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Université Jean Moulin - Lyon III

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Crossing the Thresholds, Colliding with the Vaults: Navigating the New Atomic Chambers of the Third Nuclear Age

Olivier Zajec

RESEARCH NOTE

Strategic Thinking



Image *:* Damaged Tu-95 bombers on the tarmac at the Belaya airbase in Russia.

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Site web : https://iesd.univ-lyon3.fr/
Contact : iesd.contact@gmail.com

IESD – Faculté de droit
Université Jean Moulin – Lyon III
1C avenue des Frères Lumière – CS 78242
69372 LYON CEDEX 08

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Abstract

From Kahn to Hersman, the notion of a nuclear threshold, linked to the concept of escalation dominance, has a long intellectual history in nuclear strategy. Nevertheless, under the conditions prevailing in the Third Nuclear Age, the ambiguity inherent in this metaphor appears increasingly problematic for the effective management of nuclear crises. The first obvious reason is the term's intrinsic polysemy: a threshold may refer to a level of danger or pressure in a crisis, a trigger point for a particular action, a psychological tipping point, as well as a specific degree of destruction. This polysemy is problematic in itself, but this article suggests that the key problem lies in what derives from this lexical fragmentation: the inability to politically model what a threshold actually represents within a crisis unfolding under nuclear conditions. The analytical impasse reached when the sole notion of a "threshold" is expected to encompass the entire challenge of nuclear strategy is compounded by the dominant tendency to interpret that threshold through an exclusively vertical logic – that of an escalation ladder.

To propose an alternative dynamic model for interpreting contemporary deterrence limits, this article distinguishes, defines and then brings together three foundational and complementary concepts: deterrent thresholds, atomic chambers, and nuclear vaults. It then clarifies, through a conceptual graphical model relating those different notions, how the atomic chambers follow one another, and what it means to pass through them as successive deterrence thresholds intensify the pressure on political leaders. Four case studies of nuclear crises, spanning both historical and contemporary episodes, are examined through the lens of this model. Finally, the article draws conclusions from the unprecedented atomic chamber that emerged following Ukraine's "Spiderweb" operation in June 2025, studying its troubling effects on new extended deterrence architecture, particularly in Europe.

Keywords : *Nuclear deterrence; nuclear thresholds; Ukraine War; escalation dominance; vital interests; strategic solidarity.*

Concerning the author

Olivier Zajec is Professor of Political Science at Jean Moulin Lyon 3 University, where he founded and has directed the Institute for Strategic and Defence Studies (IESD) and the Master's programme in International Relations – International Security and Defence (SID) since 2018. The author of numerous scholarly articles, his research focuses on realist theories of international relations, socio-spatial approaches in political science, and strategic and defence studies. Among other works, he is the author of *Les Limites de la guerre. L'approche réaliste des conflits armés au XXIe siècle* (Mare & Martin, 2024). olivier.zajec@univ-lyon3.fr

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Crossing the Thresholds, Colliding with the Vaults: Navigating the New Atomic Chambers of the Third Nuclear Age

> They pulled open the front door, and stepped across the threshold, and felt, both of them, as if they were standing in the presence of the whole world.
>
> NATHANIEL HAWTHORNE, *The House of the Seven Gables* (1851)

In the early afternoon of June 1, 1961, a few hours before the gala dinner at Versailles where Jacqueline Kennedy was about to dazzle Paris, the man who accompanied her was received by Charles de Gaulle at the Élysée Palace, for a far less glamorous exchange of views. Courteous yet forthright, de Gaulle opened the meeting by asking the U.S. president what he wished to discuss. The situation in Berlin, which would soon escalate, was naturally on the minds of both men. Kennedy replied that it would be useful to discuss strengthening the North Atlantic Treaty Organization, adding that they could also consider together "what other instrument might be conceived in preference to NATO to ensure common defense[1]." Rather than dwell on this surprising opening, de Gaulle went straight to the heart of the matter that concerned him and, "with utmost frankness", in his own words, chose to confront his

[1] The indirect statement appears to refer to the Multilateral Force (MLF) project, which the Kennedy administration was cautiously promoting at this time among its allies. The first official proposal dates to December 16, 1960, at the ministerial meeting of the North Atlantic Council (NATO) in Paris. Allied reactions varied widely. When Kennedy presented the proposal to the Canadian Parliament on May 17, 1961, he referred to "a NATO naval force that would be truly multilateral in terms of ownership and control." It was therefore not a "separate instrument" distinct from NATO. One can only speculate about what Kennedy meant when he spoke to de Gaulle on June 1, 1961, mentioning an instrument "preferable to NATO", other than the MLF. See *Foreign Relations of the United States, 1961–1963*, vol. XIII, doc. 107, "Memorandum of Conversation, President's Visit," Paris, June 1, 1961, p. 310.

counterpart about the nuclear guarantees that the United States extended to NATO:

> First, there is no longer a nuclear monopoly. On the contrary, the Soviets and the Americans are more or less on an equal footing, and each can destroy the other. Consequently, the United States is now itself at risk. Because of the possibility of being destroyed – even if it were to destroy Russia – it would find it extremely difficult to decide to use nuclear weapons. (…) Third, the United States' commitment is not limited to Europe. Alongside crises such as the one in Berlin, others could arise in Africa, Asia, Latin America, and elsewhere. The overly simplistic notion that equated defense with the defense of Europe is no longer valid[2].

Kennedy carefully objected: in his view, the defense of the United States and that of Europe were naturally one and the same. "Since you say so, Mr. President, I believe you," de Gaulle replied, "but still, can we be certain of that?" At what point, the French leader continued, would the United States consider the situation – and he clearly meant the situation on the European front – serious enough to justify the use of atomic weapons? Washington, he noted, was said to intend to "raise the threshold for the use of atomic weapons," which must mean that it had decided these weapons would not be used in every circumstance. "When will they be used?" de Gaulle asked. "That is the question that concerns Europe." The reality, he concluded, was that no one knew when such weapons would be used. And, as the American



John F. Kennedy, Charles de Gaulle, Jacqueline Bouvier Kennedy, Paris, Elysée Palace, June 1st, 1961

[2] Ibid., p. 311.

report noted, "the general believes that if he were in [President Kennedy's] place, he wouldn't know either[3]."

Kennedy's answer about this threshold quandary is particularly interesting and deserves to be quoted at some length, as it helps establish in part the conceptual groundwork that will be the subject of this article. The American president argued that raising the threshold for the use of nuclear weapons simply meant "an attempt to better control these widely dispersed weapons." At the time, he explained, basic units of the U.S. military stationed in Europe possessed nuclear capabilities down to the platoon and company levels. As a result, even a local incident – he cited Berlin as an example – could lead to the use of nuclear weapons. The United States, he concluded, was seeking to strengthen its conventional capabilities and reconsider the threshold for nuclear use precisely to address this risk and improve control over such weapons. Hence "raising" the threshold, he emphasized, did not mean reducing U.S. commitments, but rather strengthening effective control over the U.S. nuclear arsenal.

The most striking aspect of this exchange is that de Gaulle defines the nuclear threshold as a political limit - the likelihood of crossing a given boundary which reflects the nature of the relationship between the United States and its European allies. By contrast, Kennedy seems to articulate the concept of the threshold with the variety of nuclear delivery systems and warheads, which allow policymakers to graduate the effects of nuclear use but also require closer strategic control to reduce the risk of accidental or premature escalation. In other words, the French president's question concerns the *reasons* for waging a nuclear war, whereas the American president's concerns the *conditions* under which such a war would be launched.

These two interpretations are, in fact, inextricably intertwined. Yet the delicate gap that distinguishes them without severing their connection reveals

[3] Ibid.

a divergence in political understandings of NATO's very nature, and of what we have come to call – somewhat vaguely, both then and now – the principle of "strategic solidarity." The echoes of these two questions continue to resonate with renewed force today, amid the new circumstances created by the war in Ukraine.

The Nuclear Threshold—Too Many Definitions for Too Much at Stake

The concept of limits is one of the most central to strategic studies and its theoretical applications are essential to understanding the dynamics of international relations more broadly[4]. It therefore intersects logically with the interactional study of war, raising the question of whether an armed conflict can be "limited". Technological progress having done nothing indeed to eliminate the dynamics of escalation to extremes described in *On War*, the concept of limits – which governs the relationships between power, force, and violence – applies more than ever in the Third Nuclear Age[5]. Breaking with a Second Nuclear Age characterized by the quantitative reduction of nuclear arsenals coupled to multilateral efforts to curb proliferation, this new era is witnessing a resurgence of vertical proliferation among nuclear-weapon states, and the revival of questions surrounding the acquisition of independent national

[4] In International relations and Strategic studies alone, the literature devoted to the concept of limits is extensive. Since an exhaustive review is beyond the scope of this article, we note that this concept is generally addressed in two types of works. The first focuses on the limits of strategic practice: see, among others, William W. Kaufmann, "Limited Warfare," in *Military Policy and National Security*, ed. William W. Kaufmann (Princeton, NJ: Princeton University Press, 1956), 111–34; Thomas C. Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1960); Bernard Brodie, "Deterrence Policy and Limited War," *Politique étrangère*, no. 6 (1960): 543–52; and Morton H. Halperin, *Limited War in the Nuclear Age* (New York: Wiley, 1963). The second type addresses the limits of power and force in international relations, an aspect that also informs the works of the first type. Among the most thought-provoking contributions of this second type are Michael C. Williams, *The Realist Tradition and the Limits of International Relations* (Cambridge: Cambridge University Press, 2005); Andrew J. Bacevich, *The Limits of Power: The End of American Exceptionalism* (New York: Metropolitan Books, 2008); and Nozomu Matsubara, "Conflict and Limits of Power," *Journal of Conflict Resolution* 33, no. 1 (1989).

[5] Andrew Futter and Benjamin Zala, "Strategic Non-Nuclear Weapons and the Onset of a Third Nuclear Age," *European Journal of International Security* 6, no. 3 (2021): 257–277. https://doi.org/10.1017/eis.2021.2

nuclear deterrents, driven by growing doubts about the credibility of the deterrence guarantees extended by the United States to its allies[6]. Those deeply unsettling developments occur amid unprecedented concerns about the dangerous intersection of Nuclear Command Control and Communications (NC3) and Artificial Intelligence, and within the overarching context of a systemic transition toward what might be described as a potential quantitative tripolarity among the United States, Russia, and a new actor rapidly expanding its arsenal, China[7]. One might so argue that this third nuclear age is characterized by the blurring of established limits, paving the way for the emergence of new thresholds whose nature urgently needs to be understood.

In the long intellectual history of nuclear strategy, one of the principal manifestations of the concept of limits is the notion of the "nuclear threshold." Among various declinations of this notion, it appears however possible to distinguish two main approaches. The first treats this limit as a boundary between conventional and nuclear use. From this perspective, a threshold is a barrier or a border zone that may or may not be crossed during a phased, "managed" crisis. This approach can be found, in very different forms, in the pioneering contributions of William Kaufmann ("The Requirements of Deterrence", 1956), and of Bernard Brodie, who refers in *Strategy in the Missile Age* (1959) to a "vast watershed" separating the use of nuclear weapons from their non-use. In *Stratégie de l'âge nucléaire* (1960), Pierre-Marie Gallois mentions the importance of the "ignition point" (« *point d'allumage* »), a notion quite germane to what Alain C. Enthoven describes in 1963 as a qualitative "firebreak" between conventional warfare and nuclear conflict[8].

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[6] Brian Blankenship (2025), "Do Alliance Abandonment and Coercion Increase Support for Nuclear Weapons? An Elite Survey in NATO," *International Studies Quarterly* 69, no. 2 (2025). https://doi.org/10.1093/isq/sqaf039

[7] James Johnson, "Inadvertent Escalation in the Age of Intelligence Machines: A New Model for Nuclear Risk in the Digital Age", *European Journal of International Security*, vol. 7, no 3, 2022, p. 337–359. See also Wannes Verstraete, « The Disorderly Advent of the Tripolar Nuclear Order », *Journal of Policy & Strategy*, vol. 5, n° 2, 2025, p. 91-99.

[8] See William W. Kaufmann, "The Requirements of Deterrence," in *Military Policy and National Security*, ed. William W. Kaufmann (Princeton, NJ: Princeton University Press, 1956), 12–38. Bernard Brodie, *Strategy in the Missile Age* (Santa Monica, CA: RAND Corporation, 1959), chap. 9, "Limited War," especially 327, for the passage referring to the "vast watershed"; Pierre-Marie

The second approach adopts a more or less *verticalized* heuristic perspective. Then, the threshold becomes plural, or is refracted into multiple thresholds, as in the work of the French strategist André Beaufre, who refers in 1963 to "successive thresholds that should only be crossed on the basis of special political decisions," and which are ascended along a "staircase with numerous steps ("incidents, conventional wars, tactical nuclear warfare, limited strategic nuclear warfare, all-out strategic nuclear warfare"[9]). The best-known example of this vertical, or upward logic for stratifying levels of violence is provided by the American strategist Herman Kahn. In *On Escalation: Metaphors and Scenarios* (1965), Kahn famously arranges nuclear thresholds vertically along a general escalation ladder, which he defines as "a linear arrangement of roughly increasing levels of intensity of crisis." This ladder comprises 44 rungs, grouped into seven categories and structured around six qualitative thresholds[10]. It allows him to introduce the idea of "escalation dominance," a key concept for strategists who would later favor counterforce options and develop theories of nuclear victory, according to which it is possible to "win" – or "lose" – a nuclear war[11].

Of these two conceptions, the latter appears to dominate the strategic analysis in the United States, and also in the Atlantic Alliance where debates multiply about a possible adaptation of the "graduated, unified NATO escalation ladder[12]", amid renewed interest in nuclear strategy prompted by the upheavals

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Gallois, *Stratégie de l'âge nucléaire* (Paris: Calmann-Lévy, 1960), 191; and Alain C. Enthoven, "American Deterrent Policy," speech before the Loyola University Forum for National Affairs, Loyola University, Los Angeles, February 10, 1963, U.S. Department of Defense, News Release No. 157–63.

[9] The image of a staircase with numerous steps appears in André Beaufre, *Introduction à la stratégie* (Paris: Armand Colin, 1963), 68. The levels he distinguishes are local incident, conventional war, tactical atomic war, limited strategic nuclear war, and total strategic nuclear war. See also André Beaufre, *Dissuasion et stratégie* (Paris: Armand Colin, 1964), 207 ff.

[10] Herman Kahn, *On Escalation: Metaphors and Scenarios* (New York, Washington, DC, and London: Frederick A. Praeger, 1965). See chap. II, « The Rungs of the Escalation Ladder », p. 38-49.

[11] See, in particular, Colin S. Gray and Keith Payne, "Victory Is Possible," *Foreign Policy*, no. 39 (Summer 1980): 14–27. For a structured critical analysis about counterforce options, see Charles L. Glaser, *Analyzing Strategic Nuclear Policy*, Princeton, N.J, Princeton University Press, 1990.

[12] For a critical view of this adaptation, in the wake of the Crimean crisis of 2014, see Simond de Galbert and Jeffrey Rathke, "NATO's Nuclear Policy as Part of a Revitalized Deterrence Strategy",

of the war in Ukraine. This type of discussion is generally – and quite logically - linked to the idea that a nuclear threshold can be "raised", which indicates a form of strategic relaxation, or "lowered", indicating a high level of tension associated with one actor's perception of danger.

As we saw in introduction, this very notion of a mobile threshold was used by John F. Kennedy in June 1961. More than sixty years later, this vocabulary remains common in both journalistic accounts, official statements and academic studies about the war in Ukraine or the Iranian crisis. In November 2024, when Moscow published a revised nuclear doctrine, *Euronews* run the following headline: "Russia: Vladimir Putin Lowers the Threshold for Using Nuclear Weapons."[13] In his March 2026 presidential speech redefining French deterrence doctrine, Mr. Macron judges that "A rigid guarantee would not be wise. It would lower the nuclear threshold and reduce the uncertainty of our adversaries in equal proportion"[14]. In a recent and stimulating analysis of the points of convergence between French new "forward deterrence" and NATO's nuclear doctrine, two analysts likewise emphasize the importance of robust conventional defenses in ensuring that "(…) the nuclear threshold remains high[15]."

This approach to thresholds that can be "lowered" or "raised" has a significant drawback: it encourages analysts to focus primarily either on the conventional or unconventional capabilities deployed by the adversaries involved, as expressed through the strengthening of a particular military

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Commentary, Center for Strategic and International Studies, 2016. Concerning discussions derived of the Ukraine War after 2022, see Robert Peters and Leo Keay, « Flexible Response 2.0: Rebuilding NATO's Deterrence Architecture », The Heritage Foundation, 2026. https://www.heritage.org/sites/default/files/2026-05/BG3961_1.pdf

[13] See Euronews, with the Associated Press, "Russia: Vladimir Putin Lowers the Threshold for Using Nuclear Weapons," *Euronews*, November 19, 2024.

[14] Emmanuel Macron, "Speech by the President of the Republic on France's Nuclear Deterrence." Speech delivered at the Île Longue Operational Base, March 2, 2026. Élysée. https://www.elysee.fr/en/emmanuel-macron/2026/03/02/visit-to-the-ile-longue-operational-base.

[15] Astrid Chevreuil and Jim Stokes, "The Archipelago and the Umbrella: Harmonizing French and NATO Nuclear Deterrence," commentary, Center for Strategic and International Studies (CSIS), September 1, 2026.

posture, or on deciphering the ambiguous and contingent doctrinal statements those same adversaries produce. Indeed, since February 2022, two types of analysts appear to have emerged from the newly burgeoning community of nuclear experts. The first is the nuclear accountant, who measures missile types and arsenal sizes in order to infer what a given actor *could* do. The second is the atomic haruspex: bent over the smoldering entrails of nuclear doctrines, this analyst interprets them through historical, cultural, or psychological conjectures in an effort to determine what a given actor *would* do. Despite their methodological differences, both accountants and haruspices ultimately converge on a common question, that is: what a "lowered" or "raised" nuclear "threshold" reveals about the adversary possible actions in case of the failure of its deterrence posture?

Yet is this really the most relevant question if we are to take seriously the notion of limits in international relations generally, and in nuclear strategy in particular? One might wonder whether this focus on an instrumental question – the contingent and relative positioning of a slider along a scale constructed by combining capabilities (types of weapons) and intentions (types of discourse) – diverts attention from a far more fundamental issue for nuclear strategy: understanding the deeper motives that might lead two adversaries to risk breaking the nuclear taboo in order to protect not merely interests in the narrowly strategic sense, but an existence, an identity and a dignity that they regard as politically and historically non-negotiable, whatever the risk of destruction. In other words, the "composite-vertical" understanding of the nuclear threshold may obscure the central question of nuclear affairs: "what moves political men, as distinct from military planners", to borrow McGeorge Bundy's formulation[16].

In light of the transformations of the international system, and of the growing importance of understanding the existential reasons on which the lives

[16] McGeorge Bundy, "Maintaining Stable Deterrence", *International Security*, vol. 3, no 3, Winter 1978-1979, p. 13.

and deaths of millions of people may depend, this article seeks to revisit two longstanding observations from a fresh perspective, in order to draw an original conclusion about the political balances that will shape what we call the nuclear dialectic in the years ahead. Those longstanding observations are the following: first, the notion of a "nuclear threshold", at least understood in a classical sense, isn't sufficient to explain the point at which a conventional conflict operationally could shift ("nuclear release") into the actual employment of nuclear weapons ("nuclear use"). Second, the analytical impasse reached when this notion of a "threshold" is expected to encompass the entire challenge of nuclear strategy is compounded by the dominant tendency to interpret it through an exclusively composite and vertical logic – that of an escalation ladder. The observations outlined here are not new. Numerous studies have questioned the relevance of the escalation ladder itself[17]. For the most part, however, they have done so by developing new approaches to nuclear risk, rather than, as this note seeks to do, by proposing an overarching reconceptualization of the dynamics of deterrence.

To rethink the problem posed by the concept of a threshold – particularly when understood in terms of "lowering" or "raising" – and to propose an alternative dynamic model for understanding nuclear deterrence anew as a fundamentally political phenomenon, rather than reducing it to an instrumental logic or a set of operational processes, this note first distinguishes and then brings together three foundational and complementary concepts: *deterrent thresholds*, *atomic chambers*, and *nuclear vaults*.

It then clarifies how these "atomic chambers" follow one another, what is at stake in each of them in terms of vital interests, and what it means to pass

[17] Among the most stimulating approaches that seek to reposition nuclear risk within the framework of inadvertent escalation in the Third Nuclear Age, see Rebecca K. C. Hersman, "Wormhole Escalation in the New Nuclear Age," *Texas National Security Review* 3, no. 3 (Summer 2020): 90–103. Also: James Johnson, « Inadvertent Escalation in the Age of Intelligence Machines: A New Model for Nuclear Risk in the Digital Age », *European Journal of International Security*, vol. 7, no 3, 2022, p. 337–359. Concerning the Second Nuclear Age, see Barry R. Posen, *Inadvertent Escalation: Conventional War and Nuclear Risks*, Ithaca, NY, Cornell University Press, 1991. As for the First Nuclear Age, see Richard Smoke, *War: Controlling Escalation*, Cambridge, MA, Harvard University Press, 1977.

through them as successive deterrence thresholds intensify the pressure on political leaders. This analysis of atomic chambers is illustrated by a modeling diagram that brings together the concepts introduced in the first two sections.

Finally, the third and final section builds on the overall model developed in the second section. It draws conclusions from the unprecedented atomic chamber that emerged following Ukraine's "*Spiderweb*" operation in June 2025, and examines the implications that may be expected for certain deterrence architectures – particularly what France has referred to as "forward deterrence" since President Emmanuel Macron's speech of March 2, 2026[18].

The ultimate aim is to reposition the relationship between horizontal thresholds, crossed along the x-axis of political stakes, and nuclear vaults, encountered along the y-axis of strategic risks. Such a distinction, we argue, makes it possible to develop a repoliticized understanding of the contemporary dialectic of nuclear deterrence.

The dialectic of nuclear thresholds: to push too far or to climb too high?

The image of the threshold, which we use so frequently, generates a degree of confusion. The first obvious reason is the term's intrinsic polysemy. A threshold may refer to a level of danger or pressure in a crisis (Schelling, 1961), a trigger point for a particular action (Norton, 1977), a psychological tipping point (Sagan, Press, Valentino, 2013), a rupture in the employment of military capabilities (Kahn, 1965)[19], or a specific degree of destruction. This latter meaning can be found, for example, in *Deterrence and Defense* (1961) in which Glen Snyder refers to the degree of prospective damage which would be

[18] Emmanuel Macron, "Speech by the President of the Republic on France's Nuclear Deterrence."
[19] Schelling, Thomas C. "Nuclear Strategy in the Berlin Crisis." Paper prepared July 5, 1961. In *Foreign Relations of the United States, 1961–1963*, vol. 14, Berlin Crisis, 1961–1962, document 56. Washington, DC: U.S. Department of State, Office of the Historian; Augustus R. Norton, "NATO and Metaphors: The Nuclear Threshold." *Naval War College Review* 30, no. 2 (Fall 1977): 60–75. https://www.jstor.org/stable/44635465 ; Sagan, Scott D., Daryl G. Press, and Benjamin A. Valentino. "Atomic Aversion: Experimental Evidence on Taboos, Traditions, and the Non-Use of Nuclear Weapons." *American Political Science Review* 107, no. 1 (2013): 188–206. Herman Kahn, *On Escalation: Metaphors and Scenarios* (New York: Frederick A. Praeger, 1965), p. 94.

sufficient to deter the Soviet Union from attacking: "Would the Soviet Union be deterred by the prospect of losing ten cities? No one knows, although one might intuitively guess that the threshold is closer to ten than to two or fifty.[20]" What the literature commonly refers to as a "threshold" may also denote the level of mastery a state has achieved in military nuclear technology, potentially foreshadowing not necessarily an intention, but at least an impending capability to acquire the bomb. In this case, the notions of breakout capability and nuclear latency become entangled with that of the nuclear threshold, further complicating its use[21].

This very high degree of polysemy is problematic in itself, but it is not, from an analytical standpoint, the most troubling aspect. We would suggest that the key problem lies in what derives from this lexical fragmentation: the inability to model – or to position – what a threshold actually represents *politically* during a crisis unfolding under nuclear conditions. As we have seen, the nuclear threshold is most commonly conceived in terms of "rising" or "lowering" – that is, from a vertical perspective. Yet this linguistic convenience entails a spatial representation of the nuclear crisis that may have misleading analytical implications insofar as it increases the likelihood of conflating the political and operational dimensions of nuclear dialectics within a single escalation ladder, without properly hierarchizing the two. This was, as a matter of example, the criticism that Shuttleworth levelled at Kahn's *Thinking the Unthinkable*, even before the latter published his 44-rung escalation ladder: "He never really 'gets on' to an escalation ladder: that is, he never discusses the reasons why states embark on military operations.[22]"

"The reasons why", indeed: the problem here is whether it is possible to model the dynamics of crossing the nuclear threshold in order to understand

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[20] Glenn H. Snyder, *Deterrence and Defense: Toward a Theory of National Security* (Princeton, NJ: Princeton University Press, 1961), 57.
[21] See for example Matthew Kroenig, "The Trump Doctrine on Nuclear Nonproliferation Is Born," *The Washington Post*, June 24, 2025. See also Ariel (Eli) Levite and Toby Dalton, *Demystifying the Nuclear Threshold*, Carnegie Endowment for International Peace, 2026. https//www.jstor.org/stable/resrep80906.
[22] Alan Shuttleworth, "Closed System." *New Left Review* I/19 (March–April 1963). DOI: doi.org/10.64590/5wm

holistically the implications of such a crossing not only in terms of *strategic risks* associated with a level of potential violence, but also in terms of *political stakes*, associated with a distinctive level of existential will and resolve. To develop a model of this kind, one that would amount to repoliticizing the notion of the nuclear threshold, it becomes necessary to rethink the variables of the nuclear dialectic as a whole.

Deterrent Thresholds, Atomic Chambers, and Nuclear Vaults: New Modeling Assumptions

"As he crossed the threshold and entered the apartment, he could feel himself going blank, as if his brain had suddenly shut off[23]": this is the way Paul Auster describes Quinn's entry into Peter Stillman's apartment in *City of Glass*, the first part of *The New York Trilogy* (1985). When we cross a threshold in *real* life, we proceed as Quinn does: from one room – or chamber – to another: the shift takes place along a horizontal axis. And just as Quinn does, we experience what might be called "atmospheric" effects—serenity, curiosity, unease, anxiety—which are associated with physical effects (changes in temperature and pressure), or with the psychological impressions that mark the transition from one space to another. This observation is a simple one. It may even seem simplistic and invite various objections as we develop it in the following paragraphs[24]. Yet it offers an exceptionally fruitful way of understanding nuclear dynamics, or so we hope to demonstrate here.

When a political decision-maker involved in a nuclear crisis chooses to respond to a situation entailing his nation's interests or values, he crosses a threshold, whether through the wording or through the action itself, signaling to his adversary the underlying political importance he attaches to an objective

[23] Paul Auster, *City of Glass* (Los Angeles: Sun & Moon Press, 1985), 14.
[24] One might object, for instance, that threshold can also have a geographical meaning, referring to a transitional space – a depression, pass, gap, or corridor – that allows passage between two landforms often located at different altitudes. However, viewed as a movement from one point to another, the unitary dynamic within which this threshold is situated is essentially horizontal and transitional, whereas modern nuclear vocabulary tends to transform it into a vertical value on a scale of intensity.

that appears, on the surface, to be operational or strategic. Crossing this threshold transports both the decision-maker and his adversary into a space that constitutes a distinct politico-strategic realm where the conditions of temperature and pressure will be different—either lower or higher. In turn, accessing this new space will also shape each actor's ability to assess the risks associated with the nuclear dialectic – provided, of course, that they fully realize they have crossed a significant threshold and entered a new domain of interaction.

For the purposes of our model, which, as we have indicated, seeks to clarify the relationship between political stakes and strategic risks in a nuclear crisis, we shall refer to those thresholds as "deterrence thresholds" and to those successive spaces as "atomic chambers". Atomic chambers correspond to qualitative frameworks of interaction between adversaries, separated as well as interrelated by distinct deterrence limits. The linear sequence of these thresholds and chambers constitutes the possible course of a crisis, in other terms its evolutive politico-strategic configuration. With each deterrence threshold crossed either deliberately or inadvertently, and with each transition from one atomic chamber to the next, constraints intensify: the stakes become more significant, decision-making time is compressed, information asymmetries deepen, and the risk of runaway escalation increases. The pressure exerted on political decision-makers rises accordingly.

The first hypothesis advanced here is that the number of atomic chambers – and therefore the number of thresholds governing access to them – is finite. For each crisis, depending on the actors involved, there is a number N of thresholds, each opening onto a specific chamber, which is defined first and foremost in terms of political stakes, to which strategic risks are attached. The appreciation of the stakes involved is discrete to each adversary, but the dialectical nature of every nuclear crisis means that the risks are shared by both. Naturally, just as it is possible to "enter" each of these atomic chambers, it is equally possible to leave them by strategically "stepping back" into the previous room, most often by agreeing to de-escalate one's demands. This suggests that one actor has recognized the genuinely "vital" nature of the interests at stake for

the other in the crisis—not susceptible to bluff or coercion, and highly likely to trigger the use of nuclear weapons.

The second hypothesis rests on the assumption that, at a precise point in space and time, within the corridor formed by these chambers arranged in linear succession, lies an additional $(N + 1)$ threshold which triggers a ratchet effect, making strategic retreat difficult, if not impossible. The political stake defended by one of the players, whose vital character has not been acknowledged by the other, suddenly materializes as an endorsed strategic risk.From that point onward, the horizontal management of a crisis under nuclear conditions gives way to a vertical dynamic of nuclear escalation proper.

The third hypothesis deals with the very nature of this sudden vertical shift. In our view, the brutality of the second dynamic – that of nuclear escalation proper, ordered vertically – cannot be adequately represented, and therefore understood, through the conventional image of the ladder or the staircase alone, associated with rungs, steps, levels or stages arranged in ascending order, as in the Kahnian linear arrangement of progressively increasing levels of intensity. To understand the point at which the $(N + 1)^{th}$ threshold tips a given crisis into a space of a different nature, characterized by a vertical ascent toward the extremes and the prospect of political no-return, we therefore link the notion of a deterrent threshold – understood here exclusively in terms of horizontal movement – to that of the *nuclear vault*, which we position along a vertical plane, above the movements taking place within what we have called the atomic chambers.

The number and position of those chambers, which represent a *dialectical tension* in terms of political stakes, may vary along the x-axis. In contrast, we posit that the coordinates of a nuclear vault, which represents a *confrontational intensity* in terms of potential strategic violence, are fixed on the y-axis. Those vaults comprise a pair, each reflecting a different type of nuclear use, “limited” and then “total”. They serve a strategic function by mapping onto distinct levels of destruction; and yet, their apparent function is less important than their underlying nature. The paradox of nuclear use, whether limited or

total, is indeed that it negatively reflects a positive value: the *quantitative* measure of destruction is contingent on the non-negotiable stakes attached to the *qualitative* notion of vital interest. In other words, this level of destruction is meaningful only insofar as it reflects what, beyond the N+1th deterrence threshold, corresponds to the very existence of the state.

This is why, in our model, the vaults do not "lower" or "rise": they remain absolutely locked along the ordinate, at a given y-coordinate for each actor. Each state may, of course, conceal the coordinates of its vault, or "ceiling," through the deliberate ambiguity of its official doctrine. Yet, in the minds of political leaders conscious of their historical responsibilities, this ordinate remains *fixed by design*, so to speak, insofar as they are defined in relation to a possible political event potentially actualized in x, that could neither be accepted nor treated as negotiable. We are aware that this proposition of a fixed vault (not subject to being "lowered" or "raised") could be strongly contested in the current nuclear debate. Nevertheless, it is indispensable, as we shall see, if we are to take seriously the notion of vital interests in a dialectic of nuclear deterrence which disentangles political stakes from strategic risks while reconnecting them within a single analytical framework. This is what the following paragraph in this first section addresses.

The Specific Case of Fixed Nuclear Vaults

All nuclear deterrence is ultimately oriented toward the existential notion of survival. Of course, nuclear dialectics also involve an element of coercive bargaining[25]. But this bargaining always takes place under the shadow of the ever-present possibility of massive destruction, which imposes (or should impose) intrinsic limits on it[26]. In the nuclear universe of deterrence, what is truly vital must be understood in a restrictive and absolute sense, insofar as its

[25] R. Harrison Wagner, "Deterrence and Bargaining." *The Journal of Conflict Resolution* 26, no. 2 (1982): 329–358.
[26] See in particular Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966).

definition is closely tied to the prospect of potentially absolute destruction, for oneself as well as for the adversary. It is therefore useful and justified to argue that for each actor, the value of y cannot vary, precisely because it materializes the very essence of a state's existence: the point at which, once struck, all ambiguity ceases. In terms of coordinates, it corresponds to a value that cannot accommodate any form of "displacement." In other words, a nuclear vault is a y-coordinate of possible strategic violence whose intrinsic existence is independent of any x-coordinate, yet whose projected shadow nonetheless conditions the deterrent value of each adversary's decisions along x.

As we shall examine in detail through the study of 2025 Ukraine's *Spiderweb* operation, this distinction between thresholds and vaults is of central importance to the argument presented here. Thresholds have a maneuverable function: they are mobile along x, relatively flexible, and open to interpretation. There is only one exception, as we shall see: the last of these thresholds, which is no longer a threshold of deterrence but the actual *nuclear threshold*. This threshold is fixed, and it is precisely its existential fixity in *x* that connects it to the fixity of the nuclear vaults in *y*, corresponding to two levels of nuclear violence ("limited warning" and "massive destruction"). This relationship renders the nuclear vaults immovable in nature. Stable and rigid, they represent the main structural beams toward which all lines converge. They constitute the ceiling – and therefore the limit – whose immobility determines the credibility of an entire deterrence architecture. Unlike thresholds, which correspond to the ways and means of deterrence and open up a dialogue through "signaling" at each crossing, vaults belong to the realm of ends, understood in an apophatic, negative sense. Ways and means are calibrated against these thresholds, while the pace of what are commonly referred to as nuclear "signals" accelerates or slows depending on how far the players stand from the last, concealed and fixed nuclear threshold—a threshold that opens a wormhole leading to the nuclear vaults.

The foregoing discussion explains why, in this model, the actual *tension* governing what is at stake politically is represented along the abscissa, while the potential *intensity* of actions is represented along the ordinate. Both are thus

brought into relation. Conversely, representing thresholds as "falling" or "lowering" along a vertical escalation ladder prevents us from distinguishing these dimensions, thereby obscuring the relationship between the types of stakes involved in terms of power, and the concrete strategic consequences they entail in terms of violence.

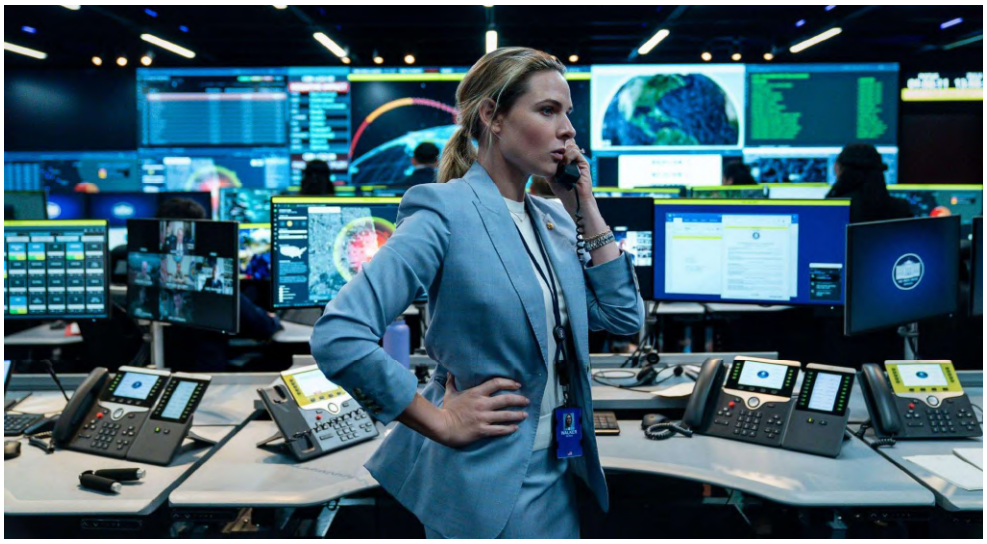
This leads to an important observation for the rest of our conceptual framework: unlike deterrent thresholds, a vault is not "crossed"; it is collided with. This last word is crucial. To speak of a "collision" with a ceiling by actors swept up in a crisis spiral is to imply that they will experience a severe shock – and this presupposes a prior acceleration that has kinetically propelled them upward. Many scholars, from Daniel Halévy and Robert W. Cox to William E. Scheuerman and Hartmut Rosa, have examined the political underpinnings of "acceleration" in history[27]. In everyday language, we speak of "events accelerating" to convey a vague sense of losing control or composure during a crisis. This applies not only to the frequency of catastrophic events – as the contemporary climate crisis illustrates – but also to the conditions under which a political and strategic confrontation is managed when it threatens to lead to a major war involving high-intensity sequences[28].

In our model, which focuses on crisis management in a nuclear context, acceleration must be understood more specifically as a runaway sequence of decisions whose potential consequences are too severe to be captured solely in

[27] See Daniel Halévy, *Essai sur l'accélération de l'histoire* (Paris: Les Îles d'or / Éditions Self, 1948). In "On Thinking about Future World Order" (1976), Robert W. Cox explicitly addresses the acceleration of history, drawing on Halévy. The text was subsequently reprinted in Cox's *Approaches to World Order* (Cambridge: Cambridge University Press, 1996), 60–84. See also Christophe Bouton, *The Acceleration of History: From the Enlightenment to the Anthropocene* (Paris: Seuil, "L'ordre philosophique" series, 2022). A discussion of the relationship between power, acceleration, and decision-making can be found in William E. Scheuerman and Hartmut Rosa, eds., *High-Speed Society: Social Acceleration, Power, and Modernity* (University Park: Pennsylvania State University Press, 2009).

[28] The image is quite old: In the first case, see "Events Are Accelerating, Notes General de Gaulle," *Le Monde*, March 7, 1950. In the second case, among many other examples, see "Opening Statement by Mr. Andrew Shearer, Director-General of National Intelligence, Senate Finance and Public Administration Legislation Committee," Office of National Intelligence, Australian Government, October 7, 2025 https://www.oni.gov.au/news/senate-estimates-october-2025.

terms of gradual, horizontal progression. Given its mechanics and consequences, this acceleration – as a runaway process that may culminate in what Kahn called a "spasm" and which the recent film *A House of Dynamite* has vividly illustrated – justifies a reversal of the matrix[29]. In other words, the successive pairs of "crossing the N^{th} deterrence threshold – entering the N^{th} atomic chamber," repeated along the x-axis, ultimately give way to a brutal shift in perspective: the positive value attached to political stakes is suddenly multiplied by the negative value associated with potential levels of destruction. It was precisely this multiplication that the interactive management of a nuclear crisis sought to prevent: mathematically, multiplying a positive value by a



***A House of Dynamite* (dir. Kathryn Bigelow, Netflix, 2025)**

negative one inevitably yields a negative result. The "firebreak" captures this multiplication of politically positive and strategically negative values, which yields a dynamic of negative acceleration. Yet its deeper significance becomes apparent only when the political and strategic dimensions of crisis management are analytically distinguished. This, in turn, and again requires modeling them along two separate axes in order to understand what happens when these axes

[29] See Herman Kahn, *On Escalation: Metaphors and Scenarios* (New York: Frederick A. Praeger, 1965), 194–95. The term appears on the forty-fourth and final rung of the "escalation ladder," in chapter IX, "Military and Civilian Central Wars." Kathryn Bigelow, dir., *A House of Dynamite*, screenplay by Noah Oppenheim (2025), film, Netflix.

commute, following the transgression of a clearly defined political threshold. This provokes then an abrupt transition to a vertical logic of ascent toward the extremes, propelling the actors toward a vault with which they collide at high speed.

Once this breakthrough has occurred, the question becomes what lies beyond the debris of the first nuclear vault, in the space this canopy had concealed from those involved in the crisis – but also, as we shall see, from which it had protected them.

Within the coordinate system established here – where mobile thresholds (except for one) are crossed at x_1, x_2, and x_3, opening onto atomic chambers C_1, C_2, and C_3, while fixed vaults are struck at y – only one question remains truly significant, a quandary that has compelled strategists since 1945: *under what circumstances would a nuclear-armed country consciously risk breaching the vault and using an atomic bomb? And under what circumstances would a non-nuclear-armed state, no less consciously, risk being struck by one?*

To this existential question, in the literal sense of the term, there is – or should be – only one answer. These actors would consciously take such a risk only to defend vital interests concerning the integrity of the heart of their territory, whose occupation or destruction could result, beyond any doubt, not merely in a partial reverse but in total defeat, threatening the identity of their people, the freedom of their nation, and the survival of their state. In our model, the prospect of such total defeat explains and supports the hypothesis of a "national" nuclear threshold for each nuclear-armed state, at a given value of x specific to that state. At this threshold lies a situation that the nuclear-armed nation *will not accept*. For any less comprehensive, less absolute, or less certain reason than the prospect of the total defeat just defined, it is reasonable to think that the use of nuclear weapons in the thermonuclear era would amount to what Hans Morgenthau, a central figure in political realism, described as "suicidal absurdity[30]."

[30] Hans J. Morgenthau, "Public Affairs: The Impotence of American Power," *Commentary* 36, no. 5 (November 1963): 385. See also his 1977 statement about tactical nuclear weapons: "The

The next question for each actor is therefore to determine precisely where, in geographical space and political time, this limit lies: the final deterrence threshold which, once crossed, turns out to be the actual nuclear threshold, reversing the underlying logic of the nuclear crisis. A progression that had until then been horizontal and mediated – open to negotiation and governed by caution – would be transformed into a vertical and immediate ascent, governed by urgency and instinct, leading abruptly to a collision with the nuclear vault.

What Happens in the Atomic Chambers

To clarify the stages of this dialectic – between deterrence thresholds that are crossed and nuclear vaults that are collided after the $(N+1)^{\text{th}}$ threshold has been overstepped – we propose now a general illustrative diagram. Although such a qualitative diagram could undoubtedly be improved, it provides a way to model and articulate the "vertical" and "horizontal" axes of contemporary deterrence dynamics. One of its genuine analytical features distinguishes the principal "atomic chambers" of the Third Nuclear Age and the thresholds that lead from one to the next. The number of thresholds and the sequence of chambers will, of course, depend in part on variables specific to each crisis: the strategic depth of the actors involved, the nature of the "vital" interests involved, the identities of the direct and indirect adversaries of the nuclear-weapon states (NWS), or the strategic cultures of their decision-makers, among others. Some fundamental thresholds, however, are likely to be common to almost all nuclear crises – for example, the threshold corresponding to an armed violation of the territorial borders of a nuclear-capable state.

Having established the limits of this model, structured by dependent variables linked to the specific characteristics of each nuclear actor and

threat of waging – or the actual waging – of a nuclear war is not a rational instrument of national policy, for it is an instrument of suicide and genocide": Hans J. Morgenthau, "The Fallacy of Thinking Conventionally about Nuclear Weapons," in *Arms Control and Technological Innovation*, ed. David Carlton and Carlo Schaerf (London: Croom Helm, 1977), 256.

independent variables corresponding to elements common to all nuclear crises, we can now propose a model that captures the interplay between, on the one hand, political stakes, represented along the horizontal axis by a crisis corridor punctuated by deterrence thresholds that provide access to atomic chambers, and, on the other, levels of strategic risks, represented by nuclear vaults plotted along the vertical axis.

In order to distinguish the stages involved in managing a crisis in a nuclear environment, as shaped by the situation confronting a given state in the different atomic chambers, we will discriminate between two types of interests: "national" interests, which are open to interpretation and relative across space and time, on the one hand, and "vital" interests, whose security value is no longer relative but absolute, on the other.

- Once the crisis has erupted, an initial deterrence threshold is crossed, leading to the first atomic chamber. At this stage, the state must adjust its posture and rhetoric in response to attacks targeting the *national* interests of its allies;
- The second chamber concerns an attack threatening the vital interests of allies – for example a massive conventional invasion of their territory. Such an invasion can be considered as a threat against either the *national* interest or the *vital* interest of the state. The distinction between these two perceptual options is often conditioned by the criterion of contiguity: if the invaded allied state is also a neighboring state, the threat is likely to be perceived as vital. In this sense, the Spanish and Polish peoples' differing perceptions of the Russian threat appear to be shaped by the socio-spatial function of distance.
- The third chamber involves a direct threat to the state's vital interests, implying that the danger has reached the approaches to the national sanctuary.
- The fourth chamber, meanwhile, would involve an attack – either direct or "hybrid" – on vital national interests *within* the national sanctuary itself, without irreparably endangering the nation's survival.

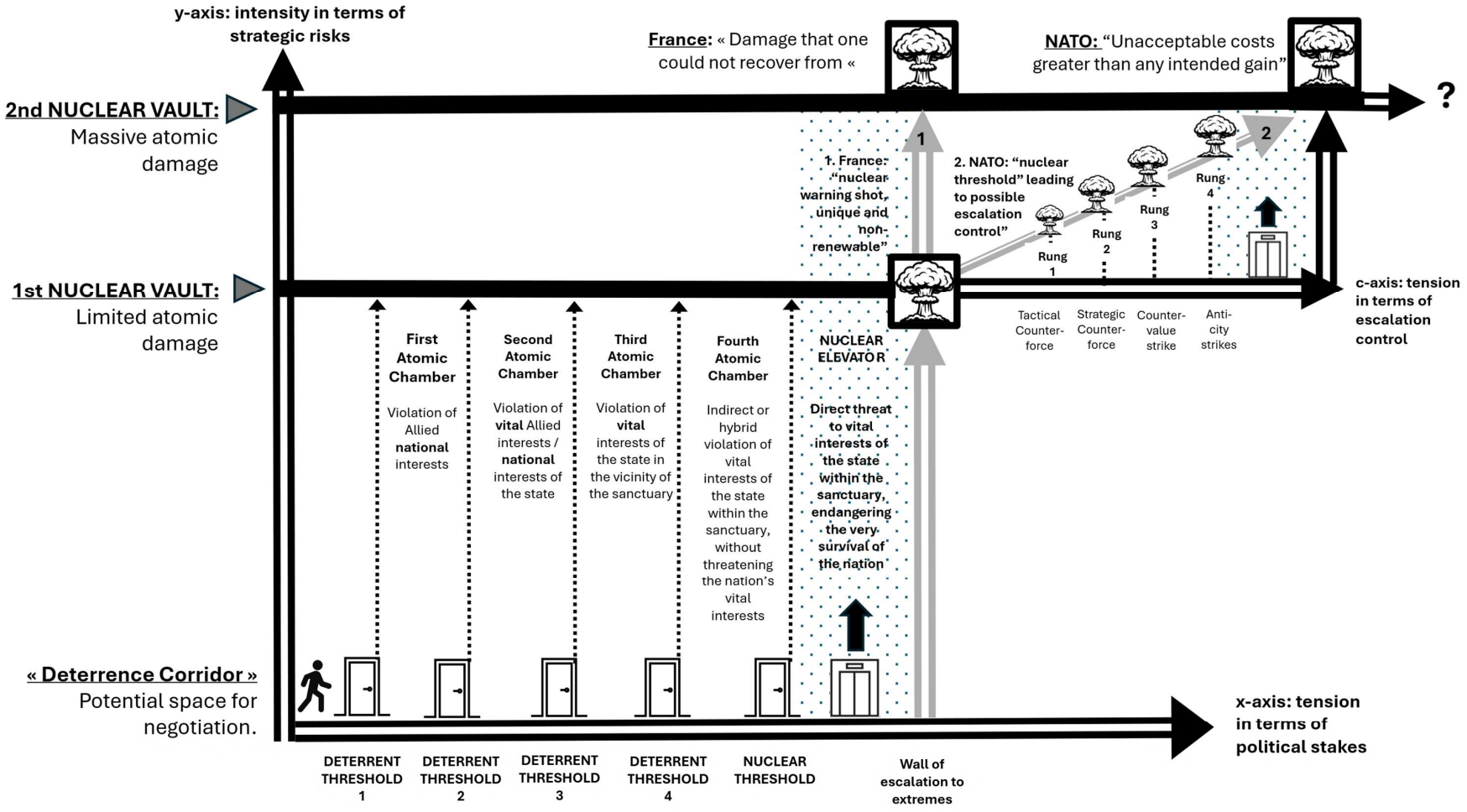


Fig. 1: Deterrence Thresholds, Atomic Chambers and Nuclear Vaults (O. Zajec, 2026)

Now, where does this proposed “fourth chamber” come from? The crucial point is that it has emerged only very recently, with Ukraine’s decision to strike deep inside Russia’s sanctuary, targeting elements of its nuclear forces through Operation *Spiderweb* in June 2025. The implications of such a decision have perhaps not received the full attention they deserve - we will return to this point in the final section of this note.

Before doing so, and to illustrate concretely this model, we will test here four different cases.

- The first case concerns a maximal central deterrent: the United States during the Cuban Missile Crisis (1962), which displays a progression from regional coercion to the immediate exposure of the national territory to nuclear attack, without culminating in an actual attack on that territory.
- The second involves another maximal central deterrent: Russia in the context of the ongoing war in Ukraine (2022–2026).
- The third case concerns a minimal regional deterrent: Pakistan during the Kargil War (1999), in which a nuclear-armed state engaged in a limited conventional conflict with another nuclear-armed state shortly after both countries had openly demonstrated their nuclear capabilities in 1998.
- The fourth involves a European P5 nuclear-weapon state engaged as a minimal central deterrent in a crisis with a nuclear dimension: France in the context of the ongoing war in Ukraine.

The aim of such a comparison, using the criteria of the dialectical model we have developed, is to empirically determine the number of deterrence thresholds crossed by the selected actors during each of the crises under study —and thus the number of atomic chambers they effectively entered.

The United States during the Cuban Missile Crisis (1962): The Cuban Missile Crisis provides a particularly revealing case for distinguishing the third and fourth atomic chambers, since the Soviet deployment of nuclear missiles in Cuba brought an adversary's strategic capabilities within immediate reach of the American national sanctuary. The first chamber was entered when Washington interpreted the Soviet military buildup in Cuba as a threat to American regional interests and to the security of its allies in the Western Hemisphere. President John F. Kennedy publicly warned Moscow against introducing offensive weapons into Cuba on September 4, 1962, before the discovery of operational missile sites transformed the crisis in October. The second chamber was entered when the deployment of Soviet nuclear-capable missiles threatened the security of American allies and the credibility of the US regional security order. The administration's decision to impose a naval quarantine on Cuba on October 22, accompanied by the elevation of US forces to DEFCON 3, signaled that Washington regarded the challenge as exceeding the limits of an ordinary regional confrontation. The third chamber was unmistakably approached when the discovery of Soviet medium- and intermediate-range ballistic missiles in Cuba revealed a direct threat to the American national sanctuary. On October 24, US forces enforcing the quarantine confronted Soviet ships, while the growing operational readiness of the missile sites intensified fears of a direct nuclear exchange. On October 24–25, US forces moved to DEFCON 2, bringing the Strategic Air



U.S. aerial reconnaissance photograph of a medium range ballistic missile launch site at San Cristobal in Cuba, on 1 November 1962 during the Cuban missile crisis. National Archive

Command to a level of readiness unprecedented in American history. The Soviet deployment did not merely threaten an ally or a regional interest: it altered the strategic vulnerability of the continental United States itself. The fourth chamber, however, is not entered: although the shooting down of an American U-2 reconnaissance aircraft over Cuba on October 27 brought the crisis closer to direct military confrontation, no Soviet attack struck vital American interests within the national sanctuary.

Russia in the context of the ongoing war in Ukraine (2022–2026): Russia's full-scale invasion of Ukraine in February 2022 can be interpreted as an initial crossing of the first atomic threshold, insofar as Moscow chose to employ large-scale conventional force to pursue what it considered vital geopolitical objectives in its neighboring strategic environment. Yet, within the proposed model, the first chamber must be distinguished from the Russian state's own



Oreshnik Strike, Ukraine, 21 November 2024. Wikimedia Commons.

escalation in response to Western support for Ukraine: the invasion itself was an act of Russian aggression, not an attack on Russian interests. The relevant progression concerns Moscow's subsequent perception of Western military assistance, sanctions, and political opposition as challenges to Russian national

interests. The second chamber becomes relevant when Russian leaders portray Western support for Ukraine as threatening Russia's vital interests, particularly as weapons supplied by NATO members enable Ukrainian forces to strike Russian territory. This perception was increasingly reflected in Russian nuclear signaling, including the announcement in March 2023 that Russia would deploy tactical nuclear weapons in Belarus. The third chamber can be associated with Moscow's growing concern that Western military involvement might evolve into direct intervention threatening Russian strategic positions or the approaches to the national sanctuary. The revision of Russia's nuclear doctrine in November 2024 broadened the circumstances under which nuclear use could be contemplated, including certain forms of conventional aggression posing a critical threat to Russian or Belarusian sovereignty or territorial integrity. The revised doctrine also treats aggression by a non-nuclear state supported by a nuclear-armed state as a joint attack, thereby providing a doctrinal basis for linking Ukrainian military operations to the strategic responsibility of Western powers. The November 2024 demonstration of the Oreshnik intermediate-range ballistic missile against a target in Ukraine further reinforced this signaling campaign. The road-mobile, intermediate-range Oreshnik, derived from the RS-26 Rubezh, is capable of carrying multiple independently targetable re-entry vehicles and fitted with either conventional or nuclear warheads. It allows Moscow to demonstrate a capacity for escalation while preserving ambiguity about the nature of a future strike.

These developments can be interpreted as evidence of a widening Russian conception of the threats that might justify nuclear escalation, although they do not, by themselves, establish that Russian leaders considered its vital interests have been physically reached. In June–July 2025 Ukraine launches the Operation *Spiderweb*, striking against Russian nuclear bombers, installations and infrastructure, including targets deep inside internationally recognized Russian territory. With this decision, which creates an entirely unprecedented situation in the history of nuclear crises, Ukrainians are drawing the Russians into the model’s fourth atomic chamber. Although the crisis has not, so far, resulted in the use of nuclear weapons, Moscow deeply intensifies its

conventional attacks against Ukraine and warns Washington of the risk of nuclear confrontation.

Pakistan during the Kargil War (1999): The Kargil War of 1999 offers a contrasting case in which a nuclear-armed state engaged in a limited conventional conflict with another nuclear-armed state shortly after both countries had openly demonstrated their nuclear capabilities in 1998. The first chamber can be associated with Pakistan's decision to support an incursion into the Kargil sector of Indian-administered Kashmir in 1999, thereby challenging India's territorial control and regional position while attempting to keep the conflict geographically limited. The second chamber was approached as Indian forces mounted a sustained military campaign to recover the occupied positions, raising the prospect of a broader conventional war between the two states. For Islamabad, the danger was not simply that India would reverse the territorial gains made at Kargil, but that the conflict might expand into a conventional confrontation in which India's greater military resources would become decisive. Pakistani officials consequently issued nuclear-related warnings. On May 31, 1999, Foreign Secretary Shamshad Ahmad declared that Pakistan would not hesitate to use any weapon in its arsenal to defend its territorial integrity. Such statements can be interpreted as an attempt to deter India from widening the conflict, while increasing the perceived risks of escalation for external powers. The third chamber is not concerned by this crisis: the available evidence does not establish that Pakistan



Soldiers of the Indian Army depicted after capturing a hill from Pakistani forces during the Kargil War, 1999. Wikimedia Commons.

considered its national sanctuary to have been directly threatened during the Kargil fighting. India largely confined its military operations to the Indian side of the Line of Control, while its political leadership sought to avoid widening the conflict across that boundary. Scholarship on Kargil emphasizes the importance of limited war, crisis bargaining, and competing perceptions of escalation risk, cautioning against attributing the decisions of either side to nuclear deterrence alone.

France in Ukraine crisis and war (2014-2026): In April 2014, following Russia's annexation of Crimea, France enters the first atomic chamber of the model: Paris deployed four dual-role Rafale fighter jets to Poland and the Baltic states as part of NATO's reinforcement measures. The second chamber is entered in February 2022, with the Russian invasion of Ukraine: this full-scale attack is considered as a blow to France's national interests, particularly in the European context. In March 2022, as an exceptional measure of nuclear signal following the invasion, Emmanuel Macron therefore ordered the simultaneous deployment of three nuclear-powered ballistic missile submarines (SSBNs). As for the third deterrence threshold, the model suggests that it is crossed, as we saw, when a state considers clearly that the adversary operation threatens the vicinity of the national sanctuary. In the French case, we argue that this threshold was overstepped with the formal announcement of the new doctrine of Forward deterrence in March 2026. This evolution has been driven less by the actual advance of Russian troops than by a shift in the French government's perceptions. Under the "Forward Deterrence" doctrine, formalized by the President of the French Republic on March 2, 2026, the French "approaches" – formerly defined in the narrowest sense – now appear to extend across EU territory as far as the Russian border (Finland, Norway, and Poland—all of which share a border with Russia—have joined France's Forward Deterrence Partnership). France enters therefore gradually in the third atomic chamber. The Forward Deterrence Partnership authorizes the use and sharing of infrastructure or airfields in ten NATO countries for the temporary deployment of French Rafale aircraft possibly equipped with ASMPA-R nuclear missiles. It

also provides for allied conventional forces to support French airborne nuclear operations through escort, refueling, and reconnaissance. Finally, it opens up the possibility of equipping French forces stationed in Eastern Europe with ground-launched conventional missiles capable of striking deep into Ukrainian



"Forward deterrence": Emmanuel Macron's nuclear address, March 2, 2026. ECPAD.

and potentially Russian (?) territory. The boundary between the second and third thresholds that we defined is thus becoming increasingly blurred. This is a particularly important point to emphasize, since France is the only one of the four actors examined in these case studies to enter the third chamber even though its national territory is not in the immediate vicinity of the crisis

ATOMIC CHAMBERS	WHAT IS AT STAKE POLITICALLY	EFFECTIVE MEASURES TAKEN BY A NUCLEAR-ARMED STATE PERCEIVING ITS NATIONAL OR VITAL INTERESTS TO BE UNDER THREAT			
		CENTRAL MAXIMAL DETERRENT		REGIONAL MINIMAL DETERRENT	CENTRAL MINIMAL DETERRENT
		UNITED STATES IN CUBA CRISIS (1962)	RUSSIA IN UKRAINE CRISIS AND WAR (2014-2026)	PAKISTAN IN THE KARGIL WAR (1999)	FRANCE IN UKRAINE CRISIS AND WAR (2014-2026)
First atomic chamber	**Hostile acts targeting the national interests of the state's allies**	**September 4, 1962 -** Washington interprets the Soviet military buildup in Cuba as a threat to American regional interests and to the security of its allies in the Western Hemisphere. John F. Kennedy warns Moscow against introducing offensive weapons into Cuba before the discovery of operational missile sites transformed the crisis in October.	**March 2014**: Ouster of the elected Yanukovych government, rise to power of pro-European forces in Kyiv. Russia's hybrid seizure of Crimea.	**May 31, 1999** — Following Pakistani infiltrations into Indian-controlled territory, New Delhi deploys its air force against irregular Kashmiri fighters. Pakistan's foreign minister declares that his country will not hesitate to use any weapon in its arsenal to defend its territorial integrity.	**April 2014**, deployment of four dual-role Rafale fighter jets to Poland and the Baltic states as part of NATO's reinforcement measures following Russia's annexation of Crimea
Second atomic chamber	**Hostile acts on the vital interests of allies, perceived as harming the state's national interests**	**October 22, 1962:** the deployment of Soviet nuclear-capable missiles threatens the security of American allies and the credibility of the US regional security order. The imposition of a naval quarantine on Cuba on October 22, is accompanied by the elevation of US forces to DEFCON 3, signaled that Washington regarded the challenge as exceeding the limits of an ordinary regional confrontation	**February 24–27, 2022** — Initial nuclear threats and heightened alert following the invasion of Ukraine.Vladimir Putin warns powers that might intervene against Russia that they would face consequences "such as you have never seen in your entire history," before placing Russia's nuclear forces on a special regime of alert. In March 2023 Russia announces it would deploy tactical nuclear weapons in Belarus	**July 1999** - Indian forces continue to advance toward the recapture of the occupied heights. U.S. intelligence detects worrying indications that Pakistan may be preparing its nuclear forces for possible deployment.	**March 2022**, on an exceptional basis and following Russia's military invasion of Ukraine, the President of the Republic orders the simultaneous deployment of three nuclear-powered ballistic missile submarines (SSBNs)
Third atomic chamber	**A perceived hostile act against the state's vital interests, which implies that the threat concerns the approaches to the national sanctuary.**	**October 24–25, 1962:** The SAC disperses its nuclear-armed bombers, while Polaris submarines move into their patrol positions. The United States imposes a naval quarantine of Cuba. U.S. forces move to DEFCON 3 on October 22. On October 24, the SAC moves to DEFCON 2, placing U.S. strategic nuclear forces at their highest state of readiness short of general war.	**November 21, 2024** — First Russian strike using the Oreshnik ballistic missile, potentially capable of carrying nuclear warheads, but armed with conventional payloads in this strike. Six months after the targeting of RussianVoronezh-DM radars by Ukrainian drones, the attack is presented as a response to the use of Western missiles against Russian territory, with its deterrent message directed at Ukraine's Western supporters.	**n.a.**	**March 2026**: The French Forward Deterrence Partnership is formalized on March 2, 2026. It provides for the possible temporary deployment of aircraft belonging to France's nuclear forces in European countries bordering Russia.
Fourth atomic chamber	**An attack (possibly "hybrid") on the state's vital interests within the national sanctuary itself, without, however, irreparably endangering the nation's survival.**	**n.a.**	**June–July 2025** — After Operation *Spiderweb*. Moscow intensifies its conventional attacks against Ukraine and warns Washington of the risk of nuclear confrontation: "These actions have not led to this outcome in the present case, but hypothetically, if this course continues, they could lead to an escalation between nuclear powers" (Ryabkov, June 11 2025)	**n.a.**	**n.a.**

Fig. 2: The sequency of atomic chambers: an application to different NWS's positioning in crisis and war (O. Zajec, 2026)

Taking into account the *Spiderweb* operation of June 2025 has enabled us to establish that, among the four cases compared here, only Russian-Ukrainian relations in the context of the Ukrainian crisis involved the actual crossing of a fourth threshold—one that was not crossed between Russia and the United States in 1962, between Pakistan and India during the Kargil War in 1999 nor, so far, between France and Russia in the current Ukrainian crisis.

It is therefore important to understand in a comprehensive way the implications of this fourth atomic chamber and the consequences its emergence may have in the future, which, given the dynamics of the model presented in this article, concerns especially the stakes-to-risks ratio in the new European nuclear landscape.

Entering the fourth chamber: the shattering effect of Spiderweb reinterpreted in the X- and Y-axes of the deterrence dialectic

By May 2024, Ukrainian forces targeted Voronezh-DM radars belonging to Russia's ballistic-missile early-warning system, an integral part of its nuclear deterrence architecture. The targeted facilities – primarily Armavir, where the damage was significant, and Orsk, where the extent of the damage is less certain – were located 450 and 1,200 kilometers from the Ukrainian border, respectively. Numerous experts emphasized the gravity of this red line being crossed in 2024[31]. Nevertheless, it was another operation, called *Spiderweb*, that plainly confirmed one year later Kyiv's intention to test the limits of a nuclear-armed state.

In June 2025, drones secretly transported deep into Russian territory by Ukrainian security services targeted some twenty strategic bombers at four air bases. The operation had a significant impact: the most conservative estimates, based on satellite imagery, indicate that seven Tu-95MS bombers were destroyed and four Tu-22M3s were hit at Belaya air base[32]. The consequences of this operation – combined with the occupation of Russian territory by Ukrainian forces, including during the

[31] James M. Acton, "The United States Should Not Further Loosen Its Prohibition on Ukraine's Using U.S.-Supplied Weapons to Strike Russia," Carnegie Endowment for International Peace, June 6, 2024.
[32] See Hans M. Kristensen, Matt Korda, Eliana Johns, and Mackenzie Knight-Boyle, "Russian Nuclear Weapons, 2026," *Bulletin of the Atomic Scientists* 82, no. 3 (2026): 221–54.

Ukrainian offensive in Kursk Oblast from August 2024 to April 2025 – are fundamental. Indeed, until then, neither the First Nuclear Age (1945–1991) nor the Second (1991–2014) had seen a crisis, however intense, result in the direct invasion of the territorial sanctuary of a major nuclear power, a deliberate strike against elements of its Nuclear Command, Control, and Communications (NC3) system, or the destruction deep within its territory of delivery systems or platforms belonging to its strategic nuclear forces[33]. All these scenarios could be considered "covered" by the nuclear deterrence of the state concerned[34].

We know, for instance, that in Herman Kahn's six major categories of "thresholds, or firebreaks," a breach of the "central sanctuary" is immediately followed by the transition to a "central war."[35] It is fair to say that this model broadly reflects more or less the prevailing understanding of the thresholds for nuclear conflict between nuclear-armed states prior to 2022. Yet the same logic can be found in a number of works published after the invasion began. In May 2025, three months before the launch of Operation *Spiderweb*, Timothy Thomas compares several Russian representations of nuclear escalation, and places particular emphasis on a 2024 book coauthored by Sergey Karaganov, Dmitry Trenin, and Sergey Avakyants, in which those Russian defense experts combine the concepts of deterrence (*sderzhivanie*) and intimidation (*ustrasheniye*) in order to model a vertical approach to managing escalation in a conventional conflict under the shadow of nuclear weapons, designed to thwart Western strategies[36].

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[33] The Falklands, invaded by Argentina in 1982, are a British Overseas Territory, not the United Kingdom's principal territorial sanctuary, and London did not seriously contemplate the use of nuclear weapons during the crisis. During the 1973 Yom Kippur War, Israeli territory faced the threat of a major ground invasion. Nevertheless, the protection afforded by the U.S. central deterrent remained in place, and the "Samson" nuclear option – which Washington would have opposed – was quickly set aside.

[34] This traditional mindset is reflected in remarks made by Keith Kellogg, then Donald Trump's Special Presidential Envoy for Ukraine and Russia, in a Fox News interview on June 3, 2025, following Operation *Spiderweb*. This perception is not limited to the Republican camp: in 2021, several statements by Joe Biden referred to the risk of a "Third World War."

[35] Herman Kahn, *On Escalation: Metaphors and Scenarios* (New York, Washington, DC, and London: Frederick A. Praeger, 1965), 133.

[36] Timothy Thomas, "Escalation Ladders in Russian Nuclear Strategy: What Rung Are We On?", The Saratoga Foundation, March 3, 2025. https://www.saratoga-foundation.org/p/escalation-ladders-in-russian-nuclear?

But whether we refer to western "ladders" inspired by Kahn, or to "scales" recently developed by Russian authors such as Trenin, Karaganov, or Kokoshin, we must acknowledge that they do nothing to help us understand the current reality. The limits that we once understood to define an international crisis under the shadow of nuclear weapons have been fundamentally transformed, even if not all experts seem to fully recognize the depth of this change. As we note above, the rupture stems arguably from the fact that the 2024 attacks on the early-warning radars in Armavir and Orsk, followed by *Spiderweb*, created a fourth atomic chamber that did not previously exist. During the Cuban Missile Crisis, for example, the entire process of crisis management remained within the third chamber of our model (infringement on vital interests at the approaches to the sanctuary). Ukraine, however, has shown that crossing the threshold of the third chamber – by militarily breaching the borders of a nuclear-armed state directly, or striking some of its nuclear strategic capabilities deep within its territory – does not necessarily trigger a massive atomic retaliation.

What lessons can be possibly drawn from this, in order to shed light on what might happen if other actors, embroiled in other crises, current or future, were also to decide to cross this fourth threshold?

Has Russian deterrence failed? A study of the step-by-step desecration of the sanctuary

It is quite striking how those who praised *Spiderweb* tend to focus exclusively on its impressive tactical dimension. Seeking to reassure about its potential consequences, they adhere to the classical idea that a "threshold" rises or falls according to the willpower and risk tolerance governing relations between two actors engaged in a nuclear crisis. From this perspective, these analysts seem to be less concerned with the firebreak that Kahn established between an attack on the sanctuary and the outbreak of a central nuclear war, than with another of his observations, which can be found in *On Escalation*, chapter 6, entitled "The Nuclear

Threshold": "We can also violate the central sanctuary by degrees"[37]. The main analytical problem, as noted in the introduction, lies in the meaning generally assigned to the concept of a threshold, which tends to be conflated with the rungs of an "escalation ladder" (in Kahn's sense) or the steps of a more or less steep staircase (as, for example, in André Beaufre's work). If we follow this logic, adopted by many observers of the crisis, Ukraine would, in a sense, have forced Russia to raise its nuclear threshold (or would have forced her to reveal that it was higher than she was prepared to admit), and its risk-taking would have paid off. This is the argument advanced by analysts writing for the specialized open-source intelligence website *Meduza*: "Should Russia's nuclear threats – whether explicit or implicit – influence decisions regarding aid to Ukraine? Or should these threats be viewed as bluffs? The SBU is likely attempting to demonstrate that this is indeed the case[38]". Rose Gottemoeller, NATO's Deputy Secretary General from 2016 to 2019, seems to move in a similar direction. Despite her expressed concerns about strategic stability between Russia and the United States, she returns to the poker analogy to describe the implications of *Spiderweb*: "Ukraine 'called' and exposed their bluff. [The Russians] retaliated only with conventional weapons, but it was still remarkable."

If it is possible to conceptualize the "violation by degrees" of a sanctuary through the use of nuclear weapons by two nuclear-armed states, it seems all the more conceivable that such a process could occur between a nuclear-armed state and a non-nuclear-armed one. The latter, while incapable of using nuclear weapons, may nevertheless be determined to push its conventional and hybrid capabilities to the limit, as Ukraine has done by assuming that its nuclear-armed adversary would refrain from using nuclear weapons except in response to an existential threat. This perception can be associated to that of Argentina in the 1982 Falklands war, challenging the national interest of a NWS, the United Kingdom, which effectively

[37] Herman Kahn, *On Escalation*, 133. The original text reads: "We can also violate the central sanctuary by degrees. But the nuclear threshold and the central sanctuary are probably the two most salient and objective of the thresholds."
[38] The acronym SBU, frequently used by journalists covering the war in Ukraine, refers to the Security Service of Ukraine (SSU). "SBU" derives from the transliteration of the Ukrainian acronym (Служба безпеки України – СБУ).

chose restraint. Such a case somehow consistent with the original formulation of Nina Tannenwald's nuclear taboo theory[39]. Ultimately, it suggests that Operation *Spiderweb* — a gradual violation of the sanctuary that went unpunished— demonstrates that Russia is structurally in a position of self-deterrence. Previous Russian warnings amounted to sustained blackmail, or even a permanent bluff that should never be taken seriously. In other words, Russia would issue nuclear threats without ever being willing to act on them.

Mark J. Massa, among others, argues for instance that Russia's deterrence credibility is severely damaged:

> (…) a Russian nuclear response in Ukraine seems unlikely, even after Russia lowered its declared threshold for nuclear use in September 2024. Ukrainian drone strikes against several Russian bomber bases might have appeared to fit precisely the type of attack liable to trigger Russia's lowered threshold for nuclear use. Yet no such use materialized. (…)[40]

It is worth noting that Massa is careful to add that "nuclear-armed states may very well use nuclear weapons to force an end to military operations that could result in unacceptable costs, such as the destruction of a large portion of their nuclear arsenal." However, such an analytical *caveat* is not always acknowledged by other proponents of the *Spiderweb* model. Some go further, asserting, as noted above, that Russian deterrence has "failed."[41] In 2025, Polina Sinovets and Muhammed A. Alkiç pointed to "the evidence of the futility of Russian deterrent threats against Ukraine."[42] Meanwhile, in France, some experts pretends that Russian deterrence has failed "both as a concept and as a system[43]." Such claims extend beyond academic analysis and

[39] Nina Tannenwald, *The Nuclear Taboo: The United States and the Non-Use of Nuclear Weapons Since 1945* (Cambridge: Cambridge University Press, 2007).
[40] Mark J. Massa, "Ukraine's Drone Strikes Offer Four Big Lessons for U.S. Nuclear Strategists," *New Atlanticist*, Atlantic Council, June 6, 2025. Russia announced a revision of its nuclear doctrine in September 2024, formally adopted on November 19, 2024.
[41] See Olga O. N. Sinovets and Mykola G. Borysov, "Deterrence, Compellence, or Credibility Fatigue? Russian Nuclear Threats in the War on Ukraine," *Journal of Strategic Studies* (2025).
[42] Polina Sinovets and Muhammed Ali Alkış, "Deterrence, Compellence, or Credibility Fatigue? Russian Nuclear Threats in the War on Ukraine," *Journal for Peace and Nuclear Disarmament* 8, no. 2 (2025): 393–408.
[43] Dimitri Minic, "The War in Ukraine Has Led to a Loss of Credibility for Russian Nuclear Deterrence," interview by Hugues Maillot, *Le Figaro*, October 6, 2025.

have permeated public debate. On September 13, 2024, even before Spiderweb occurred, Ulrich Speck wrote in the *Neue Zürcher Zeitung* about the "end of Russia's nuclear deterrence[44]." What is the merit of such claims? What are their implications for understanding the true nature of the fourth atomic chamber?

Let's imagine a man who visits a zoo. Despite the park's rules, he slips a hand through the bars of a wild animal's cage. The animal does not pounce. It merely raises its head and stares at him. "This wild animal is less terrifying than I had been led to believe," the visitor concludes from his experience. "So much for all those alarmist zoologists. Why not empirically prove once and for all that they are wrong by slipping my hands through the bars again – but this time with both hands? There will always be time to pull them back if the animal makes a move, and besides, he is far from me and the metal bars are sturdy." In the shadow of the cage, whose rust-eaten bars have gone unrepaired for decades, the muscles in the beast's hindquarters – which have been trained for years to clear the entire length of the cage in a single leap – begin imperceptibly to tense.

The implications of the new deterrence reality created by *Spiderweb* differ considerably depending on whether one continues to rely on the traditional concept of the escalation ladder or instead interprets the operation through the conceptual framework distinguishing deterrence thresholds from nuclear vaults by articulating the horizontal and vertical dimensions of crisis management under nuclear conditions, as proposed in this research note in a view to re-articulate political stakes and strategic risks. Based on this model, what the Ukrainian operations of August 2024 and June 2025 revealed was *by no means* that Russian deterrence failed, insofar as it is tied to a definition of what constitutes vital interests, but rather that the answer selected by Moscow compels us to rethink the number of thresholds that characterize the Atomic chambers composing the Deterrence Corridor of the Third Nuclear Age. This hypothesis has far-reaching implications, as we shall see.

[44] Ulrich Speck, "Ukraine-Krieg: Das Ende der nuklearen Abschreckung Russlands," *Neue Zürcher Zeitung*, September 13, 2024.

The proponents of the "bluff" hypothesis frequently cite the various versions of Russian nuclear doctrine, updated in 2020 and, most notably, in November 2024, in support of their argument, given the fact that this update would have lowered the nuclear threshold[45]. However, experts on Russian strategic culture remain deeply divided on the issue, likely for one good reason: the "threshold" in question is discursive in nature[46]. Aware of the problems that invariably arise when interpreting what might be termed the *nuclear declaratory*[47], other proponents of this same bluff hypothesis prefer to rely on a syllogism: since Russia has not used nuclear weapons, it did not seriously consider using them; therefore, its threshold must have been "high"[48].

The model proposed here provides a structured basis which tends to lend support to the arguments of researchers who regard this instrumental syllogism as a strategic fallacy. By reframing the concepts of a sliding threshold along the x-axis and a fixed ceiling along the y-axis, we can therefore infer that the conclusion to be drawn about Russia's doctrine prior to Spiderweb is neither that its threshold was higher than officially stated, nor that it had previously been "lowered" only to be forced back up abruptly when Russia yielded to Ukraine's "call". Rather, Russia appears to have recognized that several significant horizontal thresholds had been crossed by Ukraine and its allies since 2022, for instance with the provision of ATACMS missiles in

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[45] Alexander Graef et Gabriela Iveliz Rosa Hernandez, "The 'Karaganov Debate': How Policy Entrepreneurs Shape Russia's Nuclear Doctrine," *Global Studies Quarterly*, vol. 6, no 2 (2026) See the original doctrinal document on the Russian government's website: http://publication.pravo.gov.ru/document/0001202411190001

[46] Among the authors who challenge the assumption that changes in doctrinal wording, more aggressive nuclear rhetoric, or nuclear exercises automatically indicate a "lowering of the threshold", see Lydia Wachs, "Russian Nuclear Roulette? Elites and Public Debates on Nuclear Weapons in Moscow after Ukraine," *The Nonproliferation Review* 30, nos. 4–6 (2023; published online December 24, 2024): 173–96. Kristin Ven Bruusgaard has developed a systematic analysis of this question. Following a series of complementary studies on Russia's nuclear-use threshold, she compared the explanatory strength of three interpretive schools in 2026 – "state existence," "desperation," and "escalate to de-escalate" – and concluded that the latter two were weak. See Kristin Ven Bruusgaard, "Losing Without Using: Russian Conventional Defeat in Ukraine and Nuclear Weapons," *Defense & Security Analysis* 42, no. 2 (2026): 246–50. See also Bruusgaard, "Russian Nuclear Strategy and Conventional Inferiority," *Journal of Strategic Studies* 44, no. 1 (2021): 32.

[47] For example, on the question of what Chinese declarations regarding "No First Use" actually entail, see Adam Mount, "No First Use Can Still Help to Reduce US-China Nuclear Risks," *Journal for Peace and Nuclear Disarmament*, vol. 7, no. 1, 2024, pp. 131–142. DOI: 10.1080/25751654.2024.2356333

[48] For an examination and refutation of this hypothesis, see Ulrich Kühn, "The Fall Crisis of 2022: Why Did Russia Not Use Nuclear Arms?" *Defense & Security Analysis* 41, no. 2 (2025): 280–300.

October 2023, which facilitated deep strikes into the territory of a nuclear-weapon state. Moscow may therefore have reduced—not the y-coordinate of its nuclear vault, which our model treats as fixed—but the ambiguity surrounding the coordinate pair (x, y) that defines the relationship between its nuclear threshold and its first nuclear vault. This, specifically, to discourage its adversaries from crossing further thresholds along the x-axis. It was this kind of warning – signaling the possibility of a dangerous exit from what we call the third atomic chamber – that *Spiderweb* chose to ignore in June 2025. For Moscow, the question then became how to relate Ukraine's crossing of an unprecedented deterrence threshold to the possible decision of deliberately striking its own vault. In other words, what was at stake pointed to what the nuclear strategist Lucien Poirier, a leading French nuclear strategist, called the "range of uncertainty" between a theoretical deterrence threshold – in this case, an actual violation of national territory – and the concrete nuclear threshold. The latter corresponds to what Poirier termed the "critical aggression threshold," which emerges when the aggressor makes its intentions sufficiently clear for the defender to regard its vital interests as threatened[49].

To characterize the way to make good of the nexus formed by both the intra-war escalation management and the escalation control in a nuclear atmosphere, reference is often made to the expression "theory of victory." This term, which originated in the nuclear debates of the late 1970s, reflects how nuclear capabilities are expected to translate into coercive leverage, escalation advantage, or a favorable strategic outcome. In its more operational forms, it may also entail the ability to fight and prevail in a nuclear war, rather than merely deter one. The expression has recently resurfaced in NATO's official discourse. The new Supreme Allied Commander Europe (SACEUR), U.S. Air Force General Alexus G. Grynkewich, notably declared on 12 October 2026, while unveiling NATO's "Theory of Victory" against a potential

[49] See Lucien Poirier, *Des stratégies nucléaires* (Paris: Hachette, 1977), 185.

Russian attack, that the Alliance should be confident in its ability to "match any enemy move up the escalation ladder"[50].

And still, perhaps the conceptual effort devoted to defining what constitutes such a "victory" would benefit from being more consistently balanced by an examination of what might constitute a conventional defeat capable of triggering nuclear escalation[51]. What most distinguishes an unbearable defeat from a mere military reverse is that the latter is temporary – in other words, strategically *reversible*. And this precisely appears to be the distinction Moscow has drawn, concluding that the consequences of *Spiderweb* and the Kursk operation could not lead to total defeat and therefore did not threaten the "very existence of the state," a concept that has underpinned Russian doctrine for thirty years, despite its situational variations. It should also be noted that Ukraine is *not* a nuclear-armed state and that, although Russia has never formally adopted a "sole purpose" doctrine in the strict sense, this fact should rationally have informed the proportionality of its response, even under these circumstances.

Perhaps Ukraine's decision to carry out Operation *Spiderweb* was the result of a calculated attempt to manipulate risk. But such a "calculation" may also have been intertwined with what Pauly and McDermott, in an important article devoted to the psychology of nuclear brinkmanship, call "the role of emotion and the desire for revenge in the motivation for attack.[52]" As for Russia, however, it is reasonable to suggest that this second dimension, while it may have fueled a transient temptation to resort to nuclear weapons for punitive purposes, was ultimately overridden and set aside. Ultimately, the Kremlin chose to exercise (a kind of) restraint in this instance, at the risk of leading both allies and adversaries to believe that its previous nuclear signals had been partly or entirely a bluff. Here, Russia is somehow paying

[50] This statement could encompass the nuclear dimension, since the escalation ladder invoked is not confined to conventional means. Nevertheless, the SACEUR makes no explicit reference to nuclear weapons. See Alexus G. Grynkewich, "The Theory of Victory: How to Achieve Military Success in Deterrence and Defence Against Russia?" Speech at the Warsaw Security Forum, Warsaw, October 12, 2026. https://note.com/david_parmer/n/n009a4de86536?hl=en&utm

[51] We would venture to refer to Olivier Zajec, « La dimension atomique de la guerre d'Ukraine », *Stratégique*, n° 129, décembre 2022.

[52] Reid B. C. Pauly and Rose McDermott. "The Psychology of Nuclear Brinkmanship." *International Security* 47, no. 3 (Winter 2022/23): 16. https://doi.org/10.1162/isec_a_00451

the perceptual price for having arguably resorted too frequently to nuclear signaling throughout this protracted war in Ukraine.

Apparently less driven by a normative taboo (which is becoming increasingly fragile those days) than by a residual tradition (the enduring value attached to the status of a responsible nuclear-armed state), also weighing the difference between a partial setback and an unacceptable defeat, Moscow opted for a two-pronged response: on the one hand, downplaying the damage inflicted by an actor portrayed as irresponsible and uncontrollable; on the other, addressing Kyiv's supporters directly by staging a dialogue among "responsible" nuclear powers. This dialogue was framed around a warning about the consequences for relations between states possessing central nuclear deterrents and sharing responsibility for upholding the established nuclear order. The official statement issued by Russian Deputy Foreign Minister Sergei Ryabkov on June 11, 2025. suggest what may potentially await its adversaries – whether nuclear-armed or not – beyond the new deterrence environment represented by the fourth chamber of our model, now being used in an unprecedented way[53].

> "These countries, which possess [the resources needed to designate the target, direct aerial missions, and relay real-time information from the headquarters of those who coordinated this operation], took this step while consciously testing our patience and endurance. They encroached upon the foundations of the concept of nuclear deterrence, not merely by accommodating the Kyiv regime, but by providing it with key sensitive information. Consequently, the lack of any response, both publicly and behind closed doors, to our demands that such practices be halted and that an appropriate assessment be made of what happened, as well as the lack of response from Washington and London, effectively amounts to an acknowledgment of their complicity in such actions. These actions have not led to this outcome in the present case, but hypothetically, if this course continues, they could lead to an escalation between nuclear powers.[54]"

[53] In a relatively recent article, Kristin Ven Bruusgaard clearly highlights the asymmetry of perceptions among actors involved in a nuclear crisis: the same doctrinal change may be interpreted by an adversary as a "lowering of the threshold" without necessarily corresponding to an equivalent change in the actual decision-making threshold. See "Deterrence Asymmetry and Strategic Stability in Europe," *Journal of Strategic Studies* 47, no. 3 (2024): 334–62.

[54] "Ryabkov: Russian Nuclear Deterrence Potential against US Not Significantly Damaged by Attacks on Airfields," Interfax Russia, June 11, 2025.. https://www.interfax-russia.ru/military/news/646722

The Russian deterrence was arguably tested by Ukraine. But this should not mean that Russian deterrence has failed in any way, if we refocus this issue on the question of vital interests. Factually, such a situation highlights the importance of two kinds of enlightening arguments. The first one, perceptual by nature, has been clearly put forward by T. V. Paul, who posits that the non-use of nuclear weapons is explained by the gradual emergence of an awareness of the catastrophic consequences of their use and the reputational costs that would be incurred by any country that used them again[55]. Still, as we know, Paul does not regard this "tradition" as a strict taboo that could prevent a state from using nuclear weapons under all circumstances, especially when it considers its vital interests to be under threat[56]. The second argument, which is more structural in nature, was put forward by Lawrence Freedman in the context of a RAND Corporation study devoted to the 1982 Falklands War, which pitted a nuclear-armed state against a non-nuclear-weapon state: "Restraint in the use of force, wrote Freedman, is much more feasible for countries with significant local military superiority or at least substantial reserves and a range of options that can be sustained over time. Countries with limited military power lack the diplomatic flexibility of a superpower.[57]" Both calibrated judgments by Paul and Freedman remains highly useful in trying to understand why Russia's behavior in 2025 was probably less akin to an exposed bluff than to deliberate restraint.

The Issue of Restraint

The word "restraint," used to describe Moscow's response, may understandably raise questions. We must therefore be careful to emphasize that Russia was unquestionably responsible for launching a massive, coordinated military

[55] T. V. Paul, *The Tradition of Non-Use of Nuclear Weapons* (Stanford, CA: Stanford University Press, 2009).
[56] In her most recent work, prompted by the deterioration of deterrence balances resulting from the war in Ukraine, it is worth noting that Nina Tannenwald herself emphasizes that the repeated use of nuclear threats and the normalization of the prospect of nuclear weapon use can weaken the norm of non-use, and the subsequent "taboo" that would derive from it. See Nina Tannenwald, "Is Using Nuclear Weapons Still Taboo?," *Foreign Policy*, July 1, 2022, https://foreignpolicy.com/2022/07/01/nuclear-war-taboo-arms-control-russia-ukraine-deterrence/.
[57] Lawrence Freedman, *The South Atlantic Crisis of 1982: Implications for Nuclear Crisis Management*, RAND Note N-2926-CC (Santa Monica, CA: RAND Corporation, May 1989), p. 38.

attack against its neighbor in February 2022. Given this indisputable fact, many analysts will argue that Russia should, in principle, accept responsibility for its actions and face the consequences of its aggression, regardless of the extent of the destruction those consequences entail.

Such a logic is essentially the same as that expressed in 2024 by Peter Stano, the European Union's spokesperson for foreign affairs and security policy, in the aftermath of the Ukrainian operation in Kursk Oblast. On August 7, 2024, Stano specifically invoked Article 51 of the United Nations Charter: "We consider that Ukraine is waging a legitimate defensive war against an illegal act of aggression, and, within the framework of this legitimate right to self-defense, Ukraine has the right to strike the enemy wherever it deems necessary – on its own territory, but also on the enemy's territory.[58]"

In the aftermath of Operation *Spiderweb*, however, the European Union cautiously refrained from issuing an official statement specifically addressing the event. Kaja Kallas was virtually isolated in openly drawing conclusions from Stano's earlier remarks. She praised the operation, declaring that the Ukrainian strikes against Russian strategic aviation were "rewriting military history." Rather than emphasizing the nuclear risk involved, she highlighted the operation's favorable tactical cost-effectiveness: "I think this clearly raises the cost for the Russians as well, once again, and that it could lead the Russians to also desire peace," she concluded, drawing a parallel with Russian attacks on military and civilian targets in Ukraine[59].

It is nevertheless important to clarify that this logic, while legally and morally sound, is at the same time strategically fragile. *Mutatis mutandis*, it would imply that because the United States attempted to invade Cuba in April 1961 – an act that, no less than Russia's invasion of Ukraine in 2022, violated the sovereignty of a country that posed no threat to it and was motivated by opposition to its political regime – it would have forfeited its moral right to wield its nuclear deterrent in October 1962. At

[58] Nate Ostiller, "'Ukraine Has the Legal Right to Defend Itself,' EU Says on Incursion into Russia's Kursk Oblast," *The Kyiv Independent*, August 7, 2024.
[59] Kateryna Danishevska, "Ukraine's Operation *Spiderweb* Is Rewriting Military History – Kallas," RBC Ukraine, June 5, 2025.

that time, the USSR, a sovereign state acting at Havana's sovereign request, "defensively" deployed nuclear-capable SS-4s, and especially SS-5s, amid the tobacco fields of western Cuba. It should also be added that, according to a broad interpretation of Stano's strictly legal logic, Havana – which was defending itself against an illegal act of aggression under the Charter – would therefore have been within its rights to attack U.S. territory directly in legitimate defense. How would Washington have reacted? Fortunately, we do not know, since Fidel Castro chose not to escalate the situation, and the Soviet Union did not supply him with the offensive weapons needed to do so, opting instead to lecture him on the consequences of a thermonuclear war between central nuclear deterrers[60].

Was Kennedy – whose American archives reveal that, as late as the end of 1962, his administration was still considering the illegal overthrow of the Castro regime – receptive to this kind of legally and morally consequentialist argument when he learned of the deployment of Soviet missiles[61]? His handling of the ensuing crisis offers some clues[62]. The conclusion, which may be highly unpopular because it is "tragic" in Mearsheimer's sense[63], could be the following: in international crises that do not affect the vital interests of major nuclear powers in the immediate vicinity of their strategic barycenter, morality and reputation may be taken into account as variables that modify or adjust a course of action. This is likely – and regrettably – not to be the case when the sanctuaries of nuclear-armed powers are directly at stake: . In this unique strategic space-time, the dialectic of vital interests is likely to take precedence. The Korean and Cuban situations differed for example in their spatial configurations: while other conditioning factors must, of course, also be considered

[60] See James G. Blight, Bruce J. Allyn, and David A. Welch, *Cuba on the Brink: Castro, the Missile Crisis, and the Soviet Collapse* (New York: Pantheon Books, 1993), 502-19.
[61]See *Foreign Relations of the United States, 1961–1963*, vol. X, Cuba, January 1961–September 1962, doc. 270, editorial note on the meeting of November 3, 1961. See also doc. 304, "Program Review by the Chief of Operations, Operation Mongoose (Lansdale)," February 20, 1962.
[62] See, in particular, the exchange of letters between Kennedy and Khrushchev on October 25 and 26, 1962. See Philip Brenner, "The Kennedy-Khrushchev Letters: An Overview," in *The Cuban Missile Crisis Revisited*, ed. James A. Nathan (New York: St. Martin's Press, 1992), 281–96. See also the transcript of Kennedy's October 18, 1962, conversation with Soviet Ambassador Andrei Gromyko: *Foreign Relations of the United States, 1961–1963*, vol. XI, Cuban Missile Crisis and Aftermath, doc. 29, "Memorandum of Conversation," Washington, October 18, 1962, 5 p.m.
[63] John J. Mearsheimer, *The Tragedy of Great Power Politics* (New York: W. W. Norton, 2001), 127 ff.

in a comparative assessment, this spatial difference implies that Kennedy's freedom of nuclear manoeuvre in October 1962 was not the same as Truman's in April 1951.

"At every level, whether stable or unstable, the great threat of escalation to an atomic climax looms," Beaufre observed. This is an arguably not-so-depoliticized remark, despite his own commitment to a vertical interpretation of thresholds[64]. If we accept that the Cuban scenario is in a great part transferable to the Ukrainian situation, at least in terms of the general modeling of the risks facing the players, every crossing of a threshold is therefore highly consequential. Among others, Kallas appears to act as though the lessons of the 1962 crisis no longer apply to Ukraine. One might also argue that she does not fully grasp the extent of its own involvement in this dialectic, in view of the broader function she is supposed to serve. Her opinion might carry little weight if expressed by a relatively junior Estonian minister; it takes on considerable political significance, however, when voiced by the High Representative of the Union for Foreign Affairs and Security Policy and Vice-President of the European Commission.

Some analysts have expressed a similar view of Operation *Spiderweb*, albeit in less consequential terms. Rebeccah Heinrichs, director of the Keystone Defense Initiative at the Husdon Institute, put forward a very interesting argument in underlining that the operation was not fundamentally unprecedented:

> Operation *Spiderweb* was not unique in Ukraine's choice of target. Ukraine had already successfully carried out a stunning attack against a Russian Millerovo Air Base, taking out a Su-30SM fighter jet. The attack occurred on February 25, 2022, the same month of the Russian full-scale invasion of Ukraine. Later that year the Ukrainians attacked Russian Engels-2 Air Base on December 5, 2022, with drones, hitting and damaging a Tu-95 strategic bomber. Then on August 19, 2023, Ukrainians used drones to destroy a Tu-22M3 bomber at Soltsy Air Base[65].

[64] André Beaufre, *Deterrence and Strategy*, 69.
[65] Rebeccah L. Heinrichs, "Ukraine's Operation Spiderweb Was Smart, Not Reckless," *Providence*, June 4, 2025, https://providencemag.com/2025/06/ukraines-operation-spiderweb-was-smart-not-reckless/

These comparisons arguably gloss over the evolution of the strategic and political context between 2022 and 2026. The February 2022 strike on Millerovo took place on the very first day of Russia's full-scale invasion, before the massive Western military assistance subsequently provided to Ukraine had materialized. The December 2022 and August 2023 attacks occurred in a different military environment, but remained comparatively localized operations. By contrast, *Spiderweb* combined prolonged clandestine preparation, covert logistical penetration of Russian territory, and coordinated attacks against several airbases thousands of kilometers apart. It is possible to argue that its significance therefore lies not in the unprecedented nature of striking Russian aircraft on the ground, but in the scale, sophistication, and systemic (not only contingent) vulnerabilities exposed by the operation. Equating these earlier attacks with Spiderweb risks confusing operational continuity with qualitative equivalence. Heinrichs nonetheless characterizes Spiderweb as "Smart, Not Reckless." As for its potential consequences, these are assessed in relatively dispassionate terms: "Will Russia respond with an even more overwhelming counter strike, which will ratchet up the escalation? We will soon learn. But if it does, Ukraine is not to blame for Russia's response". Again, as with the arguments put forward by Mr. Stano, pointing this out does not amount to dismissing such an argumentation in its entirety. Rather, it is to observe that it tends to conflate the moral and legal justification for the strikes with a realistic assessment of their strategic consequences beyond the immediate context of the Russian-Ukrainian conflict.

Of course. all of the foregoing leaves considerable room for debate. However, it clearly leads us to advance a hypothesis that runs counter to the nuclear optimism that appears to prevail in some quarters of the mainstream Nuclear Blob today. We argue that the long-term effects of *Spiderweb* do not justify the enthusiasm it has generated. On the contrary, they may prove profoundly harmful. Both tactically smart *and* considerably reckless strategically, *Spiderweb* has expanded the scope of nuclear crisis management, bringing it closer to the "edge of the cliff" so central to Schelling's conception of brinkmanship, closer also to Brodie's "firebreak" and Gallois's "point

d'allumage", and deeper into the "range of uncertainty" tangent to Poirier's "critical agressivity threshold."

The result is a surprising mithridatization to nuclear risk among those operating within the atomic atmosphere of the war in Ukraine. "We will soon learn": such widespread desensitization, which takes on the appearance of resilience, may well have General Curtis LeMay smiling in his grave: the central issue of our time is no longer what unfolded *before* entering the fourth chamber – as in Cuba – but what may unfold *after* entering it. The archives suggest that LeMay, like Fidel Castro, would in principle have had little difficulty entering such a heated and pressurized chamber. Yet McNamara, Khrushchev, and Kennedy – despite Kennedy's loathing of the Castro regime – decided, after extensive debate, to keep its threshold firmly closed. By contrast, what would have seemed dangerous and irresponsible in 1962 appears to be regarded as justified and legitimate in 2026. And the threshold of the fourth chamber has now been crossed[66].

Where does this expansion of deterrence options along the x-axis lead, if not toward the prospect of punitive measures along the y-axis? Some may question this argument and suggest that a fifth threshold would simply and logically open onto a fifth chamber, with an even more suffocating atmosphere. The key would be to "hold the line" without giving in to what might amount to nothing more than the adversary's constant blackmail or bluffing. All of this makes sense—the very sense Clemenceau was invoking in March 1918 when, placing will before intellect in the strategic equation, he asserted that "the victor is the one who can, a quarter of an hour longer than his adversary, believe that he is not defeated"[67]. But in 2026, the problem is not entirely one of the final quarter of an hour. It is that the fifth chamber *may not exist*. It

[66] See Martin J. Sherwin, *Gambling with Armageddon: Nuclear Roulette from Hiroshima to the Cuban Missile Crisis, 1945–1962* (New York: Alfred A. Knopf, 2020), 287 ff. Sherwin's account of the confrontation between Kennedy and his own chief of staff of the Air Force, Curtis LeMay, is particularly illuminating. See "The Chief Confronts the Chiefs," especially 287–89, for the exchanges between Kennedy and LeMay.

[67] Georges Clemenceau, intervention à la Chambre des députés, *Journal officiel de la République française*, Débats parlementaires, Chambre des députés, séance du 8 mars 1918. https://www2.assemblee-nationale.fr/decouvrir-l-assemblee/histoire/grands-discours-parlementaires/georges-clemenceau-8-mars-1918

is indeed very likely that beyond the fourth chamber as we define it, crossing a further deterrence threshold increases – geometrically, not merely arithmetically – the risk that attacks on an actor's vital interests will ultimately undermine, in either factual or perceptual terms, a more-than-vital area of interests. At this point, the protagonists would no longer be entering a new atomic chamber, but rather the iron cage of the nuclear elevator, which would carry them towards a collision with the first nuclear vault.

In order to clarify what we term here as a "more-than-vital" element, as a criterion that transforms a 'mere' deterrence threshold into the genuine nuclear threshold, it can be fruitful to turn to the French deterrence debate of the 1970s, and more precisely to the concept of the "œuvres vives". Borrowing from naval terminology, the "œuvres vives" ("underwater hull") are the submerged parts of a ship on which its ability to float and navigate directly depends. The concept, which Gallois appears to have been the first to transpose into the nuclear context, may refer to a nation's human potential (its major cities), its economic potential (essential production centers), and its political potential (the core of political decision-making) [68]. To clarify its relationship with the concept of vital interests, one might argue that the latter has a general political meaning, susceptible to a slight degree of ambiguity, whereas the "œuvres vives" represent the beating heart of vital interests. They designate politico-strategic functions so essential – and so difficult to repair or reconstruct through human means – that any damage inflicted upon them, even if partial but unmistakable, could warrant a nuclear strike as a final warning. Otherwise, a failure to respond might undermine the credibility of any subsequent retaliatory strike, regardless of whether the aggressor is a nuclear-weapon state or a non-nuclear-weapon state.

The hypothesis defended here is that the "œuvres vives" – the underwater hull – lie just beyond the fifth deterrence threshold. In political terms, escaping from the

[68] See Pierre-Marie Gallois, *Stratégie de l'âge nucléaire*, 193. In the American translation, Richard Howard rendered *œuvres vives* as "vital works," although this perhaps does not fully convey the term's existential dimension. See Pierre-Marie Gallois, *The Balance of Terror: Strategy for the Nuclear Age*, trans. Richard Howard (Boston: Houghton Mifflin, 1961), 182, 193.

fourth chamber, would therefore amount not to a *progression*, through the crossing of a "mere" deterrence threshold, but to a *transgression*: the breaching of Enthoven's firebreak, the one and only threshold that can properly be described as nuclear. Once enacted, this transgression would not lead into a fifth atomic chamber in which step-by-step violations could continue, but into what this model proposes to consider as the iron cage of a nuclear elevator (see previous diagram). This is why we propose to consider that Operation *Spiderweb* did not lead to a failure of Russian deterrence. The Russian nuclear vault didn't change its coordinates on the y-axis of strategic risks. What Spiderweb *entirely changed* was the relationship between deterrence thresholds and nuclear vaults in the Third Nuclear Age. A new atomic chamber has been created, and decision-makers, regardless of their continent or the type of crisis they face, can now envisage entering it—and believe that they will know how to navigate it—as Ukraine is currently doing. This places intense pressure on nuclear-armed states, which must now anticipate attempts to circumvent their deterrence that may involve direct attacks on their nuclear infrastructure. They will find themselves confronted with the same dilemma as Russia in 2024–2025.

Yet this fourth chamber will change nothing about the existence of fixed nuclear vaults or the link that connects them to the nuclear threshold through the concept of vital interests. That threshold will simply be *skirted* with increasing frequency by state and non-state actors, whether nuclear-armed or not, drawing on the dual precedent set by Ukrainian audacity and Russian restraint. This is hardly a development likely to improve the state of international relations in the twenty-first century.

Conclusion: "We will soon learn"

What *Spiderweb* – combined with the 2024 attacks on the early-warning radars in Armavir and Orsk – likely brought to fruition in June 2025 can arguably be considered as a dangerous trap that threatens not only Russia, but all nuclear-weapon

states, which encompasses the United States and NATO [69]. At a time when the pillars supporting the international system appear to be on the verge of collapse, it seems important that policymakers on both sides understand that the characteristics of the fourth chamber require a reversal in the balance between determination and prudence in the difficult pursuit of a lasting ceasefire in Ukraine. Otherwise, there is reason to fear that, once a new limit or threshold is overstepped – by Russia, Ukraine, or one of Ukraine's allies – the elevator doors will suddenly slam shut on all the players. Because the essential distinction between the national and vital interests of a power situated near its sanctuary, or deep into it, has not been made, and because the frequent warnings it issues have been dismissed as "bluffs" on the grounds that it is undoubtedly the aggressor (a morally objective but strategically problematic rationale), the geometric ascent of this elevator could suddenly and brutally carry its passengers along the wall of escalation toward the extremes, to the highest levels of the nuclear dialectic. The horizontal logic of crossing thresholds described in this article would give way to the vertical logic of colliding with vaults.

What would happen then?

The first nuclear vault, "struck" at the cost of desecrating the "nuclear taboo", might cause the adversary to back down and negotiate. This is what French doctrine hopes to achieve with its "single, non-renewable nuclear warning" (see fig. 3): to escalate in order to de-escalate, so to speak (although such phrasing is highly shocking in France), and without, in theory, leaving oneself or the adversary any other choice – this is, if words have any sense, what means "a *final* chance to restore deterrence."[70]

[69] For an analysis that acknowledges the operation's dangerous consequences while noting that it may help increase pressure on Putin, see the *Washington Post* editorial board, "Operation *Spiderweb*'s Drone Attack on Russia Exposes All Air Bases," *The Washington Post*, June 1, 2025. See Katja Bego, "Ukraine's Operation Spider's Web Is a Game-Changer for Modern Drone Warfare. NATO Should Pay Attention," Chatham House, June 6, 2025, https://www.chathamhouse.org/2025/06/ukraines-operation-spiders-web-game-changer-modern-drone-warfare-nato-should-pay-attention. For a sharply critical assessment of the risks taken by Ukraine, see Ted Galen Carpenter, "Ukraine's Bomber Strike: A 'Win' That Risks Nuclear 'Russian Roulette,'" *National Security Journal*, June 4, 2025.

[70] Emmanuel Macron, "Speech by the President of the Republic on France's Nuclear Deterrence," 5.

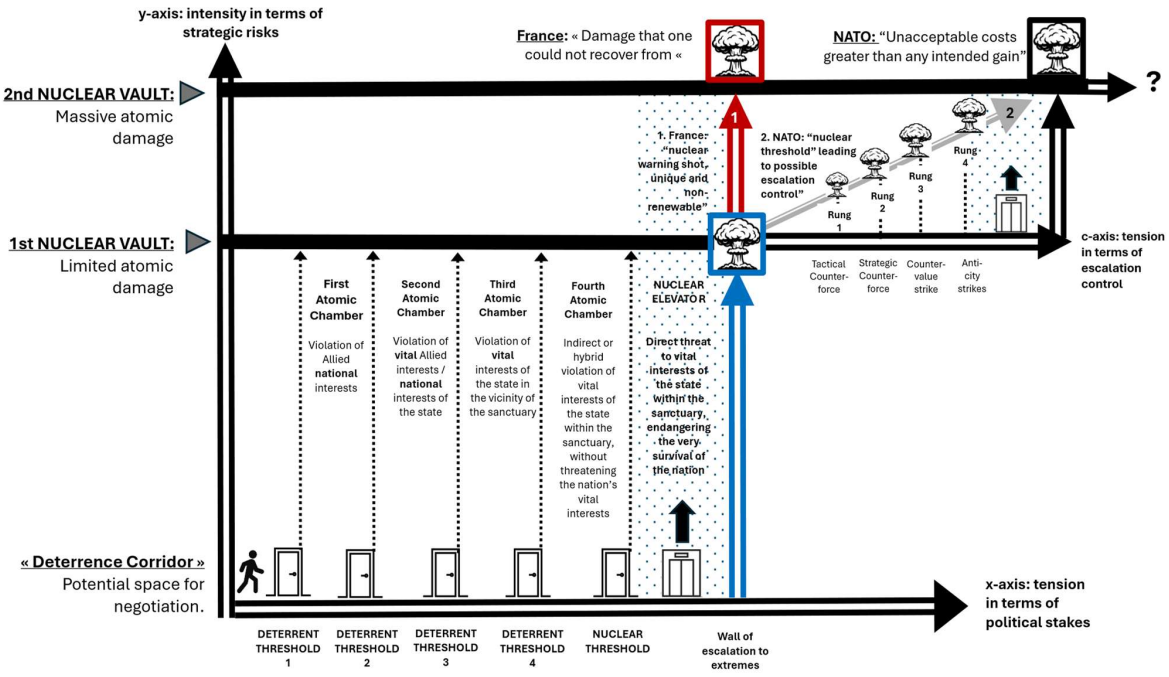


Fig. 3: The French way to "restore Deterrence" (O. Zajec, 2026)

For Russia, perhaps, and more certainly for NATO – which is increasingly influenced by the resurgence of counterforce and dominance-based escalation logic[71] – the outlook may be different. Controlling nuclear escalation would appear possible beyond the first strike, through the concept of a nuclear battle (see Fig. 4). "Unlike Armageddon," Colin Gray and Keith Payne asserted in 1980, "a nuclear war can have a wide range of possible outcomes."[72] The goal, as they suggested, would be to prevail in the clash of wills, even if it implies launching one atomic limited salvo after another, through dominance over escalation.

[71] See for example Matthew Kroenig, *The Logic of American Nuclear Strategy: Why Strategic Superiority Matters*, Oxford, Oxford University Press, 2018.
[72] Colin S. Gray and Keith Payne, "Victory Is Possible," 14. Michael Howard, among others, developed a critique of this argument. See Michael E. Howard, "On Fighting a Nuclear War," *International Security* 5, no. 4 (1981): 3–17. The subsequent debate is particularly interesting. See Colin S. Gray and Michael Howard, "Perspectives on Fighting Nuclear War," *International Security* 6, no. 1 (1981): 185–87.

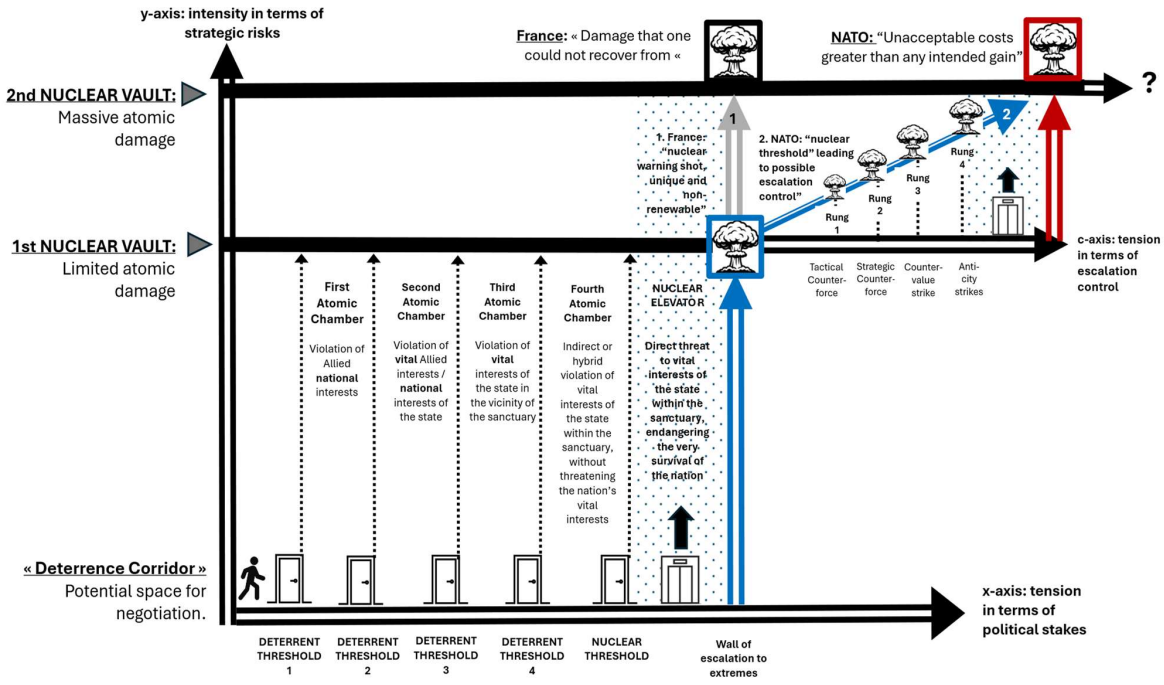


Fig. 4: NATO (and potentially Russian) way to manage the escalation (O. Zajec, 2026)

In both approaches, whether the French (parcimoniously defined and doctrinally more clearly articulated) or the NATO one, the question would be whether decision-makers were capable of overcoming the many obstacles associated with breaching the first nuclear vault in the minutes following the first operational use of nuclear weapons since August 1945. This entails conveying among "players" that nuclear use is *indeed* "limited", maintaining functional political and military communication channels, avoiding misinterpretations of the adversary's signals, and establishing a shared understanding of what constitutes a proportionate response. It also implies avoiding the trap of automatic reciprocity, preventing conventional operations from being interpreted as preparations for a further nuclear strike, and preventing the conflict from spreading to other actors. And this is not easy: the destruction of certain infrastructure, disruptions to communications, and pressure on military command structures may undermine leaders' ability to maintain control over their forces. Subordinate commands may overinterpret the instructions they receive. Alert procedures may be triggered inadvertently. Decision-making timelines may become so compressed that a thorough political assessment is no longer

possible. Which leaders are truly prepared to make decisions under such conditions of uncertainty and compressed timelines?

Is some of his works, Klaus Knorr examined states' ability to bring a nuclear confrontation to an end *after* the threshold of nuclear use had been crossed, through the development of nuclear disengagement mechanisms designed to enable adversaries to step back from a limited nuclear conflict[73]. His approach did not assume that nuclear war could be won; rather, it sought to make its termination possible. This, in turn, required an extraordinary degree of restraint and control in managing relations with the adversary, under conditions of extreme pressure. Herman Kahn himself invoked this notion of self-control, or even imperturbability, not merely in the context of disengaging from a limited nuclear conflict, but also as a condition for winning one, referring to the fact "(…) that with nerve and skill any sort of favorable asymmetry might be turned to bargaining advantage"[74].

Today's decision-makers and nuclear experts might have considerable nerve-and-skill aptitude; but it will perhaps not be sufficient in the post-Spiderweb conditions of the Third Nuclear Age. The aim is the same as it was in Cuba: convincing oneself that it is possible not to "lose" – that is, to avoid the direct path toward assured mutual destruction represented by the impact of the second vault, the one that shelters the entire edifice of what is called deterrence in the shadow of the Apocalypse, at the theoretical limits of "the absolute of the concept" (Clausewitz).

Which of the two doctrines evoked here – the "classical" French one, or the one now gaining traction among new generations of Atlanticist commentators and researchers that tends to favor the theory of a Russian "bluff" (and which may have influenced certain aspects of the doctrine of Mr. Macron's "forward deterrence") – is most consistent with what the term "limit" encompasses in the Third nuclear age? The model proposed here, which seeks to contribute to a broader understanding of

[73] Klaus Knorr, "Controlling Nuclear War," *International Security* 9, no. 4 (Spring 1985): 79–98. For an earlier formulation of the continuity between conventional and nuclear warfare, based on a logic of controlled escalation, see Klaus Knorr, *On the Uses of Military Power in the Nuclear Age* (Princeton, NJ: Princeton University Press, 1966), 97.
[74] Lawrence Freedman, *The Evolution od Nuclear Strategy* (New York: Palgrave Macmillan, third edition, 2003) 206.

the deterrence dialectic by articulating an analytical relationship between *deterrence thresholds* and *nuclear vaults*, based on a definition of different *atomic chambers*, does not provide definitive answers on this issue. But it does point to the likelihood of a number of possible escalation pathways, particularly in light of the developments in the war in Ukraine.

The nuclear threshold quandary still deserves frank and open debate. And yet, despite all the interpretive subtleties of which both atomic haruspices and nuclear accountants are capable, the central question of our time remains tragically simple: would the nuclear elevator stop after striking the first vault, allowing its passengers to disembark and enter a new corridor of horizontal deterrence? Or would it continue its vertical ascent at full speed toward a second vault, that is, a second impact – this time, the final one? "I'd like to think," Stephen Walt wrote in 2022, "that people with sharply contrasting worldviews could still agree that a nuclear war would ruin everyone's day and that there are no political objectives that would justify it."[75] In the current debate over the precise coordinates of Russia's nuclear firebreak, one sometimes gets the strange impression that certain political, military, or academic experts regard such a remark as an inappropriate form of Clausewitzian nostalgia, and would instead be willing to take considerable risks to resolve such a puzzle empirically.

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[75] Stephen M. Walt, "Ukraine Is the World's Foreign-Policy Rorschach Test," *Foreign Policy*, October 18, 2022.