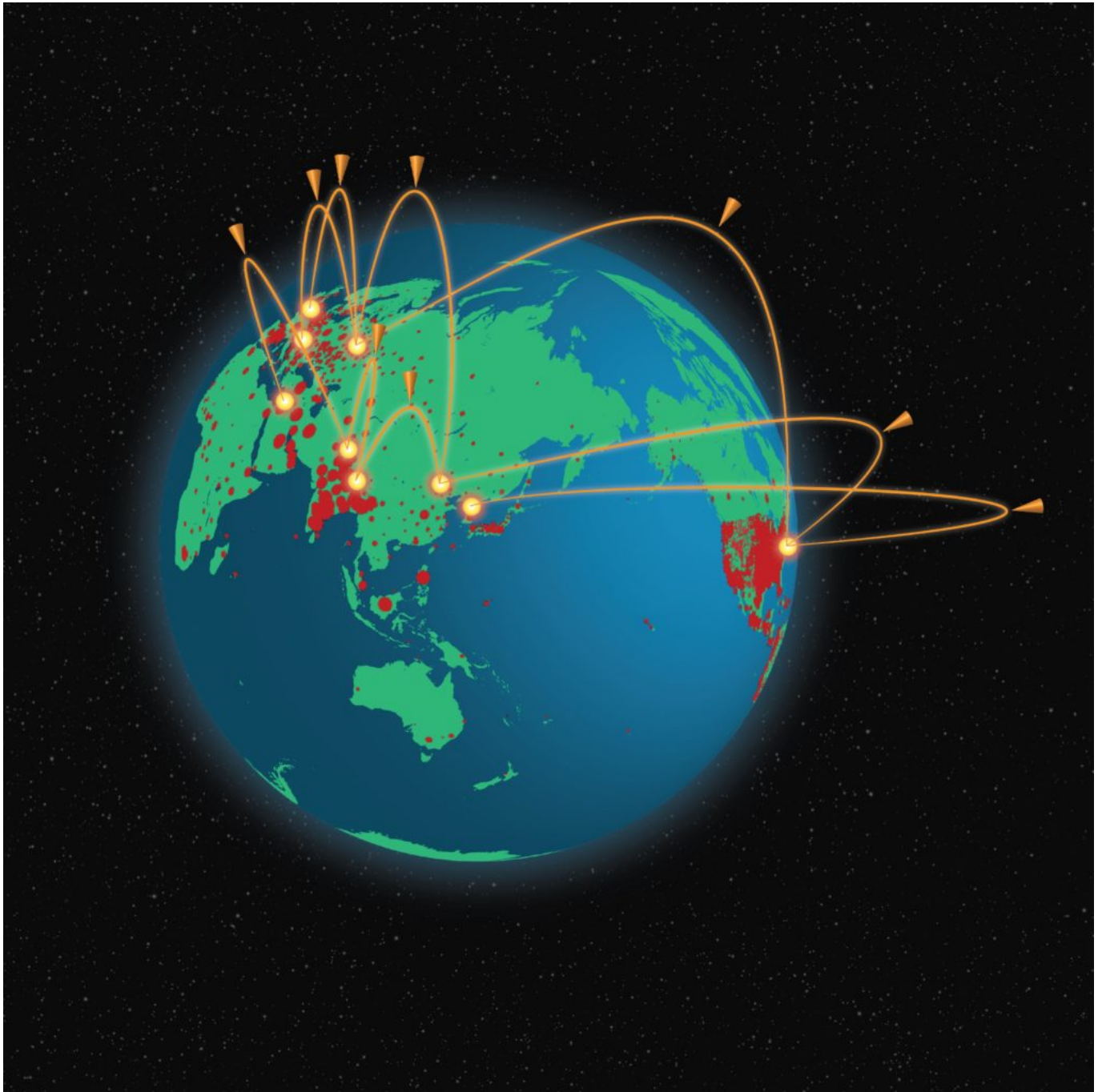


ASSESSING THE MODERNIZATION OF NUCLEAR POSTURES



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I. INTRODUCTION

In this essay, Petr Topychkanov examines the expanded roles of nuclear weapons in Asia Pacific in nuclear modernization strategies that emphasize nuclear options to respond to conventional and even cyber-attacks and lowering of the nuclear threshold.

The essay may be downloaded in PDF format [here](#)

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Banner image: Sophia Mauro for Nautilus Institute. This graphic shows the pandemic distribution from [COVID-19 Dashboard](#) by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU) on September 25, 2020; and the nuclear threat relationships between nuclear armed states.

II. NAPSNET SPECIAL REPORT BY PETR TOPYCHKANOV

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Abstract

The article examines the recent decisions taken by central nuclear-armed states to give expanded

roles to nuclear weapons in their military plans. The decisions reflect the increased salience of nuclear weapons in their national security strategies. It marks a reversal of the post-cold war trend toward the relative marginalization of nuclear weapons. Political and military leaders in these countries are moving away from the goal of limiting the nuclear weapons role to the sole purpose of deterring aggression with the use of the same type of arms. Instead, they are emphasizing nuclear options to respond to conventional and even cyber-attacks. This lowering of the nuclear threshold coincides with the stagnation of the nuclear arms control. Simultaneously, the political distrust grows between Russia and the USA, NATO, and also between the United States and China.

Changes in nuclear doctrines and force postures

The increase of salience of nuclear weapons is a visible trend among all nuclear-armed states.[1] The recent doctrinal changes tend to lower the nuclear threshold. In the regions of Europe, East Asia, and South Asia, the concept of limited nuclear war surfaces again after the years of abandonment. Political turmoil between nuclear-armed states and their allies and the introduction of new technologies add significantly to shocking the strategic stability relations of the countries, possessing nuclear arsenals. This part of the article explores the doctrinal changes in the nuclear-armed states that might make closer the risk of the first nuclear use.

Nuclear doctrines have a dual character. When discussing the nuclear doctrine, or strategy, observers sometimes describe under this both the doctrine and military plans, that are not always the same. As it was noted in a study on the Russian nuclear doctrine, “the usual practice is to draw a line between two aspects of military doctrine: the political and military-technical aspects. Until recently, the former aspect was regarded as the more stable one, while the latter, which determines the means, forms, and methods of warfare, as the more dynamic and changeable.”[2] However, this passage is relevant to any nuclear doctrine.

United States of America

The President Trump administration has approved the most recent nuclear doctrine of the United States in 2018. In comparison with the previous version of 2010, it made significant changes, mostly in response to growing threats from Russia, China, and North Korea, specifically to the alleged violations of the INF Treaty by the former. The document mentioned Russia’s so-called “escalate-t-de-escalate” concept and offered the US response to it.[3]

The doctrine witnessed the expansion of US flexibility regarding nuclear options, including low-yield ones. The rationale behind this, as explained in the text, is to preserve “credible deterrence against regional aggression.”[4] This change explicitly confirms that nuclear employment by the United States is possible in regional conflicts in sub-strategic scenarios.

In support of these changes, the nuclear posture announced the commencement of research and development of conventional ground-launched intermediate-range missiles.[5] In August 2019, less than three weeks after its withdrawal from the INF Treaty, the United States flight tested a modification of the Tomahawk ground-launched cruise missile from the Mark 41 Vertical Launch System.[6] Another flight test of a ground-launched ballistic missile of the intermediate-range happened before the end of 2019. The deployment of a new missile is possible in the near future in the Asian-Pacific region to deter China. Such a deployment is seen as desirable by US Defence Secretary Mark Esper.[7]

The Russian and Chinese reactions to these developments indicate these nations’ concerns about consequences of the lowered nuclear threshold and triggered an arms race.[8] However, the US nuclear posture states that these measures are defensive, reactive to the growing threats from

Russia, China, and North Korea, and makes nuclear employment less probable.

The unique character of the US nuclear posture is not only about a commitment to allies to use nuclear weapons to protect them from nuclear and non-nuclear threats, but also about an extensive list of threats, being deterred by the nuclear capabilities of the United States. The U.S. is only one of the nuclear-armed states that pretend to have effective deterrence against cyber threats.[\[9\]](#) Addressing the volatile security environment, the nuclear posture of the United States does not accept the concepts of no-first-use and sole purpose of nuclear weapons. It retains ambiguity regarding the concrete scenarios within which this country will use nuclear weapons.[\[10\]](#)

These changes in the US nuclear posture are accompanied by the US reservations regarding further bilateral limitations. The US president repeatedly indicated the desire to proceed with a trilateral nuclear arms control agreement with China and Russia.[\[11\]](#) Given China's refusal this format until all three countries have similar nuclear arsenals,[\[12\]](#) the risk of a nuclear arms control and disarmament dead-end is highly possible.

Russia

During the 1970s and 1980s, the Soviet Union, the predecessor of the Russian Federation, was a proponent of a no-first-use pledge.[\[13\]](#) In its first post-Soviet military doctrinal document "Basic provisions of the military doctrine of the Russian Federation" approved in 1993, a negative security assurance with two exceptions replaced this pledge. First, Russia reserved the right to strike first under an armed attack by a non-nuclear weapon state being in alliance with a nuclear weapon state. The second case was a joint aggressive action by a non-nuclear weapon state and an allied nuclear weapon state.[\[14\]](#) In both cases, there was an explicit reference to NATO as an alliance of non-nuclear weapon states and nuclear-weapon states

In the version of 2000, the military doctrine of Russia mentioned for the first time the concrete circumstances under which the country would use nuclear weapons. With some changes, these conditions remained the same in subsequent versions. In the most recent version of 2014, Russia reserves "the right to use nuclear weapons in response to the use of nuclear and other types of weapons of mass destruction against it and/or its allies, as well as in the event of aggression against the Russian Federation with the use of conventional weapons when the very existence of the state is in jeopardy."[\[15\]](#) The document mirrors the US posture in terms of protecting allies and responding to an extensive list of threats with the nuclear deterrent, except for cyber.

In the Western scientific and expert literature, it has become commonplace to argue, that the Russian nuclear doctrine is pre-emptive. The focus of the debate on the Russian pre-emption is on the concept of escalate-to-deescalate; in other words, plans for a limited nuclear strike to stop conventional aggression. Russian representatives officially and unofficially deny the existence of this doctrine.[\[16\]](#)

The escalate-to-deescalate concept is doubtful in the context of the Russia - U.S./NATO juxtaposition in the European region. There is a common belief in Russia that any armed conflict with the United States and NATO will be quickly escalated to the global and full-fledged nuclear war.[\[17\]](#) Vladimir Putin made the most recent statement about that in his Presidential Address to the Federal Assembly while commenting the low-yield nukes option of the US 2018 Nuclear Posture Review: "Any use of nuclear weapons against Russia or its allies, weapons of short, medium or any range at all, will be considered as a nuclear attack on this country. Retaliation will be immediate, with all the attendant consequences."[\[18\]](#)

On the other hand, there are indications of possibilities of Russian use of nuclear weapons pre-

emptively, regionally and in a conventional armed conflict. The military doctrine of 2014 portrayed nuclear weapons as an essential deterrent for “preventing an outbreak of nuclear military conflicts involving the use of conventional arms (large-scale war or regional war).”^[19] *The 2017 naval doctrine described the following role of tactical nuclear weapons: “During the escalation of military conflict, demonstration of readiness and determination to employ non-strategic nuclear weapons capabilities is an effective deterrent.”*^[20] *The most recent strategic exercise “Thunder 2019” had a scenario resembling the escalate-to-deescalate concept: “The situation escalates along the perimeter of the Russian borders amid the persisting conflict potential, as a result of which a threat emerges to the country’s sovereignty and its territorial integrity.”*^[21] *These examples show that Russia’s pre-emptive nuclear use in a regional conflict with conventional forces involved cannot be entirely dismissed.*

Meanwhile, the Russia’s leadership keeps describing Russia’s nuclear posture as defensive.^[22] *It combines the elements of the “launch-under-attack” and “launch-on-warning,” and some Russian authors describe it as a “reciprocal counter-strike.” How long the doctrine will remain defensive is unclear, given the demise of the INF Treaty and the risk of intermediate-range missiles deployment in Europe. These developments might cause a change of the defensive posture for an offensive one. In any case, the ambiguity of the Russian nuclear posture may grow.*

Russia is also developing and testing new offensive weapons. It has recently announced the Burevestnik nuclear-powered long-range cruise missile, the Poseidon nuclear-powered underwater drone, the Kinzhal air-launched supersonic missile, the Sarmat silo-based heavy ballistic missile, and the Avangard hypersonic glide vehicle.^[23] *It has reportedly already replaced 82 per cent of the weapons and equipment of the Strategic Rocket Forces with new systems.*^[24] *The US official position is that these weapons are destabilizing.*^[25]

China

For several decades after its first nuclear test in 1964, China maintained a restrained nuclear posture. The Chinese leadership assigned its nuclear weapons a “sole purpose” role, to be employed only in response to a nuclear strike.^[26]

The most recent nuclear doctrine of China of 2015 repeats the main principles of this restrained policy, including the no-first-use pledge and unconditional negative security assurances for non-nuclear weapon states and nuclear-weapon-free zones. The document highlighted the defensive character of the nuclear posture.^[27]

Reflecting these principles, China keeps its nuclear capabilities at the minimum level required for deterring probable adversaries. Chinese nuclear weapons probably do not need to be at high alert. China may have its nuclear warheads separated from delivery systems.^[28] The alert level will only change in crises.

However, some aspects may indicate the changing nature of China’s nuclear doctrine. Among the P5 countries, only China refuses to declare the scale of its nuclear arsenal. The state justifies this opacity by the small number of its nuclear weapons and their greater vulnerability if the number is disclosed. However, these explanations do not remove concerns about the growing size of China’s nuclear arsenal, which according to some assessments, could exceed the those of France and the United Kingdom.^[29] When China promises to join multilateral nuclear arms control when the nuclear arsenals of the United States, Russia and China will be of similar sizes,^[30] it suggests China’s unwillingness to join any arms control in a foreseeable future.

China’s practice of keeping the nuclear arsenal de-alerted in peacetime is uncertain. Beijing has

never confirmed this practice and never declared it as a de-alerting measure. In the absence of official statements, it is hard to assess open-source reports that China separates warheads from delivery systems.

In fact, the path of China's nuclear arsenal development may make this practice unfeasible. China pursues credible sea-based nuclear deterrence. Currently, it has four operational SLBM submarines of Type 094, and the next generation submarine Type 096 will be launched in 2020.[\[31\]](#) However, the SLBM submarines will be a credible deterrent only if nuclear-tipped missiles are on board. This development would mean the end of China's practice of de-mating warheads from delivery systems. Also, China pursues the replacement of silo-based liquid-fueled missiles with new mobile solid-fuel systems, such as three-stage missiles Dong Feng-31/AG (DF-31/AG) and Dong Feng-41 (DF-41). With the ranges of 11,200 and 12,000 km accordingly, these weapons may replace the obsolete silo-based ICBMs.[\[32\]](#) Again, the operationalization of the new mobile weapons would contradict the practice of de-mating warheads from delivery systems.

Another new development may be related to the possible replacement of the retaliatory posture with launch-on-warning. The 2013 edition of the Science of Military Strategy offered the following option: "If we can indeed confirm that the enemy has launched nuclear missiles against us, we can quickly launch nuclear missiles in retaliation, before the enemy's warheads reach and detonate over the targets to cause real damage to us."[\[33\]](#)

Shifting from the delayed retaliation to launch-on-warning would constitute a significant change in China's nuclear operation.[\[34\]](#) It would require early warning. The recent statement of the Russian president Vladimir Putin, who mentioned the ongoing cooperation between Russia and China on the space-based early warning, suggests China's interest in early warning capabilities.[\[35\]](#)

France

At first look, the nuclear posture of France is defensive, with a relatively high threshold. France's 2017 Defence and National Security Review, one of its most recent doctrinal documents, portrayed the nuclear arsenal as the last-resort weapon.[\[36\]](#) France signalled that there is no place for nuclear weapons in offensive scenarios.[\[37\]](#) The state does not intend to achieve any gains on the battlefield with nuclear weapons. France no longer has a nuclear triad. Its arsenal contains only air- and sea-based capabilities.[\[38\]](#)

On closer scrutiny, however, France probably has the highest level of ambiguity among the P5 countries regarding the circumstances under which it would employ nuclear weapons. Its doctrine states that the French nuclear deterrence capabilities protect France "from any aggression against our vital interests emanating from a state, wherever it may come from and whatever form it may take."[\[39\]](#) This has created fertile soil for speculation because the "vital interests" is a vague notion, even not directly linked to sovereignty.

Statements made by French officials indicated that the nuclear arsenal might be a deterrent against non-nuclear threats as well, including conventional and terrorist ones.[\[40\]](#) The planned nuclear modernization process in France during the next two decades, reflects concerns about emerging threats, such as cyber offence and anti-satellite capabilities.[\[41\]](#)

The correlation of France's nuclear posture with its membership in NATO causes additional ambiguity of France's nuclear policy. France's government sees its nuclear arsenal as a means for protecting common European "vital interests," and as contribution to global nuclear deterrence by NATO, along with the United States and the United Kingdom.[\[42\]](#) At the same time, France remains outside NATO's nuclear planning process. France is not a part of the NATO extended deterrence

posture. The concrete circumstances challenging European and NATO security under which France would employ nuclear weapons and how France would synchronize and measure its nuclear response in concert with the responses from other NATO allies therefore remains unclear.

United Kingdom

Unlike other nuclear-armed states, the United Kingdom has set a concrete unilateral limit on its nuclear stockpile: 180 nuclear warheads with 120 warheads operationally deployed in the mid-2020s. In comparison to United States, Russia, China, and France, the United Kingdom demonstrates a maximum level of transparency of its nuclear posture and capabilities vis-à-vis the non-nuclear weapon states. For instance, the UK became a core country of the Quad partnership investigating the role of non-nuclear weapon states in verifying nuclear-warhead dismantlement.[\[43\]](#)

In its 2015 National Security Strategy and Strategic Defence and Security Review, the UK reaffirmed a commitment not to use nuclear weapons against NNWS-parties to the NPT. However, the 2015 document stated that the government reserved the right to “review this assurance if the future threat, development or proliferation of these weapons make it necessary.” It also highlighted the continuous process of reviewing its nuclear posture “in the light of the international security environment and the actions of potential adversaries.” The UK did not rule out the first use of nuclear weapons.

The Strategic Defense and Security Review of 2015 kept some level of ambiguity regarding “precisely when, how and at what scale we would contemplate their use, in order to not simplify the calculations of any potential aggressor.”

The UK government’s standard practice is to have a ballistic missile submarine on deterrent patrol at any given time. The authorities claim that the missiles on the submarine are not on launch-ready alert.

The United Kingdom is currently replacing its Vanguard-class submarines with a Dreadnought-class. The first of the new class will enter service in the early 2030s. It is expected that the new class will constitute the backbone of the UK’s continuous at-sea deterrent into the 2060s.

India

India does not have an official nuclear doctrine. By the decision of the Cabinet Committee on Security (CCS) dated January 4, 2003, “India’s nuclear doctrine can be summarized as follows: 1) building and maintaining a credible minimum deterrent; 2) a posture of “no-first-use”: nuclear weapons will only be used in retaliation against a nuclear attack on Indian territory or on Indian forces anywhere; 3) nuclear retaliation to a first strike will be massive and designed to inflict unacceptable damage...”[\[44\]](#) Although India is committed to no-first-use of nuclear weapons and plans a retaliatory strike only, its nuclear forces are not yet survivable and reliable enough to endure a potential adversary’s nuclear attack.

India has declared that it will adhere to credible minimum deterrence policies. For India, the main goal is to prevent the use of WMD by another state. In the case of India, minimum nuclear deterrence requires: (a) sufficient, survivable and operationally prepared nuclear forces; (b) a robust command and control (C2) system; (c) capable intelligence and early warning capabilities; (d) comprehensive planning and training for operations in line with the strategy; and (e) the will to employ nuclear forces and weapons.[\[45\]](#) In attempting to increase the credibility and effectiveness of its nuclear weapons as a deterrent, however, India fails to limit itself to minimum deterrence. Also, since India does not currently possess effective second-strike capabilities (e.g. submarine-

launched ballistic missiles), and is actively developing its ballistic missile defence (BMD), many experts doubt that New Delhi adheres strictly to the NFU policy.^[46] If India's BMD architecture achieves completion, it might create a feeling among the political leadership of the national ability to intercept the majority of incoming missiles from Pakistan. It would potentially convince them to act more aggressively without fear of Pakistan's retaliation.

Pakistan

Pakistan has declared that it will adhere to minimum deterrence as well. As Pakistani Prime Minister Nawaz Sharif said on May 20, 1999, “nuclear restraint, stabilization and minimum credible deterrence constitute the basic elements of Pakistan’s nuclear policy.”^[47] For Pakistan, the goal is to prevent a war in which India uses WMD and conventional weapons against it.

In contrast to India, Pakistan plans to use its nuclear weapons not only against political and economic centres, but also against conventional forces in India’s territory, or in Pakistan’s territory, should India invade.

Pakistan’s deployment patterns change according to risks of pre-emption and interception. For example, Pakistan regards the US-India nuclear deal of 2008^[48] as creating a change in regional circumstances, because it allows India to improve its nuclear arsenal, and US cooperation helps India to develop its BMD systems. In response, Pakistan defends its right to increase the number of nuclear warheads in its arsenal and its nuclear delivery systems. This is why Pakistan refuses to support the CTBT or FMCT. According to some Pakistani experts, even if India signs and ratifies these treaties, Pakistan will not be interested in following suit.^[49]

There is a danger that India’s expanding capabilities in both defensive and offensive arms may provoke an asymmetric response on the part of Pakistan, including sabotage and terrorism. Pakistani experts realize that such a response would have an extreme destabilizing effect, but this choice can be driven by internal factors and implemented despite the experts’ opinion.

When nuclear-armed states are ready to strike first

A state’s readiness for the first use of nuclear weapons makes it an instrument of warfighting. An intention of using nuclear weapons first goes beyond the nuclear deterrence goal of preventing the adversary’s first strike via one’s own survivable retaliatory capabilities. First nuclear use is associated with disarming and decapitating attacks. The first nuclear strike capabilities may be seen as a response to adversary’s conventional superiority (by preventive strike means), and to the adversary’s disarming and decapitating strike capabilities (by pre-emptive strike means).

Putting the nuclear-armed states on a line from the most offensive nuclear posture to the least one, Pakistan would probably be first, and the United Kingdom would be last.

Pakistan’s nuclear arsenal has an unequivocally offensive nature with their exceptional reliance on the first use due to both strategic necessity and technical characteristics. Facing India's conventional superiority, doctrinal shifts, and political support for cross-border surgical strikes, Pakistan has to rely on the tactical nuclear weapons in several scenarios, including a hypothetical invasion by India.

Russia might be considered as a nuclear-weapon state, having the nuclear posture, the closest to the Pakistani one. Perceiving the variety of strategic offensive and defensive systems in the United States and its NATO allies as a threat to the Russian nuclear arsenal, the latter keep relying on nuclear weapons to face this challenge.

The third position tentatively belongs to the United States due to its objective situation and military capability. It has no incentive for the first use of nuclear weapons. However, the provisions of its doctrine and allied obligations result in at least declaratory reliance on the concept of the first use of nuclear weapons.

The US is followed by India, with its obligation of no-first-use. It is most likely that in practice it will continue to maintain the capability of disarming strike against Pakistan but be vulnerable for a counterforce strike by China. India assumed the obligation of no-first use to avoid provoking a pre-emptive strike on the part of China or Pakistan.

The fifth position goes to China. From the beginning, it assumed a declarative obligation of nuclear no-first-use without any reservation. However, China's retaliation strike capability is insufficient as compared to the superior forces of the US and Russia. Over time China will certainly accumulate such potential vis-à-vis the US and Russia and improve offensive (counterforce) capabilities of its nuclear forces.

The sixth is France, whose doctrine relies on nuclear deterrence for a wide variety of purposes, including the first use of nuclear weapons. Yet neither its nuclear forces nor its geostrategic situation, being a NATO member-state, implies either feasibility or necessity for first nuclear use.

The UK occupies the last position. The country has debated complete renunciation of nuclear weapons as well as first-use. The United Kingdom defines the idea of first use vaguely, probably deeming it unnecessary but trying to avoid additional political complications with the United States and NATO.

Finally, there is Israel and North Korea, which so far could not fit in the ranking for various reasons. As was mentioned above, nuclear doctrine has a dual meaning as a political document and operational plans. Since Israel keeps silence regarding its nuclear arsenal, it cannot have a public policy nuclear weapons on nuclear-weapon use. This is the main reason why discussion on the nuclear doctrine of Israel has to remain speculative. The only possible way to describe the posture is through the term of deliberate ambiguity.[\[50\]](#)

The North Korean case requires a particular focus. First, despite several official statements on nuclear weapons purposes,[\[51\]](#) this state lacks an official public nuclear doctrine. Second, having accepted denuclearization as a long-term goal, North Korea's leadership has agreed to the possibility of removing its nuclear arsenal from its strategic calculations, though in a distant future. Finally, North Korea continues building regional nuclear warfighting and nuclear inter-continental deterrence capabilities.[\[52\]](#) According to the Japanese official assessment of 2019, North Korea has miniaturized nuclear weapons to fit ballistic missile warheads.[\[53\]](#) How do these efforts reflect the military doctrine of North Korea, and how do they comply with the long-term denuclearization goal? These questions remain unclear so far.

To sum up, the military strategies of most nuclear-weapon states have lowered the threshold for the use of nuclear weapons.

Conclusion

The political and expert communities in nuclear-armed states must awake to the fact that, without progress towards a nuclear-weapons-free world, it will be impossible to curb the proliferation of nuclear weapons.

It is therefore in line with the long-term interests of nuclear-armed states to progress toward a

higher level of transparency of their nuclear doctrines and planning with regard to their strategic and non-strategic nuclear forces, their condition and development plans. This need is especially crucial in the context of the US-Russia-China relations to realize limitations of their strategic offensive arms.

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