

Chapter 4

Nuclear Weapon Policy and Nuclear Arms Control

A Reasonable Approach to Arms Control
under Great Power Competition

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U.S. B-2 stealth bomber capable of carrying nuclear weapons (Cristina Oliveira/U.S. Air/Planet Pix via ZUMA Press Wire/Kyodo News Images)

It is essential, in considering the prospects and challenges of the present-day “nuclear age,” to examine how the major nuclear-weapon states and other nuclear powers (de-facto nuclear-armed states) are pursuing strategic stability while improving their nuclear deterrence capability with any international nuclear order in mind. As discussed in the introduction, the “second nuclear age” has seen a significant reduction in the number of nuclear warheads over the past 30 years. Nevertheless, it was revealed that the warhead count is expected to increase, albeit marginally, by 2023. In the meantime, China is estimated to possess more than 1,000 nuclear warheads by 2030 under the circumstances of great power competition. The rise of China has created a need to discuss the emergence of a new international nuclear security environment, a world of “three nuclear superpowers.” Furthermore, a Russo-Ukrainian War is being initiated by Russia, the world’s largest nuclear-weapon state, to change the status quo by force backed by nuclear threats. In this “revival of nuclear weapons,” the legacies of the “first nuclear age”—the nuclear arms control treaties of the U.S.-Soviet, and the U.S.-Russia and the arms control treaties in Europe—have been on the brink of demise one after the other from the 2000s. Since the Cold War era, arms control played a role in achieving “crisis stability,” or the reduction of military incentives to strike the enemy first with nuclear weapons under crisis conditions. The outlook of what can compensate for this role is uncertain in the current “nuclear age.”¹

With the “long shadow of nuclear weapons” returning to the discussions on the international political stage, this chapter examines how the “nuclear age” is transforming and through what means strategic stability should be attained. Specifically, these questions will be analyzed by reviewing previous scholarship on the current focal issues of nuclear weapon policy, the nuclear doctrines of major nuclear-weapon states and other de-facto nuclear powers, and the arms control policies announced before and after the Russo-Ukrainian War. It then proposes a “reasonable approach to arms control under great power competition” for the new security environment.

Contemporary Nuclear Weapon Policy

Nuclear weapon policy, the focus of this chapter, is basically a generic term for declaratory policy related to the operation of nuclear weapons, including the no first use (NFU) policy, the “sole purpose of nuclear weapons” declaration, and negative security assurances (NSAs). It is also often mentioned in discussions about the future policy challenges of nuclear weapons, such as nuclear non-proliferation and reduction of nuclear

weapons.² Nuclear weapon policy thus covers a broader range of nuclear weapons issues than the term “nuclear doctrine,” which will be discussed in the next section.

Post-Cold War examples of nuclear weapon policy include the 1997 report by the U.S. National Academy of Sciences, *The Future of U.S. Nuclear Weapons Policy*. It discussed U.S. arms control against Russia, notably, nuclear force level reductions, controls on nuclear warheads, non-strategic nuclear issues, alert levels, targeting and operational doctrine, and ballistic missile defenses, coupled with U.S. nuclear weapon policy and non-proliferation issues, including involvement in multilateral treaties, NSAs, and counterproliferation measures.³ In addition, the 2009 report by the Council on Foreign Relations, “U.S. Nuclear Weapons Policy,” described strategies to keep nuclear weapons at the minimum necessary level while maintaining the credibility of nuclear deterrence, and to reduce the risks of nuclear proliferation and nuclear weapons use.⁴ More recently, in 2020, the U.S. Congressional Research Service released a commentary titled “U.S. Nuclear Weapons Policy: Considering ‘No First Use.’”⁵ U.S. government agencies have also used terms such as nuclear weapon policy and nuclear policy in similar contexts.⁶ As such, references to nuclear weapon policy can be found in primary and secondary sources. Contrary to what the above may suggest, the nuclear-weapon states it covers are not limited to the United States. This is evident in the Atlantic Council’s 1998 report, “French Nuclear Weapons Policy,” which dealt with dissuasion by nuclear weapons, no nuclear warfighting, nuclear weapons and European defense, and nuclear disarmament.⁷ Additionally, all of these nuclear weapon policies encompassed not only elements related to the operation of nuclear weapons but also a wide range of nuclear arms control, disarmament, and non-proliferation issues.

Among the issues of nuclear weapon policy, two concerning the conditions for use of nuclear weapons are highlighted. They are NSAs, which have drawn attention due to Russia’s invasion of Ukraine accompanied by nuclear threats, and NFU, which has long been adopted by China and whose prospects are being watched amid concerns over the surge in nuclear warheads during great power competition.

Nuclear Weapon Policy Issues

(1) Negative Security Assurances (NSAs)

NSAs, which have historically been a point of contention in nuclear weapon policy, refer to an assurance by a nuclear-weapon state that it will not use nuclear weapons against a non-nuclear-weapon state. Accordingly, NSAs

can be described as embodying aspects of nuclear non-proliferation policy, which is implemented as a security assurance to non-nuclear-weapon states in situations of heightened interest in and concerns about nuclear deterrence. Conversely, NSAs are closely associated with the strategic ambiguity on nuclear weapons use. As is succinctly presented in the draft final document (Paragraph 26) of the Nuclear Non-Proliferation Treaty (NPT) Review Conference from August 2022, NSAs are deemed today to contribute to building confidence in the nuclear non-proliferation regime, progress in nuclear disarmament, as well as improving the overall security environment.⁸

The principle of non-use of force has always existed, as is provided in Article 2(4) of Chapter I of the United Nations (UN) Charter: “All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations.”⁹ Based on this principle, non-nuclear-weapon states have frequently sought legally binding NSAs from nuclear-weapon states. Nonetheless, historically, NSAs provided by the five nuclear-weapon states (P5) have been confined to political declarations. For instance, during negotiations on the NPT, non-aligned countries demanded the inclusion of NSAs in the treaty’s text, while nuclear-weapon states insisted that they be treated in the context of UN actions. Ultimately, in United Nations Security Council (UNSC) Resolution 255 (1968), nuclear-weapon states no more than promised to provide positive security assurances (PSAs) to non-nuclear-weapon states, namely, to provide immediate assistance to non-nuclear-weapon states that are attacked by or threatened with nuclear weapons.

Subsequently, legally binding NSAs were introduced for the first time as a nuclear-weapon-free zone treaty in Additional Protocol II to the Treaty of Tlatelolco which entered into force in 1968. However, the United States claimed that attacks by a non-nuclear-weapon state working with a nuclear-weapon state were exempt from this provision.¹⁰ Although nuclear-weapon-free zone treaties have 116 non-nuclear-weapon states parties as of date, Russia has not ratified NSA protocols except for the Treaty of Tlatelolco and the Treaty of Rarotonga, and the United States has not ratified except for the Treaty of Tlatelolco, resulting in a limited involvement of nuclear-weapon states.¹¹

Meanwhile, NSAs have been discussed in an Ad Hoc Committee of the UN Conference on Disarmament (CD) since 1983, but it has not led to any concrete outcomes. In 1995, UNSC Resolution 984 concerning PSAs was adopted.¹² Coincidentally, this was the year when the indefinite extension of the NPT was decided, along with the package of political decisions, including

strengthening of the NPT review process and the objectives and principles for nuclear non-proliferation and disarmament. Non-nuclear-weapon states appeared to have approved the extension of the NPT in exchange for a commitment to the ultimate abolition of nuclear weapons.¹³ Against the backdrop of the indefinite extension, the P5 circulated pledges on NSAs to the UN General Assembly and the UNSC.¹⁴ In 1994, the UN General Assembly sought an advisory opinion from the International Court of Justice (ICJ) on whether the threat or use of nuclear weapons in any circumstance is permitted under international law. In 1996, the ICJ responded that, under the UN Charter and international humanitarian law as the primary applicable laws, threats based on illegal use of nuclear weapons were illegal, while stating that it could not reach a definitive conclusion as to the legality or illegality of such threats in an extreme circumstance in which the survival of a state is at stake.¹⁵ In the context of the NPT, the final document of the 2000 Review Conference reaffirmed the role of the Review Conference as a forum for discussing NSAs.¹⁶

On the other hand, there have been cases where nuclear-weapon states have made statements in their nuclear doctrine that are similar to the adoption of NSA policies. For example, the 2022 Nuclear Posture Review (NPR) specifies that the United States will not use or threaten to use nuclear weapons against non-nuclear-weapon states that are party to the NPT and are in compliance with their nuclear non-proliferation obligations.¹⁷ Similarly, “China’s National Defense in the New Era” (defense white paper) from 2019 declares that China will not use or threaten to use nuclear weapons unconditionally against non-nuclear-weapon states or nuclear-weapon-free zones.¹⁸

In summary, in addition to the principle of non-use of force in Article 2(4) of Chapter I of the UN Charter, the existing so-called NSA framework consists of: declaratory policies by nuclear-weapon states; nuclear-weapon-free zone treaties albeit limited in effect; NSAs by some nuclear-weapon states; and NFU policies discussed in the next section.¹⁹ Yet, as not all nuclear-weapon states have shifted from policies on strategic ambiguity to legally binding NSAs, there is critique that the NSAs remain inadequate.²⁰ Furthermore, Russia’s invasion of Ukraine has given rise to the view that NSAs should be granted to non-nuclear-weapon states in a more unflinching manner.²¹

Alongside these developments, the United States, the United Kingdom, and France released a joint statement in 2022 stating that, by ratifying protocols to nuclear-weapon-free zone treaties, they have undertaken legally binding obligations not to use or threaten to use nuclear weapons against states parties to the treaties.²² Additionally, at the NPT Review Conference

in August of that year, China was reportedly the only one of the P5 that supported the CD's negotiations on legally binding NSAs.²³ It is too early to assess whether they represent a first step toward building a new international nuclear order in the wake of the invasion of Ukraine. Nonetheless, the new moves surrounding NSAs by the P5 themselves are noteworthy.

(2) No First Use (NFU)

NFU policy refers to only using nuclear weapons in retaliation for a nuclear attack.²⁴ It is clearly distinct from NSAs which target non-nuclear-weapon states that do not possess nuclear weapons.²⁵ There are both arguments in favor of and against NFU's value. Proponents tend to emphasize the merits of adopting an NFU policy to reduce the risk of inadvertent nuclear war, such as miscalculated or accidental nuclear use.²⁶ Specifically, they note that NFU enhances crisis stability, allows nuclear-weapon states that adopted NFU to have a credible nuclear weapon policy, alleviates criticisms of missile defense and nuclear warhead stockpile management measures and, above all, provides political benefits to international nuclear non-proliferation efforts.²⁷ In contrast, those against NFU argue that the fear of escalation to nuclear war deters large-scale conventional wars and attacks using biological and chemical weapons.²⁸ Therefore, NFU pledges weaken the credibility of deterrence and diminish trust in extended deterrence for allies.²⁹ Critics argue that the escalation of conventional wars may ultimately increase the risk of nuclear weapon use, or that the change in declaratory policy will encourage nuclear proliferation.³⁰ As they show, both the arguments for and against the NFU nuclear weapon policy have aimed to enhance the stability of deterrence from different perspectives and have developed their discourse accordingly.

In the course of NFU's long history, it has been adopted into the respective nuclear weapon policies of China, Russia, and India. Since the Cold War, every time the United States debated whether to adopt NFU, the North Atlantic Treaty Organization (NATO) consistently opposed it, arguing that first use was the core instrument for reassuring allies.³¹ In the post-Cold War era, U.S. Secretary of Defense Les Aspin advocated for the adoption of an NFU policy to strengthen nuclear non-proliferation, stating that the superiority of NATO's conventional forces had diminished the need for nuclear weapons to deter and retaliate against Russian invasions in Europe. However, once again, an NFU policy was not realized.³² In recent years, NFU and similar nuclear posture policies have been discussed in the United States. Although past U.S. administrations adopted a policy of first use of nuclear weapons, in the 21st century both the Obama and Biden administrations considered the adoption of a "sole purpose of

nuclear weapons" policy. Sole purpose emphasizes that the fundamental role of nuclear weapons is to deter nuclear attacks.³³ However, neither administration has overturned the first use policy.³⁴ Russia, on the other hand, adopted NFU in 1982, which was perceived as rhetorical from the outset.³⁵ Russia withdrew its NFU policy after the Cold War in 1993 as its conventional forces became relatively inferior compared to NATO's.³⁶ At that time, President Boris Yeltsin of Russia expressed support for the principle of NFU during bilateral negotiations with China.³⁷

In terms of multilateral disarmament and non-proliferation, NFU has been included along with NSAs in the agenda (nuclear disarmament) of the NPT Review Conference. Furthermore, a sentence calling on nuclear-weapon states to adhere to an NFU policy and to negotiate and conclude a mutual NFU treaty was included in the "Draft Factual Summary" prepared by the Preparatory Committee for the 2026 NPT Review Conference held in 2023 (Paragraph 25).³⁸

Against this backdrop, new debates have emerged in recent years. In view of the anticipated surge in China's nuclear warhead count, some argue that a mutual NFU declaration between the United States and China should be made to enhance stability of deterrence which, by increasing transparency and avoiding misunderstandings, will help prevent inadvertent nuclear war.³⁹ Others advocate exploring a mutual U.S.-China NFU agreement that is limited to future Taiwan contingencies.⁴⁰

Regarding the sole purpose policy considered by the Obama and Biden administrations, one side claims that sole purpose is essentially the same as NFU,⁴¹ while the other side argues that sole purpose is fundamentally different from NFU.⁴² The latter side, including Nikolai Sokov and Ankit Panda and Vipin Narang, explains that whereas NFU establishes an explicit ex-ante constraint, sole purpose does not necessarily impose constraints on the use of nuclear weapons; rather, it is a statement about why the United States possesses nuclear weapons.⁴³

In any case, the fact that sole purpose became a focal issue of U.S. nuclear weapon policy twice in recent years suggests to some extent that the United States views it must reduce strategic ambiguity in nuclear weapon policy to enhance the credibility of nuclear deterrence and avoid the outbreak of an inadvertent nuclear war. It is worth recognizing anew that the United States nevertheless faces the harsh reality: the security environment is not one in which a sole purpose nuclear posture can be adopted.

In addition to the above, there is recent scholarship discussing an NFU policy that pays attention not only to nuclear but also to deterrence stability while aiming to minimize nuclear risks,⁴⁴ as well as research describing the benefits of an NFU policy from a realist approach in international politics.⁴⁵

With the rise of the three nuclear superpowers, it is time to reconsider NFU and its sole purpose and, from an academic perspective, delve deeper into what future circumstances would allow for the adoption of these policies and how they can be utilized to manage great power competitions over nuclear weapons.

As examined thus far, this section has focused on NSAs and NFU. Both are tied to the conditions for use of nuclear weapons by nuclear-weapon states and imply assurances to non-nuclear-weapon states, nuclear non-proliferation, and improvement in strategic stability. Yet, the processes for their adoption and formation of legally binding agreements have raised issues about maintaining strategic ambiguity in nuclear deterrence and providing assurance to allies. Taking these into consideration, the following section provides an overview of recent trends in the nuclear doctrines of major nuclear-weapon states and nuclear-armed states, while continuing to pay attention to the conditions for use of nuclear weapons.

Nuclear Doctrine and the Role of Nuclear Weapons

Nuclear doctrine determines the force structure, declaratory policy, and diplomacy of states possessing nuclear weapons.⁴⁶ In addition to the goals and missions that guide the deployment and use of nuclear weapons, it encompasses, *inter alia*, deterrence, target destruction, assurance of allies, and a hedge against an uncertain future.⁴⁷ Some scholars note that nuclear doctrine reduces the risk of escalation in case of deterrence failure, demonstrates survivability against escalation by hostile nations and, in the event of a nuclear war, plays a role in controlling escalation with minimum destruction in accordance with the law of armed conflict.⁴⁸ Alternatively, nuclear doctrine appears to illustrate the logic of how nuclear weapons build security.⁴⁹ Some also stress the need to constantly discern whether nuclear doctrine aligns with a state's external message and political strategy, and whether it reflects wishful thinking or propaganda, which is sometimes a difficult task.⁵⁰ Needless to say, nuclear doctrines must thus be examined from an objective perspective.

(1) First Use of Nuclear Weapons (United States, Russia, United Kingdom, France, Pakistan)

Under basic nuclear weapons policy, a first use policy means that a country will use nuclear weapons against an adversary that has launched an armed strike using means other than nuclear weapons. Scholars argue that the first use policy should be distinguished from preemptive strike, in which an attack using nuclear weapons starts a war when armed conflict had not

begun, or from disarming first strike, in which a preemptive nuclear strike inflicts devastating damage on an adversary's strategic nuclear forces.⁵¹ It should be noted that first use alone cannot act as a nuclear deterrence mechanism. For instance, unless a state possesses capabilities for a destructive retaliatory second strike against an adversary's strategic nuclear forces that can survive the adversary's preemptive strike or disarming first strike using nuclear weapons, the adversary may be further incentivized to use nuclear weapons.⁵² Such retaliatory second-strike capability with high survivability can be understood by considering the nuclear triad possessed by a number of nuclear-weapon states and nuclear-armed states, including the United States and Russia. The triad generally consists of intercontinental ballistic missiles (ICBMs) representing readiness, submarine-launched ballistic missiles (SLBMs) representing survivability, and strategic bombers representing flexibility. This triad has been considered to provide credible deterrence.⁵³

After the Cold War, a majority of nuclear-weapon states have adopted the first use policy. This suggests that the P5 apart from China, which has an NFU policy, and nuclear-armed states excluding India have pledged their right to use nuclear weapons first in particular circumstances. Indeed, some argue that nuclear doctrines and related policy documents impart a certain level of strategic ambiguity to the conditions for use of nuclear weapons by countries having the first use policy.⁵⁴ In light of the above, this section provides an overview of the nuclear doctrines of the P5 and other nuclear powers.

United States

The NPR has been prepared by successive U.S. administrations and published with partial information disclosure since 1993 from the early post-Cold War period. It explains the U.S. guidelines for the use of nuclear weapons. The first NPR was released in 1994 during the Bill Clinton administration. With the dissolution of the Warsaw Treaty Organization, the full implementation of the Intermediate-Range Nuclear Forces (INF) Treaty, and the signing of the Strategic Arms Reduction Treaty (START I), the United States was perceived at the time as the victor of the Cold War.⁵⁵ Perhaps to reflect such circumstances, the 1994 NPR set forth a policy of maintaining a sensible level of nuclear forces and reducing the role of nuclear weapons.⁵⁶ Against the backdrop of growing concerns about "rogue states" and terrorists acquiring weapons of mass destruction, the 2002 NPR published by the George W. Bush administration pledged that the nuclear triad would be transformed by a capabilities-based approach.⁵⁷ The 2010 NPR under the Barack Obama administration emphasized that the fundamental role of nuclear weapons remained unchanged: to reassure extended deterrence to allies

and partners. At the same time, it stated that while the United States would work to establish conditions for safely adopting a policy under which deterring nuclear attack is the “sole purpose of U.S. nuclear weapons,” the security environment did not yet allow for such a policy to be adopted.⁵⁸ The 2010 NPR stressed securing vulnerable nuclear materials



A U.S. Minuteman ICBM being test launched (Brittany Murphy/U.S. Space Force/ZUMA Wire/ZUMAPRESS.com/Kyodo News Images)

in view of the threat of nuclear terrorism, and advocated for nuclear arms reduction measures, such as early ratification of the Comprehensive Nuclear-Test-Ban Treaty (CTBT), a strengthened NSA, de-MIRVing ICBMs, and the elimination of sea-launched cruise missiles (SLCMs) with nuclear warheads.⁵⁹ The 2018 NPR published by the Donald Trump administration newly mentioned geopolitical challenges among great powers and reiterated the policy of first use of nuclear weapons.⁶⁰ Furthermore, it expanded the nuclear modernization policy, and announced plans to develop low-yield nuclear warheads for SLBMs and SLCMs with Russia in mind.⁶¹

In 2022, the Joe Biden administration released an NPR along with strategic documents, such as the “National Defense Strategy” and the “Missile Defense Review.” The 2022 NPR set out two fundamental principles: (1) maintaining a safe, secure, and effective nuclear deterrent and strong and credible extended deterrence; and (2) reducing the risk of nuclear war and the salience of nuclear weapons globally. The content was comprehensive and balanced, with attention directed to a new international nuclear order under geopolitical challenges and to nuclear disarmament norms.⁶² Specifically, it emphasized that as long as nuclear weapons exist, the fundamental role of U.S. nuclear weapons was to deter nuclear attack, and that the use of nuclear weapons would only be considered in extreme circumstances to defend the vital interests of the United States or its allies and partners.⁶³ On NSA, it stated that the United States would not wage or threaten to wage a nuclear attack against non-nuclear-weapon states that are party to the NPT and fulfill their nuclear non-proliferation obligations. It noted that, for all other countries, there was a narrow range of unforeseen circumstances in which nuclear weapons play a role in deterring attacks that have strategic effect.⁶⁴ In addition, the United States retained the policy of moving toward the goal of declaring the “sole purpose of nuclear weapons,”

and affirmed that it would work with allies and partners to identify concrete steps that would allow the United States to do so.⁶⁵

Furthermore, it was described that nuclear weapons undergird all U.S. national defense priorities, and that no U.S. weapon can replace the unique deterrence effects of nuclear weapons. It further stated that while the fundamental role of U.S. nuclear weapons was to deter nuclear attack, more broadly they deterred all forms of strategic attack, assured allies and partners, and allowed the United States to achieve presidential objectives if deterrence failed.⁶⁶ In addition to also sending a clear message to Russia and China in view of the invasion of Ukraine and their responsibilities as permanent members of the UNSC, the NPR highlighted measures to advance the goal of reducing reliance on nuclear weapons even in an increasingly severe security environment. These measures included enduring improvement in the security environment, a verifiable arms control agreement among the major nuclear-weapon states, and progress in the development of non-nuclear capabilities. Notably, it rejected hedging against an uncertain future as a role of nuclear weapons.⁶⁷ This stance was, for example, mentioned in the 2017 NPR⁶⁸ and has been observed in recent debates surrounding the United Kingdom’s nuclear doctrine.⁶⁹ On nuclear weapons systems, the 2022 NPR called for the cancellation of the SLCM program, while it continued modernization programs, such as ICBMs, strategic bombers, air-launched cruise missiles (ALCMs), and W-93 nuclear warheads, and retained the low-yield W-76 nuclear warhead for SLBMs initiated by the previous administration. Some criticized this decision.⁷⁰ However, others have assessed that these measures in the NPR were not outside the realm of sound decisions in the context of the great power competition.⁷¹

The 2022 NPR’s mention of facing China as a near-peer geopolitical competitor along with Russia has been a subject of various debates. For example, Matthew Kroenig suggests that the United States should develop a strategy to deter both competitors simultaneously by increasing U.S. nuclear forces beyond the levels in the New Strategic Arms Reduction Treaty (New START), thereby denying mutual vulnerability between the United States and China, as well as by developing flexible non-strategic nuclear capabilities and operational concepts through the deployment of long-range standoff weapons and SLCMs carrying nuclear warheads.⁷² Edward Geist acknowledges that, after New START expires in 2026, the United States would still have the “upload hedge” option, meaning re-loading nuclear warheads that were previously designated for stockpiles onto strategic delivery vehicles. However, he argues that it is not necessary to increase the number of nuclear warheads if, for example, the United States uses remote

sensing or other intelligence means to ascertain the location of China's ICBM silos and pursues development of non-nuclear ICBM silo killers.⁷³

Opinions are also divided on the decision not to adopt sole purpose in the 2022 NPR, which drew attention for its contrast with the 2010 NPR. Scott Sagan points out that the policy of nuclear ambiguity has ceased to serve the national security interests of the United States after President Obama's speech in Prague in 2009.⁷⁴ On the other hand, Matthew Costlow argues that U.S. calculated ambiguity contributes to deterring increasing strategic non-nuclear threats (threats of chemical, biological, and conventional weapons), giving U.S. leaders the freedom of action in times of crisis or conflict and assuring allies and partners, and therefore, the first use policy should continue to be maintained.⁷⁵

Russia

Russia has frequently revised its military doctrine and national security concept in the post-Cold War period.⁷⁶ For instance, the 1997 national security concept allowed for the use of nuclear weapons if the existence of the Russian Federation as an independent sovereign state was under threat. The military doctrine unveiled in 2000 mentioned the use of nuclear weapons in situations critical to the national security of the Russian Federation. The 2010 military doctrine explicitly stated that Russia reserved the right to use nuclear weapons in response to the use of nuclear or other weapons of mass destruction against Russia or its allies, as well as in the event of aggression using conventional weapons that threatens the existence of the state.⁷⁷

In 2020, Russia released its first public document with nuclear deterrence in the title, "Basic Principles of State Policy of the Russian Federation on Nuclear Deterrence." According to the document, Russia positions nuclear weapons solely as a "means of deterrence." It stated that Russia's nuclear deterrence policy "is of a defensive nature, aimed at maintaining the potential of nuclear forces at a level sufficient to ensure nuclear deterrence" and distinguished between nuclear deterrence and conventional deterrence. Particularly significant is the document's listing of conditions for use of nuclear weapons. They included (1) "the use by an adversary of nuclear weapons or other weapons of mass destruction on the territories of the Russian Federation and (or) its allies," (2) "aggression against the Russian Federation with the use of conventional weapons when the very existence of state is in jeopardy," and the newly added (3) "the receipt of reliable information about the launch of ballistic missiles attacking the territory of the Russian Federation and (or) its allies" and (4) "adversary actions affecting critically important state or military objects of the Russian Federation, the

disablement of which could lead to the disruption of retaliatory actions by nuclear forces."⁷⁸ Some assess that this 2020 public document provided more details on aspects of Russia's nuclear deterrence that were previously ambiguous and showed consistency with the country's nuclear policy over the past 20 years.⁷⁹ Some suggest that the principles underlying Moscow's nuclear doctrine are actually close to those of Western nuclear-weapon states.⁸⁰ Others point out that Russia's nuclear doctrine lacks provisions similar to those in the U.S. NPR, including a provision on not conducting nuclear attacks or threatening to use nuclear weapons against non-nuclear-weapon states that are party to the NPT, and therefore, a wide range of first use scenarios must be considered with Russia in mind.⁸¹

There have been several notable developments surrounding Russia and nuclear weapons even after the end of the Cold War. In 2009, for example, Nikolai Patrushev, secretary of Russia's Security Council, mentioned the first use of nuclear weapons against aggressors using conventional weapons in large-scale, regional, or local wars.⁸² Additionally, the 2000 Russian military doctrine discussed "escalate to de-escalate" (E2DE) as including the use of nuclear weapons in the early stages of a conflict to induce a cessation of hostilities.⁸³ Underlying such discussions may have been international concerns about Russia's low level of nuclear transparency.⁸⁴ Moreover, some note that Russia has recently shifted from dependence on nuclear escalation toward "strategic deterrence," or the use of a combination of nuclear forces, conventional forces, and non-military means and capabilities, such as information, to protect national security interests from external threats, and that E2DE had become practically a myth.⁸⁵

Nonetheless, it cannot be denied that Russia's nuclear policy continues to stir controversy in the international community. In an unprecedented move to counter the NPR of the Trump administration, President Vladimir Putin announced in his 2018 annual address to the Federal Assembly the development of six types of weapons for strategic deterrence, including hypersonic weapons, and garnered international attention.⁸⁶ Since around 2014, before withdrawing from the INF Treaty in 2019, the United States had expressed concerns regarding Russia's development of the SSC-8 ground-launched cruise missile (known as 9M729 in Russia), stating that it



Russia's Avangard hypersonic glide vehicle (Sputnik/Kyodo News Images)

constituted a violation of the treaty.⁸⁷ When Russia annexed Crimea in 2014 and invaded Ukraine in 2022, President Putin and other Russian senior officials often made remarks that could be interpreted as nuclear threats. As tensions rose around the Zaporizhzhia nuclear power plant, which Russia militarily occupied, concerns grew that it may use a “false-flag attack” on the pretext of a nuclear terrorist attack by Ukraine.⁸⁸ Furthermore, Moscow’s announcement of a new nuclear sharing policy with Belarus during the Russo-Ukrainian War triggered a calm response from NATO countries with a history of nuclear sharing arrangements, as well as concerns toward Russia from non-aligned countries that have long been critical of such policies.⁸⁹ Amidst these developments, the U.S. State Department criticized Russia for breaching New START, citing cancellations and delays in inspections and consultative meetings. Then, in February 2023, Russia announced the suspension of its participation in the treaty.⁹⁰ In October of the same year, President Putin indicated that he would give approval to the State Duma to de-ratify the CTBT in order to pressure the United States, which had still not ratified the treaty. This move was strongly criticized as a self-destructive policy.⁹¹

Russia’s nuclear policy appears to have transformed substantially in recent years given the circumstances of the “revival of nuclear weapons.” However, as recent cases involving New START and CTBT reveal, Russia may not necessarily seek to withdraw from all arms control treaties and enter into an unrestricted arms race with the United States. As such, the changes in Russia’s nuclear policy must continue to be monitored alongside the developments in the Russo-Ukrainian War.

United Kingdom

Throughout the post-Cold War period, the United Kingdom has been regarded as being closest to nuclear disarmament among the P5. Furthermore, it has viewed itself as a “disarmament laboratory,” as epitomized by not only its nuclear arms reduction but also its technical initiatives, such as dismantlement and verification of nuclear warheads.⁹² Following the retirement of the WE177 Type B nuclear bomb in 1998, the United Kingdom consolidated its nuclear weapons and strategic delivery vehicles into the SLBM Trident II D-5 and missile submarines.⁹³ Accordingly, while maintaining the minimum nuclear deterrent necessary for providing effective deterrence, the United Kingdom set an example by reducing nuclear weapons capabilities and demonstrated a commitment to multilateral nuclear disarmament and non-proliferation efforts.⁹⁴ The 2010 “Strategic Defence and Security Review” revealed that the country would reduce the nuclear warhead stockpile ceiling from no more than 225

to no more than 180 by the mid-2020s, reduce the number of warheads onboard four Vanguard-class missile submarines from 48 to 40, reduce the requirement for operationally available warheads from fewer than 160 to no more than 120, and reduce the number of operational missile tubes from 16 to no more than eight.⁹⁵

Yet, in “Global Britain in a Competitive Age: The Integrated Review of Security, Defence, Development and Foreign Policy” published in 2021, following Britain’s withdrawal from the European Union (BREXIT), it was announced that the country would increase the nuclear warhead stockpile ceiling to 260 in order to maintain the minimum destructive power to assure credible and effective nuclear deterrence against threats from any direction.⁹⁶ It further explained that the United Kingdom would maintain a deliberately ambiguous strategy about “precisely when, how and at what scale we would contemplate the use of nuclear weapons.” Moreover, it stated that, although the use of nuclear weapons would be limited to extreme circumstances of self-defense and the country would not use or threaten to use nuclear weapons against non-nuclear-weapon states that are party to the NPT, this would not apply to non-nuclear-weapon states in violation of the NPT.⁹⁷

In “Integrated Review Refresh 2023: Responding to a More Contested and Volatile World” released in 2023, it was explained that the use of nuclear weapons would only be considered in extreme circumstances of self-defense, including defense of NATO members, and that there was no change to the NSA policy. However, the fundamental principles of nuclear deterrence in the 2021 Integrated Review were retained.⁹⁸ As discussed above, alongside voluntary reduction and shrinkage of nuclear forces and weapons systems, the country has carried out visible arms control and disarmament efforts as part of its quiet withdrawal from the role of nuclear force host nation under NATO’s nuclear sharing arrangements. The United Kingdom still has the smallest number of nuclear forces among the P5. Meanwhile, the country would be only second after China in terms of nuclear-weapon states that increased the number of nuclear warheads in the post-Cold War period. While the magnitude of the increase differs considerably between the two countries, its political significance may not be small.

France

France defines nuclear deterrence as the ultimate guarantee of the country’s “sovereignty” and “security, protection and independence of the Nation.”⁹⁹ This view has also been articulated clearly in recent speeches by President Emmanuel Macron: “[nuclear deterrence] ensures our independence, our freedom to assess, make decisions and take action. It prevents adversaries from

betting on escalation, intimidation and blackmailing to achieve their ends.”¹⁰⁰ Regarding France’s robust and credible nuclear deterrent, the 2022 “National Strategic Review” states: “The effectiveness of French deterrence policy depends on its political, operational and technical credibility. This is reflected in a high state of readiness and long-term capability commitments.” At the same time, it notes that, taking into account the advances in technology and the unfolding of hybrid forms of conflict globally, France must constantly consider the expanding capabilities of its competitors and hybrid forms of action in peacetime.¹⁰¹



French Navy’s Triomphant-class nuclear submarine (Reuters/Kyodo)

France overhauled its nuclear forces after the Cold War, reducing the number of nuclear warheads from 540 to 290. As for strategic delivery vehicles, ground-based medium-range ballistic missiles were deactivated in 1996. As a result, the country’s nuclear arsenals now consist only of nuclear warheads mounted on land-based aircraft and carrier-based aircraft, and SLBMs carried by strategic nuclear submarines that provide a continuous at-sea deterrence.¹⁰² While France has reintegrated into NATO, it still does not participate in NATO’s Nuclear Planning Group (NPG).¹⁰³ Meanwhile, throughout the post-Cold War period, France has reiterated its willingness to independently provide nuclear deterrence to Europe. Even in recent years, President Macron has made similar calls for “European strategic autonomy,” and such activities have come under the spotlight.¹⁰⁴ Having reduced one-third of its nuclear forces since the Cold War, some speculate that France may not join future arms control agreements that call for further reductions.¹⁰⁵

Pakistan

Pakistan, which conducted nuclear tests in 1998 and declared possession of nuclear weapons, is another country that reserves the right of first use of nuclear weapons. Although it is a nuclear-armed state outside the NPT framework and is in a different position from the P5 examined above, Pakistan’s nuclear doctrine has made a notable evolution in recent years. The country employs strategic ambiguity in its nuclear weapon policy.

The nuclear doctrine is made public not through documents but through, *inter alia*, statements by political leaders and announcements via the military’s media.¹⁰⁶ Issues that have been watched closely include minimum credible nuclear deterrence, buildup of nuclear arsenals through recent years, production of fissile material for weapons, and investment in sea-based retaliatory second-strike capability. This has raised speculations that Pakistan will shift to a more complex deterrence posture. Its focus on short-range ballistic missiles has prompted disputes that the system of nuclear authority will change from centralized control to delegated command. Subjects of debate have even included whether Pakistan would, if attacked by an adversary’s conventional forces, adopt a nuclear deterrence strategy that does not shy away from rapid tactical nuclear retaliation against both military and non-military targets (asymmetric escalation strategy).¹⁰⁷

Against this backdrop, retired Lt. Gen. Khalid Kidwai of the National Command Authority, a body in charge of research and development and other matters concerning nuclear weapons, delivered an address in 2023 at the Institute of Strategic Studies Islamabad which drew significant attention. He emphasized the strength of Pakistan’s nuclear weapon policy and nuclear triad to deter non-nuclear limited war. In such a war, envisaged to be India’s Cold Start doctrine, unified battle groups are swiftly mobilized to conduct operations within Pakistani territory without crossing the nuclear threshold. Furthermore, he described the advantages of Pakistan’s full-spectrum deterrence policy to deal with all threats from India, and explained the genesis of this deterrence policy from both vertical and horizontal dimensions. Specifically, he discussed that the destructive power of nuclear weapons would enable Pakistan’s army, navy, and air force to cover a range from 0 meters to 2,750 kilometers and the three tiers of strategic, operational, and tactical.¹⁰⁸ Some raise concerns that lowering the nuclear threshold from that in the traditional nuclear doctrine will compromise the stability of deterrence.¹⁰⁹ Pakistan, like India, is not a party to the NPT and has neither signed nor ratified the CTBT. While it supports commencing negotiations on the Fissile Material Cut-off Treaty (FMCT), Pakistan is known for advocating that existing stockpiles also be covered by the treaty, in contrast with other nuclear-weapon states or nuclear-armed states.¹¹⁰

(2) Destabilizing NFU Policies (China and India)

This section examines countries which have adopted NFU policies. As already mentioned, two states have declared an NFU policy as of writing: China and India. Historically, China is considered to be the only nuclear-weapon state to adopt an unconditional NFU policy and to maintain a posture of not using nuclear weapons first under any circumstances.¹¹¹

China

China's nuclear doctrine is said to have not changed once since its first nuclear test in 1964, whereas its military doctrine on conventional forces has been revised nine times since the country was founded. In addition, no clear relationship is observed between China's conventional and nuclear forces. Its declaratory policy states that China will use nuclear weapons only for retaliation in the event of a nuclear attack.¹¹² Nevertheless, a host of previous scholarship has expressed skeptical views on the validity of China's NFU policy.¹¹³

The recent attention on China's nuclear forces may have been triggered by the U.S. Department of Defense's "Military and Security Developments Involving the People's Republic of China," an annual report forecasting China's rapid nuclear buildup. The 2023 report estimated that China possessed a stockpile of more than 500 operational nuclear warheads by May 2023, and that it will deploy over 1,000 operational nuclear warheads at high readiness levels by 2030. Furthermore, it estimated that China will continue to build up nuclear forces to achieve basic modernization of the People's Liberation Army (PLA) by 2035 under President Xi Jinping's goal to turn it into a world-class military by 2049.¹¹⁴

Conversely, according to "China's National Defense in the New Era" 2019 defense white paper, China is committed to an NFU policy of not using nuclear weapons first under any circumstances. It also provides NSAs by pledging not to use or threaten to use nuclear weapons against non-nuclear-weapon states or nuclear-weapon-free zones unconditionally. With regard to nuclear arms control and disarmament, it advocates the ultimate complete prohibition and thorough destruction of nuclear weapons, and states that China does not engage in any nuclear arms race with any country. Additionally, the paper describes that China keeps its nuclear forces and posture at the minimum level required for national security and pursues a nuclear strategy of self-defense, noting that the purpose of possessing nuclear forces is to deter other countries from using or threatening to use nuclear weapons.¹¹⁵

However, as China has never explained its nuclear strategy systematically, U.S. prior scholarship has striven to decipher it through the prisms of minimum deterrence and China's unique assured retaliation strategy.¹¹⁶ Liping Xia explains four schools have attempted to offer their own interpretations on China's nuclear strategy. The first school attempts to understand it as a doctrine based on minimum deterrence centered around NFU and support for nuclear disarmament. The second school steps beyond minimum deterrence by considering China's nuclear deterrence theory as being outside Western nuclear strategic concepts, such as not intending

to use nuclear weapons as offensive weapons and neither requesting nor providing extended deterrence. The third school claims that there are discrepancies between the wording of China's nuclear doctrine in English and Chinese, and understands it as a strategy of countering nuclear coercion, not minimum deterrence. The fourth school views that, in order to evolve the limited nuclear deterrence doctrine into a comprehensive nuclear deterrence doctrine, China seeks to pursue a doctrine capable of deterring conventional, theater, and strategic nuclear war and of controlling and suppressing escalation of nuclear war.¹¹⁷

Yet, in recent years, China has rushed to build fast breeder reactors and reprocessing facilities¹¹⁸ and has become the only country among the P5 to oppose the moratorium on the production of weapon-grade fissile material. Furthermore, it has constructed significantly more ICBM silos, as revealed by satellite image analysis. While not all of them must be filled with ICBMs,¹¹⁹ they are seen as evidence supporting China's substantial increase in nuclear warhead number as far as capability is concerned.¹²⁰ As regards strategic delivery vehicles, the reported testing of a fractal orbit bombardment system from a hypersonic glide vehicle (HGV) has increased doubts about whether China will adhere to its NFU policy based on retaliatory second strikes.¹²¹ Some suggest that China is building up its nuclear forces, believing that more robust nuclear arsenals will give it greater freedom and reduce the risk of being forced into some form of capitulation by the United States.¹²² Others speculate that the buildup may indicate China's attention to nuclear-armed states other than the United States.¹²³ In addition, as was already discussed, some argue that in future strategic talks between the United States and China, both countries should mutually declare NFU to each other and to their allies for strategic stability.¹²⁴ Moreover, amid growing concerns about the destruction of nuclear weapons systems by cyberattacks or long-range precision strikes, there are arguments that China should prioritize building a mutual deterrence relationship with the United States over the Taiwan Strait. There are also discussions suggesting that the enhancement of ballistic missile defense (BMD) requires China to further expand its ICBM forces. Others analyze that, if mutual NFU policies are agreed upon between the United States and China, and if the United States refrains from building up its nuclear forces and deploying BMD systems, China may not need to increase the number of nuclear warheads, which could open up room for nuclear arms reduction.¹²⁵

China has been seen as long enjoying third-party strategic benefits from bilateral nuclear arms control treaties between the United States and Russia. However, China had no involvement in such treaties, and when the United States proposed a trilateral 21st-century arms control model among the

United States, China, and Russia in 2020, the Chinese Ministry of Foreign Affairs immediately rejected it citing the size of China's nuclear arsenals as the reason.¹²⁶ Against this backdrop, a number of future U.S.-China (or U.S.-China-Russia) nuclear arms control proposals have been floated. One model deems that Chinese land-based INF Treaty-range missiles and U.S. air-based INF Treaty-range missiles include nuclear and conventional warheads and are similar in scale. The respective missiles would be combined flexibly, and their numerical ceiling would be equal. A second proposal calculates China's land-based INF Treaty-range missiles and U.S.-Russian strategic nuclear weapons according to the number of launchers and set an equal ceiling for both, which would facilitate negotiations for a trilateral arms control agreement among the United States and Russia, which have superior strategic nuclear weapons, and China, which has outstanding INF Treaty-range missile forces.¹²⁷

At the First Committee of the 76th session of the UN General Assembly in 2021, China declared it would commit to peaceful development and a nuclear strategy of self-defense. Additionally, in 2022, the director-general of the Department of Arms Control of the Chinese Ministry of Foreign Affairs stated that China was taking steps to modernize its nuclear forces rather than expanding its nuclear arsenal.¹²⁸ While such statements have been issued, it has been pointed out that China's rapid buildup of nuclear forces in recent years diverges considerably from its traditional policies, and this cannot be overlooked.¹²⁹ Moreover, deployment of nuclear weapons that does not align with stated goals or lack discipline and restraint could lead to changes in China's nuclear goals in the future. Critics argue that such lack of clarity sends mixed signals to adversaries.¹³⁰ Under the present circumstances, it may be difficult to take China's statements about modernizing its nuclear forces at face value.

India

India, which has conducted nuclear tests outside the NPT framework and declared possession of nuclear weapons in 1998, has announced that it adopts an NFU policy like China. India's NFU was put into writing in 2003 by the "Cabinet Committee on Security Reviews Progress in Operationalizing India's Nuclear Doctrine."¹³¹ This document spelled out India's nuclear doctrine as follows: (1) India will build and maintain a credible minimum deterrent; (2) NFU nuclear weapons will only be used in retaliation against a nuclear attack on Indian territory or on Indian forces; (3) nuclear retaliation to a first strike will be massive and designed to inflict unacceptable damage; (4) nuclear retaliatory attacks can only be authorized by the civilian political leadership through the Nuclear Command Authority; (5) nuclear weapons

will not be used against non-nuclear-weapon states; however, in the event of a major attack against India or Indian forces by biological or chemical weapons, India will retain the option of retaliating with nuclear weapons; (6) India will continue to implement strict controls on the export of nuclear and missile related materials and technologies, participate in the FMCT negotiations, and observe the moratorium on nuclear tests; and (7) India will continue to commit to the goal of a world without nuclear weapons through global, verifiable, and non-discriminatory nuclear disarmament.

As seen above, India's nuclear doctrine articulated an NFU policy from the outset, but at the same time, it left open the possibility of using nuclear weapons first, stating that the country will retaliate with nuclear weapons against attacks by biological or chemical weapons. Even after the release of the above document, amid tensions in India-Pakistan relations and other factors, Indian senior officials made remarks that seem to add strategic ambiguity to the NFU policy.¹³² Since 2003, India has invested significant resources into developing and acquiring highly responsive and accurate strategic delivery vehicles and BMD beyond those expected for retaliatory second-strike capability. Moreover, statements by Indian senior officials and others (including former senior officials) calling for the adoption of preemptive nuclear strike options due to their strategic advantages, suggest that India is pursuing flexible nuclear options other than countervalue in view of Pakistan's long-range nuclear weapon system.¹³³

India, which shares borders with China and Pakistan—hostile nuclear-weapon state and nuclear-armed state—has faced regional competition under the "long shadow of nuclear weapons" for over two decades. Accordingly, despite the recent changes in the strategic nuclear environment, India's intention behind maintaining NFU may remain a focal issue in the coming years, including revision of India's NFU policy.¹³⁴

The nuclear doctrines of major countries have been surveyed thus far. In several cases, their focal point was whether an NFU policy was adopted. Yet, as this chapter illuminates, many countries ultimately chose a first use policy, and all of them are committed to modernizing their nuclear forces to maintain and strengthen nuclear deterrence, albeit on varying scales. With a few exceptions, there appears to be little common ground among them, including the importance they attach to nuclear weapons, their approach to arms control, and their policy on nuclear weapons reduction.

The international nuclear dynamics are becoming increasingly complex, and partially due to limited transparency, what appears on the surface may not represent the reality. Despite these difficulties, the international dynamics may be described as follows for simplicity. (1) The United States, the United Kingdom, and France are focused on modernizing their nuclear

weapons while aiming to maintain the status quo by strengthening arms control. (2) Russia does not actively want to enter into a nuclear arms race, but it has withdrawn from arms control treaties that it finds unfavorable and is increasing its reliance on nuclear deterrence. (3) China distances itself from U.S.-Russia arms control negotiations, is working to enhance its nuclear forces, and appears to be trying to establish its own place in the new international nuclear order. (4) As emerging nuclear-armed states, India and Pakistan are building up their nuclear arsenals under their own logic which differs from Cold War-era deterrence theories.

The following section examines the historical background of arms control treaties that are now in a crisis of demise. It attempts to analyze prescriptions that may be effective in the current circumstances by drawing insights from leading arms control discourses, mainly in literature published in around 2020.

The End of Arms Control Treaties and a New Search for Strategic Stability

The Continued Transformation of Arms Control

What kind of measures has arms control entailed historically, and what strategic implications have they had in the “nuclear age” of less than 80 years? Until the 20th century, most arms control measures in the international community were imposed by victors on defeated nations, and arms control negotiations were conducted to achieve a clear objective. However, during the Cold War when the world entered the nuclear age, a new strong mutual interest in avoiding nuclear war manifested in U.S.-Soviet arms control negotiations. As a result, the formation of arms control agreements aimed at stabilizing the “balance of terror” is considered to have fundamentally shifted toward agreements self-enforced by the parties.¹³⁵ Since the 1960s, various benefits of arms control have been discussed through discourses on strategic stability, comprised of crisis stability (stability of preemptive strike) and arms race stability.¹³⁶ Some described that arms control, by freezing, limiting, reducing, or eliminating specific weapon types and by preventing military activities and regulating troop deployments, has been beneficial in reducing the risk of accidental war and slowing down and increasing the predictability of an arms race.¹³⁷ Some have suggested that, if war breaks out, arms control narrows the scope of its objectives and violence,¹³⁸ while others have argued that arms control can mitigate the negative effects of the “security dilemma,” which can escalate interstate tensions and increase the

probability and severity of crises, potentially leading to war.¹³⁹ Arms control during the Cold War was valued for these reasons. Akiyama Nobumasa classifies the motives of arms control negotiations into disarmament, stability, and the pursuit of superiority. He contends that these objectives have been influenced by “structural compatibility,” consisting of international great power relations dynamics, technological innovations, and decision-making systems in response to external pressures.¹⁴⁰

However, praising arms control unequivocally may not necessarily be a correct approach if the history is considered. As Donald Brennan pointed out at the end of the 1950s, while arms control was often regarded as improving the security environment, thereby potentially leading to risk reduction, it also undeniably raised alarms about the emergence of new, complex, and unpredictable risks.¹⁴¹ This argument cannot be neglected even today, particularly in examining the background of some nuclear-weapon states’ and nuclear-armed states’ passivity toward arms control.

There are various interpretations of what is broadly meant by strategic stability, or the overarching concept of crisis stability and arms race stability. Frank Harvey defines strategic stability as a “catch-all expression” designed to stabilize the historic nuclear rivalry to prevent nuclear exchanges between the United States and Russia. According to Harvey, it encompasses: (1) a set of interrelated concepts, such as mutual assured destruction (MAD); (2) academic theories, such as nuclear deterrence; (3) policies, such as massive retaliation strategies, flexible response strategies, and NFU; and (4) arms control treaties, such as the Anti-Ballistic Missile (ABM) Treaty.¹⁴² In recent years, many scholars and practitioners also discuss strategic stability from a wider perspective beyond preventing nuclear exchanges. For example, Bruno Tertrais defines strategic stability as the absence of incentives for large-scale aggression, the clarity of intents and the predictability of behavior, and the respect for sovereignty and absence of interference in domestic affairs.¹⁴³ Dmitri Trenin describes strategic stability as including the avoidance of military confrontation between nuclear-armed states; the management of global competition; unilateral and parallel restraint in deployments of nuclear weapons and nuclear doctrines; and communications, confidence-building measures, and conflict-prevention mechanisms to enhance stability in the absence of arms control.¹⁴⁴ James Acton criticizes that the concept of strategic stability has been abused in the absence of an agreed definition. He argues that the definition was overly narrow in the Cold War discourse on crisis stability. Due to a strong tendency to discuss preemptive strike stability arising from easily quantifiable technical characteristics of strategic offensive capabilities, other factors such as emotion, pressure, miscalculation, and poor communication were underestimated. However, he contends that

crisis stability implications of recent technological trends, such as high-precision conventional forces and missile defense, cannot be neglected, and therefore, the world today needs a strategic stability concept that takes these factors broadly into account.¹⁴⁵ C. Dale Walton and Colin S. Gray list a number of points that strategic stability today should consider, including the impact of social, economic, technological, and religious trends, the fluidity of international events, consideration of extreme violence at times, understanding of a stability continuum (strategic stability and instability are not absolute conditions), and the understanding that strategic stability may not necessarily be increased through arms control.¹⁴⁶ As the above reveals, recent years have seen increasing debates on strategic stability that extend beyond the context of nuclear strike. It is noteworthy that much of this discussion has included factors such as enhancing predictability, managing competition, and building confidence, which have been expected and discussed as the benefits of arms control since the “first nuclear age.”

The question of what fueled the end of arms control treaties is reexamined next. To stabilize the “balance of terror” during the Cold War, a series of diplomatic negotiations were conducted on U.S.-Soviet arms control, which resulted in drastic reductions of nuclear arsenals around the end of the Cold War.¹⁴⁷ The verifiable agreement-based INF Treaty and START I and the unilateral disposal of tactical nuclear weapons by both the United States and Russia under Presidential Nuclear Initiatives (PNIs) and other arrangements produced tangible outcomes. On the one hand, START I incorporated provisions for the balance of strategic nuclear forces between the United States and the Soviet Union. On the other hand, it introduced provisions that were relatively advantageous to the United States and was thus regarded as “arms control at the conclusion of conflicts” to cement the vanquisher’s superiority.¹⁴⁸ Subsequently, as the United States became increasingly unipolar and the former U.S.-Soviet bipolar structure rapidly receded, Russia reacted against the U.S. shift from traditional strategic stability to countering the spread of “rogue states.” As a result, some point to a clear correlation between the pronounced emphasis on nuclear non-proliferation and the slowing momentum of U.S.-Russian nuclear arms control and disarmament.¹⁴⁹ Meanwhile, during the 2000s, Russia saw its power wane and sought to assert its status as a major power, utilizing U.S.-Russian arms control as a means to challenge the U.S.-led international order and conduct soft balancing.¹⁵⁰ Some argue that the Obama administration, which advocated for a “world without nuclear weapons,” focused primarily on nuclear non-proliferation and counter-nuclear terrorism and that their driver was nuclear disarmament.¹⁵¹ Others view that nuclear war is the only existential threat to the United States, which overwhelms other countries

with non-nuclear forces. They opine that while proposals for nuclear arms control or nuclear non-proliferation toward a “world without nuclear weapons” offer a range of advantages, Russia did not necessarily enjoy the same advantages as the United States during the Obama administration.¹⁵²

The above observations also denote that the end of arms control treaties was underpinned mainly by the gradual erosion of the political and military momentum to maintain the treaties since the end of the Cold War, which can be attributed to U.S. and Russian actions in terms of arms control treaties and the changes in the international security environment.¹⁵³ As was mentioned in the introduction, since the turn of this century, the ABM Treaty was terminated in 2002 and the INF Treaty in 2019, and New START’s implementation was suspended by Russia in 2023. The INF Treaty and New START cover intermediate-range nuclear forces with ranges from 500 to 5,500 kilometers and strategic nuclear forces with ranges exceeding 5,500 kilometers, respectively. Therefore, through 2020, U.S. and Russian leaders explored negotiations for a new successor treaty involving China or the United Kingdom and France. However, the United States and Russia possess nearly 4,000 nuclear warheads each, including stockpiles, while the United Kingdom, France, and China have only around 300 to 400 warheads each. Numerical caps on their weapons could require unequal limits similar to those of the Washington Naval Treaty of 1922.¹⁵⁴ Furthermore, it should be noted that where there is much uncertainty over the prospects for the future balance of power amid great power competition, it has been said that nuclear-weapon states will not necessarily have a high incentive to form arms control agreements and fix the distribution of nuclear forces with military and political elements.¹⁵⁵

Another point worth considering, which this chapter will touch on again, is the emerging argument in the United States that nuclear superiority should be reasserted with the two near-peer competitors in mind. During the Cold War, efforts aimed at nuclear superiority were eventually replaced by pursuing strategic stability through the introduction of mutual vulnerability and arms control.¹⁵⁶ Conversely, in the face of China’s nuclear buildup, “upload hedge” is being debated in the United States as has already been mentioned. Upload hedge means that undeployed nuclear warheads are uploaded on strategic delivery vehicles up to the maximum number beyond the New START limits through the 2030s.¹⁵⁷ Moreover, some note that such U.S. moves toward nuclear superiority, even if they are in response to China’s nuclear expansion, could prompt Russia to increase its nuclear warhead numbers if the United States exceeds the limits of New START.¹⁵⁸ Furthermore, if the United States, China, and Russia increase their nuclear warhead numbers, it could domino into further nuclear expansion by India,

which views China as a potential adversary, and by Pakistan, which is in a hostile relationship with India.¹⁵⁹ If this were to happen, the impact on the international nuclear order and nuclear non-proliferation regime could be catastrophic. Nuclear deterrence is not a matter that can be argued based on the number of nuclear warheads.¹⁶⁰ Some have also pointed out that it is logistically challenging to address effective deterrence against the existence of two near-peer competitors.¹⁶¹ However, even if the United States were to adhere to the strategic nuclear deployment limit set by New START at 1,550 warheads, concerns may grow that it may not be sufficient to deter both Russia and China in the future.¹⁶² From this perspective, pursuing superiority and maintaining the status quo are both expected to face dilemmas over time.

Yet, amid the “revival of nuclear weapons” and the intensification of great power competition, the nuclear weapon policies of major states are highly unlikely to include unilateral and significant nuclear reduction initiatives as epitomized by the 1991 U.S.-Russian PNIs at the end of the Cold War,¹⁶³ or a proposal for a one-third reduction of U.S. strategic nuclear forces which President Obama mentioned in his Berlin speech in 2013 when negotiations on New START’s successor agreement were at a standstill.¹⁶⁴ According to a scholar, a growing sentiment pervades in the U.S. Senate not to ratify any treaties that do not increase U.S. superiority. Meanwhile, China and Russia cannot be politically incentivized to participate in treaties that unilaterally benefit the United States, further dimming the prospects for the formation of fair and balanced arms control treaties that require each party to make appropriate compromises.¹⁶⁵ Conversely, it suggests that the parties see less advantages of participating in arms control agreements by conducting treaty negotiations and even accepting such compromises. In June 2023, U.S. National Security Advisor Jake Sullivan stated that the number of U.S. nuclear weapons does not necessarily have to exceed the combined number of nuclear weapons of its competitors for effective deterrence against Chinese and Russian nuclear weapons, and that the United States will seek to establish a global agreement specifying that artificial intelligence (AI) programs will not be used to authorize the use of nuclear weapons without a human in the decision-making loop.¹⁶⁶ His remarks were groundbreaking, offering considerable insights for contemplating future arms control approaches.

Albeit not nuclear weapon treaties, which are the main focus of this chapter, and thus their detailed discussions are deferred to elsewhere, there are also other arms control treaties on the verge of crisis. They include the Conventional Armed Forces in Europe Treaty that Russia has suspended since 2007 and officially withdrew from in 2023. Additionally, the United

States withdrew from the Treaty on Open Skies in 2020, citing alleged Russian treaty violations, and Russia initiated withdrawal procedures in 2021.

New Arms Control Discourses

As seen above, even arguments for shifting toward nuclear superiority are gaining traction amid the “revival of nuclear weapons” and great power competition. In this context, what should be the future direction of arms control, a means that had been considered beneficial for strategic stability in the nuclear age? In examining this question, it is worth referring to the active debates that have transpired among scholars and practitioners regarding nuclear weapon policies based on the positions and perspectives of hawks and doves since the Cold War period.

In the “first nuclear age” in the United States, clashes unfolded between the hawks, who argued for building up nuclear forces in number and type, and the doves, who argued for their reduction.¹⁶⁷ The most important point here is that both hawks and doves advocated for nuclear weapon policies that would avoid a nuclear war which could destroy civilization. Generally, hawks are viewed as pursuing “peace through strength” by seeking nuclear superiority to mitigate the risk of nuclear war, while doves are regarded as proponents of stability through arms control, citing concerns that excessive armament could instill fear of attack in the adversary.¹⁶⁸

Yet, according to David Cooper, the classical deterrence-centric arms control concept and its diplomatic practices over the years reveal not the arguments made by hawks or doves but rather a “middle path,” or owls in the middle ground between hawks and doves. This approach emphasizes that arms control policies should continue to be pursued as “guardrails” to prevent inadvertent nuclear war which no one wants, and as a strategy to “buy time” until geopolitical circumstances improve.¹⁶⁹ Graham Allison, Albert Carnesale, and Joseph Nye, who provided the definitions of hawks and doves mentioned above, describe these owls as being concerned with inadvertent nuclear war occurring due to the situation spiraling out of control. In response to such risks, owls advocate for measures that avoid crises and strengthen nuclear deterrence controls, noting that non-rational factors can degrade the rational decision-making process for nuclear deterrence in urgent crisis situations. Following Russia’s invasion of Ukraine, Nye has published a paper on revisiting nuclear ethics. In it, he proposes that ten principles are key for avoiding nuclear war: (1) maintain a credible nuclear deterrent; (2) improve conventional deterrence; (3) enhance crisis stability; (4) reduce the impact of inevitable accidents; (5) develop procedures for war

termination; (6) prevent and manage crises; (7) invigorate non-proliferation; (8) limit misperceptions through improved communication; (9) pursue arms control negotiations; and (10) reduce reliance on nuclear weapons over time.¹⁷⁰ In the current situation in which the “revival of nuclear weapons” and great power competition put the fate of the nuclear age in question, owls’ logic appears to be a rational approach that gives consideration to wide-ranging factors, from the maintenance and improvement of deterrence, to the avoidance of inadvertent nuclear war and the pursuit of arms control and nuclear non-proliferation.

In any case, owls have emphasized avoiding crises by maintaining credible deterrence to enhance crisis stability, along with holding regular bilateral discussions and communication among all nuclear-weapon states to mitigate the impact of accidents and strengthen crisis management.¹⁷¹ Many states possessing nuclear weapons would probably find the aforementioned benefits of participating in arms control agreements to be relatively acceptable. Among these various crisis avoidance measures, attention should be paid again to the hotline as one that seems straightforward to initiate. Hotline agreements have been seen as a means to prevent inadvertent nuclear war since the Cuban Missile Crisis. Following the memorandum between the United States and the Soviet Union in 1963 and their hotline modernization agreement in 1971, hotline agreements were concluded between France and the Soviet Union in 1966 and between the United Kingdom and the Soviet Union in 1967. In 1987, Nuclear Risk Reduction Centers were established in the U.S. and Soviet capitals to enhance communication channels for avoiding crises. In 1998, the United States and China as well as China and Russia agreed to establish hotlines. China and India also entered into a similar agreement. In 2004, a hotline was established between the foreign ministries of India and Pakistan to prevent misunderstandings that could lead to nuclear war.¹⁷² In addition to these, the establishment of hotlines was also announced between North Korea and South Korea in 2008 and between Taiwan and China in 2015.¹⁷³ However, it is an entirely different matter whether these hotlines will function effectively in crisis situations once again following the period of “nuclear forgetting” after the end of the Cold War.¹⁷⁴ In this context, recent studies calling for increased communication channels between nuclear-weapon states for nuclear risk reduction offer implications that cannot be ignored.¹⁷⁵

So far, this article has outlined three camps of arms control thinking. But what are the policy debates of contemporary arms control studies? The following section attempts to analyze major arms control discourses of recent years by classifying them broadly into three categories: (1) nuclear war avoidance and deterrence-oriented approach; (2) international norms-

oriented approach; and (3) a “world without nuclear weapons” approach. It should be noted in advance that the United States is often the subject in prior studies on arms control arguments.

(1) Nuclear War Avoidance and Deterrence-oriented Approach

First, the “integrated arms control” argument that was published in the United States just prior to the Russian invasion of Ukraine in 2022 is worth mentioning. Rebecca Hersman and others called for integrated arms control that is flexible, which would contribute to enhancing strategic stability, and that is sustainable and operates across multiple technologies and actors.¹⁷⁶ Subsequently, in the wake of Russia’s invasion of Ukraine, Heather Williams, a co-author of the “Integrated Arms Control in an Era of Strategic Competition” report, along with Nicholas Smith Adamopoulos, underscored the need to revise conventional arms control and risk reduction measures, which are designed to lower the chances of inadvertent escalation in the presence of an actor who intentionally escalates crises and uses nuclear weapons for coercion.¹⁷⁷ With regard to new integrated arms control, they emphasized the importance of: (1) customizing arms control to match deterrence requirements; (2) formulating short-term risk reduction measures; (3) promoting allies’ strategic priorities; (4) continuing the U.S. strategic modernization policy; and (5) maintaining a competitive edge in emerging technologies while exploring arms control opportunities.¹⁷⁸ With two strategic competitors in mind, integrated arms control is designed to function in tandem with “integrated deterrence” that is articulated in the Biden administration’s National Security Strategy. This theory is an approach that looks at new aspects of arms control that differ from the focus of previous U.S.-Soviet or U.S.-Russia agreements, such as confidence-building and legally binding mechanisms to verify compliance with treaties.¹⁷⁹

The integrated arms control theory’s argument for short-term risk reduction measures that do not rely on arms control treaties and its negotiations can also be found in other arms control arguments. Linton Brooks, for example, discusses new arms control policies, while emphasizing strategic stability and arms control for preventing nuclear war. Amid the end of arms control treaties, he calls for all forms of cooperation that prevents nuclear war and increases crisis stability, as well as a policy that returns to the concept of arms control without adhering to the traditional form of treaties, including increasing transparency and predictability, maintaining parity between the United States and Russia, engaging nuclear-weapon states in strategic stability, meeting the obligations under Article VI of the NPT, and holding strategic discussions among the P5 plus India and Pakistan.¹⁸⁰ In this vein, Alexander Graef and Tim Thies also note that arms

control in a non-cooperative environment changes the costs of escalation, increases confidence in strategic stability, and helps manage the global power transition. However, they suggest that cooperative arms control is unlikely to be realized in the near future, and under an increasingly multipolar strategic relationship, the goal of arms control will likely revert to risk reduction, prevention of full-scale nuclear war, and management of an arms race. Accordingly, they advocate for promoting China's engagement in multilateral arms control, ensuring the resilience of command, control and communications (C3) systems, and specifying the role of precision-strike weapons.¹⁸¹ The above prior scholarship all have "risk reduction" and "strategic discussions" as keywords and attempt to achieve strategic stability and avoid nuclear war by departing from the traditional form of arms control treaties. Furthermore, they provide important insights into short-term prescriptions for preventing inadvertent nuclear war.

Meanwhile, it is necessary to mention the study of the deterrence-focused type of arms control as another facet of the aforementioned integrated arms control. Matthew Kroenig describes that it would be difficult to demand verifiable and transparent arms control from China, which has a strategic culture that stresses secrecy and deception and has little experience in arms control negotiations. He suggests that a quantitative parity between U.S. and Chinese nuclear forces would be undesirable for the U.S. nuclear deterrence strategy and that China would have little motive to conclude an unequal treaty. He calls for maintaining the U.S. nuclear superiority and giving China more opportunities to learn about arms control, such as through U.S.-China strategic stability talks and inviting Chinese officials to participate in New START verification activities.¹⁸² Keith Payne and Michaela Dodge argue that in order to obstruct the threat of first use of nuclear weapons against the United States, it must pursue flexible nuclear weapons policies and arms control that allows it to maintain and enhance a force posture that is adaptable and scalable to change.¹⁸³ John Maurer supports arms control treaties that make no distinction between nuclear weapons and emerging technologies and help shape and strengthen one state's interests and offset the advantages of the adversary, and sharply criticizes that associating the success of arms control with peace and international cooperation distorts the correct understanding.¹⁸⁴ Timothy Crawford and Khang Vu consider arms control as a means of coordinating great power relations, particularly as a means of driving a wedge to prevent the formation of a hostile coalition, and explain that the United States should use arms control to weaken the China-Russia strategic alliance.¹⁸⁵

All of the above can be understood as arms control studies that take into account the U.S. nuclear deterrence strategy and pursue relative gains, as

advocated by the neorealist school of international politics.¹⁸⁶ However, if too much emphasis is placed on gains over competitors, there is concern that China and Russia may not find their own interests in the goals advocated by these arms control theories, making the prospects for consensus formation itself uncertain.

(2) International Norms-oriented Approach

Next, a number of prior scholarship will be cited to introduce recent arms control discourses that focus on a more normative perspective. The first is Michael Moodie and Jerry Zhang's discussion of a "multi-stakeholder" arms control approach. According to their argument, as arms race stresses rise in a hostile geopolitical environment and prospects for arms control and other multilateral cooperation become increasingly uncertain, successful arms control initiatives are expected to bring about long-term economic and strategic benefits for major countries and contribute to strengthening global governance. In contrast, failure to reinvigorate arms control could have adverse effects on norms and institutions that are core components of the international system and intensify competitive stresses.¹⁸⁷ Therefore, they argue that reinvigorating arms control in today's geopolitically contested security environment requires long-term engagement from major powers, the adoption of a multi-stakeholder approach involving non-major powers and international organizations, and a reconceptualization of the fundamental tenets of arms control.¹⁸⁸

A joint statement issued in May 2023 by the European Leadership Network and the Asia-Pacific Leadership Network raises alarm about the challenges of maintaining international norms, noting that worsening great power competition will make it even more difficult to advance nuclear arms control and risk reduction solely within the NPT framework.¹⁸⁹ Specifically, it calls on the P5 to hold strategic stability talks at a variety of levels and to resume strategic risk reduction talks. It also urges the United States and Russia not to exceed the New START limits on deployment of strategic nuclear weapons, and proposes to CTBT signatory and non-ratifying states



The third meeting of the International Group of Eminent Persons for a World without Nuclear Weapons in Nagasaki City, Nagasaki Prefecture, December 8, 2023, which affirmed that "sage is indispensable" to nuclear disarmament (Kyodo)

to make concerted efforts toward a moratorium on nuclear testing and the entry into force of the treaty.¹⁹⁰

The 2022 study by Lotje Boswinkel and Paul van Hooft, which presents an arms control discourse in Europe under geopolitical competition, argues for a shift from normative disarmament approaches that were mainstream in the post-Cold War period when arms control and disarmament were the trend, to approaches centered on strategic stability and competitive advantage under the tense geopolitical environment of recent times.¹⁹¹ Furthermore, it suggests that the ultimate goal of arms control is to prevent nuclear escalation, and emphasizes the need to reconsider NATO's dual-track approach to enhance strategic stability, shift strategic calculations and bring adversaries to the negotiating table, and simultaneously strengthen the knowledge base for deterrence and arms control that includes the insights of the European public.¹⁹²

Another example of such international norms-oriented discourse may be the "IGEP Message to the First Preparatory Committee of the 2026 NPT Review Conference" published in 2023 by the International Group of Eminent Persons for a World without Nuclear Weapons (IGEP) hosted by the Japanese Ministry of Foreign Affairs. Mindful of the nuclear buildup, decreasing guardrails provided by arms control, concerns about the humanitarian consequences of nuclear weapon use, and increasing risks of nuclear proliferation, in the message the IGEP urges states to strengthen concrete norms so as not to damage the nuclear non-proliferation regime based on the NPT, namely: not diminish security for all; not use or threaten to use nuclear weapons; not conduct nuclear testing; not produce fissile material for weapons; and reaffirm commitments made at the previous NPT Review Conferences. Additionally, it calls on states to practice strategic restraint; enhance the transparency of nuclear arsenals, postures, and doctrines; initiate and maintain strategic dialogues and crisis communication; and advance dialogue on establishing new arms control arrangements.¹⁹³ All of these measures appear to comprehensively address the concerns underlying contemporary arms control discourses and send a clear message focusing on maintaining non-proliferation norms centered around the NPT.

Other recent studies discussing treaty or agreement-based new arms control include James Acton, Thomas MacDonald, and Pranay Vaddi's "Reimagining Nuclear Arms Control: A Comprehensive Approach." Specifically, it proposes a U.S.-Russian data exchange for SLCMs and sea-launched boost glide missiles (SLBGMs); a U.S.-Russian transparency regime for actual or suspected nuclear warhead storage facilities; a U.S.-Russian confidence-building regime for European Aegis Ashore ballistic missile defense facilities; a U.S.-Chinese regime for cutoff and transparency

of fissile materials for weapons; the conclusion of a U.S.-Chinese-Russian trilateral launch notification agreement for ballistic missiles, missile defense tests, and outer space launches; and the conclusion of a trilateral agreement on "keep-out zones" around high-altitude satellites.¹⁹⁴

What these preceding studies have in common is that they all recognize the significant changes in the strategic environment under great power competition, and therefore, explore new forms of arms control treaties, the basis of which is maintaining international norms of nuclear non-proliferation. In short, the greatest challenge may be fostering a common understanding among the major powers on the need to reinvigorate arms control.

(3) A "World without Nuclear Weapons" Approach

Finally, there is prior scholarship on recent arms control discourses advocating for a "world without nuclear weapons." They critique the nuclear deterrence structure from a broader perspective and encourage nuclear-weapon states to take new steps. Approaches outlining the steps toward achieving a "world without nuclear weapons" are wide-ranging, including those with realist perspectives to those emphasizing the potential for more liberal multilateral cooperation. Regardless of the approach, it cannot overlook the importance of ethical considerations which permeate through these discourses, such as nuclear disarmament norms and the humanitarian dimensions of nuclear weapons.

While published before Russia's invasion of Ukraine, a study by William Perry and Tom Collina draws on how the United States and Russia historically and on numerous occasions faced situations close to inadvertent nuclear war and offers a variety of policy prescriptions. Specifically, they propose ending the launch-on-warning posture, prohibiting the first use of nuclear weapons, abolishing ICBMs and downsizing nuclear rebuilding, maintaining New START and reducing nuclear forces to around 100 warheads based on climate impact studies of nuclear war, imposing restrictions on strategic missile defense, and pursuing a swift agreement at the leaders' level.¹⁹⁵ To halt the momentum of an arms race, Akshai Vikram calls on the United States to maintain New START, mitigate the risk of accidental use of nuclear weapons by adopting an NFU policy and ending the launch-on-warning posture for ground-based missiles, and review the low-yield submarine-launched nuclear warheads and ground-based midcourse defense system that could undermine strategic stability and increase the risk of nuclear war. Furthermore, Vikram proposes that Russia commence discussions with the United States to reduce HGVs and INF range missiles that can carry nuclear warheads.¹⁹⁶

The essence of these discourses on reducing nuclear dangers through arms control and nuclear non-proliferation can be found in the op-eds on a “world without nuclear weapons” by the “four horsemen” comprised of George Shultz, Henry Kissinger, William Perry, and Sam Nunn,¹⁹⁷ which spread and garnered support from the United States to the international community. Another was the Global Zero movement,¹⁹⁸ which aimed at achieving a “world without nuclear weapons” in multiple phases, ranging from the reduction of U.S. and Russian nuclear warheads to 1,100 each and the adoption of an NFU policy by all nuclear-weapon states, to the reduction of U.S., Chinese, and Russian nuclear warheads to around 300 each. Both align with the arms control discourses in around 2010. In addition to the aforementioned discourses, other prior studies have raised the cancellation of targeting for a first strike by nuclear weapons,¹⁹⁹ the abolishment of ICBMs to shift from a triad to a dyad,²⁰⁰ and revising strategic missile defense.²⁰¹ However, due to their mixed reactions and their potential significant impact on the existing nuclear deterrence structure, these measures have not been adopted in the nuclear weapon policies or doctrines of the P5 and nuclear-armed states.

As the “revival of nuclear weapons” gains traction, arms control studies advocating a pivot to drastic nuclear arms reductions to achieve a “world without nuclear weapons” have indeed faced sharp criticism. For example, Brad Roberts emphasizes the importance of “strategic patience” in arms control. He provides a realist analysis of four reduction options that the United States can adopt alone amid the challenges facing U.S.-Russian nuclear arms control. The four options are: (1) the withdrawal of U.S. non-strategic nuclear weapons deployed in European NATO countries; (2) reducing deployed U.S. nuclear warheads by one-third from 1,550; (3) downsizing of the nuclear triad; and (4) transitioning to a minimum deterrence posture. Roberts warns that these options may weaken extended deterrence and the assurance of allies, raise doubts about U.S. commitment to great power competition, and decrease the ability to meet and recover from the demand for nuclear forces in contingencies. He adds that there is no guarantee that other nuclear-weapon states will align with unilateral nuclear reductions, which may undermine strategic stability, extended deterrence, and the assurance of allies in the U.S. nuclear deterrence function.²⁰²

Meanwhile, it goes without saying that the international community must uphold a free and open international order based on the rule of law, and even in an increasingly severe security environment, promote realistic efforts toward the realization of a “world without nuclear weapons” to ensure peace in the international community.²⁰³ Advancing steady efforts toward a “world without nuclear weapons” has an important implication precisely

during challenging times when the threat of nuclear weapons looms over the world. Therefore, it is necessary to continue to broadly consider how to take a step toward the goal of a “world without nuclear weapons,” and from a realist perspective, perpetually revisit the questions of what the priorities of arms control are and what hurdles exist in achieving them.

In the above, preceding scholarship on new arms control discourses was classified into three broad categories, and their respective logic were examined. Since they all have different emphases, it is difficult to make generalizations about their superiority or inferiority. Still, it deserves attention that, while some discourses appear to be based on strategic dialogues and stress the importance of arms control’s contribution to managing an arms race and achieving strategic stability, few pursue agreements that elaborate on the U.S.-Soviet or U.S.-Russian arms control treaties since the Cold War.

Conclusion

This chapter revisited some nuclear weapon policy issues and reconsidered the contemporary role of nuclear weapons by examining the nuclear doctrines of major powers. Furthermore, as the end of arms control treaties becomes a reality, this chapter attempted to shed light on the arms control discourses that were presented in around 2020 and identify the arms control functions demanded amid the “revival of nuclear weapons” and great power competition, as well as the common threads that run through their arguments.

In conclusion, this chapter proposes a new arms control approach tailored to the changing security environment based on the owls’ perspective, which is dubbed a “reasonable approach to arms control under great power competition.” First, the reasons for adopting the owl perspective are explained. A potential nuclear arms race in the future and the growing risk of nuclear proliferation are deeply concerning for both the international security environment and the international nuclear order, considering that successive U.S.-Russian arms control treaties have been on the brink of demise. Moreover, nuclear-weapon states cannot be realistically demanded to implement unilateral nuclear reductions or similar measures, given the prevalence of nuclear threats and rising expectations on nuclear deterrence. At this juncture, it is therefore best to conduct discussions that are aligned with the middle path—the owl’s approach—which seeks first and foremost to reduce the risk of inadvertent nuclear war, an urgent issue, without siding with either extreme, while simultaneously attempting to maintain and improve deterrence to enhance strategic stability.

The difference between traditional arms control and the “reasonable approach to arms control under great power competition” is that the latter gives weight to continuous dialogue with diverse stakeholders. In the short term, this form of arms control would not rely solely on arms control treaties. Rather, they would pursue a more pragmatic approach to avoiding crises. In the medium to long term, the “reasonable approach to arms control under great power competition” proposal aims to create a verifiable arms control agreement while maintaining fairness for all participating countries. In the context of nuclear weapons, the post-Cold War arms control treaties at the brink of demise were generally aimed at strategic stability between two states. However, as noted above, several aforementioned studies have shown that the stance of the parties to some of these treaties has shifted since the end of the Cold War. Specifically, the United States pursued fixed strategic advantages, made nuclear non-proliferation a centerpiece of its agenda, and put forward initiatives to achieve a “world without nuclear weapons” backed by its conventional force superiority. Conversely, while Russia initially followed suit in seeking nuclear power status, it gradually stepped up its discontent with the U.S. stance, defected from U.S. arms control policies while increasing its reliance on nuclear forces once again, and weakened Russian engagement. Consequently, the rise of two near-peer competitors that the United States faces today would arise under a weakened arms control regime. Furthermore, not only the pursuit of U.S. nuclear superiority as some have argued, but also maintaining the status quo in terms of the number of nuclear warheads at the New START levels and unilateral reduction of nuclear forces could each pose strategic risks.

Thus, the best course of action would inevitably be to start with efforts to prevent inadvertent nuclear war, seek to enhance strategic stability, and explore stability through arms control. Imposing limits on nuclear forces is expected to face many difficulties when the outcomes of superiority are unclear under great power competition. Accordingly, in the short term, while first accumulating small achievements, it is necessary to seek the formation of a reasonable arms control agreement that can involve China, the United Kingdom, and France in the medium to long term. Incidentally, this approach is essentially in the same vein as the commitment articulated in the “G7 Leaders’ Hiroshima Vision on Nuclear Disarmament” issued on the occasion of the 2023 G7 Summit: “our commitment to the ultimate goal of a world without nuclear weapons with undiminished security for all, achieved through a realistic, pragmatic and responsible approach.”²⁰⁴ The “reasonable approach to arms control under great power competition” proposed in this chapter is not confined to traditional bilateral nuclear arms control treaties. Based on the dynamics of the three nuclear superpowers,

it instead implies a flexible approach to arms control incorporating layered and incremental policy measures for enhancing strategic stability.

First, measures that are sought to avoid inadvertent nuclear war in the short term include technological updates of hotlines. Other measures include new agreements among nuclear-weapon states and nuclear-armed states to ensure that nuclear weapons systems and their operations do not cause malfunctions or misunderstandings in the event of attacks in outer space, cyber, and electromagnetic domains and unforeseen incidents. In addition, major powers can attempt multi-tiered strategic dialogues from the leaders’ level to Track 2 to foster common understanding on strategic stability. Also worth pursuing are the dissemination and internalization of practices, such as data exchange and verification under reciprocity aimed at forming arms control agreements in the future. Moreover, to elicit commitments from countries that are reluctant to engage in arms control, let alone strategic dialogue, it is indispensable to spread a common awareness of the increased risk of an inadvertent nuclear war breaking out amid the end of arms control treaties and a “revival of nuclear weapons.” In this regard, the aforementioned attempt by the Biden administration to regulate the use of AI that utilizes nuclear weapons without involving human decision-making is commendable, notwithstanding its consequences.

At the same time, nuclear-weapon states’ adherence to NPT Article VI obligations to pursue negotiations in good faith on nuclear disarmament is indispensable for rebuilding the international nuclear order and, especially, upholding the international norms of nuclear non-proliferation. While this point aligns with traditional arms control, concerns about inadvertent nuclear war have heightened from around the time of Russia’s invasion of Ukraine. Furthermore, the Treaty on the Prohibition of Nuclear Weapons has been negotiated and entered into force in view of the humanitarian impact of nuclear weapons. In such an age, good faith negotiations by nuclear-weapon states will be expected to go a step further, despite the current circumstances that make this most challenging. In this context, what appears to face the lowest political hurdle are activating the P5 process, a scheme that brings together the five nuclear-weapon states for discussions, and announcement of measures to enhance the transparency of nuclear doctrines and arsenals. Conversely, against the backdrop of the “revival of nuclear weapons,” initiatives that may be politically challenging include U.S. and Chinese ratification of the CTBT, reconsideration of Russia’s withdrawal of treaty ratification, a new commitment to legally binding NSAs by the P5, and a joint declaration on the irreversibility of nuclear disarmament.

Desirable in the medium to long term will be the resumption of

negotiations to achieve verifiable nuclear arms control agreements, where fairness is taken into consideration for all negotiating parties. Likewise essential will be discussions on nuclear-weapon states' arms control frameworks for nuclear warheads and strategic delivery vehicles, with a view to creating conditions that will allow all nuclear-weapon states to adopt the sole purpose or NFU policy eventually. Even if reservations are initially attached to the sole purpose or NFU policy, gradual approaches to removing them may be warranted, the first of which may be reciprocal agreements between specific nuclear-weapon states. In the long term, states will need to delve into nuclear reduction measures for realizing a "world without nuclear weapons," including ending the launch-on-warning posture among nuclear-weapon states and reassessment of the triad. For many nuclear-weapon states and nuclear-armed states, however, such measures represent a more difficult challenge for their nuclear weapon policy beyond the adaptation of legally binding NSAs and NFU. It must be reiterated that their achievement would be premised on fundamental improvements in the international security environment.

Moreover, the realities of the current security environment suggest that the prospects may not be optimistic even for the aforementioned multi-layered and incremental "reasonable approach to arms control under great power competition." Nevertheless, genuinely worthwhile ideals and goals may be necessary in order to create arms control agreements that are politically and militarily resilient and contribute to strategic stability. Based on these ideals and goals, a fair approach that stakeholders deem will contribute to their respective national interests and in which they will decide to participate may constitute the very essence of arms control in the "new horizons of the nuclear age."

This chapter is based on the following previously published papers and other works by the author.

- Ichimasa Sukezuki, "Reisen 2.0 to gunbi kanri" [Arms control challenges in 'Cold War 2.0'], *Anzenhosho Senryaku Kenkyu* [Security & Strategy] 4, no. 1 (December 2023): 1-20.
- , "Oshu anzenhosho to kakuyokushi: Takamaru Roshia no kaku no kyoi to Oshu no senryakuteki jiritsu" [European security and nuclear deterrence: The growing Russian nuclear threat and European strategic autonomy], in *Gaiko anzenhosho seisaku kara yomu Oshu togo* [European integration: An analysis of foreign and security policy], ed. Nakauchi Masataka and Tanaka Shingo (Osaka: Osaka Daigaku Shuppankai, 2023), 251-274.
- , "'Dai 2 no kaku jidai' ron saiko" [Rethinking theories of the security in the second nuclear age], *Kokusai Seiji* [International Relations], no. 203 (March 2021): 17-32.
- , "'Kyoso jidai no guroobaru Buriten' hokokusho to kakugunbi kanri gunshuku fukakusan no tenbo" [Prospects for the UK's nuclear arms control and non-proliferation policy after the publication of the integrated review of "Global Britain in a competitive age"], *NIDS Commentary* (May 27, 2021), 1-8.
- , "Kakudanto no kaitai haiki to 'yushikoku kensho apuroochi': Kakuheiki kinshi joyaku (TPNW) no kensho seido seibi ni muketa ichikosatsu" [Dismantling and disposal of nuclear warheads and "verification approach by a coalition of willing": A study on the development of the verification system for the Treaty on the Prohibition of Nuclear Weapons (TPNW)], *Anzenhosho Senryaku Kenkyu* [Security & Strategy] 1, no. 2 (October 2020): 35-56.

1. Barry R. Posen, "Crisis Stability and Conventional Arms Control," *Daedalus* 120, no. 1 (Winter, 1991): 217.
2. Amy F. Woolf, "U.S. Nuclear Weapons Policy: Considering 'No First Use,'" CRS Report for Congress, Updated March 29, 2022, 1.
3. Committee on International Security and Arms Control National Academy of Science, *The Future of U.S. Nuclear Weapon Policy* (Washington, D.C.: National Academy Press, 1997), 33-57.
4. Independent Task Force Report, "U.S. Nuclear Weapons Policy," Council on Foreign Relations (April 2009); George Perkovich and Pranay Vaddi, "Proportionate Deterrence: A Model Nuclear Posture Review," Carnegie Endowment for International Peace (2021).
5. Woolf, "U.S. Nuclear Weapons Policy: Considering 'No First Use.'"
6. Robert Scher, "U.S. Nuclear Weapons Policy and Programs: U.S. Nuclear Employment Strategy," U.S. Department of Defense website.
7. Pascal Boniface, "French Nuclear Weapons Policy after the Cold War," Atlantic Council (August 1998).
8. NPT/CONF.2020/CRP.1, August 22, 2022.
9. The principle of non-use of force is said to include the exercise of the right of self-defense as an exception to the use of force by individual states under Article 51 of the UN Charter, and an exception to collective measures by the UN under Articles 39 and 42 of the UN Charter. Asada Masahiko, "Doji tahatsu tero jiken to kokusaiho: Buryoku koshi no hoteki hyoka wo chushin ni" [The September 11 terrorist attacks in the United States in the light of international law], *Kokusai Anzenhosho* [Journal of International Security] 30, no. 1-2 (September 2002): 69.
10. "Negative Security Assurances," Reaching Critical Will website.
11. "Negative Security Assurances (NSAs)," NTI website (January 5, 2023).
12. "The Conference on Disarmament and Negative Security Assurances," United Nations Office for Disarmament Affairs, January 2018, 1.
13. Sato Shiro, "NPT no fubyodosei to kakuheiki kinshi joyaku no ronri: Chitsujo/muchitsujo, byodo/fubyodo" [A logic of the inequality of the NPT and the TPNW: Order/anarchy and equality/inequality], *Heiwa Kenkyu* [Peace Studies], no. 57 (December 2021): 20.
14. "The Conference on Disarmament and Negative Security Assurances."
15. Yamada Toshinori, "Kakuheiki no ikaku shiyo no gohosei" [Legality of the threat and use of nuclear weapons], in *Gunshuku jiten* [Disarmament dictionary], ed. Japan Association of Disarmament Studies (Tokyo: Shinzansha, 2015), 115.
16. "The Conference on Disarmament and Negative Security Assurances," United Nations Office for Disarmament Affairs website.
17. [U.S.] Department of Defense, "2022 Nuclear Posture Review Fact Sheet: U.S. Nuclear Deterrence Strategy and Policy," October 2022, 1. The 2022 NPR also notes, "For all other states [that are not party to the NPT and not in compliance with their nuclear non-proliferation obligations], there remains a narrow range of contingencies in which U.S. nuclear weapons may still play a role in deterring attacks that have strategic effect against the United States or its Allies and partners."
18. "China's National Defense in the New Era," Xinhua Net, July 24, 2019.
19. Francesca Giovannini, "Negative Security Assurances after Russia's Invasion of Ukraine," *Arms Control Today* 52, no. 6 (July/August 2022): 6-11.
20. Paul Ingram, "Renewing Interest in Negative Security Assurances," BASIC Briefing Paper (June 2017), 2.
21. Ibid.
22. [U.S.] Department of State, "P3 Joint Statement on Security Assurances," August 4, 2022.
23. "Negative Security Assurances (NSAs)," NTI website, January 5, 2023.
24. Ankit Panda, "'No First Use' and Nuclear Weapons," Council on Foreign Relations (July 17, 2018).
25. Kurosawa Mitsuru, "Kaku no sensei fushiyo wo meguru shomondai" [Issues surrounding non first use of nuclear weapons], *Gunshuku Fukakusan Mondai Series* [Disarmament and Non-proliferation Issue Series], no. 1 (August 1999): 4.
26. Steve Fetter and John Wolfsthal, "No First Use and Credible Deterrence," *Journal for Peace and Nuclear Disarmament* 1, no. 1 (2018): 102.
27. Michael S. Gerson, "No First Use: The Next Step for U.S. Nuclear Policy," *International Security* 35, no. 2 (Fall 2010): 7-47.
28. Franklin C. Miller and Keith B. Payne, "The Dangers of No-First-Use," Bulletin of the Atomic Scientists website, August 22, 2016.
29. John R. Harvey, "Assessing the Risks of a Nuclear 'No First Use' Policy," War on the Rocks website, July 5, 2019.
30. Woolf, "U.S. Nuclear Weapons Policy: Considering 'No First Use,'" 2.
31. Panda, "'No First Use' and Nuclear Weapons."
32. Fetter and Wolfsthal, "No First Use and Credible Deterrence," 105-106.
33. The difference between NFU and "sole purpose of nuclear weapons" is discussed later. In the 2022 NPR, both are referred to in a single sentence. [U.S.] Department of Defense, "2022 National Defense Strategy of the United States of America," October 27, 2022.
34. Richard C. Bush and Jonathan D. Pollack, "Before Moving to 'No First Use,' Think about Northeast Asia," Brookings (July 20, 2016); Demetri Sevastopulo and Henry Foy, "Allies Lobby Biden to Prevent Shift to 'No First Use' of Nuclear Arms," *Financial Times*, October 30, 2021. It has been pointed out that all U.S. allies strongly oppose NFU and may also be deeply concerned about "sole purpose of nuclear weapons."
35. Ram Ganesh Kamatham, "Nuclear No-First Use: Revisiting Hawks, Doves and Owls," Wire website, February 1, 2019.
36. Panda, "'No First Use' and Nuclear Weapons."
37. Sverre Lodgaard, "Obstacles to No-First-Use," Pugwash Conferences on Science and World Affairs, November 15-17, 2002.
38. NPT/CONF.2026/PC.I/CRP.3, August 10, 2023.
39. Hans Binnendijk and David Gompert, "Towards Nuclear Stewardship with China," Survival Online, February 16, 2023.
40. Tong Zhao, "It's Time to Talk about No First Use," Foreign Policy website, November 6, 2023.

41. “No-First-Use Policy Explained: What is a ‘No-First-Use’ Nuclear Policy?” Union of Concerned Scientists, May 7, 2020.
42. Ankit Panda and Vipin Narang, “Sole Purpose is not No First Use: Nuclear Weapons and Declaratory Policy,” War on the Rocks website, February 22, 2021.
43. Nikolai Sokov, “No First Use, Sole Purpose and Arms Control,” Vienna Center for Disarmament and Non-Proliferation, November 2021; Panda and Narang, “Sole Purpose is not No First Use: Nuclear Weapons and Declaratory Policy.”
44. George Perkovich and Pranay Vaddi, “Toward a Just U.S. Nuclear Declaratory Policy,” *Arms Control Today* 51, no. 2 (March 2021): 6-11.
45. Steven Pifer, “Nuclear Weapons: It’s Time for Sole Purpose,” *The National Interest*, September 15, 2020.
46. Paul Ingram, “Discussion Paper: Nuclear Doctrine,” NTI website, January 2019.
47. Ibid.
48. Perkovich and Vaddi, “Proportionate Deterrence: A Model Nuclear Posture Review,” 13-16.
49. Mahesh Shankar and T.V. Paul, “Nuclear Doctrines and Stable Strategic Relationships: The Case of South Asia,” *International Affairs* 92, no. 1 (2016): 2-3.
50. Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century* (Stanford: Stanford University Press, 2016), 6.
51. Ogawa Shinichi, “Kaku no senseifushiyo ni kansuru giron no keii to kadai” [The debate on no preemptive use of nuclear weapons: Background and issues], *Rippo to Chosa* [Legislation and Research] 309 (October 2010): 26. Ogawa uses the terms “non preemptive use” and “preemptive use” rather than “non first use” and “first use.” In this book, the terms have been cited as “first use” and “non first use” for the sake of unifying terminology.
52. Beyza Unal, Yasmin Afina, and Patricia Lewis, eds., “Perspectives on Nuclear Deterrence in the 21st Century,” Chatham House Research Paper (April 20, 2020).
53. [U.S.] Office of the Secretary of Defense Nuclear and Missile Defense Policy, “The Importance of the Nuclear Triad,” November 2020.
54. Panda and Narang, “Sole Purpose is not No First Use: Nuclear Weapons and Declaratory Policy.”
55. Mitsuru Kurosawa, “Nuclear Posture Review: Trump and Three Previous Administrations,” *Osaka University Law Review*, no. 66 (2019): 46-47.
56. [U.S.] Department of Defense, “Annual Report to the President and the Congress,” February 1995, 10-11.
57. [U.S.] Department of Defense, “Annual Report to the President and the Congress,” 2002, 83-84.
58. [U.S.] Department of Defense, “Nuclear Posture Review Report,” April 2010, 45-47.
59. Ibid.
60. [U.S.] Department of Defense, “Nuclear Posture Review,” February 2018, 20-21.
61. Ibid., 54-55.
62. [U.S.] Department of Defense, “2022 Nuclear Posture Review,” October 2022, 1-3.
63. Ibid., 9.
64. Ibid.
65. Ibid.
66. [U.S.] Department of Defense, “2022 Nuclear Posture Review Fact Sheet: U.S. Nuclear Deterrence Strategy and Policy,” October 27, 2022.
67. When the United Kingdom updated the Trident missile system in around 2016, hedging against an uncertain future was included in the logic of nuclear weapons possession. [UK] Parliament Hansard, “UK’s Nuclear Deterrent 613, debated on July 18, 2016,” 2016.
68. [U.S.] Office of the Secretary of Defense, “Nuclear Posture Review 2018,” February 2018, 24.
69. [UK] Parliament Hansard, “UK’s Nuclear Deterrent.”
70. Daryl G. Kimball, “Biden’s Disappointing Nuclear Posture Review,” *Arms Control Today* 52, no. 10, (December 2022): 3.
71. Keith B. Payne, ed., “Expert Commentary on the 2022 Nuclear Posture Review,” *Occasional Paper* 3, no. 3 (March 2023): 135.
72. Matthew Kroenig, “Deterring Chinese Strategic Attack: Grappling with the Implications of China’s Strategic Forces Buildup,” Atlantic Council (November 2021), 17-20.
73. Edward Geist, “The U.S. Doesn’t Need More Nuclear Weapons to Counter China’s New Missile Silos,” *Washington Post*, October 18, 2021.
74. Independent Task Force Report, “U.S. Nuclear Weapons Policy,” 99.
75. Matthew Costlow, “Believe it or not: U.S. Nuclear Declaratory Policy and Calculated Ambiguity,” War on the Rocks website, August 9, 2021.
76. Amy F. Woolf, “Russia’s Nuclear Weapons: Doctrine, Forces, and Modernization,” CRS Report for Congress, Updated April 21, 2022, 7-8.
77. Ibid.
78. “Foundations of State Policy of the Russian Federation in the Area of Nuclear Deterrence (Informal translation by the CNA Russia Studies Program),” Center for Naval Analysis (June 2020).
79. Nikolai Sokov, “Russia Clarifies Its Nuclear Deterrence Policy,” Arms Control Association website, June 3, 2020.
80. Bruno Tertrais, “Real and Imagined Challenges to Strategic Stability,” The Hague Centre for Strategic Studies (February 2022), 1.
81. Ogawa, “Kaku no senseifushiyo ni kansuru giron no keii to kadai,” 31.
82. Dmitry Solovyov, “Russia Reserves Pre-Emptive Nuclear Strike Right,” Reuters, October 14, 2009.
83. Kristin Ven Bruusgaard, “Myth 9: ‘Russian Nuclear Strategy is Best Described as ‘Escalate to De-Escalate’” Chatham House (June 2022).
84. Stockholm International Peace Research Institute, *SIPRI Yearbook 2022: Armaments, Disarmament and International Security* (London: Oxford University Press, 2022), 355.

85. Anya Loukianova Fink and Olga Oliker, "Russia's Nuclear Weapons in a Multipolar World: Guarantors of Sovereignty, Great Power Status & More," *Dædalus* 149, no. 2 (Spring 2020): 41.
86. Koizumi Yu, "Puchin daitoryo ga akiraka ni shita Roshia no shingata kakuheiki" [Russia's new nuclear weapons revealed by President Putin], International Information Network Analysis website, April 13, 2018.
87. [U.S.] Department of State, "Fact Sheet: Russia's Violation of the Intermediate-Range Nuclear Forces (INF) Treaty," December 4, 2018.
88. Ellen Mitchell, "Why Fears of a Russian 'False Flag' Attack are on the Rise," *Hill*, October 26, 2022.
89. Katia Glod and Oliver Meier, "Be Careful What You Wish for: Russia Wants to Share Nuclear Weapons with Belarus," European Leadership Network (April 6, 2023).
90. Heather Williams, "Russia Suspends New START and Increases Nuclear Risks," Center for Strategic and International Studies (February 23, 2023).
91. Daryl Kimball, Tony Fleming, and Kathy Crandall Robinson, "Russia's Self-Destructive Move to De-Ratify the CTBT," Arms Control Association (October 17, 2023).
92. Ichimasa Sukeyuki, "Kakudanto no kaitai haiki to 'yushikoku kensho apuroochi': Kakuheiki kinshi joyaku (TPNW) no kensho seido seibi ni muketa ichikosatsu" [Dismantling and disposal of nuclear warheads and "verification approach by a coalition of willing": A study on the development of the verification system for the Treaty on the Prohibition of Nuclear Weapons (TPNW)], *Anzenhosho Senryaku Kenkyu* [Security & Strategy] 1, no. 2 (October 2020): 47-49; Tom Plant, "The Disarmament Laboratory: Substance and Performance in UK Nuclear Disarmament Verification Research," FIIA Working Paper (October 2019), 5.
93. Tom Dodd and Mark Oakes, "The Strategic Defence Review White Paper," U.K. House of Commons Library (October 15, 1998), 32.
94. [UK] HM Government, "The Future of the United Kingdom's Nuclear Deterrent," December 2006, 7-8.
95. [UK] HM Government, "Securing Britain in an Age of Uncertainty: The Strategic Defence and Security Review," October 2010, 38-39.
96. [UK] HM Government, "Global Britain in a Competitive Age: The Integrated Review of Security, Defence, Development and Foreign Policy," March 2021, 76.
97. *Ibid.*, 77.
98. [UK] HM Government, "Integrated Review Refresh 2023: Responding to a More Contested and Volatile World," March 2023.
99. [France] Ministère de la Défense, "French White Paper: Defence and National Security," July 2013, 20.
100. [France] Elysee, "Speech of the President of the Republic on the Defense and Deterrence Strategy," February 7, 2020.
101. [France] Secrétariat Général de la Défense et de la Sécurité Nationale, "National Strategic Review 2022," December 2022.
102. "France's Nuclear Inventory," Center for Arms Control and Non-Proliferation (March 2020).
103. Alastair Cameron and Jean-Pierre Maulny, "France's Nato Reintegration: Fresh Views with the Sarkozy Presidency?" Royal United Services Institute Occasional Paper (February 2009), 6.
104. Ichimasa Sukeyuki, "Oshu anzenhosho to kakuyokushi: Takamaru Roshia no kaku no kyoi to Oshu no senryakuteki jiritsu" [European security and nuclear deterrence: The growing Russian nuclear threat and European strategic autonomy], in *Gaiko anzenhosho seisaku kara yomu Oshu togo* [European integration: An analysis of foreign and security policy], ed. Nakauchi Masataka and Tanaka Shingo (Osaka: Osaka Daigaku Shuppankai, 2023), 262-267.
105. "Fact Sheet: Nuclear Disarmament France," NTI website, January 12, 2023.
106. Sitara Noor, "Pakistan's Evolving Nuclear Doctrine," *Arms Control Today* 53, no. 8 (October 2023): 12-17.
107. Sadia Tasleem, "Pakistan's Nuclear Use Doctrine," Carnegie Endowment for International Peace (June 30, 2016); Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton: Princeton University Press, 2014), 19-20.
108. Sitara Noor, "Did Pakistan Just Overhaul Its Nuclear Doctrine?" Foreign Policy website, June 19, 2023.
109. Noor, "Pakistan's Evolving Nuclear Doctrine."
110. "Fact Sheet: Nuclear Disarmament Pakistan," NTI website, February 6, 2023.
111. Pan Zhenqiang, "China's No First Use of Nuclear Weapons," in *Understanding Chinese Nuclear Thinking*, ed. Li Bin and Tong Zhao (Washington, D.C.: Carnegie Endowment for International Peace, 2016), 51.
112. M. Taylor Fravel, *Active Defense: China's Military Strategy since 1949* (Princeton: Princeton University Press, 2019), 236.
113. For example, see Ben Lowsen, "Is China Abandoning Its 'No First Use' Nuclear Policy?" Diplomat website, March 21, 2018.
114. [U.S.] Department of Defense, "Military and Security Developments Involving the People's Republic of China 2023 Annual Report," October 2023, 103-104.
115. "China's National Defense in the New Era," Xinhua Net, July 24, 2019.
116. Takahashi Sugio, "US Policy toward China," in *China Security Report 2018: The China-US Relationship at a Crossroads*, English edition, ed. National Institute for Defense Studies (NIDS) (Tokyo: NIDS, 2018), 40.
117. Liping Xia, "China's Nuclear Doctrine: Debates and Evolution," Carnegie Endowment for International Peace (June 30, 2016).
118. Shannon Bugos, "Pentagon Sees Faster Chinese Nuclear Expansion," *Arms Control Today* 51, no. 10 (December 2021): 26-28.
119. Shannon Bugos and Julia Masterson, "New Chinese Missile Silo Fields Discovered," *Arms Control Today* 51, no. 7 (September 2021), 24-25.
120. Matt Korda and Hans Kristensen, "A Closer Look at China's Missile Silo Construction," Federation of American Scientists (February 11, 2021).
121. Nicola Leveringhaus, "Chinese Nuclear Force Modernization and Doctrinal Change," Briefings de l'Ifri (August 19, 2022), 1.
122. Michael E. O'Hanlon, Melanie W. Sisson, and Caitlin Talmadge, "Managing the

- Risks of US-China War: Implementing a Strategy of Integrated Deterrence,” Brookings Policy Brief (September 2022).
123. W.J. Hennigan and John Walcott, “The U.S. Expects China Will Quickly Double Its Nuclear Stockpile,” Time website, May 29, 2019.
 124. Hans Binnendijk and David C. Gompert, “Towards Nuclear Stewardship with China,” Survival Online website, February 16, 2023.
 125. Xia, “China’s Nuclear Doctrine: Debates and Evolution.”
 126. George Perkovich, “What’s in it for China? A Beijing Insider’s Surprising Insight on Nuclear Arms Control,” Carnegie Endowment for International Peace (July 30, 2019).
 127. Tong Zhao, “Opportunities for Nuclear Arms Control Engagement with China,” *Arms Control Today* 50, no. 1 (January/February 2020): 9-12.
 128. “Fact Sheet: Nuclear Disarmament China,” NTI website, September 11, 2023.
 129. Iida Masafumi, “China’s Strategy to Transform the Existing International Order,” in *China Security Report 2024: China, Russia, and the United States Striving for a New International Order*, English edition, ed. Iida Masafumi, Arakaki Hiromu, and Hasegawa Takeyuki (Tokyo: NIDS, 2023), 26.
 130. Fiona S. Cunningham, “The Unknowns about China’s Nuclear Modernization Program,” *Arms Control Today* 53, no. 5 (June 2023): 6-14.
 131. [India] Prime Minister’s Office, “Cabinet Committee on Security Reviews Progress in Operationalizing India’s Nuclear Doctrine,” January 4, 2003.
 132. Abigail Stowe-Thurston, “Added Ambiguity over India’s No First Use Policy is Cause for Concern,” Center for Arms Control and Non-proliferation (August 22, 2019).
 133. Cristopher Clary and Vipin Narang, “India’s Counterforce Temptations: Strategic Dilemmas, Doctrine, and Capabilities,” *International Security* 43, no. 3 (Winter 2018): 7-8.
 134. Ibid.
 135. Angelo M. Codevilla, “The Flaws of Arms Control,” Strategika website, August 25, 2015.
 136. Thomas C. Schelling, *Funso no senryaku: Geemu riron no essensu* [The strategy of conflict], trans. Kohno Masaru (Tokyo: Keiso Shobo, 2008), 259; Linton F. Brooks, “The End of Arms Control?” *Daedalus* 149, no. 2 (Spring 2020): 86.
 137. Jozef Goldblat, *Gunshuku joyaku handobukku* [Arms control: A guide to negotiations and agreements], trans. Asada Masahiko (Tokyo: Nippon Hyoronsha, 1999), 1-12.
 138. Thomas C. Schelling and Morton H. Halperin, *Strategy and Arms Control* (New York: Elsevier Science Ltd, 1985), 3.
 139. Jeffrey A. Larsen, “An Introduction to Arms Control and Cooperative Security,” in *Arms Control and Cooperative Security*, ed. Jeffrey A. Larsen and James J. Wirtz (Boulder: Lynne Rienner, 2009), 2.
 140. Akiyama Nobumasa, “Taikokukan kankei no henyō to gunbi kanri taisei” [Changes in major power relations and arms control regimes], *Kokusai Seiji* [International Relations], no. 203 (March 2021): 33-39.
 141. Donald G. Brennan, “Gunbi kanri no haikei to mokuhyō” [Setting and goals of arms control], in *Gunbi kanri gunshuku anzenhosho* [Arms control, disarmament and national security], ed. Donald G. Brennan (trans. Kotani Hidejiro) (Tokyo: Kajima Kenkyusho and The Japan Institute of International Affairs [JIIA], 1963), 28-31.
 142. Frank P. Harvey, “The Future of Strategic Stability and Nuclear Deterrence,” *International Journal* 58, no. 2 (Spring 2003): 321.
 143. Tertrais, “Real and Imagined Challenges to Strategic Stability,” 3.
 144. Dmitri Trenin, “Strategic Stability in the Changing World,” Carnegie Endowment for International Peace (2019), 1.
 145. James M. Acton, “Reclaiming Strategic Stability,” in *Strategic Stability: Contending Interpretations*, ed. Elbridge A. Colby and Michael S. Gerson (Carlisle: Strategic Studies Institute and U.S. Army War College Press, 2013), 121-123.
 146. C. Dale Walton and Colin S. Gray, “The Geopolitics of Strategic Stability: Looking beyond Cold Warriors and Nuclear Weapons,” in Colby and Gerson, *Strategic Stability*, 109-110.
 147. Ishikawa Taku, “Henyō suru gunbi kanri fukakusan to ‘shinsekai chitsujo’” [Changing arms control, non-proliferation and the “new world order”], *Kokusai Anzenhosho* [Journal of International Security] 35, no. 4 (March 2008): 7.
 148. Tosaki Hirofumi, “Bei-Ro gunbi kanri: Tankyoku kozoka de no henshitsu to kokusai chitsujo” [U.S.-Russian arms control: Transformation and international order under a unipolar structure], *Kokusai Anzenhosho* [Journal of International Security] 35, no. 4 (March 2008): 19.
 149. Ishikawa, “Henyō suru gunbi kanri fukakusan to ‘shinsekai chitsujo,’” 8.
 150. Tosaki, “Bei-Ro gunbi kanri: Tankyoku kozoka de no henshitsu to kokusai chitsujo,” 30.
 151. Tosaki Hirofumi, “Obama seiken no kakugunshuku fukakusan seisaku: Bijon to seika no gyappu” [The Obama administration’s nuclear disarmament and non-proliferation policy: Gaps between vision and results], *Kokusai Anzenhosho* [Journal of International Security] 41, no. 3 (December 2013): 47.
 152. Steven Pifer, “10 Years after Obama’s Nuclear-Free Vision, the US and Russia Head in the Opposite Direction,” Brookings Commentary (April 4, 2019).
 153. Ichimasa Sukeyuki, “‘Reisen 2.0’ to gunbi kanri” [Arms control challenges in ‘Cold War 2.0’], *Anzenhosho Senryaku Kenkyu* [Security & Strategy] 4, no. 1 (December 2023): 1-20.
 154. Pifer, “10 Years after Obama’s Nuclear-Free Vision, the US and Russia Head in the Opposite Direction.”
 155. JIIA, ed., “Strategic Annual Report 2019: Japan and Post-INF Nuclear Arms Control /Non-Proliferation,” English edition, JIIA (2019), 66.
 156. Lauren Sukin, “When Nuclear Superiority Isn’t Superior: Revisiting the Nuclear Balance of Power,” Carnegie Endowment for International Peace (October 17, 2023).
 157. Keith B. Payne et al., “Nuclear Force Adaptability for Deterrence and Assurance: A Prudent Alternative to Minimum Deterrence,” National Institute for Public Policy (2014), xvi.
 158. Hans Kristensen, Matt Korda, Eliana Johns, and Mackenzie Knight, “Strategic

- Posture Commission Report Calls for Broad Nuclear Buildup,” Federation of American Scientists (December 10, 2023).
159. Lynn Rusten and Mark Melamed, “The Three-Competitor Future: U.S. Arms Control with Russia and China,” *Arms Control Today* 53, no. 2 (March 2023): 7-8.
 160. Ibid.
 161. Jim Garamone, “General Says Deterring Two ‘Near Peer’ Competitors Is Complex,” DOD News website, August 17, 2023.
 162. Eric S. Edelman and Franklin C. Miller, “Statement before the United States Senate Committee on Armed Services: United States Nuclear Strategy and Policy,” Senate Armed Service website, September 20, 2022; Rusten and Melamed, “The Three-Competitor Future: U.S. Arms Control with Russia and China.”
 163. “Unilateral U.S. Nuclear Pullback in 1991 Matched by Rapid Soviet Cuts,” National Security Archive website, September 2016.
 164. [U.S.] White House, “Remarks by President Obama at the Brandenburg Gate, Berlin, Germany,” June 19, 2013.
 165. George Perkovich, “An Optimist Admits That It Is Difficult to See a Path Forward,” *Arms Control Today* 52, no. 3 (April 2022): 12-14.
 166. Julian E. Barnes and David E. Sanger, “U.S. Will Try to Bring China into Arms Control Talks,” *New York Times*, June 2, 2023.
 167. Graham T. Allison, Albert Carnesale, and Joseph S. Nye, Jr., “Hawks, Doves and Owls: A New Perspective on Avoiding Nuclear War,” *International Affairs* 61, no. 4 (October 1985): 581.
 168. While fixed definitions are not necessarily presented in prior scholarship discussing the differences between hawks, doves, and owls in the arms control context, this chapter referred to Graham Allison, Albert Carnesale, and Joseph S. Nye, “Analysis & Opinions: Of Hawks, Doves and Now, Owls,” *New York Times*, July 31, 1985.
 169. David A. Cooper, *Arms Control for the Third Nuclear Age: Between Disarmament and Armageddon* (Washington, D.C.: Georgetown University Press, 2021), 205-206.
 170. Joseph S. Nye Jr., “Nuclear Ethics Revisited,” *Ethics & International Affairs* 37, no. 1 (Spring 2023): 5-17.
 171. Allison, Carnesale, and Nye, “Hawks, Doves and Owls: A New Perspective on Avoiding Nuclear War.”
 172. Nikolas K. Gvosdev, Jessica D. Blankshain, and David A. Cooper, *Decision-Making in American Foreign Policy: Translating Theory into Practice* (Cambridge: Cambridge University Press, 2019), 79; Daryl Kimball, “Fact Sheets & Briefs: Hotline Agreements,” Arms Control Association website, May 2020; Suhasini Haidar, “Nuke Hotline for India, Pakistan,” CNN, June 20, 2004.
 173. Kimball, “Fact Sheets & Briefs: Hotline Agreements.”
 174. Takahashi Sugio and Akiyama Nobumasa, “‘Kaku no fukken’ no genjitsu” [The reality of “revival of nuclear weapons”], in “*Kaku no bokyaku*” no owari: *Kakuheiki fukken no jidai* [The end of nuclear forgetting: Revival of nuclear weapons], ed. Akiyama Nobumasa and Takahashi Sugio (Tokyo: Keiso Shobo, 2019), 5.
 175. Steven E. Miller, “Nuclear Hotlines: Origins, Evolution, Applications,” Paper presented to the 75th Anniversary Nagasaki Nuclear-Pandemic Nexus Scenario Project, October 31-November 1, and November 14-15, Nagasaki University website, 2020.
 176. Rebecca K.C. Hersman, Heather Williams, and Suzanne Claeys, “Integrated Arms Control in an Era of Strategic Competition,” Center for Strategic and International Studies (January 2022), 3.
 177. Heather W. Williams and Nicholas Smith Adamopoulos, “Arms Control after Ukraine: Integrated Arms Control and Deterring Two Peer Competitors,” Center for Strategic and International Studies (December 2022), 1.
 178. Ibid., 1-2.
 179. On the integrated deterrence concept, see [U.S.] Department of Defense, “2022 National Defense Strategy,” October 2022, 8-11.
 180. Brooks, “The End of Arms Control?,” 90-92.
 181. Alexander Graef and Tim Thies, “Lessons from the Past: Arms Control in Uncooperative Times,” Global Policy Brief (December 2022).
 182. Kroenig, “Deterring Chinese Strategic Attack: Grappling with the Implications of China’s Strategic Forces Buildup,” 20.
 183. Keith B. Payne and Michaela Dodge, *Stable Deterrence and Arms Control in a New Era* (Fairfax: National Institute Press, 2021), ix-25.
 184. John D. Maurer, “The Forgotten Side of Arms Control: Enhancing U.S. Competitive Advantage, Offsetting Enemy Strengths,” War on the Rocks website, June 27, 2018.
 185. Timothy Crawford and Khang Vu, “Arms Control and Great-Power Politics,” War on the Rocks website, November 4, 2020.
 186. Robert Powell, “Absolute and Relative Gain in International Relations Theory,” *American Political Science Review* 85, no. 4 (December 1991): 1303.
 187. Michael Moodie and Jerry Zhang, “Bolstering Arms Control in a Contested Geopolitical Environment,” GGIN Policy Brief (October 2022), 5.
 188. Ibid., 3.
 189. “Protecting Nuclear Arms Control is a Global Imperative,” European Leadership Network / Asia-Pacific Leadership Network website (May 2023).
 190. Ibid.
 191. Lotje Boswinkel and Paul van Hooft, “Not One Without the Other: Realigning Deterrence and Arms Control in a European Quest for Strategic Stability,” Hague Centre for Strategic Studies (December 2022).
 192. Ibid.
 193. “IGEP Message to the First Preparatory Committee of the 2026 NPT Review Conference,” Ministry of Foreign Affairs (MOFA) website (April 4-5, 2023).
 194. James M. Acton, Thomas D. MacDonald, and Pranay Vaddi, “Reimagining Nuclear Arms Control: A Comprehensive Approach,” Carnegie Endowment for International Peace (2021).
 195. William Perry and Tom Collina, *Kaku no botan: Arata na kakukaihatsu kyoso to Toruuman kara Toranpu made no daitouryoukenryoku* [The button: The new nuclear arms race and presidential power from Truman to Trump], trans. Tainaka

- Masato and Yoshida Fumihiko (Tokyo: Asahi Shimbun Shuppan, 2020), 272-285.
196. Akshai Vikram, “The New Nuclear Arms Race: The Outlook for Avoiding Catastrophe,” Ploughshares Fund (August 2020).
197. George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, “Toward a Nuclear Free-World,” *Wall Street Journal*, January 15, 2008.
198. “Roadmap to Zero,” GlobalZero.org website.
199. For example, see Peter Rudolf, “US Nuclear Deterrence Policy and Its Problems,” SWP Research Paper, no. 10 (2018).
200. For example, see Jeff Richardson, “Shifting from a Nuclear Triad to a Nuclear Dyad,” *Bulletin of the Atomic Scientists*, September/October 2009: 33-42.
201. For example, see Tytti Erästö and Matt Korda, “Time to Factor Missile Defence into Nuclear Arms Control Talks,” SIPRI Commentary / Backgrounders (September 30, 2021).
202. Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, 257-261.
203. “G7 Hiroshima Summit (Session 9 Toward a Peaceful, Stable and Prosperous World),” English edition, MOFA website (May 21, 2023).
204. “G7 Leaders’ Hiroshima Vision on Nuclear Disarmament,” MOFA website (May 19, 2023).