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TRUTH OR DARE: TRANSPARENCY, AMBIGUITY, AND PROSPECTS FOR NEW INTERNATIONAL COMMITMENTS IN THE NUCLEAR REALM

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Introduction

Both transparency, the provision of detailed, accurate, and verifiable information about arsenals and strategies, and ambiguity, the intentional obfuscation of such information to keep others guessing, play roles in deterrence strategies for pretty much all states, nuclear-capable or not. States also practice transparency because of various international obligations.

In this paper¹, we examine the logic for and against nuclear weapons transparency and how it manifests itself in the attitudes and behaviors of countries which believe they benefit from nuclear deterrence. We show how states that possess or are otherwise protected by nuclear weapons, including the two countries that hold the lion's share of the global arsenal, the Russian Federation and the United States, choose transparency and ambiguity situationally, mainly in service of deterrence goals and arms control and disarmament commitments. But the specifics of what this means, already in flux in anticipation of a new period of great power competition, are now shifting further as large-scale conflict continues in Ukraine. On February 24, 2022, when the Russian armed forces began an assault on Ukrainian territory along multiple axes, an eight year old war in Ukraine long at a nasty simmer became a full-scale conventional conflict and Europe, free of wars of this scale for decades, was faced with a new security paradigm. Among other things, new perspectives on nuclear dangers, nuclear threats, and nuclear postures are emerging in light of a conflict explicitly fought in the nuclear shadow. As countries rethink how they view and value nuclear deterrence, transparency, ambiguity and risk, the repercussions of their debates and decisions will echo globally and for years to come.

While much will surely yet change as fighting continues, nuclear weapon states may find that the significant escalation risks posed and evidenced by the conflict in Ukraine and its

likely aftermath argue for greater transparency in what threaten to be unstable times. If so, they have at their disposal a variety of options for unilateral and multilateral actions. Among them, the framework of the Nuclear Nonproliferation Treaty (NPT) offers some building blocks.

Logics of Ambiguity and Transparency

If one point of military capacity, conventional or nuclear, is to frighten off potential adversaries, then that deterrence logic demands at least some transparency. In order to deter an adversary from an undesirable action, one must convince that adversary that one is capable of a terrifying response and is willing to undertake it. The first part of a credible deterrence posture is a question of force posture: what weapons one has, in what numbers, and where they are, coupled with plans and strategies for using them. Here, transparency that shows potential adversaries that one can respond is crucial to credibility. The second part is a question of will. If a state has the evident capacity and can also demonstrate willingness to take action, its threats are more likely to be believed.

In the nuclear realm, there is a good bit to be transparent about. Countries can reveal the sizes of their weapon stockpiles, the types of weapons they have, where and how they are deployed and stored, their strategies of deterrence and/or use, and whether or not their arsenal is growing or shrinking. Information about stockpiles of fissile material can also help outsiders – allies or adversaries – and publics understand what a country is doing in the nuclear realm. Full transparency would also include the budgets allocated and spent on weapon development, deployment, and maintenance, as well as information about related exercises.

Theoretically, full global transparency of military (including nuclear) postures and plans could be good for stability. As Thomas Schelling wrote in *Arms and Influence* back in 1966:

“[I]f all threats were fully believable (except for the ones that were completely unbelievable) we might live in a strange world – perhaps a safe one, with many of the marks of a world based on enforceable law. [...] The world would be full of literal and figurative frontiers and thresholds that nobody in his [sic] right mind would cross.”²

But no nuclear weapon state has yet chosen to be fully transparent. This is because ambiguity also has its uses. A weaker country gains no advantage and every disadvantage from revealing its weaknesses. Even a powerful country may want to keep secret capabilities that adversaries or others would otherwise try to steal or emulate, creating a proliferation risk, or counter. Indeed, the effectiveness of some capabilities and postures depends on a certain amount of secrecy: revealing the locations of mobile nuclear missile launchers or submarines would undermine second-strike capability.³

There are also good reasons to stay quiet about intentions. Credible threats to respond to crossed red lines are crucial for deterrence, but states also want prospective adversaries to overestimate the risks of crossing pink and grey lines. Meanwhile, leaving allies guess-

ing can be advantageous, lest they become emboldened by a promise of defense and act disruptively as a result.⁴ This said, if nuclear armed states are too secretive towards their allies, those that rely on reassurance might be less assured.

Indeed, just as full transparency would likely lead to stability, ambiguity could do the same under some conditions. If ambiguity leads states and non-state actors to attribute greater capacity and resolve to their real and potential adversaries than actually exists, they are less likely to engage in risky behavior. However, if ambiguity instead leads countries to underestimate one another’s capacity and resolve, including because they believe that others’ ambiguity intentionally masks weakness of weapons, will or both, it will instead increase the risk of escalation spirals.⁵

These dynamics apply for both nuclear and conventional arsenals. But nuclear deterrence may require less credibility, and thus less transparency, to work than conventional deterrence. Because the dangers inherent in nuclear use are so high, deterrence theorists have long postulated that potential adversaries of a nuclear weapon state would think



Picture: A Soviet inspector examines a BGM-109G Gryphon ground-launched cruise missile in 1988 prior to its destruction.

https://en.wikipedia.org/wiki/Intermediate-Range_Nuclear_Forces_Treaty#/media/File:INF_inspection.JPG



Russian S-300V Air Defence System, by Vitaly V. Kuzmin - <http://vitalykuzmin.net/?q=node/459>, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=20263346>

twice about attacking even if they judged their enemy unlikely to actually use nuclear weapons in response.⁶

A number of theorists believe that fear of nuclear weapons use has prevented great power war over the last seven decades. Some argue that fear of nuclear escalation has prevented nuclear war since 1945. Specifically, this view holds that states avoid use of nuclear weapons in order to avoid responsive use of nuclear weapons by adversaries, and the ensuing risk of further escalation.⁷ But for a nuclear weapon state that risks losing a conventional war, that may not be enough. Thus, as Daryl Press and Keir Lieber argue, nuclear weapon states fearing conventional military defeat “tend to develop coercive nuclear doctrines and postures to give them the capability to stalemate their most threatening adversary.”⁸ That is, they also threaten nuclear use to deter conventional fights.

Deterrence and warfighting aside, reputational factors may also play a role in decisions to be transparent or ambiguous. If countries agree that more transparency makes the world safer, those willing to be transparent will be seen in a better light by others. Similarly, if one is reducing one’s arsenal or disarming in order to meet treaty commitments, transparency helps prove decommissioning and dismantlement of weapons.

But reputational costs may also lead states to keep capabilities secret, say if they violate international agreements, norms, or law. South Africa’s aborted nuclear weapon program was developed under wraps. Israel has generally remained opaque about its nuclear weapon program, letting it be an open international secret. Russia kept the existence of its 9M729 INF-range cruise missile secret in order to avoid blame for the collapse of the INF Treaty. The same can apply to intentions. As James Fearon has written, countries pondering disruptive actions “may conceal their true willingness to fight in order to avoid appearing as the aggressor.”⁹

Domestic politics may also play a role. Democratic countries with more open and transparent political systems often have obligations to citizens to reveal at least some aspects of their capabilities, strategy, and budget.

But obligations to citizens or not, democratic states still justify secrecy when it comes to nuclear weapons. The formal grounds are usually national security. For instance, the United Kingdom, in its 2021 Integrated Review, determined that in an “evolving security environment” it should stop making the size of its stockpile or numbers of deployed warheads and missiles public.¹⁰ But other factors may also play a role. The Biden administration in the United States, which in 2021 declassified the numbers for stockpiles and dismantled warheads, has not disclosed them in 2022 because other nuclear-armed states have not followed their example (and perhaps also because the numbers have not shrunk).

The Truth is Out There

Even as countries adopt a mix of transparency and ambiguity in their military postures and strategies, including when it comes to nuclear weapons, arms control and nonproliferation agreements and institutions are at least partially predicated on the notion that more transparency makes everyone safer.

As such, they help to increase transparency through a wide range of unilateral, bilateral, and multilateral mechanisms that provide varying degrees of information about at least the declared nuclear weapon states. Arms control treaties and their verification mechanisms let signatories, and to a lesser extent the public, know about weapon types and numbers. The International Monitoring System of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) is able to ensure that no nuclear explosion goes unnoticed despite the treaty itself not yet having entered into force. Statements and documents issued by national officials and reports to legislatures describe both postures and strategies. Exercises demonstrate capabilities and provide insight into how countries think about using them. Although all of these, even put together, offer less than complete information and may indeed mislead in the interest of both deception and ambiguity, they also provide a good deal of data.

Moreover, information on nuclear postures may leak (perhaps intentionally to help strengthen deterrence) or be stolen. Intelligence collectors gather data about other states' arsenals using a variety of tools, many of which are growing ever-more capable as surveillance technology improves. If this information is rarely if ever shared with the public, civil society and academic researchers combine what governments provide with what they and others observe, including data gathered from leaks, open-source intelligence, and other materials to estimate arsenals and strategies.¹¹ Indeed, the capacity for open source estimations has become even more robust as monitoring and verification technologies have become more and more accessible. The difficulty of keeping at least some information confidential can encourage states to be more transparent themselves, for instance to reduce the bureaucratic costs of classification and to better control the message when information makes it out regardless.¹²

The NPT and its Obligations

The NPT, in force since 1970, is on paper the world's most far-reaching multinational mechanism related to nuclear weapons. But

although it encompasses most of the world's states, it makes real demands only of those who sign on as non-nuclear weapon states. As set forth in Article 2 of the NPT, these countries must remain non-nuclear. Article 3 establishes an obligation to conclude safeguard agreements with the International Atomic Energy Agency (IAEA). This has evolved into the comprehensive safeguards standards under which non-nuclear weapon states have to comprehensively declare all peaceful uses of nuclear energy and submit to oversight of those nuclear energy programs to the IAEA.¹³ The five countries recognized as nuclear weapon states by the NPT (China, France, Russia, United Kingdom, and the United States, termed the P5 because they are also the five permanent members of the United Nations Security Council) have an easier bar to clear: they are merely to pursue disarmament "in good faith". Although subsequent discussions and documents do call on them to offer greater transparency, these are not legally binding. The four (admitted and presumed) nuclear weapon possessors which are not NPT parties (India, Israel, North Korea, and Pakistan) are under no obligations at all.

Since 2000, the NPT has also sought more transparency from the nuclear weapon states. At both the 2000 and 2010 NPT Review Conferences, treaty parties agreed that the P5 should do more to advance both disarmament, the treaty's original call on them, and transparency.¹⁴ While in the NPT context the P5 have consistently reaffirmed commitments to transparency,¹⁵ they have also vacillated on implementing them, and in other statements have openly touted the benefits of ambiguity.

The nuclear weapon states have agreed among themselves to undertake some additional transparency and reporting requirements. But their compliance even with these voluntary commitments varies. At the NPT's 2000 Review Conference, the P5 agreed to provide regular reports on their capabilities and their progress towards disarmament.¹⁶ With the 2010 Action Plan, the nuclear

weapon states agreed to report on their progress on disarmament, risk reduction and transparency efforts. The plan also called for a standard reporting form for nuclear weapon states' regular reports. In 2015, the P5 pledged to document their progress in implementing a roadmap for "rapid" movement towards overall reduction in the global stockpile of nuclear weapons and to explain their weapons' operational status, role in military and security planning and strategy, and risk of accidental use.¹⁷

To date, however, reports have been inconsistent and irregular. Different countries submit different sorts of documents for each conference and have not in fact aligned on a consistent reporting format. China and Russia were the first to provide reports, in 2005. These included only publicly available information.¹⁸ In 2005, China declared its nuclear arsenal the smallest among the five nuclear weapon states, but did not elaborate.¹⁹ In 2010, 2014 and 2015, Beijing affirmed its commitment to disarmament for all and described its nuclear policy as solely defensive and "open, transparent and responsible."²⁰ Russia's reports chronicle its reductions in line with arms control treaties since 2000 and contain a pledge to continue to shrink its arsenal. The United States, which offered a paper rather than a report in

2010, noted its reductions of weapons and fissile material since 1988 and cited then-President Barack Obama's promises of an ambitious agenda for nuclear disarmament.²¹ France and the United Kingdom submitted no national reports in 2010. In 2014, for the Preparatory Committee meeting and the following 2015 Review Conference, all five nuclear weapon states submitted statements or reports. France and the United Kingdom provided topline numbers for their nuclear weapon arsenals.²² The United States detailed bilateral arms control commitments and achievements since the Cold War in its Action Plan Report.²³ Russia did the same in its statement.²⁴ For the 2019 Preparatory Committee only China and the United Kingdom submitted reports, China reiterating its previous reports and the United Kingdom again reporting topline numbers.²⁵

For the 2022 Review Conference, all P5 countries submitted national reports on their progress in implementing the NPT obligations.²⁶ All were more detailed than past submissions, and offered more information regarding doctrines, posture, and commitments and actions taken since the 2010 reporting cycle, although all provided material was already in the public sphere. Russia and the United Kingdom specifically referenced previously issued government documents.



Delegates on the last day of the 10th NPT Review Conference await outcome. © Oliver Meier

In the case of Russia, this was its June 2020 “Basic Principles of State Policy of the Russian Federation in the Area of Nuclear Deterrence” which provides detail on Russian deterrence principles and conditions for nuclear use, as discussed below. The United Kingdom referenced its 2021 “Integrated Review of Security, Defence, Development and Foreign Policy”, which in part makes an argument for greater ambiguity.

The P5 have also issued joint statements. Since 2009, they have met periodically, under what is termed the “P5 process”, to discuss NPT-related transparency and confidence building measures. For example, the P5 in a 2010 joint statement reiterated their commitment to the NPT and affirmed they were “developing the mutual confidence and transparency among the P5 that is essential to make progress towards multilateral nuclear disarmament.” Yet, the NPT nuclear weapon states failed to clarify what such openness might entail.²⁷

In their December 2021 Joint Communiqué, the P5 mentioned “transparency” only alongside “outreach” activities and in the context of communication between the nuclear weapon states, the NPT Bureau (i.e. the chairs of the main committees during meetings of states parties), non-nuclear weapon states and civil society. The Joint Communiqué also reaffirmed the P5 intention to hold a Review Conference side event dedicated to national nuclear doctrines and policies.²⁸ Such an event might have been helpful in improving P5 transparency efforts. Yet, the P5 have not formally met since Russia’s February 24, 2022 attack on Ukraine and the event has yet to take place.

Russian and American Approaches to Transparency and Ambiguity

As the two countries with well over 90 percent of the world’s nuclear weapons, the United States and Russia are in a category of their own. Historically, the two have provided a good bit of information about their arsenals to one another as a result of bilateral arms

control commitments. They also share information with their allies. They offer far less to third states and the public.

In recent years, what was once a constellation of treaties to limit U.S. and Russian (formerly Soviet) nuclear weapons and commit the two countries to inform one another about their arsenals has shrunk to one. This is the 2010 New START accord, which was extended in 2021 for five years, until February 2026. Under the terms of the treaty, Moscow and Washington must provide one another with detailed information about their strategic nuclear weapons, including numbers, new types, new deployments, exercises, and so forth. The treaty also mandates telemetry sharing on up to five missile tests per year. New START provides for robust verification, through “National Technical Means” such as satellite surveillance and on-site inspections of facilities and weapons.²⁹ Nuclear Risk Reduction Centers operate in Russia (dubbed Directorate for Oversight of Implementation of Agreements at the Ministry of Defense) and the United States (National and Nuclear Risk Reduction Center at the Department of State).³⁰ The centers permit direct communication with one another, and pass on a variety of notification messages related to treaty implementation.

The United States and Russia publish the aggregate numbers of their strategic offensive nuclear weapons, as defined by New START, but not other data shared under treaty auspices. So far, this data exchange and publication has been unaffected by the war in Ukraine. The two report the numbers of deployed and non-deployed launchers subject to treaty limitations (Sea-Launched Ballistic Missiles, or SLBMs; Intercontinental Ballistic Missiles, or ICBMs; and heavy bombers) as well as associated deployed warheads.³¹

Information on fissile material stocks for military purposes is not included in any transparency mechanism and usually classified because it would allow assessments of long-term nuclear capabilities. However,

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Russia and the United States (and France and the United Kingdom) have announced that they no longer produce fissile material for nuclear weapons purposes.

In 1991 and 1992, the United States and first the Soviet Union and then Russia issued a series of unilateral pledges, termed the Presidential Nuclear Initiatives, or PNIs, to reduce mainly non-strategic capabilities and do so transparently. The United States maintains that Russia has never fully implemented these pledges.³²

New START framework data exchanges do not obligate its parties to share, publicly or otherwise, information about weapons not limited by New START. Russia keeps secret most data on non-strategic nuclear weapons, i.e. those that can be deployed on short- and medium-range delivery vehicles,³³ and new weapons with strategic ranges that are not subject to treaty limits because their parameters diverge from those defined by New START. This said, Russian officials do selectively provide information to the media about specific developments and deployments of new systems (they do the same

when it comes to treaty-limited weapons). For the rest, including many non-strategic weapons assigned to systems that can carry both nuclear and conventional armaments, officials have not provided much information on types and numbers. Moscow has never given a total number of non-strategic nuclear warheads but maintains that “Russia’s non-strategic nuclear capability is no more than 25 percent of the level of capability which the USSR possessed in 1991.”³⁴ Independent experts believe that Russia possesses just under 2,000 warheads of this category.³⁵ Moscow has also avowed that the vast majority of these weapons are non-deployed, in central storage facilities.³⁶

The fact that many of Russian non-strategic delivery systems are dual-capable, that is, can be deployed with either nuclear or conventional warheads, further complicates estimates. External observers and analysts may categorize non-strategic delivery systems as nuclear weapons carriers even if such systems in fact are deployed in a conventional role only.³⁷ This ambiguity may contribute to inflated estimates of Russia’s non-strategic nuclear weapons numbers.



Russian telemetry processing system supplied to U.S. under START treaty, at NMC.agr.jpg, https://commons.wikimedia.org/wiki/File:Russian_telemetry_processing_system_supplied_to_U.S._under_START_treaty_at_NMC.agr.jpg

Generally, the United States has voluntarily provided more information than Russia, although not always consistently. From 2010-2018, Washington declassified the total size of its nuclear stockpile for prior years. In 2019, the Donald Trump administration stopped the declassification of 2018 stockpile data.³⁸ It also did not release data in 2020. In October 2021, the Biden administration again declassified the data, revealing that in 2020, the United States had had a stockpile of 3,750 warheads and 2,000 more awaiting dismantlement.³⁹ With this return to form, the U.S. government has resumed providing both historical (dating back to 1945) and reasonably up to date information (the 2021 numbers have not yet been declassified) about its warhead inventories and dismantlement rates, in addition to what it releases through the New START framework.⁴⁰ The United States, however, like Russia, keeps secret the total size of its non-strategic nuclear

warhead stockpile, some of which is deployed in Europe. Independent experts believe that the number of U.S. nuclear bombs deployed in Europe is around 100 and that the United States maintains a similar number at home for potential future deployments.⁴¹

The United States since 2013 has become more open about the costs of its nuclear weapons programs.⁴² Although line items remain spread across agencies, mainly in the Defense and Energy Departments, budget information is available to those willing to do the math. Moreover, the Congressional Budget Office since 2015 independently evaluates the costs of nuclear weapon plans every two years, and publishes its assessments. The 2021 assessment concludes that the nuclear arsenal would cost U.S. taxpayers 634 billion US-Dollar over the course of 2021-2030.⁴³

Russian budget numbers are more difficult to parse, although many are also published in a variety of sources, including those from the ministries of Finance and Defense and from the State Atomic Energy Corporation Rosatom. Line items vary from year to year, as do classification rules. Russia's once fairly detailed reporting to the United Nations Office for Disarmament Affairs (UNODA) has since 2010 become highly generalized. For example, it no longer differentiates between nuclear and non-nuclear expenditures.⁴⁴ However, snippets of information emerge from a variety of sources. For instance, during discussions of the three-year federal budget draft in 2021, authorities disclosed that Moscow then planned to increase spending on its nuclear weapons enterprise by 14 percent between 2022 and 2024.⁴⁵ If accurate, this would bring the annual nuclear weapons expenditures (excluding costs for delivery vehicles) to 56.17 billion Roubles by the end of 2024.⁴⁶ However, Russia may since have changed some of its priorities and funding allocations in the face of continued war in Ukraine.⁴⁷ As of late 2022, the Russian Federal Budget includes the same figure for 2023 (49.77 billion Roubles), but the 2024 plan has been increased even further: now 64.29 billion Roubles, it is still labeled as 0.04 percent

of GDP. Meanwhile, a decrease is planned for 2025 – to 0.03 percent GDP for a total of 58.54 billion Roubles.⁴⁸

Washington and Moscow also provide some information about their nuclear weapon strategies. The United States includes a discussion of nuclear weapons and conditions for their use in its National Security Strategy, issued by the White House every few years. Nuclear weapons are also discussed in other publications defining doctrine and planning published by the Defense Department and its components and those issued by the State Department, Department of Energy, and other agencies. U.S. government and military personnel discuss strategy in academic publications, presentations, and press and other interviews. The United States develops and announces shifts in both strategy and posture through occasional Nuclear Posture Reviews, the most recent of which, already cited above, was issued on October 27, 2022.⁴⁹

No U.S. administration has provided details on the conditions under which the United States would resort to nuclear weapon use. Generally, the United States is consistent in saying that its arsenal exists to deter conflict and aggression against itself and its allies, but has rejected promises not to use nuclear weapons first, other than the pledge not to use them against non-nuclear weapon states party to the NPT and in compliance with their nuclear nonproliferation obligations.⁵⁰

In 2018, the Trump administration Nuclear Posture Review (NPR) seemed to widen the conditions under which the United States might use nuclear weapons, for instance suggesting it might respond to cyberattacks with nuclear weapons.⁵¹ The 2022 Biden administration NPR instead states that the “nuclear deterrent undergirds all national defense priorities” and that “nuclear weapons are required to deter not only nuclear attack, but also a narrow range of other high consequence, strategic-level attacks.”⁵² The 2022 NPR also reiterates past commitments made in other fora “not to purposely threaten civilian populations or objects, [or] inten-

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tionally target civilian populations or objects in violation of LOAC [the Law on Armed Conflict].⁵³

Russia, for its part, has long offered a general statement regarding its nuclear strategy in its occasional published military doctrine, including the conditions under which Russia would use nuclear weapons. These have, since 2010 averred that Russia would only use nuclear weapons in the event of a threat to "the very existence of the state."⁵⁴ Russia's naval doctrine speaks of the need to maintain non-strategic nuclear deterrence capacity.⁵⁵

In June 2020, Moscow published the "Basic Principles of State Policy of the Russian Federation in the Area of Nuclear Deterrence", which lays out conditions for nuclear use in more detail and discusses Russia's perspective on the logic of nuclear deterrence.⁵⁶ It states that Russian nuclear use is possible if Russia believes itself under ballistic missile attack, if adversaries use nuclear or other weapons of mass destruction against Russia or its allies, if adversaries attack Russia's capacity for nuclear retaliation (e.g., its command and control), or in the event of conventional aggression that threatens "the very existence of the state." Moreover, Russian nuclear deterrence is intended, in the event of conflict, to preclude escalation of hostilities and to end the conflict on "terms acceptable to the Russian Federation and (or) its allies." The document also suggests that nuclear deterrence doctrine applies prior to nuclear use. If a nuclear weapon is used, therefore, the document's outline for Russian approaches may no longer apply.⁵⁷

Russian military specialists and strategists have written extensively on the need for Russia to dissuade adversaries, whether in the name of deterrence or warfighting, by being able to escalate to various sorts of nuclear use.⁵⁸ Such writings are not in line with the official nuclear doctrine, but might seem to lend credence to Western, and especially U.S. views that Russia would, indeed, use a nuclear weapon early in a conflict to force the United States or other adversaries to stand down. Recent statements by Russian lead-

ers, including Vladimir Putin, that seemed to hint at lower thresholds for nuclear use, including to defend Russia's "territorial integrity", further complicate matters.⁵⁹

Critics complain that both countries' transparency regarding nuclear doctrine and strategy is at best incomplete and at worst misleading. But from Moscow's and Washington's perspective, the ambiguity is part of the point. Russia's "Basic Principles" explicitly state that deterrence requires some unpredictability of when and how nuclear weapons will be used.⁶⁰ The 2018 U.S. Nuclear Posture Review (NPR) puts it this way: "It remains the policy of the United States to retain some ambiguity regarding the precise circumstances that might lead to a U.S. nuclear response."⁶¹ The 2022 NPR avoids the word "ambiguity", but its discussions of "integrated deterrence" and "campaigning" seem to at least partially reflect the same paradigm.⁶²

Those looking for more clarity also watch nuclear exercises. States conduct nuclear and conventional military exercises to train forces and to send signals to other countries. But such signals may be intentionally misleading, and/or unintentionally misread. For instance, in November 2021 Russian Minister of Defense Sergei Shoigu described deployments of the U.S. heavy bombers near Russian borders, undertaken as part of the U.S. "Global Thunder 2021" exercise, as a major and escalating threat, even as the United States describes them as geared to evaluation and improving readiness and deterrence capacity.⁶³

Russian exercises often highlight the capacity for joint operations, incorporating different legs of the nuclear triad as well as non-strategic nuclear forces and non-nuclear deterrence forces. They emphasize nuclear command, control and communication (NC3) and strategic forces battle management system functioning. But Russia provides information about such exercises inconsistently. Over the years, some patterns in Russian nuclear exercises have emerged. Regular combat patrols by road-mobile ICBM units, sometimes termed exercises, focus on protecting the

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launchers from all sorts of attacks (saboteurs, air-space strikes, weapons of mass destruction) and ensuring battle readiness under any circumstances.⁶⁴ These exercises have gotten longer over time. Their patterns were in flux before 2022, when the Rocket Forces gradually extended the lengths of the patrols but have not changed since February 24, 2022.⁶⁵ The scenario for Russia's latest nuclear forces exercise, held in fall 2022, envisioned a "deep second strike" in the face of enemy attack – a retaliatory launch of strategic missiles by allegedly survivable land, air and sea platforms.⁶⁶

Chinese, French, and British Approaches to Transparency and Ambiguity

China, France, and the United Kingdom each have their own approach to transparency. Not bound by treaty commitments like those under New START, their revelations outside the NPT context about postures and plans are entirely voluntary and unilateral.

None of the P5 provide information about their military highly-enriched uranium (HEU) or plutonium stockpiles, although France and the United Kingdom, like the United States and Russia, as noted above, have stated that they no longer produce fissile materials for weapons purposes.⁶⁷ While China has not officially declared this, experts assess that Beijing has also halted the production of fissile material.⁶⁸

China is comparatively forthright about its non-transparency. At the 2000 NPT Review Conference, Beijing initially opposed language in the final document on the disclosure of information on nuclear capabilities by nuclear-weapon states. It wanted to limit such disclosures to negotiated arms limitation agreements and link them to no-first use commitments of the other nuclear-weapon states.⁶⁹ China has long been wary of treaty commitments as well, arguing that as a country with a smaller nuclear arsenal (presumably as compared to the United States and Russia), more transparency

is bad for its security.⁷⁰ In line with this, China offers no information on its nuclear weapons arsenal size or makeup, inactive stockpile, or nuclear weapons spending. Official statements and press reports (as well as parades) do reveal some aspects of weapon types, developments, and sometimes deployments, but China rarely publicizes its exercises that involve nuclear forces. Chinese media reports tend to emphasize Beijing's no first use doctrine and second-strike capabilities.⁷¹

The last official information proffered on Chinese nuclear force size was in a 2004 fact sheet that claimed China "possesses the smallest nuclear arsenal" of the nuclear-weapon states.⁷² But China's modernization efforts – most prominently represented by the construction of what appear to be new ICBM silos – suggest that this may no longer be the case, even if it was true at the time. Both U.S. released intelligence assessments and open source analyses indicate that the arsenal has grown substantially. However, because the People's Republic of China seems to co-deploy its conventional and nuclear capabilities, counts and assessments are difficult.⁷³

When it comes to Chinese strategic thinking, some experts, including official ones representing other governments, suspect that Beijing's description of its nuclear policies is not fully in line with reality.⁷⁴ Beijing insists that it will not use nuclear weapons first and that its arsenal is intended only for retaliation in case of a nuclear attack. However, the U.S. Department of Defense reports that some Chinese military officers in published work have suggested the possibility of lower barriers to use.⁷⁵ And while past documents have affirmed that China's weapons are not kept on alert and warheads are stored separately from delivery systems,⁷⁶ some scholars also believe that China has raised ICBM readiness levels.⁷⁷

France's President Macron has publicly stated that he views transparency as "part of [France's] responsibilities as a 'nuclear-weapon State' under the NPT."⁷⁸ Indeed, since the mid-1990s, successive French Presidents have offered regular speeches on nuclear deterrence to their

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military establishment, which have included information on doctrine as well as weapons and approximate stockpile numbers.⁷⁹ In March 2008, President Nicolas Sarkozy disclosed the upper limit of the full (deployed and non-deployed) French nuclear warhead arsenal, announcing that it included fewer than 300 nuclear warheads.⁸⁰ Since then, his successors, François Hollande and Emmanuel Macron have affirmed, in 2015 and 2020 respectively, that the arsenal remained below that limit.⁸¹ Officials and official documents confirm that France’s arsenal consists of submarine-launched ballistic missiles and air-launched missiles and that at least one of France’s four ballistic missile submarines (SSBNs) is on patrol at any given time.⁸²

The French president has said that the country’s nuclear doctrine allows it to target adversaries’ “political, economic and military nerve centres,” if they threaten France’s vital interests.⁸³ French documents also note that nuclear forces are meant, in part, to ensure “the freedom of action of [France’s] conventional forces.” More vaguely, they are also meant to help prevent “major direct confrontation between great powers.”⁸⁴

France provides the topline numbers for its nuclear weapon spending, but does not specify how these are calculated. France’s most recent military planning law, passed in 2018, allocates 25 billion Euros to the French nuclear forces between 2019 and 2023.⁸⁵ In 2022, Paris reported a commensurate annual allocation of 5.3 billion Euros to its nuclear deterrence mission.⁸⁶ But Paris does not break down the costs, although it affirms that the 25 billion Euros include the cost of modernizing both France’s sea and air capabilities.⁸⁷ Information on the specific cost of France’s SSBN force and its modernization to a third generation SSBN is classified.⁸⁸

French exercises, although they are meant in part to demonstrate the country’s capacity and thus contribute to deterrence, also do not add much to the picture. They emphasize force-on-force air battle, battle readiness of the air leg, and patrols and test launches for the sea leg.⁸⁹

As noted above, the **United Kingdom** has recently decided to become less transparent. Since 2010, London has committed to upper limits for its nuclear force, which consists entirely of submarine-launched ballistic missiles.⁹⁰ In its 2015 Strategic Defense and Security Review, London pledged that by the mid-2020s, it would possess no more than 180 deployed and non-deployed nuclear weapons, no more than 120 of them operationally available, and with a maximum of 40 warheads on each submarine.⁹¹ But in the 2021 Integrated Review, the government cited an “evolving security environment including the developing range of technological and doctrinal threats,” to both raise this cap and adopt a “policy of deliberate ambiguity” intended to “[complicate] the calculations of potential aggressors, [reduce] the risk of deliberate nuclear use by those seeking a first-strike advantage, and [contribute] to strategic stability.”⁹² Specifically, London noted that it would no longer publicly divulge figures for its operational stockpile or deployed warhead and missiles.⁹³ London’s 2015 Strategic Defense and Security Review already reserved the right to stay “deliberately ambiguous about precisely when, how and at what scale [the UK] would contemplate [nuclear weapons] use, in order to not simplify the calculations of any potential aggressor.”⁹⁴ Civil society groups have criticized this new approach, frustrated with what seems a reversal of a longstanding UK policy to pursue increased transparency as an integral part of disarmament.⁹⁵

Reliable cost data for the British deterrent is hard to come by due to inconsistent reporting, incomplete information, and secrecy that London says is necessary for operational security.⁹⁶ Based on the bits and pieces of publicly available information, experts assume that the UK nuclear deterrent costs taxpayers some 2.8 billion Pounds per year.⁹⁷

As to exercises involving nuclear forces, the United Kingdom does not appear to announce them, thus it is next to impossible to determine what is an exercise and what a deterrent patrol or test launch.

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The Other Nuclear Armed States

India, Israel, Pakistan, and North Korea are not NPT member states. The first three never signed the NPT. North Korea announced its withdrawal in 2003, though some states question whether it did so in compliance with the legal requirements for leaving the NPT. As non-signatories, these states are not legally bound by the NPT's obligations and prohibitions, including the ones on transparency. Their approaches to posture and strategy emphasize ambiguity, although those that admit to a nuclear arsenal insist that theirs serves a deterrent purpose.

India describes its arsenal as intended as a “credible minimum deterrent.” It pledges no first use, with an exception for biological or chemical attacks.⁹⁸ Likewise,

Pakistan describes its force as purely defensive. Neither discusses its stockpiles, storage, or operations.⁹⁹ Both eschew nuclear exercises, viewing them as escalatory.¹⁰⁰ According to experts' assessments, Pakistan possesses 165 nuclear warheads and India 160.¹⁰¹ **North Korea** pledges no-first-use unless adversaries “encroach upon its sovereignty” or its security.¹⁰² What transparency it offers takes the form of weapon and missile tests, which reveal capacity to build and use nuclear weapons and delivery vehicles. Experts assess that Pyongyang has accumulated enough fissile material to build 40 to 50 nuclear weapons.¹⁰³ **Israel**, which does not admit to having nuclear weapons (experts assess it has about 90, deliverable via missiles or as bombs), does not officially discuss their purpose or reveal whether and when exercises involve a nuclear dimension.¹⁰⁴

Allies and Umbrellas

Allied nuclear weapon states generally share substantial amounts of information with their partners. The United States and United Kingdom cooperate extensively in the nuclear realm, both in warhead and delivery system development.¹⁰⁵ Meanwhile, non-nuclear allies of nuclear weapon states that are protected by security commitments from their nuclear-armed partners necessarily receive some information from those partners, and protect it as the partners require them to. As a result, they broadly follow templates the nuclear armed states set out for transparency and ambiguity. This said, the very notion of extended deterrence brings with it a certain ambiguity, as the state extending protection must simultaneously assure its ally of its commitment, deter adversaries, and avoid, as relevant, emboldening allies to potentially risky behavior.

The North Atlantic Treaty Organization (NATO) is a self-described “nuclear alliance,” which comprises three nuclear weapon states, although only two of them, the United States

and United Kingdom, participate in its Nuclear Planning Group with non-nuclear armed alliance members and explicitly indicate that (some) of their nuclear weapons are intended to deter threats to their allies.¹⁰⁶ In addition to UK submarine forces, NATO relies on the U.S. arsenal and U.S. deployments on the territories of Belgium, Germany, Italy, the Netherlands and Turkey.¹⁰⁷ To date, NATO confirms forward deployment of nuclear weapons but neither NATO nor any of the nuclear sharing host nations have officially confirmed the existence of U.S. nuclear weapons stationed on their soils, much less stated how many there are.¹⁰⁸ NATO holds an annual nuclear exercise, Steadfast Noon, which has only been publicized since 2021, no doubt to signal a reminder of the alliance's nuclear capacity, and also its restraint. The public information provided emphasizes that Steadfast Noon is routine, and reveals nothing about participants, locations, or scenarios.¹⁰⁹ NATO's ambiguity when it comes to both deployments and exercises likely serves two purposes. One is to sidestep public skepticism in some member states of reliance on nuclear weapons.¹¹⁰ The

other is to leave potential adversaries guessing as to when and how NATO might use nuclear weapons.¹¹¹

The United States also extends nuclear deterrence to its allies in the Asia Pacific region, notably Japan, South Korea, and Australia.¹¹² All three are public about their reliance on U.S. deterrence, but in different ways. South Korea makes no secret that it views the threat of U.S. nuclear use as critical to continued deterrence of North Korean attack.¹¹³ Japan, a strong proponent of nonproliferation, has faced domestic and international criticism for relying on Washington's promises to use nuclear weapons to protect it. However, it and the United States have grown increasingly open about the arrangement.¹¹⁴ Australia tends to be quiet about its reliance on U.S. extended deterrence. Unlike South Korea and Japan, it does not jointly plan nuclear operations with the United States.¹¹⁵

The United States does not formally extend a nuclear umbrella over Taiwan, which is self-governing but claimed by the People's Republic of China. The 1979 Taiwan Relations Act commits the United States to assist Taiwan in its self-defense which is sometimes interpreted as a promise to defend the island. Recently, U.S. rhetoric has come closer to suggesting that Washington would aid Taiwan militarily in the event of attack. This is presumably meant to deter China.¹¹⁶ That is, Washington may hope that China will believe that the United States might not only defend Taiwan conventionally, but would escalate to nuclear use in some situations.

Russia's military doctrine extends an explicit nuclear umbrella: it permits use of Russian nuclear weapons to defend itself or its allies. Russia's formal allies, which amount to the members of the Collective Security Treaty Organization (CSTO), however rarely discuss the matter. If there is any CSTO or bilateral nuclear planning, it is highly secret. Whether this ambiguity is intended to send signals or an artefact of history seems to depend on the country concerned.

For example, Belarus, which, like Kazakhstan and Ukraine inherited a portion of the Soviet

nuclear arsenal and rid itself thereof soon after independence, is overtly covered by a Russian nuclear umbrella. The two countries issued a joint military doctrine in 2021, which referenced Russian nuclear weapons as a "factor preventing nuclear and conventional military conflicts."¹¹⁷ Russia has incorporated nuclear weapons in some joint exercises with Belarus and Belarusian officials have over some years sporadically spoken about possible Russian nuclear deployments, and even of developing an independent nuclear program. In February 2022, Belarus dropped from its constitution a clause committing the country to become a nuclear weapon free zone.¹¹⁸ That same month, Belarus President Aleksander Lukashenko was present in the "situation room" of a major Russian strategic deterrence forces exercise.¹¹⁹ In June of that year, the presidents of Russia and Belarus reportedly discussed possible arrangements and exercises similar to NATO nuclear sharing and announced plans to provide Belarus with dual-capable systems (upgraded Su-25 attack aircraft and Iskander-M missile system). Nevertheless, there is no evidence of concrete Russian plans to deploy nuclear warheads to Belarus.¹²⁰ Such a deployment, if pursued, would run counter to the CSTO Permanent Council statement of November 2021 calling for all nuclear weapon state signatories to the NPT to limit their deployment of nuclear weapons to their own national territories.¹²¹

By contrast, Kazakhstan could only rely on Russian extended deterrence in direct contradiction in its overall approach to nuclear issues. Astana publicly supports a nuclear weapon-free world, has been a driving force behind a Central Asian nuclear weapon free zone, and has ratified the Treaty on the Prohibition of Nuclear Weapons (TPNW).¹²²

Transparency, Ambiguity and Ukraine

Nuclear weapons and nuclear deterrence have been threaded through both Western and Russian policies in the attenuated crisis that began in late 2021. Since then, Western nuclear weapon states and Russia have relied on a mix of transparency and ambiguity

to deter one another. They have done this through comments about possible nuclear use, statements about other repercussions, and revelations of intelligence information.

Russia has been over in its reminders of the nuclear shadow hanging over this conflict. As 2021 drew to a close, 2022 began, and Russian forces steadily gathered along Ukraine's borders, Western leaders told Moscow that use of force against Ukraine would be met with severe sanctions but made no known reference to military, much less nuclear, use. As Russian forces moved into Ukraine on February 24, undeterred by those threats, Russian president Vladimir Putin warned Western states of "consequences far greater than any of you have faced in history" if they got involved.¹²³ Russia also ran nuclear exercises the week before and the week of its February 2022 offensive. A few days in, it announced a heretofore unheard of "special regime of combat duty" for its strategic forces, later explained to consist of increased staff and readiness at command centers. In the fall of 2022, Vladimir Putin mentioned nuclear weapons in his speech announcing that Russia planned to annex four Ukrainian regions partially controlled by Russian forces, and Russian officials notified global counterparts and the United Nations of fears that Ukraine planned to use a radiological weapon.

The initial Russian statements and actions were understood in both Russia and Western states as intended to remind all concerned that Russia was a nuclear weapon state, capable of very dangerous escalation. That is to say, Russia was looking to use its nuclear weapons to deter NATO involvement in Ukraine with an ambiguous (because it was neither clearly stated nor specific) nuclear threat. The French foreign minister Jean-Yves Le Drian responded by reminding Moscow that NATO "is a nuclear alliance."¹²⁴ Although the United States canceled an ICBM test launch in March, it has since carried out its regular nuclear exercises, including an ICBM launch authorized

from an airborne nuclear command posts in August.¹²⁵ Throughout the first eight months of the war, NATO members have generally been clear, specific, and, indeed, transparent in saying that they have no intention of getting directly involved in the conflict unless allies are attacked. This said, U.S. President Biden has also noted that any nuclear use in this conflict, presumably by Russia, would draw unspecified "severe consequences."¹²⁶

In line with this, NATO members and Russia have avoided direct engagement with one another, suggesting that both are concerned about the risks of escalation. Western states have, however, continued to supply Ukraine with increasing quantities and ever more sophisticated weapons as well as other assistance. This suggests they do not view Russia's ambiguous threats as indicating credible dangers of nuclear use in response to such aid. Indeed, the United States has repeatedly indicated that it sees no evidence of Russia preparing for any kind of nuclear use, and Vladimir Putin has stated directly, seemingly walking back some of the earlier ambiguity, that the present crisis does not yet present nuclear dangers. This said, reports indicate that Western states are trying to calibrate their assistance in order to avoid escalation.¹²⁷

Prospects for Increased Transparency and the Role of the NPT

The tension between transparency and ambiguity and the complexity of factors that drive countries towards one, the other, or a combination of the two, is evident in all nuclear weapon states' policies, statements, and actions, as well as those of many of their allies. But nuclear weapon states do not, by and large, seem to be sold on transparency as the best path to security. Overall, their policies remain ambiguous, with transparency used mainly to support explicit and implicit threats.

Chinese experts, especially, have argued that states with smaller arsenals need more ambiguity. In reality, the key factors may be linked more to security and insecurity than arsenal size. Countries that are confident in their capabilities are more likely to see transparency as contributing to deterrence. Countries that are less capable than they would like to appear will naturally be concerned that openness could undermine their deterrence posture. Thus, as confidence wanes, ambiguity may well rise. Over recent years, as great power competition intensified, it is thus not surprising that the United Kingdom, and, at least for a time, the United States, embraced greater ambiguity. Meanwhile, countries that rely on nuclear-armed allies will want public reassurance of the nuclear umbrella's coverage. Thus, in the face of a hot conflict in Europe and especially if military buildups emerge in its aftermath, the smart money will be on nuclear states becoming more secretive and countries relying on extended deterrence seeking more explicit promises.

However, security and insecurity are not the only factors affecting what countries reveal and what they do not. International pressure may also have an effect, though it is difficult to assess its impact. Some Chinese scholars argue that China has become more transparent as a result of international pressure, even as Beijing in many ways became more secretive under pressure from the Trump administration.¹²⁸ Some Russian scholars believe that U.S. assertions about Russian doctrine in its 2018 Nuclear Posture Review are what led it to clarify its approach to deterrence in June 2020, although that text failed to end Western debates.¹²⁹

In an uncertain and dangerous environment, the real determinant of whether and when countries are willing to become more transparent (and reduce stockpiles) will be their confidence in their arsenals (nuclear and conventional). It seems likely that the more confident among them may well seek to be more transparent.

If so, the NPT provides something of a ready-made format for P5 information exchanges. By fulfilling the promise of the 2010 Action Plan and strengthening and formalizing its expectations, and by building on existing approaches and suggestions on how to improve multilateral nuclear transparency regimes, the P5 can demonstrate a renewed commitment to at least some NPT goals amidst a period of growing tension.¹³⁰

One option, likely out of reach at present but worth considering if states are looking to reduce escalation risks and increase stability, would be to extend the robust system of monitoring and data exchanges Russia and the United States agreed through years of arms control to other nuclear powers.¹³¹ Britain, France, and China could undertake voluntarily what the United States and Russia have bound themselves to do under legally binding treaties, as the latter two commit to maintaining their own contributions even if treaties expire. Under a step-by-step approach, the other three states could first disclose aggregate numbers of deployed strategic delivery vehicles, deployed warheads, and the total number of deployed and non-deployed launchers in the format specified by New START. At a later stage, they could exchange details on, inter alia, deployed and non-deployed strategic systems; missiles, submarines, and air bases.¹³² China, certainly, would balk at such a proposal, at least in the near term. But agreement by the United Kingdom and France to participate in such an arrangement could begin to move the needle and establish new norms and expectations.

The P5 could also consider expanding the Nuclear Risk Reduction Center (NRRC) system, with its direct communication links, beyond the United States and Russia. While there is no evidence that the NRRCs were used by either side to clarify nuclear signaling since February 24, 2022, they could be used for such communications in future. If expanded to the other nuclear powers, moreover, they could facilitate a more systematic approach to transparency, including, perhaps, about the role of NRRCs themselves.

Britain, France, and China could undertake voluntarily what the United States and Russia have bound themselves to do under legally binding treaties

At a minimum, the nuclear weapon states could more seriously and consistently implement NPT reporting guidelines. The Non-Proliferation and Disarmament Initiative (NPDI) repeated in a 2019 Working Paper its call for all NPT states parties to use a standardized reporting form (such as the ones they suggested in 2017 and 2018) to explain their fulfillment of the 2010 NPT Action Plan.¹³³ Non-nuclear weapon states and civil society should continue and coordinate pressure campaigns on the nuclear weapon states to incentivize better compliance.

Similar pressure should be applied to improve transparency regarding fissile material stockpiles. Experts have emphasized the need for annual updates on both, holdings of highly enriched uranium and plutonium, and the portions of stockpiles that consist of

weapons-usable material available for monitoring by the IAEA.¹³⁴

With fighting continuing to rage in Ukraine, it is difficult to be optimistic about prospects for greater transparency. This said, transparency retains evident benefits for stability and greater predictability, perhaps especially in a more conflictual atmosphere. In many cases, moreover, states will likely find that it bolsters, rather than detracts from, deterrence. While P5 cooperation is limited at present, some initiatives continue, suggesting that it remains a plausible platform for whatever transparency mechanisms countries can agree to.¹³⁵ These, combined with unilateral, but somewhat synchronized, risk reduction measures that also serve deterrence and stability goals, could both attain their immediate purposes and lay the groundwork for future projects.

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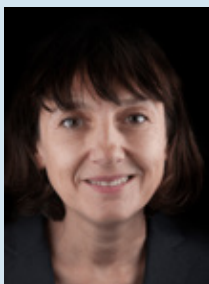
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The Deep Cuts Commission provides decision-makers as well as the interested public with concrete policy options based on realistic analysis and sound research. Since it was established in 2013, the Commission is coordinated in its deliberations by the Institute for Peace Research and Security Policy at the University of Hamburg (IFSH), the Arms Control Association (ACA),

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