the logic of a conditioned optimism: the specific 3.2:1.4:1 contemporary US-China-Russia triadic power disposition massively reduces the likelihood of nuclear escalation.

---

[71] Fiona S Cunningham and M Taylor Fravel, "Dangerous Confidence? Chinese Views on Nuclear Escalation," *International Security* 44, no. 2 (October 2019): 61–109, https://doi.org/10.1162/isec_a_00359.
[72] Peter Wood, Alex Stone, and Thomas Corbett, "Chinese Nuclear Command, Control, and Communications" (Montgomery, AL: China Aerospace Studies Institute, March 2024), 51.
[73] Wu Riqiang, "Living with Uncertainty: Modeling China's Nuclear Survivability," *International Security* 44, no. 4 (April 2020): 84–118, https://doi.org/10.1162/isec_a_00376.
[74] Glaser and Fetter, "Should the United States Reject MAD?, 71.
[75] Brendan R Green and Caitlin Talmadge, "Then What? Assessing the Military Implications of Chinese Control of Taiwan," *International Security* 47, no. 1 (2022): 7–45, https://doi.org/10.1162/isec_a_00437.