

Contributions to Political Science

Adérito Vicente
Polina Sinovets
Julien Theron *Editors*

Russia's War on Ukraine

The Implications for the Global Nuclear
Order

 Springer

Contributions to Political Science

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ISSN 2198-7289

ISSN 2198-7297 (electronic)

Contributions to Political Science

ISBN 978-3-031-32220-4

ISBN 978-3-031-32221-1 (eBook)

<https://doi.org/10.1007/978-3-031-32221-1>

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This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Acknowledgments

The editors of this volume would like to thank Ulrich Kühn, Head of the Arms Control and Emerging Technologies Program at the Institute for Peace Research and Security Policy at the University of Hamburg (IFSH), and Benjamin Hauteauverture, Senior Research Fellow at the Foundation for Strategic Research and founding member of the European Union Non-Proliferation and Disarmament Consortium, for supporting our project from the very beginning. We would also like to thank all contributors for their commitment and patience during the various stages of processing this edited volume. In addition, we are deeply grateful to our families for their love and unwavering support throughout the process of writing this book.

Finally, we wish to acknowledge that this project was completed in the aftermath of the unprovoked and unjustified military aggression against Ukraine that began on February 24, 2022 and continues to this day. In light of this ongoing war, we dedicate this book to the brave and resilient Ukrainian people.

Contents

Introduction: How Has Russia’s War on Ukraine Changed the Global Nuclear Order?	1
Adérito Vicente, Polina Sinovets, and Julien Théron	
Part I The New Challenges and Threats to Global Nuclear Order	
The Crisis of Global Security Architecture and Challenges for Nuclear Nonproliferation and Arms Control	19
Sergiy Galaka	
Irregular Nuclear Warfare: Operating Top-of-the-Spectrum Means in the Gray Zone under the Threshold of Reaction. A Predictive Approach to the Ukrainian Battlefield	27
Julien Théron	
Russia’s Nuclear Blackmail as a Threat to the Global Nuclear Order	39
Olga Brusylowska	
Part II Missile and Disruptive Technologies	
Emerging and Disruptive Technologies in Russia’s War against Ukraine	55
Sitki Egeli	
Role of Missiles in Russia’s War on Ukraine and Its Implications for the Future of Warfare	69
Miles Pomper and Vasilii Tuganov	

Part III Arms Control Deadlock and the Possible Ways Out

War in Ukraine and US–Russian Arms Control: Is It Needed? Is It Possible?	97
Nikolai Sokov	
Strategic Arms Control Deadlock and the Possible Ways Out	109
Łukasz Kulesa	
Gender Perspectives in Arms Control and the Risks Deriving from Russia’s War on Ukraine	121
Federica Dall’Arche	

Part IV The NPT Regime: Competing Narratives on Nuclear Deterrence and Disarmament

Nuclear Deterrence in Russia’s War on Ukraine: The Credibility Dilemma	141
Polina Sinovets and Iryna Maksymenko	
The Future of the Nuclear Nonproliferation and Disarmament Regime	153
Adérito Vicente	
U-Factor: Russia’s War on Ukraine and the Deterrence vs. Disarmament Discussion. Pragmatic Internationalism	171
Valeriia Hesse	

Part V The Impact of Russia’s War Against Ukraine on Regional Cases

Anchoring US–Russia Relations: Perspectives, Strategic Cultures, and Nuclear Posture	187
Valentina Cassar	
NATO’s New Strategic Concept: The Changing Role of Nuclear Weapons, from Collective Security Back to Collective Defense	205
Tetiana Melnyk	
How Did the Russian Invasion of Ukraine Influence Iran’s Approach to the Nuclear Threshold?	217
Valeriia Gergiieva	
The Impact of Russia’s War against Ukraine on Finland and Sweden’s Decision to Join NATO: Effects on the Global Nuclear Order	229
Adérito Vicente, Muhammed Ali Alkış, and Iryna Maksymenko	
Conclusion: Challenges and Prospects for the Current Global Nuclear Order	247
Adérito Vicente, Polina Sinovets, and Julien Théron	

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List of Abbreviations

ABM	Anti-Ballistic Missiles Treaty
ACDC	NATO Arms Control, Disarmament, and Weapons of Mass Destruction Nonproliferation Centre
AI	Artificial intelligence
ALCM	Air-Launched Cruise Missile
ARH	Active radar homing
ASAT	Anti-satellite weapons
BCC	Bilateral Consultative Commission
C3	Command, Control, and Communications
C4	Command, Control, Communications, Computers
C4ISR	Command, Control, Communications, Computers (C4) and Intelligence, Surveillance and Reconnaissance (ISR)
CD	Geneva-based Conference on Disarmament
CEP	Circular Error Probable
CFE	Conventional Forces in Europe Treaty
CSTO	Collective Security Treaty Organization
CTBT	Comprehensive Test Ban Treaty
DA-ASAT	Direct-Ascent Anti-Satellite
DoD	United States Department of Defense
DPRK	Democratic People's Republic of Korea
DSMAC	Digital Scene Matching Area Correlator
EDT	Emerging and Disruptive Technologies
ENTSO-E	European electric grid
ERW	Explosive Remnants of War
EU	European Union
EUNPDC	EU Non-Proliferation and Disarmament Consortium
FMCA	Treaty of Friendship, Cooperation and Mutual Assistance between Finland and the Soviet Union
FMCT	Fissile Material Cut-off Treaty

FRS	<i>Fondation pour la recherche stratégique</i> (Foundation for Strategic Research)
GICHD	Geneva International Centre for Humanitarian Demining
GLCM	Ground-Launched cruise missile
GLONASS	Russian satellite navigation system operating as part of a radio navigation-satellite service
GPPI	Global Public Policy Institute
GPS	Global Positioning System
GW	Generations of Warfare
HIMARS	High Mobility Artillery Rocket System
HRW	Human Rights Watch
IAEA	International Atomic Energy Agency
ICBL	International Campaign to Ban Landmines
ICBM	Intercontinental Ballistic Missile
IFSH	<i>Institut für Friedensforschung und Sicherheitspolitik an der Universität Hamburg</i> (Institute for Peace Research and Security Policy at the University of Hamburg)
ILPI	International Law and Policy Institute
INF	Intermediate-Range Nuclear Forces Treaty
INSTEX	Instrument in Support of Trade Exchanges
IRGC	Islamic Revolutionary Guard Corps
IRI	Islamic Republic of Iran
ISR	Intelligence, Surveillance and Reconnaissance
JCPOA	Joint Comprehensive Plan of Action
KA-SAT	a high-throughput geostationary telecommunications satellite owned by Viasat
KCL-CSSS	Centre for Science and Security Studies, King's College London
MFA	Ministry of Foreign Affairs
MLRS	Multiple Launch Rocket System
MoD	Ministry of Defense
NATO	North Atlantic Treaty Organization
NGO	Non-governmental organization
NNWS	Non-nuclear weapon states
NPP	Nuclear power plants
NPR	United States Nuclear Posture Review
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
NRBC	Nuclear, Radiological, Biological, and Chemical weapons
NSS	United States National Security Strategy
NWS	Nuclear weapon states
OdCNP	Odesa Center for Nonproliferation
OPCW	Organization for the Prohibition of Chemical Weapons
OSCE	Organization for Security and Cooperation in Europe
PAES	Nuclear power plants complex of Rivne, Khmelnytskyi, and Pivdennoukrainska

PJM	Permanent Joint Mechanism
PKK	Kurdistan Workers' Party
PRC	People's Republic of China
PTBT	Partial Test Ban Treaty
REVCON	NPT Review Conferences
RF	Russian Federation
RPO	Rendezvous and Proximity Operations
ROK	Republic of Korea
SALT	Strategic Arms Limitation Talks Agreement
SAM	Surface-to-Air Missile
SARH	Semi-active radar homing
SATNAV	Satellite navigation
SCO	Shanghai Cooperation Organization
SIPRI	Stockholm International Peace Research Institute
SORT	Strategic Offensive Reductions Treaty
SRBM	Short-Range Ballistic Missile
START	Strategic Arms Reduction Treaty
TASS	Russian News Agency
TEL	Transporter-Erector-Launchers
TERCOM	A navigation system used primarily by cruise missiles
TGNA	Turkish Grand National Assembly
TNW	Tactical nuclear weapons
TPNW	Treaty on the Prohibition of Nuclear Weapons
UK	United Kingdom of Great Britain and Northern Ireland
UNGA	United Nations General Assembly
UNIDIR	United Nations Institute for Disarmament Research
UNODA	United Nations Office for Disarmament Affairs
UNSC	United Nations Security Council
UNSCR	United Nations Security Council Resolution
US	United States of America
WMD	Weapons of Mass Destruction
WPS	Women, Peace and Security
ZAES	Zaporizhzhia Nuclear Power Station

List of Figures

Chapter 6

Fig. 1	Ivano-Frankivsk-1, a former nuclear storage site, and the possible target of the first Kinzhal near Delyatin. <i>Source:</i> Image Google Earth, © 2023 / CNES / Airbus	79
Fig. 2	A possible target of the second Kinzhal near Chasiv Yar. <i>Source:</i> Image Google Earth, © 2023 / Maxar Technologies	80
Fig. 3	A possible target of the third Kinzhal near Voronovytsya. <i>Source:</i> Image Google Earth, © 2023 / Maxar Technologies	81
Fig. 4	Hrim-2 mobile SRBM system on parade in Kyiv, 2018. <i>Source:</i> Image Sergienkod, © 2018 / Creative Commons	82

Chapter 16

Fig. 1	Survey on perception of NATO membership in Finland 2014–2022. <i>Source:</i> EVA (2022), Yle News (2022)	233
Fig. 2	Survey on perception of NATO membership in Sweden 2014–2022. <i>Source:</i> Statista (2022)	234

List of Tables

Chapter 5

Table 1	Emerging and Disruptive Technologies per different reports and studies	57
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Chapter 6

Table 1	Russian missiles used in Ukraine	74
Table 2	Nomenclature of tactical missiles used by Ukraine	84

Introduction: How Has Russia's War on Ukraine Changed the Global Nuclear Order?



Adérito Vicente, Polina Sinovets, and Julien Théron

Abstract This chapter is a prime approach of the book, examining how Russia's invasion of Ukraine in February 2022 changed the global nuclear order. The aim of this introductory chapter is to present the processes and stakes brought to light in this collective work. First, it draws a conceptual framework investigating how Russia transformed the global nuclear order by invading Ukraine. Second, it presents four tasks to respond to this challenge: exploring the reasons for such a study, understanding the implications of the war from a nuclear order perspective, assessing the situation, and detailing perspectives that it implies. Subsequently, the editors expose the paramount importance of exploring this topic, as it impacts international security and the global equilibrium of power. They examine Russia's war on Ukraine, precise the global nuclear order's context in which it occurred, and show the impact of the former to the latter. Finally, the chapter proposes a structure for the book, outlining the authors' transversal guiding questions and introducing each chapter of the book. Overall, this introduction presents a general overview of the various approaches and issues proposed by this collective volume.

Keywords Nuclear order · Russia's war on Ukraine · NPT regime · Nuclear politics

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1 Introduction

The Russian invasion of Ukraine, on February 24, 2022, marked a deeply disturbing challenge to the current global nuclear order. Since that day, the number of articles and research projects on nuclear strategy and politics has markedly increased worldwide, complementing a likewise increasing number of monographs and edited volumes that had begun to appear on related topics during the preceding months.

The aim of this book is to contribute to an ongoing discussion on the scope and impact of Russia's war on Ukraine in the current global nuclear order. While this UN-led order was essentially designed to mitigate nuclear dangers, inhibit arms races, prevent the spread of nuclear weapons to additional states, and create conditions for their elimination, Russia's war on Ukraine increases the nuclear threat and as a result deepened the idea that states should rely on nuclear weapons as essential to their national security.

The attack of the largest nuclear weapon state in the world (Russia) against a non-nuclear weapon state (Ukraine), which committed to forgoing the nuclear weapons that it inherited from the Soviet era in exchange for security assurances, under the 1994 Budapest Memorandum, presents itself as a major wound on the global nuclear order and to its Treaty on the Non-Proliferation of Nuclear Weapons (NPT) regime.

The present edited volume is the result of an Experts Workshop entitled "Russia's War on Ukraine: the Implications for Arms Control and Nonproliferation" that took place between July 18 and 19, 2022, at the Old University Building, in Valetta, Malta.

This event was organized under extraordinary circumstances, due to Kremlin's unprovoked and unjustified military aggression in Ukraine, by the Odesa Center for Nonproliferation from Odesa I. I. Mechnikov National University, which was obliged to work remotely and undertake its events outside of Ukraine. The workshop was kindly hosted by the Department of International Relations from the University of Malta with the precious support of the Ploughshares Fund and Swedish Radiation Safety Authority.

The workshop, which was overseen by Polina Sinovets and Iryna Maksymenko, had the initial objective of exploring the influence of Russia's war on Ukraine on arms control and nonproliferation regimes, in particular: (1) the rise of states that are challenging the NPT regime by seeking to develop nuclear weapons; (2) the increase of states trying to resolve their territorial claims, using the nuclear coercion and the umbrella function of their nuclear arsenals; (3) the further split between the supporters of the NPT and the Treaty on the Prohibition of Nuclear Weapons (TPNW), which is deepening the polarization between non-nuclear weapons states (NNWS) and nuclear weapons states (NWS); (4) and the issues regarding the loopholes in the existing arms control system and the arms trade, which became obvious in the course of the war.

In mid-July 2022, the 2-day international workshop in Malta was attended by 24 experts from 9 different countries (Ukraine, Malta, the United States, France, Poland, Germany, Turkey, the United Kingdom, and Portugal) representing various

prestigious institutions (including think tanks and universities) around Europe and North America.

Later, the editors of this present volume, Adérito Vicente, Polina Sinovets, and Julien Théron, decided that the aim of this book and the scope of its research should be expanded and explore how Russia's War on Ukraine changed the global nuclear order, by including and adding to the former research topics, the study of new challenges and threats that includes: (1) the deterioration of nuclear norms; (2) the new debate about the competing narratives on nuclear deterrence and disarmament; (3) the development of new missiles and disruptive technologies such as hypersonic missiles, drones, and artificial intelligence; (4) and the increasing threat of the use of nuclear weapons.

In the aftermath of Malta's expert workshop, upon an invitation by Springer Nature, the editors decided to publish in a form of an edited volume and present as many of the workshop's key findings and assessments as possible.

Most of the chapter authors in the present volume attended the 2022 Malta workshop and took its intense discussions into account when finalizing their contributions to the present volume. Other chapter authors to this book were invited later in the process with an aim of covering as broad a spectrum of relevant research topics as possible under the circumstances, with authors writing from different regional, professional, and institutional angles.

Looking back on the 12-month process of our research agenda, some things have changed in Russia's war on Ukraine along with its impact on the global nuclear order, even within that short time frame. In the wake of this event, nuclear weapons regained a forefront role in the communication between competing great powers, namely the United States (US) and its allies against the revisionist powers of Russia and China. Furthermore, Moscow's nuclear blackmail coerced the North Atlantic Treaty Organization (NATO) member states from giving direct military support to Ukraine and refreshed the functions attributed to nuclear weapons, in particular, the nuclear coercion and the threat of nuclear use posing new challenges to the global nuclear order. In addition, the paradox of this conflict is that unlike the US and NATO, which are "somewhat deterred by Russian strategic nuclear weapons from interfering directly in the war, Kyiv does not seem to be deterred by Moscow's nuclear rhetoric" (Sinovets & Vicente, 2022, p. 3).

The question is, however: How has Russia's War on Ukraine changed the global nuclear order? For this purpose, we suggest framing the following four tasks as the basic definition of the book: (1) to explore and understand the main reasons for studying this significant and contemporary topic, (2) to illustrate which are the fundamental nuclear implications brought by Russia's War on Ukraine, (3) to define global nuclear order and explain its current form, and, ultimately, (4) to provide answers, perspectives, and additional guiding questions for how has Russia's War on Ukraine changed the global nuclear order.

In short, Russia's War on Ukraine has had a significant impact on the global nuclear order by causing the deterioration of relations between the US and Russia including their bilateral negotiations on nuclear arms control agreements, increasing military spending and the development of new nuclear weapons systems, raising

questions on the effectiveness of nuclear deterrence, undermining existing arms control, nonproliferation and disarmament agreements and norms, and thus in the whole NPT regime itself. As a result, and considering the negative impact of these effects, the risk of nuclear escalation and the likelihood of nuclear war have increased, and the potential for strengthening the nuclear nonproliferation and disarmament regime has been severely reduced.

The editors of this volume propose these tasks to gain a better understanding of the possible nuclear world order challenges and changes one should look into the main domains of the global nuclear order, i.e., deterrence, arms control, nonproliferation, and disarmament. By carefully reviewing the challenges posed to each of these dimensions by the war, we would have a better picture of whether those challenges may be crucial for the current nuclear order. In this context, we pose the following question(s): (a) what are the possible transformations of it? and (b) what we should expect in the future?

2 Why Is It Important to Study Russia's War on Ukraine and Its Impact on the Global Nuclear Order?

Due to Russia's war on Ukraine, there is a renewed interest from political scientists, historians, nuclear scholars, and international relations experts to study nuclear strategy and politics. Thus, there is a flourishing spread of academic literature available discussing Russia's war on Ukraine and its nuclear implications. Notable works on this topic have appeared profusely in different academic journals such as the *International Security*, *Journal of Cold War Studies*, and *Nonproliferation Review*, or in magazines like the *Foreign Affairs*, *Bulletin of the Atomic Scientists*, *War on the Rocks*, *Foreign Policy*, *The Wall Street Journal*, or *Washington Post*.

Several nuclear scholars and experts are actively engaging in publishing papers, participating in workshops, and attending conferences at different universities' research centers and think tanks. These include Harvard Kennedy School's Belfer Center, Stanford University's Center for International Security and Cooperation, Sciences Po, the Centre for Science and Security Studies from Kings College London, the newly Alva Myrdal Centre for Nuclear Disarmament at Uppsala University, the James Martin Center for Nonproliferation Studies in Monterey, and Vienna Center for Disarmament and Non-Proliferation, but also the Institute for Peace Research and Security Policy at the University of Hamburg, Stockholm International Peace Research Institute, Carnegie Endowment for International Peace, International Institute for Strategic Studies, European Leadership Network, EU Non-Proliferation Consortium, Fondation pour la recherche stratégique, Istituto Affari Internazionali, and, of course, the Odesa Center for Nonproliferation from the Odesa I.I. Mechnikov National University.

However, the editors of this book believe that the knowledge provided by this academic literature and activities on the topic of Russia's war on Ukraine and its

impact on the global nuclear order is scattered and not merged in a comprehensive edited volume. As such, it is our aim to create a book that fulfills this research gap, considers all key features, poses new research questions, and provides new answers to this topic.

Studying this topic is important in order to better understand the implications of the conflict on international security and the global balance of power. By understanding the impact of Russia's actions on the global nuclear order, scholars can stimulate the academic debate and better inform policymakers in their decisions to ensure competitive coexistence, strategic stability, and peace among rival powers (see Betts, 1992; Colby & Gerson, 2013; Shambaugh, 2018; Sinovets & Alberque, 2022; Steinbruner, 1978; Yost, 2011).¹

Thus, in the context of this book, it is the first task of its editors to explore and understand the main reasons for studying this significant and contemporary topic.

First, it is relevant to mention that this war has raised concerns about the security of NNWS in the region, particularly Ukraine, and has called into question the reliability of security guarantees provided by NWS. Before the war, Ukraine had voluntarily given up its nuclear weapons that were inherited after the collapse of the Soviet Union, in exchange for security guarantees from Russia, the US, and the United Kingdom through the Budapest Memorandum of 1994 (United Nations, 1994; see Budjeryn, 2014, 2022b; Yost, 2015).

However, Russia's invasion of Ukraine on February 24, 2022, has called into question the reliability of these security guarantees and whether Ukraine should consider developing its own nuclear weapons to deter future aggression.

Second, and in conjunction with the study of the previous reason, this war highlights the challenges to the nonproliferation regime and the importance of the security guarantees that underpin it. Russia's aggression against Ukraine has raised concerns about the potential for other countries to acquire nuclear weapons in order to protect themselves from similar aggression (Vicente, 2022a). Hence, understanding the risk of nuclear proliferation and its implications of this war for the future of the nonproliferation regime is crucial for ensuring that this regime remains effective in preventing the spread of nuclear weapons.

Third, Russia's war on Ukraine has also had a significant impact on the relationships between major powers such as the US, Russia, China, and the European Union (see Fidler & Gordon, 2023; Meister, 2022; Menon, 2022). Furthermore, it had had a significant effect on the security of the Euro-Atlantic region, as it has led to increased

¹Competitive coexistence refers to the ability of two or more entities to coexist and compete with each other at the same time. For example, competitive coexistence between the US and Russia refers to the relationship between the two countries where they compete with each other in areas such as economic, military, and political influence, while also being able to maintain diplomatic and economic relations. This relationship has been complex throughout history, with periods of cooperation and competition. However, Russia's war on Ukraine has significantly impacted the competitive coexistence between the US and Russia, making it difficult for the two nations to cooperate on other global issues such as fighting terrorism, addressing climate change, or promoting global nuclear disarmament

tensions and a deterioration of relations between Russia and the West (ibid.; Vicente, 2022b). These relationships have been strained by the conflict, which in turn can affect global stability and nuclear order.

Fourth, it is pertinent to scrutinize that Moscow's aggression against Ukraine has led to increased tensions between Russia and the West, with the potential for a new arms race in Europe. Hence, assessing the impact of this war on the future of arms control and disarmament is crucial for ensuring the continued reduction and eventual elimination of nuclear weapons.

Fifth, the war has raised concerns about the growing role of nuclear deterrence in the current security environment together with the increased anxiety over its effectiveness in preventing the use of nuclear weapons (see Bollfrass & Herzog, 2022). It has also raised the question of the limits of nuclear deterrence and its effectiveness as a tool for affecting the conventional conflict between nuclear and non-nuclear states. This includes the effect that it may have on the future nuclear postures of the US and Russia. In addition, Russia has boosted its nuclear rhetoric by modernizing its nuclear arsenal, and the conflict has led to increased military exercises by Russia and NATO states that could potentially increase the risk of an accidental nuclear exchange (see Arndt & Horowitz, 2022).

Sixth, considering nuclear deterrence existing issues, this war increased the likelihood of the potential use of nuclear weapons in a regional conflict (Polina, 2022b). Both the US and Russia have significant nuclear arsenals, and it is important to grasp that any escalation of the conflict could potentially lead to the use of nuclear weapons. Thus, it is relevant to study what are the possibilities of their use in Ukraine and their consequences for the present global nuclear order. Therefore, evaluating the risks and taking steps to mitigate them is essential for guaranteeing the safety and security of the global nuclear order.

Overall, studying Russia's war on Ukraine and its impact on the global nuclear order is essential for understanding the implications of this conflict for the stability and security of the global nuclear order, as well as for assessing the impact of the war on nuclear deterrence, arms control, disarmament, norms, relations between Russia and the West. In addition to raising questions about the reliability of security guarantees and the potential for a new arms race in Europe.

2.1 Russia's War on Ukraine

On February 24, 2022, Russian President Vladimir Putin launched an unprovoked invasion of Ukraine, setting off the largest armed conflict in Europe since the Second World War. Ukraine has mounted a strong defense despite being vastly outnumbered, but Russian bombing and shelling have pummeled Ukrainian cities, civilian casualties are growing by the day, and the fighting has sparked an enormous refugee crisis.

While Russia's invasion of Crimea and Donbas back in 2014 "was a first opportunity for Europeans to confront Russia," there was an "apathetic attitude"

toward Moscow and, “Europeans underrated President Putin’s threats and the build-up of Russian military power near European borders” (Vicente, 2022b). The Kremlin’s unjustified military aggression in February 2022 changed that old paradigm.

Russia’s war on Ukraine has destabilized the region and raised concerns about the use of nuclear weapons (Tertrais, 2022a). The conflict has had significant implications for the growing role of these weapons in interstate politics (Sinovets, 2022a, 2022b). Our second task, as editors of this book, is to illustrate which are the fundamental nuclear implications brought by this war.

One of the most significant implications of the war has been the increase in tensions between Russia and the West. The US and its European allies have imposed economic sanctions on Russia in response to its aggression in Ukraine and have increased their military presence in the region. This has led to a new Cold War-style standoff, with both sides flexing their military muscles and engaging in a dangerous game of brinkmanship.

As the conflict rages on, the implications of Russia’s war on Ukraine in relation to nuclear weapons have been a concern, as Russia has one of the world’s largest arsenals. On the one hand, deterrence against the US and NATO is working and “its use as a cover for Russian aggression in Ukraine could be successful” (Sinovets & Vicente, 2022, p. 2). For example, the missile incident in Poland which took place on November 15, 2022, makes the case that fear of nuclear escalation is much alive between the two nuclear superpowers, the US and Russia (ibid; Stepanenko, 2022).²

On the other hand, Russia’s actions in Ukraine are challenging the existing deterrence strategies and raised questions about the ability of nuclear weapons to deter belligerence, especially because Kyiv does not seem to be deterred by Moscow’s nuclear rhetoric, nor Russia seems to be ready to use nuclear weapons on Ukraine’s territory (Sinovets & Vicente, 2022).

However, it is unclear what will happen next. Can Russia’s war on Ukraine end without nuclear weapons? Answering that question and projecting the ultimate outcome of the war is challenging. While the war has been a tragedy for Ukraine and Ukrainians, it has also proven to be a military, economic, and geopolitical disaster for Russia (Pifer, 2022). The ongoing conflict has severely “damaged Russia’s military and tarnished its reputation, disrupted the economy, and profoundly altered the geopolitical picture facing Moscow in Europe” (ibid.).

One of the main concerns about the war is the potential for nuclear escalation. Russia’s ongoing conflict in Ukraine has raised fears that Moscow might use its nuclear weapons in the event of a wider war. The risk of nuclear disaster is further exacerbated by the presence of nuclear power plants and other nuclear facilities in Ukraine, which could become targets in the event of a war.

Another major implication of the war has been the erosion of the global nonproliferation regime. Moscow’s previous annexation of Crimea in 2014 and its full-fledged invasion of Ukraine in 2022 have called into question the sanctity of borders

²For a comprehensive account of the nuclear escalation concept and escalation ladder model, see Kahn (2010).

and the principle of territorial integrity. As previously mentioned as one of the main reasons for studying Russia's war on Ukraine and its impact on the global nuclear order, this conflict has also raised concerns that other countries may be encouraged to pursue their own territorial ambitions, potentially leading to the spread of nuclear weapons to new states, with unpredictable consequences for the NPT regime.

In sum, Russia's war on Ukraine has far-reaching nuclear implications. It has increased tensions between Russia and the West, challenged the existing deterrence strategies, increased the possibility of nuclear weapons use, eroded the principle of territorial integrity and nonproliferation regime, and has also had a negative impact on the current nuclear global order.

2.2 *Global Nuclear Order*

As editors of this book, our third task is to define one important concern of our research, i.e., what is the global nuclear order?

In a nutshell, the global nuclear order is commonly understood as an evolving and complex set of institutions, norms, and practices governing the development, deployment, and use of nuclear technology worldwide.

The quest for a conceptualization of nuclear order is often portrayed as a "pragmatic" or "practical" compromise between unconstrained nuclear anarchy and prompt steps toward nuclear disarmament (Egeland, 2021; Waltz, 1981, 2000). Thus, the aim of the global nuclear order is to preserve nuclear stability, maintain international peace and security, on the one hand, and prevent the spread of nuclear weapons to additional states or nonstate actors while pursuing its gradual disarmament, on the other hand.

Historically, the current global nuclear order has its roots in the events of the Second World War and the subsequent development of nuclear weapons technology, various treaties, and agreements, as well as multilateral institutions to discuss and negotiate the use and possession of these weapons.

The most significant event in the formation of the global nuclear order was the dropping of atomic bombs on Hiroshima and Nagasaki by the US in August 1945 (see Paul, 2009; Tannenwald, 1999). These bombings resulted in the deaths of over 200,000 people, most of them civilians, and led to Japan's surrender, effectively ending the Second World War (The Manhattan Engineer District, 1946). The bombings also demonstrated the devastating power of nuclear weapons and sparked a global fear of nuclear war. The reality is that these weapons were so horrific in their effects that they created not a precedent for their use but a nuclear taboo (Sinovets & Vicente, 2022, p. 2; Tannenwald, 1999).³

³In her thought-provoking article entitled 'The Nuclear Taboo: The United States and the Normative Basis of Nuclear Non-Use,' Nina Tannenwald (1999) promoted the notion that a powerful, ethically based social normative element must be considered in explaining why nuclear weapons

The Cold War further solidified the global nuclear order, by creating a system built by design and by an interlocking of the superpower competition between the US and the Soviet Union (Walker, 2000). Both countries built large nuclear arsenals and engaged in a nuclear arms race. The fear of nuclear war between the two superpowers led to the development of the mutually assured destruction (MAD) doctrine, which stated that the use of nuclear weapons by either side would result in the destruction of both countries. Hence, deterrence became the first building block of the nuclear order, while building blocks in the form of arms control treaties were meant to offer diplomatic reassurance to complement deterrence.

The crucial foundation stone for a nuclear order that did not rely solely on nuclear deterrence came with the emergence of the NPT treaty, which was first proposed in 1968 and entered into force in 1970. This landmark treaty remains, “for better or worse, the cornerstone of the global nuclear disarmament and nonproliferation regime” (Vicente, 2022a). Thus, up to the present day, this regime has been based on a delicate balance between three key pillars of the NPT: prevent the spread of nuclear weapons and weapons technology (nonproliferation), promote cooperation in the peaceful uses of nuclear energy, and to further the goal of achieving nuclear disarmament and general and complete disarmament.

Theoretically, one way to conceive of the global nuclear order is that it consists of two interlocked sub-orders, or systems: a system of nuclear deterrence and a system of nuclear restraint (Walker, 2000). In this conception, “both systems recognize the unique destructive power of nuclear weapons which distinguish them from other armaments, place them into a category of their own, and emerge with the ultimate objective of avoiding a nuclear war” (Budjeryn, 2022a, p. 239).

Moreover, both systems within the nuclear order recognize that nuclear weapons have influenced and shaped the behavior of states and the international system. We argue that the existence of nuclear weapons has created stable and predictable systems of deterrence and nuclear restraint, which have prevented major wars between major powers.

However, the global nuclear order has been challenged in recent years by the actions of certain countries, such as North Korea and Iran, which have pursued nuclear weapons programs in defiance of international agreements (see Smetana, 2019). Additionally, the US and Russia have withdrawn from several key arms control agreements, such as the Intermediate-Range Nuclear Forces Treaty (INF), raising concerns about the future of the global nuclear order.

More recently, Russia's war on Ukraine endangers the global nuclear order. While prosecuting its invasion of Ukraine, Russia has relied heavily on nuclear threats, turning the war into a dangerous nuclear crisis with profound implications for the global nuclear order (Budjeryn, 2022b). So, what kind of nuclear order does the world face now?

have not been used since 1945. A norm that has stigmatized them as unacceptable WMD, by which nuclear use acquired considerable ‘odium’, repulsion, and ignominy. The nuclear taboo creates a non-use norm (no use of nuclear weapons in warfare), therefore, a general inhibition over their use.

2.3 How Has Russia's War on Ukraine Changed the Global Nuclear Order?

Russia's ongoing war in Ukraine has caused a negative impact on the current global nuclear order. In general, it has led to the increasing military spending and the development of new nuclear weapons systems, weakening of existing nonproliferation and arms control agreements as well as of the NPT regime, deterioration of nuclear norms, questioning the effectiveness of nuclear deterrence (or its eventual disruption), and increasing likelihood of nuclear use.

So today, we can argue that the global nuclear order is based on three fundamental elements: (1) the limitation of the number of states possessing nuclear weapons, (2) the coincidence between the NPT-recognized nuclear weapon states' status and their permanent position at the UN Security Council, and (3) the tradition of nonuse of nuclear weapons (Tertrais, 2022b, p.39). However, Russia's war on Ukraine has endangered all these three elements, leading the current nuclear order to potential new nuclear disorder (Vicente, 2022a).

First, Russia's aggression in Ukraine has also called into question the effectiveness of existing mechanisms for preventing the spread of nuclear weapons, and this has raised concerns about the future of arms control and nonproliferation agreements. The termination of the INF treaty, which was signed in 1987 and eliminated a class of nuclear missiles, by the US and Russia, due to mutual accusations of noncompliance, is one example of the deterioration of arms control agreements.

Russia's active nuclear brinkmanship throughout the war has become a showcase of how a state's nuclear status can inspire a "feeling" of being free to wage wars and change borders in its neighborhood without the threat of being punished by the international community. This example can be tempting to those NWS that have regional ambitions and want to change their borders without the consent of their non-nuclear weapon state neighbors.

Following the "inspiring" example of Russia's aggression against Ukraine, insecure states or regimes may have a new incentive for developing nuclear weapons which could increase the pool of states that possess nuclear weapons in the upcoming years. For example, Iran and North Korea are already stepping over the "red lines" of the NPT in one way or another. Other states may be inspired to follow their case.

Second, Russia's war on Ukraine has highlighted the ongoing threat of nuclear weapons, and the need for disarmament, and increased tensions between Russia and the West, which has made it more difficult for the parties to engage in disarmament negotiations and to move forward on the TPNW. At the present time, the connection between the NPT-recognized nuclear weapon states' status and their permanent position at the UN Security Council has been already causing great controversy among the supporters of the TPNW. They are openly disputing NPT's grand bargain legality while condemning NWS for abusing international law with the power of nuclear deterrence.

There is an excessive polarization between the NPT advocates (who de facto support nuclear deterrence as a core of certain states' policies) and the TPNW supporters (who explicitly support the prohibition of nuclear weapons and provide a comprehensive framework for their elimination).

The TPNW has already stepped on the unique rights of the P5 to possess nuclear weapons, which fundamentally contradicts the authority of the NPT as the cornerstone of the global nuclear disarmament and nonproliferation regime. As mentioned, the NPT has been tremendously eroded by Russia's ongoing conflict in Ukraine.

Third, and finally, the tradition of nuclear weapons nonuse is challenged by Russia's constant nuclear threats. These threats are mostly about nuclear coercion; however, their frequent use disqualifies deterrence credibility increasing the following risk of Russia trying to restore it.

3 The Structure and Aims of this Book

The present collection of papers brings together 17 authors from 9 different countries (Ukraine, France, the USA, Turkey, etc.). The variety of the fields they study goes from war studies to nuclear policy. Some are theoreticians, others practitioners. Some found their works on multiple cases or on transatlantic policies, others are specialists of Ukraine or Russia, and a few specialized in both.

Together, they bring a multitude of methodological, institutional, political, historical, and regional perspectives, enhancing scope and depth through a multidisciplinary approach. All the chapters contribute in some way to answering one or several of the guiding questions of this book:

- What is Russia trying to achieve by waging nuclear warfare?
- Is a nuclear attack plausible? How and why?
- Why is nuclear a dimension of a conventional conflict?
- What perspectives exist to analyze the nuclear dimension of Russia's war on Ukraine?
- How does this dimension impact global strategic equilibrium between NWS, as well as between them and NNWS?
- What is the consequence on the legal treaties?
- Would it be possible to come back to the ex-ante situation?
- Where is the global situation of nuclear weapons heading to?
- How deep does it shape future international security environment?
- How could states protect themselves, and should they react to the threat?
- Altogether and through diverse approaches, they address the capstone question of this collective volume: how has Russia's War on Ukraine changed the global nuclear order?

In order to offer a comprehensive answer, this book is divided into five main topical parts. Part I analyzes the new challenges and threats to global nuclear order; Part II approaches the question through missile and disruptive technologies; Part III

explains issues related to arms control deadlock and the possible ways out; and Part IV addresses the NPT regime and its competing narratives on nuclear deterrence and disarmament. Altogether, they cover through diverse ways the many questions posed by the deteriorating evolution of global nuclear order.

In Part I, on the new challenges and threats to global nuclear order, Sergiy Galaka, Julien Théron and Olga Brusylovska propose three different approaches, based on nonproliferation and arms control, irregular nuclear warfare, and blackmail strategy.

Sergiy Galaka's chapter, titled "The Crisis of Global Security Architecture and Challenges for Nuclear Nonproliferation and Arms Control," explains how the international security environment has been degraded by the war. The existing structure does not apply anymore to the current trends; these ones push, as a consequence, for deep reforms. Arms control and nuclear nonproliferation should, however, be kept as the baseline of any incoming restructuration that would intervene as a consequence of Russian war on Ukraine.

Julien Théron's chapter is titled "Irregular Nuclear Warfare: Operating Top-of-the-Spectrum Means in the Gray Zone under the Threshold of Reaction: A Predictive Approach to the Ukrainian Battlefield." He explores the possibilities for Russia to operate nuclear warfare in an innovative, nonstrategic way, keeping its actions under the threshold of reaction of Western powers. This "irregular nuclear warfare" would be highly disruptive and able to transform Russia's strategic equilibrium.

Olga Brusylovska's chapter, titled "Russia's Nuclear Blackmail as a Threat to the Global Nuclear Order," exposes how Russia's nuclear blackmail has marked the international security environment. Moscow has developed a brand-new strategy that couples shelling Ukrainian nuclear facilities and threatening rhetoric, in the quest of a method to control other countries. This innovative strategy did not prove efficient yet, but is perilous enough to transform the former strategic equilibrium.

In Part II, focusing on missile and disruptive technologies, Sitki Egeli shows how emerging and disruptive technologies play on the situation, when Miles Pomper and Vasili Tuganov investigate the role of missiles and its consequences.

Sitki Egeli's chapter, "Emerging and Disruptive Technologies in Russia's War against Ukraine," addresses the role of Russian hypersonic weapons and cyber threats, as well as Moscow's self-moderation in its counterspace activities. These three emerging technologies are waged mainly to influence the conventional war on the ground and have, overall, been largely overestimated. He demonstrates, however, that future crises will not necessarily be based on the same circumstances.

Miles Pomper and Vasili Tuganov's chapter, titled "Role of Missiles in Russia's war on Ukraine and its Implications for the Future of Warfare," analyzes the importance of missiles and the balance of power, in this domain, between Russia and Ukraine supported by NATO. They expose the actors' evolving strategies and measure the efficiency of their actions in the first 10 months of the conflict. The authors also explore potential future development of missile systems and their importance on tomorrow's battlefields.

In Part III, on arms control deadlock, Nikolai Sokov, Łukasz Kulesa, and Federica Dall'Arche decrypt the consequences of the war on this issue and address the possibility of evolution.

Nikolai Sokov's chapter, titled "War in Ukraine and US-Russian Arms Control: Is it Needed? Is it Possible?" demonstrate how regulation has been affected by Moscow's aggression against its neighbor. This historical crisis has brought back key questions related to nuclear disarmament, as multiple agreements are eroding. The world heads for an unregulated balance and risks are increasing, including through a nuclear arms race, as the very aim of control was to reduce them.

Łukasz Kulesa's chapter, titled "Strategic Arms Control Deadlock and the Possible Ways Out" considers that the current crisis is a continuation of a decay which existed long before February 2022. The war on Ukraine worsened US–Russia strategic stability dialog. Expectations about a new agreement, which would follow the New START treaty after 2026, are dubious, and the possible alternatives are hardly sufficient, requiring, therefore, substantial reengagement.

Federica Dall'Arche's chapter is titled "Gender Perspectives in Arms Control and the Risks Deriving from Russia's War on Ukraine." It investigates the links between gender, weapons, disarmament, and arms control. It presents several case studies of victims and participation in negotiations and peace processes, as well as the risks from gender perspectives of the Russian war on Ukraine.

In Part IV, dedicated to the NPT regime and its competing narratives on nuclear deterrence and disarmament, Polina Sinovets, Iryna Maksymenko, Adérito Vicente, and Valeriia Hesse tackle the debate and challenges of nuclear nonproliferation.

Polina Sinovets and Iryna Maksymenko's chapter, titled "Nuclear Deterrence in Russia's War on Ukraine: the Credibility Dilemma," questions several issues regarding the global nuclear order. They apply deterrence theory to the context of Russian transgressive aggression. The two authors also question the different elements of deterrence, its limitation, and its overall efficiency to actually endorse security environments.

Adérito Vicente's chapter, "The Future of the Nuclear Nonproliferation and Disarmament Regime," underlines the destabilizing and challenging effect of the Russian war on Ukraine over the global nuclear order. He explores normative texts which have been sapped by Moscow in its violation of its neighbor's independence and sovereignty, and the impact on nonproliferation and disarmament at bilateral and multilateral levels. He also stresses the importance to re-engage into dialog and renewed commitments.

Valeriia Hesse's chapter, titled "U-Factor: Russia's War on Ukraine and the Deterrence vs. Disarmament Discussion. Pragmatic Internationalism," explains that Russia's war on Ukraine emitted a perilous signal, as assurances failed when deterrence functions. This means that conventional war can operate under the protection of nuclear threats. Additional risks also occur through the exit from existing nuclear weapons regulations and disarmament mechanisms. These elements, says the author, call for an enhanced pragmatic internationalism.

Part V focus on the impact of Russia's war against Ukraine on Regional Cases. Valentina Cassar, Tetiana Melnyk, Valeriia Gergiieva, Adérito Vicente, Muhammed Ali Alkış, and Iryna Maksymenko focus, regarding Moscow's war against Ukraine, on US–Russia relations, Iran's approach as well as Sweden and Finland decisions to join NATO.

Valentina Cassar's chapter, which is titled "Anchoring US-Russia Relations: Perspectives, Strategic Cultures, and Nuclear Posture," addresses the influence of both countries' doctrines on their strategic culture. She also studies various conditioning factors, as well as the role of imminent or systemic threats in shaping American and Russian behaviors. Global equilibrium, she explains, might be the deep motivation for implementing their strategies toward each other.

Tetiana Melnyk's chapter is titled "NATO's New Strategic Concept: The Changing Role of Nuclear Weapons, From Collective Security Back to Collective Defense." It explains that NATO, as a collective deterrence and defense organization, turned also into a tool to signal red lines to its competitors. From 2010 to 2022, this evolution has been following a worsening global order. Through its unprovoked aggression of Ukraine, Russia paradoxically actively participated in this transformation, which shaped the 2022 Strategic concept.

Valeriia Gergiieva's chapter, titled "How did the Russian Invasion of Ukraine Influence Iran's Approach to the Nuclear Threshold?" focuses on the political power of nuclear weapons applied to Iran, Russia, and the relations between the two countries. The collapse of the Joint Comprehensive Plan of Action (JCPOA) participated in this phenomenon, as well as threats of military coercion, technological advance, and huge protests. Tehran turned to Russia and China and switched from negotiation to confrontation.

Adérito Vicente, Muhammed Ali Alkış, and Iryna Maksymenko's chapter is titled "The Impact of Russia's War against Ukraine on Finland and Sweden's Decision to Join NATO: Effects on the Global Nuclear Order". It studies how Finland and Sweden have switched their traditional security alignment because of Russia's war on Ukraine, as well as their active pursuit of membership within NATO's nuclear alliance. They expose the transformation of their security environment, the changes in threat perception, and their pathway toward membership.

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Part I
**The New Challenges and Threats to Global
Nuclear Order**

The Crisis of Global Security Architecture and Challenges for Nuclear Nonproliferation and Arms Control



Sergiy Galaka

Abstract Russia's war on Ukraine has made the global and European security architecture crisis evident and accelerated changes in the international system. In order to stabilize, both European and global security architecture should be radically transformed, keeping key elements of the existing security architecture—arms control and nuclear nonproliferation. A new peace deal would concentrate on the influence Russia's war on Ukraine will produce on these important spheres.

Keywords Global security architecture · International system · Nuclear nonproliferation · Russia's war on Ukraine · Arms control

1 Introduction

By starting its war of choice on Ukraine on February 24, 2022, Russia has shifted its challenge to the existing rule-based global order to a new level. This step meant a direct assault on the very existence of this order.

I suggest that radical changes or total reconstruction of the global security architecture are required, including the fact that the nuclear nonproliferation system and arms control are its essential parts. Their role in preserving peace and stability could hardly be overestimated, as demonstrated by the experience of the relatively peaceful period after the Second World War.

If there are no transformations and changes in the global security architecture, the world could face new dramatic cataclysms that increase the likelihood of nuclear weapons being used. To avoid such development, key challenges, resulting from the gravest crisis in European history after the Second World War, should be identified and analyzed at an expert level. Risks and challenges for nuclear nonproliferation and arms control emerged as a result of Russia's war on Ukraine.

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The global security architecture is a skeleton of the international system, the key to its stability and longevity, and should be treated as a priority in efforts to strengthen global security.

The system was under the stress of global changes since the end of the twentieth century. After the break-up of the Union of Soviet Socialist Republics (USSR) and the integration of former Soviet allies into the European Union (EU) and North Atlantic Treaty Organization (NATO), the United States (US) was de facto a dominant power of the international system through the 1990s. Due to political reasons, this de facto dominance was never structured into a new global security architecture.

The following rise of China, India, and Brazil gave birth to a new trend toward the development of a multipolar system. With its Versailles complex and growing ambitions to restore its role in the international system, Russia plays the role of an icebreaker, crushing the existing system and accelerating inevitable changes.

The European and global security architectures, which were encountering an inflating crisis for years, appeared to be unable to react to new challenges, especially to the 2022 Russian invasion of Ukraine.

2 Risks for Nuclear Nonproliferation and Arms Control

The UN-based Atomic Energy Commission and Disarmament Commission provided key platforms for talks, resulting in the signing of the Partial Test Ban Treaty also called the “Moscow Treaty” (PTBT) in 1963 and the Nuclear Non-Proliferation Treaty (NPT) itself, open for signature on July 1, 1968.

The same is true for the breakthrough arms control agreements and treaties, reached during the *détente* period of the 1970s, these include the 1972 Strategic Arms Limitation Talks Agreement (SALT I), the 1979 SALT II Agreements, Anti-Ballistic Missiles Treaty (ABM). The latter established a solid basis for further arms control talks and the signing of the 1987 Intermediate-range Nuclear Forces Treaty (INF), the 1991 Strategic Arms Reduction Treaty I (START I), the 1993 START II, and the 2010 Treaty between the US and Russia on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START).

This treaty is the last major remaining arrangement in the sphere of strategic arms. It was extended in 2021 for 5 years and expires in 2026. Since the start of the 2022 Russian aggression against Ukraine, the agreement’s future looks uncertain. With the advanced risks of the ongoing war, even if it survives till 2026, it is hard to imagine a positive future for nuclear arms control. To have a chance to sign a new treaty, Russia and the US should conduct lengthy and complicated talks in the long run. Under the existing circumstances, it is difficult to predict positive prospects for a new agreement in the foreseeable future. If the war escalates, relations between the most powerful nuclear states will make such talks even less realistic because of US and Russian foreign and internal policy reasons. In the case of the US, the 2024 presidential elections, bitter rivalry between the two main political parties will create an unfavorable climate for such talks. During Donald Trump’s presidency, the US dropped out of some agreements—the INF treaty and the Iran nuclear deal, to

mention a few. It is too early to predict the outcome of the 2024 US presidential elections, but as of now, chances for a republican candidate to win look more realistic. Trump's unwillingness to prolong the New START Treaty casted a shadow of doubt over republican policy on arms control in case of winning the White House, even if the name of a new president will not be Donald Trump.

In such a tense situation, the deployment of intermediate-range nuclear-armed missiles in Europe looks likely. Should it happen, the level of confrontation on the continent will increase critically, unrestricted global nuclear arms race, which could also involve China, and possibly other states with nuclear arms will follow, raising chances for possible nuclear war.

Russia's war on Ukraine is certain to also boost the arms race in the sphere of anti-ballistic missiles, where the US will rely on its technological leadership. All this will make nuclear deterrence less reliable and the global security situation less predictable.

The insufficient reaction by the international community to the violations of international law related to the 2014 Russian invasion of Ukraine and the annexation of Crimea—and from the West in particular—made the large-scale 2022 attack possible.

Ukraine tried to activate all mechanisms available to defend it, involving the 1994 Budapest Memorandum. Reacting to Russian intervention in Crimea, the *Verkhovna Rada*, the Ukrainian Parliament, issued on February 28, 2014, an address to the signatories of this international agreement. It demanded to confirm in practice their obligations not to use force or threaten its use against the territorial integrity or political independence of Ukraine. The Ukrainian Parliament called, in accordance with Articles 6 and 7 of the Memorandum, for immediately engaging in consultations with Ukraine and to support monitoring by the United Nations (UN) Security Council of the situation in some Ukrainian regions—Crimea, in particular. In case of escalation, the *Verkhovna Rada* demanded that all the signatories of the Memorandum insist on immediate actions by the UN Security Council (UNSC), aimed at providing help to Ukraine as an NPT non-nuclear member-state (Verkhovna Rada of Ukraine, 2014).

Another grave sign of the nuclear nonproliferation growing crisis is the constant nuclear blackmail, used by Russia against Ukraine and Western powers during the war. Former Ukrainian ambassador to the US and France Oleh Shamshur (2022) stressed that the threat of “the use of weapons of mass destruction against Ukraine constitutes a threat to vital interests of the whole democratic world, first of all—NATO members.” Essentially, it should be considered the gravest violation of the NPT, undermining its very principles.

The depth of the negative influence of the Ukrainian case on international security is yet to be estimated. What is clear, however, is that it is a hard, arguably lethal blow to the spirit of the NPT. Key nuclear power, attacking a non-nuclear state that denuclearized and respected its obligations under the NPT—that may become a *coup-de-grâce* for nuclear nonproliferation. Extraordinary decisions and radical steps are required to counter this failure and give a chance for the nonproliferation to survive.

Nuclear power stations' security and safety might well become another victim of this war, threatening the ongoing process of transfer to green energy as nuclear power stations are considered to constitute an important source of energy supply for the period of transition from coal and oil-based energy production. Events around Chernobyl and Zaporizhzhia stations demonstrated Russia's recklessness, the weakness of the International Atomic Energy Agency (IAEA), and the real possibility of grave consequences for Europe, such as contamination of vast areas not only locally, but in broader territories, through wind and water. Thus, it will certainly influence the prospects of nuclear electric power development, as any new construction projects in the field of nuclear energy will have to consider all risks involved.

Russia's war on Ukraine leads to very unfortunate conclusions about the feasibility of denuclearization and security risks arising from some nuclear powers for non-nuclear states. Till recently, Ukraine was considered a success story of denuclearization, strengthening the nuclear nonproliferation regime, and securing the 1995 NPT extension. Now Ukraine is under constant nuclear blackmail from Russia and feels itself under potential threat of tactical nuclear weapons use.

Any state will learn a lesson from the Ukrainian case. This war will most probably be a trigger for many states who expressed their criticism of the NPT and nuclear weapon states in the past. At least some of them might reconsider their decision to refrain from developing nuclear weapons, and no pressure might be able to stop them to proceed in case they consider the situation as an existential threat. Moreover, some new important actors of the international system might use the situation to seek the development or acquisition of nuclear weapons as a symbol of world status, as well as a security instrument in their bid for power. This, in turn, will create new uncertainties for the future international system.

3 Challenges for the Global Security Architecture

International dynamics of the late twentieth and early twenty-first centuries were characterized by radical changes in the world, resulting, at the end of the Cold War, in the break-up of the Soviet Union, and the rise of China, India, and Brazil. The bipolar international system, dominating for a half-century, was de facto dead, but the transformation of its main institutions, requiring review and adaptation of the existing global security architecture, was not performed. The emerging new realities came into conflict with outdated institutions, developed as a result of the Second World War, leading to increased security risks on the global and regional levels. The negative trend involving decreasing efficiency of the global security system was unavoidable, leading to a dichotomy between the existing institutions and deep changes on the global level, resulting from the decline of some states and the rise of new powers, seeking more prominent roles in the international system. To complicate the situation even more, Russia took a revisionist course, trying to position itself as a successor to the Soviet Union and Russian empire, seeking the return of its previous influence on the global stage, trying to secure a key position for

itself and making an assault on the existing global security order. China tries to change the international system to its benefit, using belligerent Russia as a striking force against the existing world order.

After the break-up of the Soviet Union, the Russian Federation was steadily losing economic positions and political influence in the world. But since Vladimir Putin's regime strengthened politically and high oil prices provided it with substantial resources, strong revisionist tendencies appeared in its foreign policy. Chechen wars and the 2008 Russian war on Georgia demonstrated Moscow's readiness to use military force to reach political aims.

Rising tensions with the West in general, and the US in particular, resulted in a crisis of existing arms control treaties and agreements, and their termination. For example, the ABM and INF treaties—fell victim to this trend. The last major US—Russian treaty remaining in force—the New START Treaty is under threat. Its fate is difficult to predict in a situation of an ongoing war against Ukraine.

All major security institutions responsible for regional and global security—the UN, the Organization for Security and Cooperation in Europe (OSCE), and even the demonstrated weakness, inefficiency, and lack of political will. Even if the right resolutions and decisions were adopted, their practical realization was hampered by growing contradictions between key actors of the international system.

It is evident now that those institutions over-lived the epoch when their existence was essential. In the present form, they do not reflect new realities and sometimes are harming the very cause they were established for. The main mission of the UN, as declared in its Charter, is to keep global peace and security. For many decades, it was evident that this goal cannot be achieved in conflict situations due to the misuse of the veto powers by the opposing permanent UNSC members. Russia and China vetoes are used against resolutions designed to prevent North Korea and Iran from developing nuclear arms and ballistic missiles. This is the best proof of veto dysfunction in the field of nuclear nonproliferation.

It is clear in the Ukrainian case. Neither in 2014 nor in 2022 had the UNSC managed to condemn Russia's actions. All options to stop aggression—UN peace-keeping and establishing UN military force in accordance with article 47 of the UN Charter, were nonstarters, as it was evident that Russia would block any UNSC resolution, blaming it. UN mechanisms, envisaged to deal with ongoing armed conflict, were doomed to be blocked by Russian Federation, exercising its veto powers, though it was party to the conflict. Condemnations by the UN General Assembly, though important politically, are not obligatory according to international law in contrast to the UNSC resolutions. Thus, it was not possible to seriously consider other options to return peace to Ukraine.

The UNSC failed to act in accordance with the UN Charter because Russia exercised its veto power, blocking on February 25, 2022, the UNSC draft resolution, condemning the Russian war on Ukraine and demanding Russian troops withdraw from the Ukrainian territory (United Nations, 2022). Though the UN General Assembly adopted a resolution, condemning Russian acts of aggression against Ukraine, it has no obligatory character in contrast to the UNSC's resolutions.

Thus, the UN has failed to act in accordance with its Charter and its main goal—to keep peace and security.

The main regional organization, responsible for peace and security in Europe—the OSCE, proved to be incapable of implementing its 1975 Helsinki Final Act principles, in particular, the inviolability of borders in Europe. Its mission to the Donbas region, established in 2014, failed to name the intruder and aggressor, citing their limited mandate, issued under consensus rule. In 2022, Russia has blocked the organization's activity over the war it waged against Ukraine.

The International Red Cross was unable to fulfill its aims too, both in 2014 and 2022. The Ukrainian ombudsman, Dmytro Lubinets, has bluntly accused it of failing to even contact most of the Ukrainian prisoners of war. On October 28, 2022, he declared indeed that the International Red Cross Organization has failed to fulfill its mandate, “calling Russia’s war” on Ukraine “a crisis” or “conflict in Ukraine” and that Ukraine will look for an alternative organization to substitute it (Krechetova, 2022).

After the 2014 Russian annexation of Crimea and intervention in Donbas, it was evident that the existing regional and global security architecture has failed. Assessing the negative influence of 2014 events on the international security system and nuclear nonproliferation, the author pointed out, in 2015, that Russia’s breach of its obligations according to the Budapest Memorandum, as well as the UN Charter and Helsinki principles, failure to respect Ukraine’s sovereignty, leads to the discredit of the NPT and is sending a message to potential proliferators, that nuclear weapons are the most efficient instrument of defense (Galaka, 2015).

The Ukrainian researcher Hryhorii Perepelytsia (2015) claimed that international organizations, established to guarantee peace and security, failed to do so in the aftermath of the 2014 Russian military intrusion into the territory of Ukraine and the annexation of Crimea. It violated the UN Charter and the Helsinki 1975 Final Act, based upon the principle of inviolability of the existing borders in Europe. In terms of the Budapest Memorandum, its signatories—the US, Great Britain, and Russia—failed to even meet together to discuss the crisis, while the Memorandum requested immediate consultations of the three powers with Ukraine in case of threat to its sovereignty and territorial integrity (Article 6). As a result of Ukraine’s insistence, US Secretary of State John Kerry and British Minister of Foreign Affairs William Hague met on March 5, 2014, in Paris, with the acting Minister of Foreign Affairs of Ukraine Andriy Deschytza, but Russia refused to take part (Galaka & Perepelytsia, 2015).

As a result of Russia’s 2022 aggression against Ukraine, the global security architecture sustained a heavy and arguably lethal blow to its ability to effectively realize the initial aims of its core institutions, demonstrating a total impotence to deal with this most serious attack on international stability. It failed at all levels—regional, with the OSCE, and global, with the UN and the IAEA. The risks for global and regional security architecture, as well as for nuclear nonproliferation regimes and arms control agreements, have increased dramatically. It will not take long for them to cease to exist in their present form. All attempts to reanimate them without introducing radical changes are doomed to fail.

Those in the Western elite and bureaucratic establishments of international organizations who believe that nothing significant has occurred and that it is feasible to implement some improvements without fundamental reforms should not deceive themselves. The damage to the key global security institutions has already been done.

4 Conclusion

Whatever the outcome of this war will be, terrible harm has already been done to global security architecture in general, and nuclear nonproliferation and arms control in particular. Russia's war on Ukraine has proved that the existing security institutions, as results of the Second World War are dysfunctional. Mid- and long-term consequences of the ongoing war for the nuclear nonproliferation regime and arms control will definitely result in a very high risk of total collapse. They can hardly survive in their present form. Those capable of transformation may have a chance for longer existence. In order to survive, the nuclear nonproliferation regime should take into consideration the challenges and threats that face non-nuclear weapon states, to preserve the spirit of the NPT.

Ukraine has denuclearized—perhaps under pressure, but voluntarily. It fulfilled all its obligations since the accession to the NPT, withdrawing all its nuclear warheads to Russia, eliminating its missiles, strategic and long-range bombers, closing the Chornobyl nuclear station blocks, capable of producing plutonium as a by-product, introducing strict control over all nuclear material under the IAEA safeguards, but was pressured by Moscow both economically and politically, and physically attacked in 2014. It was done in breach of all major arrangements, securing its sovereignty and territorial integrity, including the 1997 Treaty of friendship between Russia and Ukraine. Finally, in 2022, Ukraine became a victim of open large-scale Russian aggression—unjustified, unprovoked, and leading to terrible consequences for the rules-based world order.

What is evident is that we are witnessing the end of the world order as we knew it. All the attempts to cling to the existing mechanisms and institutions are counterproductive—it is only a matter of time before they will either radically transform themselves or collapse. One can understand the underlying fear of radical changes that motivates numerous “conservationists,” but it is better to face the reality and prepare for new challenges, before they become deadly threats, possibly leading to what was determined in theory as “nuclear chaos.”

It is a critical point and the expert community has to suggest possible steps to reform what can be saved from the global security architecture. The sphere of nuclear nonproliferation and arms control is a key part of the existing security system, and it should be treated as a priority.

It is impossible to improve the existing regimes and treaties without transforming the major global and regional security institutions. The existing global security architecture should either undergo a radical transformation or face a pitiful prospect.

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Irregular Nuclear Warfare: Operating Top-of-the-Spectrum Means in the Gray Zone under the Threshold of Reaction. A Predictive Approach to the Ukrainian Battlefield



Julien Théron

Abstract Considering nuclear warfare through a contemporary war studies analysis does not lead to the same conclusion as strategic studies. Deterrence, avoidance, and equilibrium are indeed key concepts of a nuclear strategy in classical terms; however, contemporary war studies teach that nothing is impossible in an always-changing environment. Without trying to discredit or even contest strategic studies, contemporary war studies can bring a fresh, out-of-the-box approach to the plausibility of nuclear warfare in the twenty-first century. Mobilizing the Ukrainian battlefield—understood in the broadest sense by gathering all domains—seems particularly pertinent for several reasons. First, the Kremlin has waged war against Ukraine since 2014, revealing numerous innovative approaches to modern warfare’s means and concepts. Second, Moscow has never hesitated to increase the pressure on Kyiv, scaling up its mobilization to reach a strategic victory. Third, numerous occurrences have demonstrated that Russia’s leadership hinted at what they described as a legitimate use of their nuclear arsenal in Ukraine or against what it calls the “collective West”.

Keywords War · Gray zone · Irregular nuclear warfare · Threshold · Ukraine · Russia

1 Introduction

Contemporary war studies carry numerous theories. However, almost all concluded that actors adopt behaviors based on more and more domains of conflict. Although no nuclear attacks have occurred from non-state armed groups, some have tried to access these technologies to build dirty bombs. Indeed, in the current state of war, non-state armed groups are regularly trying to climb in the spectrum of confliction

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(i.e., the scale of means to produce conflict) and states to go down. Both types of actors use nonviolent tools to target the psyches of populations. Of course, these types of warfare are compatible. And all contemporary theories seem to converge toward the idea that actors try to maximize the impact of their actions while implementing minimal actions.

Almost a century ago, limited warfare was aimed at optimizing the means of warfare (Liddell Hart, 1941). However, more recent theories have also clearly pushed in this direction. Although only incidental to this study, compound war theory goes in the same direction by limiting the means deployed by states to perform conflicts through cooperation with local proxies (Huber, 2004). The theory of hybrid warfare aims to take advantage through surprising conflation mixes that exploit adversaries' weaknesses in innovative ways (Hoffman, 2007). The most recent generations of warfare (GW) align with this theory. The sixth GW shows a trend for non-contact warfare. The seventh GW, although prospective, assesses the will of states to retract their armies from combat to find new means to win wars. The eighth GW, without casualties, may be investigated to limit the political risk of large-scale conventional attacks (Alderman, 2015). Other conceptual approaches, such as new-generation warfare and non-linear warfare, also push for ways to diverge the path of warfare from conventional combat (Revaitis, 2018). Finally, surrogate warfare strives to conduct—and win—conflicts without having to risk major combat operations (Rickly, 2020).

Scientific literature seems to converge toward the hypothesis of more and more blurry lines in warfare. As wars are regularly undeclared, operate through non-kinetic means or under cover and often through proxies, another hypothesis is that nuclear warfare can also be the subject of such a fuzzy environment of conflation. These two hypotheses, however, ask a series of questions. Would it be possible, in theory, for Russia, to add a nuclear part to the strategic mix it deployed against Ukraine? What would it look like, in practice, while strategic studies are dominated by the key concept of deterrence? And how could even limited nuclear warfare in Ukraine limit backfire? These different issues lead to this overarching question: What kinds of “irregular nuclear warfare” could Russia implement to, at the same time, incite the West to stop its support to Ukraine and stay under the threshold of reaction?

To answer this question, the theoretical approach has to take into consideration that, from 2007, the year of Vladimir Putin's historical Munich speech on the need to reform the global security architecture, to 2022 and the situation of high-intensity conventional warfare, the Kremlin has been searching for innovative ways to limit, and sometimes even hide, its implication into open confrontation, at least with the West. Even when the conflict went kinetic in regional theaters (e.g., Georgia, Syria, and Ukraine in 2014), Moscow kept a small footprint. Even the 2022 offensive was designed to freeze Ukrainian troops and induce a Russian-backed coup to quickly restore pro-Kremlin power in Kyiv and not dive into a long and destructive military conflict that would risk destabilizing the Russian regime itself. Therefore, it can be acknowledged with confidence that from its conflict polity of active measures, reflective control, or cybernetics in confrontation with the West, Moscow decided

to identify and favor more decisive actions to limit its exposure to high political, military, financial, and human costs. This provokes aggressive behaviors to shock security environments and deeply transform the international order while always staying below the threshold of reaction from the North Atlantic Treaty Organization (NATO).

This behavior is motivated by the asymmetric situation of power between Russia and NATO. However, this power imbalance is not the only feature. While trying to provoke dramatic changes in its regional environment, the Kremlin also aims to achieve a significant modification of global security. Everything from little green men to cyber attacks that target civilians are typical forms of irregular warfare deployed by non-state armed groups to compensate for the power asymmetry with state adversaries. On its path to breaking the international order and replacing it with a more unbridled violent one, Moscow attempts to reach decisiveness through highly psychological, politically impactful, and population-centric actions. Usually applied to non-state armed groups, this method is the basis of irregular warfare in contemporary scientific literature (Kilcullen, 2017; Nagl, 2005; Petraeus & Amos, 2007; Taber, 2002).

All contemporary approaches and Russia's conflicting behavior converge in describing a permanent search for irregular shocks that would paralyze Western decision-makers and societies, who are noticeably bad at anticipating and bracing for such circumstances. From a war studies point of view, nuclear weapons are nothing other than top-of-the-spectrum weapons. If they relate to a particular history, operational features, destruction capacity, and subsequent doctrine, they are still weapons. The choice of using nuclear weapons relates to the question of the consequences. However, regarding Moscow's continual search for decisive, change-making actions and the poor performance of the Russian conventional military in Ukraine, as well as the high political cost of the war, the question of nuclear weapons being used in the Russian war with Ukraine has returned. The reason why the Kremlin cannot reach its goal in Ukraine is the West's support of Kyiv. The only way to change that is to produce a groundbreaking disruptive shock that would incite Western populations and leaders to let Kyiv fall. Of course, this should be without provoking a response from the West or at least limiting its impact.

In order to answer the overarching question, three specific approaches can, first, enlighten the motivation for the Kremlin to implement an irregular nuclear option, which has been advanced by Jennings, Fox and Taliaferro, Sinovets and Renz, and Sokov. Second, as Moscow relies on the West's incapability to anticipate its objectives and strategies, trying to fix analytical objectiveness requires developing a proper and dedicated framework that would allow us to correctly evaluate this possibility. Third, in order to have a precise idea of what kind of hostile actions could refer to irregular nuclear warfare, it seems necessary to establish robust predictive scenarios.

2 Three Useful Analytic Prisms

The problem with approaching Russia's war against Ukraine in a prospective way is that it is regularly changing paths. Therefore, projecting what is known into the future does not work in general, as Lawrence Freedman stated, but this is particularly true regarding Russia (Freedman, 2018). This does not mean that the Kremlin is necessarily good at conceiving strategy; however, its only way to prevail is to find innovative and traumatic solutions to push its advantage. A groundbreaking use of nuclear warfare, even limited, low-key, and irregular, would be so shocking that it is difficult to comprehend. This is precisely why the Kremlin can rationally mobilize this option and why it is necessary to study this potentiality. And its propaganda channels already prepared Russian and international opinion for such a possibility (Arndt & Horovitz, 2022; Gressel, 2022). To do so, three pieces of scientific literature are particularly pertinent.

2.1 *Jennings, Fox, and Taliaferro*

Nathan Jennings, Amos Fox, and Adam Taliaferro underline the mistakes made by Washington, the significant role of indirect action in contemporary warfare, and the deep need for better anticipation. States, and sometimes even non-state armed groups, act as forcefully as possible while always trying to stay under the threshold of reaction from the West.

The authors developed numerous out-of-the-box ideas. They start by contesting Fuller's assertion that "physical" land invasion between nuclear powers is an "obsolete thing," both in theory and in practice. More importantly, they stress the possibility of states using non-strategic nuclear weapons, particularly to target command centers. They consider this risk high in Eastern Europe, "where Russia—with 6,800 active warheads—has explicitly threatened first use of nuclear weapons to offset its maneuver weakness. While the US Army intellectually separates nuclear from conventional, Moscow has fully integrated a range of tactical nuclear capabilities into its larger fire complex. Furthermore, it is inconceivable that Russians, remembering horrific Nazi invasions, would view any NATO offensive in any context other than regime survival, or that they would not escalate accordingly" (Jennings et al., 2018).

Furthermore, the three authors signal the importance of complex scenarios resulting from nuclear powers producing territorial sanctuaries, which are cleverly used to produce hostile actions while ensuring protection from the potential retaliation of a reluctant West. Moreover, the authors also consider that states such as Russia perceive nuclear tactical weaponry as part of an integrated fire system. They stressed that the development of a *fait accompli*, with the example of Russia in Ukraine, creates a clear risk of nuclear escalation as the only way out.

Although written 4 years before Russia's 2022 invasion of Ukraine, the article identifies the key milestones for the potential rise of nuclear tensions related to Moscow's attempt to redraw the geopolitical order. This new strategic race encourages the Kremlin to identify new means of warfare that could surpass the West's military means and exploit cracks in the psyche of Western societies and leaders. In this respect, Russia can depend on the following three key assets:

- An uncertain, although incredibly large, nuclear arsenal.
- Tactical nuclear weapons integrated into warfare theory.
- The experience of identifying and implementing hybrid solutions—"hybrid" meaning not "under the threshold of violence" but the identification and implementation of the most efficient innovative tools to reach strategic objectives.

2.2 *Sinovets and Renz*

In a paper developed for NATO Defence College, Polina Sinovets and Bettina Renz explain how Russia developed paranoia from an ontological state of strategic vulnerability. They explain that "Russia's perceived need to defend what it sees as its vital sphere of interest is central to the 2014 doctrine. No state belonging to this sphere of influence is named explicitly, but Russia's concern over the establishment of regimes in "bordering states, whose policy threatens the interests of the Russian Federation," is unambiguous" (Sinovets & Renz, 2015).

The authors also state that "The current doctrine still envisages the potential use of nuclear weapons in two types of conflict: large-scale and regional ones." The Kremlin mobilizes Belarus in its war in Ukraine and openly considers that the conflict is global and against the "collective West." Therefore, the 2022 invasion is at once a regional and large-scale conflict.

Sinovets and Renz quote Sergey Karaganov, who argued that Russia's enemies are democratic Western states and that Moscow considers the threats they induce to be existential. A nuclear response to this supposed threat depends therefore uniquely on Moscow's evaluation.

2.3 *Sokov*

In a piece published at the end of May 2022, Nikolai Sokov uses a predictive approach to examine the significant nuclear threat of escalation in conventional warfare in Ukraine. Sokov concludes that a lower-spectrum approach is much more interesting than the top-of-the-spectrum approach, which usually involves nuclear weapons. Indeed, when applied to Ukraine, this nuclear threat is certainly less connected to classical deterrence (who seriously believes that NATO wants to invade Russia and should be deterred through nuclear equilibrium?) than the

political situation of the Kremlin. The nuclear threat against democracies is proof that the regime contemplates the clear possibility of its own collapse and tries to avoid it at any price.

The West must consider how things are thought of in the Kremlin. Thinking Russia's nuclear options are connected to the conventional war in Ukraine has integrated a key factor: the Kremlin's need for disruption. As Moscow faces an inevitable defeat, Western support for Kyiv should remain on its original path. In some ways, financial sanctions and social or political actions might be seen as a more existential threat to Moscow than a non-existing nuclear escalation from the West or even the West providing conventional weapons to support Ukraine.

Sokov rationally considers that the nuclear option is not only a threat from Russia but a real possibility, although it would not imply strategic weapons. Instead, irregular nuclear actions would replace the classical deployments of ICBM, strategic bombers, or nuclear-powered ballistic missile submarines (Sokov, 2022). He explains that “three options for Russia appear possible, depending on how strong Western pressure will be:

- An underground nuclear test.
- A “demonstration” explosion over an uninhabited area (such as the Arctic).
- Limited—perhaps single—use against a high-value non-military target in a non-nuclear NATO state. The choice of the target will depend on which country is seen as being at the forefront of efforts to strangle Russia.”

Western powers assume that the Kremlin would be reluctant to use nuclear weapons because of its fear of retaliation. However, this would induce a strategic nuclear attack against another nuclear power or nuclear-protected power. Sokov sketches a few other options for how the Kremlin could play its nuclear card. One must not forget that Moscow has a certain ability to introduce innovative actions above the threshold of the acceptable but below the threshold of reaction. This could apply to introducing irregular nuclear warfare, which would have a severe psychological impact and significantly transform the international order, with reduced negative externalities for Moscow.

3 Cognitive Biases Preventing an Objective Approach to the Possibility of Nuclear Use

As the three pieces demonstrate, irregular nuclear warfare is a real option for the Kremlin to reach strategic objectives that it cannot approach otherwise. Unfortunately, international relations theory in general and strategic studies in particular often brings behavioral schemes that are quite inert and apply to extremely different situations and motivations. Two pools of problems often make the war prospective so wrong.

The first pool relates to the West's inability to produce a proper situational analysis:

- We project according to what we know, and the enemy prepares to skirt—precisely—what we know.
- We rationalize our refusal to think about potential elements because they seem irrational, immoral, apparently impossible, undesirable, etc.
- Our intellectual inability to imagine inventive and original paths to catastrophes is due to the lack of “out-of-the-box” thinking. In other words, we are stuck in the past and are unable to properly imagine the future because of *habitus*.
- We think that all agents are rational.
- We think that if agents do not think like us, they are irrational.

The second pool of problems relates to our conception of what, where, and when nuclear threats occur, which presents the following problems:

- Everything in the scientific literature of war studies indicates, in the past 70 years, that the limit between war and peace no longer exists.
- Wars are no longer declared.
- The spectrum of warfare tools is much larger than our psychosociological representations of war.
- Nuclear threats are wrongfully considered exclusively at the top of the warfare spectrum as exclusive components of nuclear, radiological, biological, and chemical (NRBC) weapons. They could occur at other belligerent levels, down the spectrum.
- Nothing demonstrates that nuclear aggression would result from a direct conventional conflict.

To correct these two pools of issues, a few axioms based on a strictly scientific and objective approach could be established. This corrective framework is needed to achieve a better understanding of the risk and to adapt accordingly.

1. Embrace Weberian rationality as a *prolepsis* to expulse any subjectivity related to any type of reasoning.
2. Think outside the box to a point that is almost contrary to what we would be naturally inclined to reckon. This is difficult and even sounds absurd, but it is key to predictive approaches.
3. Conventional war, potentially on a great scale, involving one or several nuclear powers is possible. In other words, the possession of nuclear weapons does not always deter conventional or non-conventional attacks from state or non-state actors.
4. Nuclear aggressive actions do not necessarily induce a direct and strategic nuclear attack. They can be inventive, below the boundary of acceptable, in a gray zone, indirect, or even performed through proxies.
5. Nuclear aggressive actions could happen inside, as well as outside, the framework of a conventional war.

6. Nuclear aggressive actions can result from something other than “mutual escalation.”
7. Escalation itself can be military or non-military, nuclear or non-nuclear.
8. Nuclear aggressive actions can occur as a reaction to what is considered an existential threat, not necessarily to a state, but to a regime, a group, or a leader. This distinction is imperious.
9. Nuclear aggressive actions are highly dependent on the *interpretation* of a doctrine. They can even potentially be implemented completely outside the framework of a doctrine, especially in autocratic countries where official procedures are malleable regarding the leader’s will.
10. Nuclear belligerence would induce disorder, and some actors are looking to challenge the current international order. They know that the West is extremely sensitive to disorder and that acting directly on populations would destabilize the West politically.
11. If possession of nuclear weapons is an incentive to negotiate according to one’s own terms, the practical use of nuclear weapons has greater potential.
12. Fear of a nuclear power can incite it to act freely, without any boundaries, as well as raise the threats higher and higher. Therefore, fear of escalation can be seen not only as an incapacitating phenomenon, but also as an incentive for the adversary to escalate its threats higher and higher, potentially transforming these threats into reality.

Complex situations from 2011–2013 in Syria and in 2014 in Ukraine showed that Western strategists are genuinely bad at understanding and analyzing war scenarios. Russia’s attack on Ukraine in February changed this reality in certain countries, while others maintain self-deceptive dogmas and remain unprepared. The inability to anticipate leads to an inability to adapt. This is detrimental because the volatility of the international security environment demands, precisely, reinforced anticipation and adaptation capacities.

4 Predictive Scenarios

One of the keys to understanding the potentiality for future warfare is to force predictive scenarios and to realize that not only does a rational path exist, but that this path is possibly quicker and simpler than previously imagined. This also avoids prospective methods based precisely on what we already know and think, thus encouraging new perceptions of the future.

Although numerous possibilities exist, there are five possible scenarios, beyond strategic and even tactical nuclear strikes:

1. A nuclear missile is launched from the Arctic circle, flies over the North Pole, and crashes in international waters in the same area. The signature signals a Russian asset, more precisely a Bulava ballistic missile, launched by the fourth-generation Borei-A class submarine, the “Generalissimo Suvorov.” Moscow denies

responsibility and accuses the US of a false-flag operation to provide Washington with a reason to attack Russia and produce a regime change. Russia asks for an exceptional meeting of the United Nations Security Council. The Popular Republic of China backs the Russian Federation.

2. A loaded Kalibr missile is launched in the Baltic Sea, flies over Gotland, and crashes in the sea between Kalmar, Sweden, and Klaipeda, Lithuania. Moscow claims the hostile act to be a warning against the threatening parties that plot against its interests and “historical legitimacy” to claim territories in the area.
3. An Iskander carrying a limited nuclear warhead is launched from Kaliningrad toward the Aegis Ashore system complex in Redzikowo, Poland.
 - (a) The Patriot surface-to-air missile system intercepts shortly after the missile crosses the border.
 - (b) The Patriot surface-to-air missile system fails to intercept it. The site is destroyed. The Russian representation at the UN explains that the site was threatening Russia, which had the right to defend itself against NATO. Moscow justifies this assertion by the fact that it was not only canceling Russia’s potential to strike, but also, although falsely, that the site was presenting a risk of attack against Russian territory.

In both 3a and 3b scenarios, Moscow issues a stern communiqué stating that it was only a one-shot strike and would not warrant escalation from Russia’s competitors. If anyone did retaliate against Russia, the Kremlin would produce many more of these attacks.

4. A small, unidentified shell containing radioactive material explodes in front of the Government House in Chişinău, the Moldovan capital. The so-called “Government of Pridnestrovian Moldavian Republic” revendicates it as a preventive action against the massacre of Russian-speaking Moldovans, which was underway according to Russian propaganda. Tiraspol calls for the enhanced military support of the Russian Federation, which announces putting the self-declared secessionist entity under its own nuclear umbrella.
5. A dirty bomb explodes in Berlin near the Berliner Dom. Part of the city center is contaminated. The terror attack is claimed by an unknown jihadi group: al-Jihad al-Fath fi ‘Urubaa, literally the “jihad of conquest in Europe.” The analysis points to Russian radioactive material. Moscow denies and denounces “a new insanity from the collective West using terrorist methods against itself.”

Other scenarios may include the following: bombing a civilian nuclear infrastructure; provoking a kinetic effect on a civilian nuclear infrastructure through cyber means; real-life nuclear alert over Russia for all Russian population; or a live nuclear test in the Southern Atlantic. All these scenarios have one thing in common: they play on the West’s inability to respond without crossing a new Rubicon and risking its strategic position in Ukraine, but provoking a stark destabilization of the international order.

5 Conclusion

The warfare blurriness that has been underlined since decades by key authors of war studies appears to be confirmed by the possibility and preparation by Russia for irregular nuclear warfare. More specifically, the three approaches considered confirm Moscow's ability to operate, in this global framework, some hostile actions. Jennings, Fox, and Taliaferro demystified the concept of deterrence regarding the needs on the battlefield and the rising strategic importance of the *fait accompli*. Sinovets and Renz exposed that not only exists for Moscow a need to contain the democratization of its neighborhood, but also that the use of nuclear assets is allowed through Russian doctrine in the framework of regional and international conflict—the war against Ukraine being seen by the Kremlin as both. Sokov considered that the use of nuclear arms wouldn't imply strategic weapons but tactical weapons or an innovative weaponization of fissile material.

In this respect, it seems clear that keeping the question of the use of nuclear weapons within the boundaries of classical strategic deterrence is like wearing blinders. The question of cognitive bias that prevented many analysts and decision-makers in the West to see through the Kremlin's plans, in February 2022, can also apply now to the nuclear issue. The study of cognitive biases reveals two pools of problems: structural issues to base analyses on an objective situational state of affairs, and the inability to imagine out of the box what sort of hostile actions related to nuclear warfare could be implemented outside classical deterrence models.

Consequently, and to avoid these cognitive biases easily impeding the quality of prospective analysis, predictive scenarios might (and should) be used. The projection of plausible scenarios demonstrates, indeed, several possibilities for Russia to identify, prepare, and enforce hostile although irregular nuclear warfare in the pursuit of disruptive incentives for the West to interrupt its support to Ukraine, while minimizing the risk of a strong response. These scenarios include, but are not limited to: a nuclear strike in international waters along with a denial of responsibility; a nuclear-capable missile flight over a NATO or allied territory; a limited attack with a reduced nuclear payload against a strategic facility in a Western territory, the use of fissile materials on a vulnerable territory by pro-Russian groups in the Balkans; or a dirty bomb under a misleading cover in an EU country unkeen to react kinetically. The probability of these scenarios is difficult to measure, but can correct cognitive biases. Strategic deception shows indeed that the lowest probability a possible hostile action conveys, the highest potential of surprise—and therefore of success—it gets, as it profits from the adversary's unpreparedness.

The theoretical approach employed here focuses on Russia, as the ongoing situation in Ukraine provides a proper case study. However, analogous reasoning could apply to other states, such as Pakistan with the emergence of radical Deobandi groups, Iran encountering an advanced strategic crisis, or North Korea and the question of perceived existential threats against the regime's survival. Potentially, any state or non-state nuclear power could engage in irregular nuclear warfare that would undermine the absolute belief in nuclear strategic deterrence.

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Russia's Nuclear Blackmail as a Threat to the Global Nuclear Order



Olga Brusylovska

Abstract The world has been facing Russia's nuclear blackmail since the first day of a full-scale war against Ukraine: the invaders occupied Chornobyl, shelled the Neutron Source Research nuclear installation in Kharkiv, shelled Zaporizhzhia (ZAES) and then Rivne, Khmelnytsky, and Pivdennoukrainska (PAES). Without capturing Ukraine for 6 months of direct armed aggression, Russia has created new hybrid mechanisms with higher stakes. So, during the fall of 2022, we witnessed the birth of a new version of Russia's nuclear strategy. The modern version has the main new feature of nuclear blackmail as a combination of traditional bomb threat rhetoric with threats of creating a situation of global catastrophe due to the destruction of nuclear power plants (NPPs) on the territory of Ukraine. The threat of nuclear power plants is considered more effective than the threat of a bomb, so if this tactic works, Russia will constantly repeat it in relation to other countries in the region.

Keywords Russia · Nuclear strategy · Nuclear blackmail · Nuclear power plants · Nuclear escalation

1 Introduction

Nuclear blackmail is a strategy that besides nuclear deterrence coercion involves the influence on the behavior of the adversary by nuclear threats: not only weapons but also the potential destruction of the civil nuclear infrastructure. It is what was demonstrated by the Russian Federation (RF) in the war with Ukraine in 2022. The paradox is that the object of nuclear blackmail was not only Ukraine but all European states which today look more frightened by the Kremlin's actions than Ukraine itself.

In the literature on nuclear coercion, there are several dozens of researchers on the phenomenon of nuclear blackmail (Durkalec & Kroenig, 2016; Davis, 2017; Luik & Jermalavičius, 2017; Veebel, 2018; Foltynova, 2022, etc.). For example, Sechser

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and Fuhrmann (2013, p. 174) evaluated whether nuclear-armed states were more likely to make successful threats than non-nuclear states using a data set of more than 200 militarized compellent threats. Their analysis found that states possessing nuclear weapons are not more likely to make successful compellent threats, even in high-stakes crises (*ibid.*). While nuclear weapons may provide leverage in a deterrent context, these effects do not extend to compellent threats. So, Sechser and Fuhrmann (2013, p. 192–193) concluded that “nuclear proliferation may carry a variety of dangers, but nuclear blackmail is not one of them.”

The second part of the existing literature is dedicated to the problems tied to the Russian case directly. Scientists are mainly concerned about the Baltic region: the Russian Federation might use nuclear weapons or rather nuclear blackmail to gain a strategic advantage at their expense. According to Lanoszka (2019), North Atlantic Treaty Organization’s (NATO) defense planners have causes for optimism because Russia suffered an unfavorable nuclear balance at the strategic level and so it will never fully be confident that it can escape unacceptable costs meted out by the United States (US). Moreover, nuclear coercion is only effective under very stringent circumstances: when the user is facing a large-scale conventional military attack that it cannot handle. But the problem is not nuclear weapons *per se*, but Russian motives. And the Ukrainian case is real proof of it. Therefore Jayanti (2022) is rather pessimistic:

Leaving Ukraine and Europe in a state of panic over a possible nuclear disaster certainly gave Russia additional leverage in the form of terror with which it could attempt to press its goals. There is no evidence that this tactic worked. Nevertheless, Russia’s attempts to leverage fears of a possible nuclear catastrophe were part of broader efforts to drive a wedge between Europe and Ukraine, presumably to get Europe to help force Ukraine into concessions in exchange for nuclear security.

This is why Russia refused to give the International Atomic Energy Agency (IAEA) access to the plants immediately and limited media coverage.

In general, however, the question of the specifics of the Russian case of nuclear blackmail has not been studied at all which makes our study extremely relevant. The question that the international community should ask itself is not only whether Russia will use nuclear weapons against Ukraine but also what threats will determine tomorrow’s agenda even if the RF does not use them. So, the subject of the process related to the problem of nuclear blackmail is Russia and its objects are Ukraine and its Western allies. Therefore, the study is structured around the actors of international relations involved in the Russian–Ukrainian war. First, I analyze Ukraine’s nuclear infrastructure under Russian hits and Ukrainian countertactics. Second, I trace the evolution of the Russian nuclear strategy. Then, it respectively examines Russian allies and Ukrainian allies’ roles during the war.

2 Ukraine's Nuclear Infrastructures

There are four nuclear power plants (NPP) with 15 power units in Ukraine: Zaporizhzhia (ZAES), Rivne, Khmelnytsky, and Pivdennoukrainska (PAES). They generate more than half of the country's electricity which is the third largest figure in Europe after the RF and France. During the war, eight power units continue to operate in Ukraine. The Chornobyl NPP stopped working in 2000. Now there is a 30-kilometer exclusion zone around the plant, and the staff is responsible for the safe storage of spent nuclear fuel and monitors the remains of the destroyed reactor.

In Ukraine, there are two centralized storage facilities for spent nuclear fuel—at the ZAES designed for 50 years of storage, and in the Chornobyl Zone designed for 100 years. Previously Ukraine stored spent fuel from ZAES on its territory and transported it from three other stations to the RF. During the war, the transportation of nuclear materials is prohibited in Ukraine, so spent fuel is stored on the territory of the stations themselves.

The world has been facing Russia's nuclear blackmail since the first day of a full-scale war. On February 24, 2022, the invaders occupied Chornobyl and left on March 31. In total, more than 10,000 units of Russian equipment passed through the facility, and about 50 units of equipment and thousands of Russian soldiers were stationed on the territory of the NPP itself. The laboratories of the Institute of NPP safety problems of the National Academy of Sciences of Ukraine in Chornobyl also sustained damage (Krasnomovec et al., 2022). Because of the damage, the institute cannot conduct most of its research; its main task was to turn the sarcophagus into an environmentally safe object.

The second alarm signal was the shelling of the Neutron Source Research nuclear installation by the Russians in Kharkiv on March 26. An electrical substation was destroyed there, and cooling systems, the main building, heating mains, and power lines were damaged.

Third, on March 4, ZAES, the largest in Europe, became the first NPP in history to be shelled from tanks. Since the beginning of March, the administrative building and infrastructure of the training center with modern simulators for training NPP operators have been destroyed at ZAES. At that time, there were about 500 Russian soldiers, 50 military vehicles, Russian weapons, and explosives at the ZAES (Krasnomovec et al., 2022). In the event of an accident at NPP, its consequences will affect not only the territory of Ukraine but also neighboring countries.

Fourth, in the autumn, as a result of the shelling of the ZAES, the equipment of power unit No. 6 was damaged, power was lost, and an emergency start of diesel generators to ensure the operation of cooling pumps took place. In addition to the power units, the ZAES stored 5000 tons of spent nuclear fuel at that time. It is located in sealed containers of American production on the territory of the station (Krasnomovec et al., 2022). A projectile hitting a dry waste storage facility would have more serious consequences than a direct attack on the reactor.

Fifth, the ZAES was shut down on September 11. The purpose of shutting down the plant was to destabilize the Ukrainian energy system during the winter. The

capacity of ZAES is more than 6 GW. It is the largest NPP in Europe and the ninth largest in the world. Before the war, it provided almost a quarter of the country's electricity production (Orel, 2022). On September 16, Russia's Permanent Representative to international organizations in Vienna M. Ulyanov said that Russia would not withdraw its troops, equipment, and personnel from the territory of the ZAES as required by the IAEA Board of Governors (Rossija otkazyvaetsja, 2022).

Sixth, one more piece of evidence of nuclear blackmail was Russia's rocket attacks on September 19–21, 2022, on the PAES. On September 21, 2022, Putin announced a partial mobilization in Russia, and on the same day Russia hit the PAES with missiles, the explosion hit the station buildings—windows were blown out, walls were damaged, and missiles exploded just 300 meters from the reactor walls.

The State Enterprise National Nuclear Power Generating Company Energoatom, the operator of all Ukrainian NPPs, estimates material losses for ZAES at more than 18.3 billion UAH; this amount includes the cost of damaged buildings and equipment. Direct and indirect damage to Energoatom due to the war amounted to 35 billion UAH. For comparison in the first half of 2021, Energoatom had a profit of 1.12 billion UAH (Antonjuk, 2022).

On September 6, 2022, the IAEA published an objective report on the results of the mission to the ZAES (a permanent mission consisting of two rotating experts). The IAEA recorded the presence of Russian military personnel, military equipment, and Rosatom employees at the plant who may interfere with the operation of the NPP; the IAEA recorded a decrease in the number of operational personnel of the plant and an increase in their load which increases the risk of an emergency. The report was submitted to the United Nation Security Council. IAEA Director General Rafael Grossi stressed that the situation is unprecedented and called for the creation of a demilitarized zone around the ZAES before the end of the war. United Nations (UN) Secretary General Antonio Guterres supported this initiative (Orel, 2022). However, Russia continued to carry out terrorist acts against Ukrainian NPPs and blame Ukraine for this (Novikova, 2022).

The official position of Ukraine was formulated in the documents of the Verkhovna Rada of Ukraine. The basis of Ukraine's position was the prediction that the reckless actions of the top leadership of Russia and the Russian army near Ukraine's nuclear facilities could lead to catastrophic consequences for millions of people living in different countries of the world on different continents of the globe. In September 2022, Rada noted that "Russia's nuclear terrorism on the territory of Ukraine carried out from the first day of the large-scale Russian military invasion of our land—continues" (Jadernyj shantazh rosiiji, 2022). On September 22, President of Ukraine Volodymyr Zelensky (cit. in Pryshljak, 2022) speaking at a meeting of the (United Nations General Assembly) UNGA stressed that Russia should finally be recognized as a state sponsor of terrorism: "Russian radiation blackmail is something that should concern every one of you because none of you will find a vaccine for radiation sickness."

So, from the first days of the war—February 24, 2022—the invaders occupied Chornobyl, bombed the Kharkiv Research Center "Neutron Source," ZAES, and PAES, and threaten the entire nuclear infrastructure of Ukraine. The President and the Verkhovna Rada responded to these threats on the one hand trying to attract representatives of international organizations to fix the uncontrolled actions of the

aggressor, on the other proving their readiness to continue the struggle for independence without giving up to blackmail. This tactic seems to be the best and even the only possible one as international experience in the fight against terrorism proves that no negotiations or concessions should be given to terrorists.

3 Russia's Nuclear Strategy

In early March 2022, Russian Foreign Minister Sergey Lavrov claimed that he did not believe in the possibility of nuclear war, but at the end of April he already stated that “the risks of nuclear war are now quite significant” (Lavrov, 2022). Although understanding the consequences of a hypothetical nuclear strike by the RF is a deterrent for it, the threshold for Russia's use of nuclear weapons is still quite low (Khronika, 2022).

One of the first to talk about the peculiarities of Russia's nuclear strategy was political analyst Andrey Piontkovsky (cit. in Jadernyj shantazh – ostannij, 2022) noted that nuclear blackmail is an exceptionally effective element of Russian politics over the past 15 years: “This is the last trump card of Russian blackmail. Thanks to this blackmail, Ukraine, and Georgia refused to be accepted into NATO. There was a very moderate reaction to the aggression against Georgia, the annexation of Crimea, and so on.” Americans understood this threat and formed a special new type of nuclear weapon, on two missile carriers they removed the *doomsday* 50-kilotons warheads and replaced them with small warheads of 4–5 kilotons, the same ones Putin constantly threatened them with Piontkovsky (cit. in Jadernyj shantazh – ostannij, 2022) added:

Thus, the Americans gave a clear answer that nuclear strikes will not go unpunished. The concept of Patrushev and Putin was [relying on] is that if we are inferior to NATO in terms of conventional level, we will threaten to use tactical nuclear weapons, and then NATO will be afraid and capitulate. So, it was for 15 years: NATO was constantly retreating. And this was one of the reasons why they decided on this war, which was declared not only to Ukraine but to the whole of Europe. But then Putin was officially told that if tactical nukes were used, Russia would receive a retaliatory strike. This has become an effective deterrent against the use of tactical nuclear weapons.

Then, the Kremlin was forced to change its tactics. If the use of tactical nuclear weapons has become unlikely, then the use of nuclear blackmail both from the standpoint of the nuclear power industry—the shortage of electricity in Ukraine in the autumn–winter period due to the loss of the main part of the generating capacity of NPPs from the energy balance, and from the standpoint of the threat of a strike with a low-power nuclear warhead, that has become an even more valuable tool in the hands of the Kremlin.

The Russian leadership aimed to complete the “special operation,” overcome the Ukrainian resistance, and restore *Novorossiia* which was not achieved in 2014–2015

(Brusylovska, 2016).¹ Based on the territories of the south and east of Ukraine occupied and annexed to the RF through pseudo-referendums, the Kremlin dreamed of quickly forming the *Novorossiia* federal district (Brusylovska, 2016). Thus, on October 7, 2022, the 70th anniversary of Putin could be celebrated with dignity as a real “land restorationist.”

Without capturing Ukraine for 6 months, as a result of direct armed aggression, Russia has created new hybrid mechanisms with higher stakes. The Kremlin has developed a special scenario for drawing a nuclear card. The scenario of using a peaceful atom for military purposes can be traced, among other things, in the nomination of Sergey Kiriyenko, the former head of Rosatom from 2005–2016 and the curator of the Ukrainian issue (after Vladimir Surkov and Dmitry Kozak), as the first deputy head of the presidential administration of the RF. His program article, published on the website of the pro-Kremlin *Izvestia* newspaper on Russia Day, June 12, although soon withdrawn, highlighted his intentions regarding Ukraine. It was about the annexation of the occupied territories of Ukraine to the RF. The mechanism is not Surkov quasi-state “People’s Republics,” but territories that “historically were part of Russia” and are now being returned by “expressing the will of the people” in a referendum (Kiriyenko, 2022).

The probability of such a scenario was discussed in a study by the Centre for global studies (CGS, Ukraine) in 2017. The scheme of the Cuban Missile Crisis was considered ideal in the Kremlin for obtaining strategic concessions from the West. It was not about repeating the situation of 1962 but about conducting a hybrid version when something (nuclear energy) that should not have ever been a weapon becomes one. The main idea of Kiriyenko was to apply a hybrid model of mixed nuclear escalation with subsequent de-escalation according to the following scheme of the main stages proposed in the CGS study by Gonchar (2022):

1. Escalation in the area of ZAES (Energodar) with the escalation of panic both at the local level and in Europe over a possible nuclear incident with unpredictable consequences; accusations of the Armed Forces of Ukraine in the shelling of NPP.
2. Disconnection of ZAES from the United Energy System of Ukraine, de-energization of consumers in the south of Ukraine with subsequent accession to the unified energy system of the Russian Federation. Transfer of ZAES under Russian control.
3. A so-called referendum on the “reunification of the region with Russia” to fix “the expression of the will” of the population of the occupied territories, followed by their rapid accession to the RF. Proclamation of the zone of increased nuclear

¹In the Russian Empire, the term “Novorossiia” was used to refer to the region created during the time of Catherine II. This concept included modern Donetsk, Dnipropetrovsk, Zaporizhzhya, Mykolaiv, Kherson, and Odesa. Today, the term “Novorossiia” means the confederation of the self-proclaimed republics of Donetsk and Luhansk. “Novorossiia” is an example of a pseudo-reality created by Russia, since this concept plays well with the imperial heritage of the Russian Federation and serves to create new myths.

danger on the territory of Russia in Energodar in connection with “the aggressive actions of the Armed Forces of Ukraine against the Russian nuclear power facility and citizens of the RF” who live in the Zaporizhzhia region and neighboring regions.

4. Fake “terrorist strike of the Armed Forces of Ukraine” and threats to detonate warheads installed at NPP. At the same time, diverting Europe’s attention from the ZAES by cutting off gas supplies through Nord Stream 1.
5. Placement (or notification without the fact of placement) of tactical nuclear weapons near Energodar to create “a protective nuclear umbrella” with a simultaneous ultimatum about the threat of its use in case of ignoring it to Kyiv (on the cessation of hostilities and the withdrawal of the armed forces of Ukraine outside the regions of *Novorossiya*), and the US, European Union (EU), and NATO on the termination of support for Ukraine and the return of the alliance to the borders of 1997).

The second goal of Russia’s new nuclear blackmail tactic was to influence the supply of electricity to many European states. Disruption of Ukrainian electricity exports abroad, according to the Kremlin, would lead to favorable political decisions of European leaders. Due to the increase in gas prices, Europeans will try to get additional volumes of electricity from Ukraine because Ukraine is part of ENTSO-E (the European electric grid). But if there is a shortage within the state, then there will be no talk of exports (Kuleba objasn timer, 2022). By creating a constant threat of an accident, the Russians tried to influence Western countries to force Ukraine to sit down at the negotiating table. This was of particular importance against the background of the great problems of the Russian army at the front. It has become vital for the RF to force Ukraine to negotiate to fix the status of the occupied territories and get a break to accumulate reserves of weapons and manpower for a new offensive.

So, during the fall of 2022, we witnessed the birth of a new version of Russia’s nuclear strategy. The main new feature of Russia’s nuclear blackmail was the combination of the already familiar rhetoric of the bomb threat with threats of creating a situation of global catastrophe due to the destruction of NPP on the territory of Ukraine. NPPs have become the know-how that Russia has brought to the classic strategy of nuclear blackmail.

This is a powerful weapon in the hands of Russia because after Chornobyl the world understood all the dangers of a peaceful atom. That long-standing disaster demonstrated that an explosion at an NPP can have the same consequences as the detonation of many atomic bombs. After the Chornobyl accident, a radioactive cloud formed that covered not only Ukraine, Belarus, and Russia which are located near the Chornobyl NPP, but also parts of 24 European countries. Radiation exposure leads to death from acute radiation sickness an increase in cancer to the destruction of the environment, the animal and plant world for many generations. In this regard, back in August 2022, the adviser to the Minister of Environmental Protection and natural resources of Ukraine Lala Tarapakina reported that, in particular, ZAES stores ten times more nuclear fuel than it was in 1986 at the Chornobyl NPP (Chornobylska, 2022).

Russia's tactics lead to two conclusions. First, Putin demonstrated that he considered the threat of nuclear power plants more effective than the threat of a bomb, and second, he demonstrated a disregard for international institutions and the laws of the civilized world. So, the attacks on nuclear power plants in Ukraine occurred immediately after the IAEA called on Russia to stop any hostile activity against any nuclear facilities in Ukraine that Russia has turned into a target.

4 Russia's Allies

Russia's nuclear blackmail is fueling the ambitions of potential nuclear powers, as can be seen from the behavior of Iran which announced the commissioning of additional centrifuges for uranium enrichment. Thus, according to the IAEA, Tehran is ready to produce the material necessary to create an atomic bomb. At the same time, Iran is withdrawing increasingly large parts of its nuclear program from the control of the IAEA. At the same time, the new version of the nuclear agreement between Iran, the US, the EU, Russia, and China which seemed to be already nearing completion was blocked by Tehran itself (which Moscow and Beijing sided with). With the support of the Kremlin, the Iranian regime insisted on unacceptable conditions for Washington such as the exclusion of Islamic Revolutionary Guards from the US list of terrorists. In return, the Kremlin demanded that its trade relations with Iran be removed from the sanctions imposed by the West against Moscow over the Russian invasion of Ukraine.

Moscow intended to further increase the global potential for nuclear blackmail against the West. With his method, Putin as Matthias Kuntzel (cit. in Ghercingher, 2022), an expert on the Middle East, noted that he "exemplary increased the attractiveness of nuclear status around the world" Following the example of Russia's actions against Ukraine, "tomorrow the potential of blackmailing the Iranian atomic bomb may contribute to the transfer of Shiite parts of Iraq to Iran" (Ghercingher, 2022).

As for China, the use of nuclear weapons would deprive the RF of the support of this strongest ally. Therefore, the probability of Russia using nuclear weapons is extremely low. Nuclear blackmail is another matter. If the Russian scenario of nuclear escalation around the AES is successful China will use the template of Russian actions to gradually capture Taiwan, first landing troops at two NPPs in Taiwan (the current Kuosheng and the decommissioned Jinshan) which are located on the Sea coast in the northern part of the island just 25 km from Taipei (Gonchar, 2022). If the international community allows Russia to seize a country by force, fearing its threats, it will deal a fatal blow to the principle of nuclear non-proliferation. Then, there will no longer be convincing arguments against nuclear weapons for states with nuclear ambitions. Because then, they will conclude that they can at their discretion use the bomb as a means of capturing nuclear-free states simply by threatening to use it.

5 Ukraine's Allies

For a long time, Europe and the US did not take Russia's actions against nuclear facilities in Ukraine seriously and reacted little to violations of international principles. It was the dysfunction of the UN and the IAEA that prompted the Kremlin to use a hybrid nuclear escalation mechanism. Some of Ukraine's allies have not yet drawn conclusions. So, many politicians and scientists in the US say that there is a high risk of using nuclear weapons as a last argument if Russia is on the verge of complete defeat in the war (Dacenko, 2022). Fear of nuclear war is spreading in Germany: a number of intellectuals, including Juergen Habermas, are demanding restraint from the federal government in supporting Ukraine with arms supplies, fearing that otherwise Russia may be provoked to start a nuclear war against the West (Ghercingher, 2022). These supporters of peace indirectly offer Ukraine to surrender to the aggressor in the expectation that Russia will be satisfied and this will protect Germany from its desire to attack. But they do not understand how devastating consequences any concession to Russian aggression can have precisely from the point of view of the proliferation of nuclear weapons, reducing the psychological barrier to their use and, consequently, the likelihood of nuclear wars.

It is the long-term compliance of the West with the aggressive policy of Russia which strictly ignores all the norms of international law that has brought the world closer to nuclear war. The West did not respond to Russia's war crimes committed in Syria because of its nuclear status, and this reduced international law to a new maxim: those who can threaten with nuclear weapons adopt the right of the stronger indefinitely. But this increases the danger that the aggressor will eventually fulfill this threat. This road was taken back in 2014 when Russia's annexation of Crimea and occupation of part of eastern Ukraine ended the Budapest Memorandum of 1994. Ukraine gave up its nuclear weapons in exchange for a guarantee of territorial integrity by the nuclear powers—the US, Great Britain, and Russia. When the RF attacked Ukraine in 2014, violating this agreement, the West responded with only a few indecisive sanctions, and otherwise continued its “business as usual” relations with the aggressor. The message to the rest of the world was clear: no treaty assurances would protect a nuclear-free state from aggression and conquest by nuclear power. The 2022 war further reinforced this trend. Categorically ruling out direct military intervention in favor of Ukraine in response to the attack, since, according to US President Joe Biden, this will lead to World War III, the West made a statement: nuclear-free states that have become victims of nuclear aggression under no circumstances can count on active military support from outside (Ghercingher, 2022).

But there are also signs of a different approach to solving the problem of Russia's nuclear blackmail. The United Kingdom has become the head of the European coalition of Ukraine's allies. This applies not only to the period of Boris Johnson's rule but also to Liz Truss. During a speech at the UNGA, Truss (cit. in Duljaba, 2022) called Putin's nuclear threats “rattling weapons” and said that this blackmail will not work:

Putin is trying to justify his catastrophic failures. He decided to continue the effort, sending even more reservists to a terrible fate. He is desperately trying to create the appearance of democracy for a regime for which human rights and freedoms do not exist.

Since February 2022, the position of NATO has also changed radically. NATO Deputy Secretary General Alexander Vershbow said: "I think all allies already understand that we are dealing with Russia which is a revanchist force seeking a review of agreements reached after the Cold War which claims its rights to influence its neighbors which use force to change borders" (U NATO poobicjaly vidpovisty, 2022). Two months before the 2022 summit in Warsaw, Vershbow said that the alliance takes the threat of Russian aggression seriously: "First, we must remind you that we are a nuclear alliance and that we have a nuclear component that supports our traditional steps. This does not mean that we should mirror Russia's actions, but we should clearly demonstrate our position. The Russians should have no doubts... We must convince them that they can neither blackmail us nor think that they can force us to make concessions because of the limited use of nuclear weapons" (U NATO poobicjaly vidpovisty, 2022). The Seimas of Lithuania and Latvia have declared Russia a sponsor of terrorism and a terrorist state, recognizing Russia's crimes in Ukraine. Finally, the Parliamentary Assembly of the Council of Europe adopted a resolution recognizing Russia as a terrorist regime.

So, the next thing Ukraine's allies need to realize is that Russia's nuclear blackmail with a focus on the threat of NPPs was first used in Russia's war against Ukraine in 2022, but if this tactic works in Russia will certainly repeat it, and spread it in other cases. In the Black Sea, Russia can take advantage of the experience gained in order to pre-emptively seize the Chornavody NPP in Romania which is located 60 km from the coast in the event of a conflict with NATO and issue an ultimatum to the US and NATO to take military infrastructure from Central Europe. A similar scenario can be worked out for the Baltic Sea region for the coastal NPPs of Finland—Lovijis and Olkiluoto, and Sweden—Forsmark and Oskarhamn (Gonchar, 2022).

That is why it is so important for the entire international community to stop Russia here and now. Safety at Ukrainian NPPs is possible only if the plants are de-occupied, demilitarized, and Russian fire on these facilities is stopped. Further, the world should quickly jointly develop mechanisms for bringing Russia to justice for the crimes committed in Ukraine (killing civilians, torturing prisoners, rape, forced deportation of children, use of prohibited weapons, destruction of vital infrastructure, provoking global hunger, nuclear blackmail, etc.).

Sanctions against Russia and assistance to Ukraine are the beginning of the protection of millions of people from the consequences of Russia's terrorist acts at Ukrainian nuclear facilities. First of all, the nuclear sphere should not be an exception to the EU and US sanctions regime since Russia has crossed the red line and started using civilian nuclear energy as a weapon. The International Working Group on sanctions against Russia (McFaul—Yermak group) in its Action Plan of April 19, 2022, provided for sanctions against Rosatom but they are still not visible in the sanction packages. It is necessary to freeze Rosatom's projects until the complete

cessation of Russian aggression and the withdrawal of occupation troops from the territory of Ukraine.

An example of an adequate approach to Rosatom's projects has already been demonstrated by Finland which stopped implementing the joint project for the construction of the Hanhikivi-1 NPP in May 2022. Also, in 2021, the Czech Republic's Government blocked Russia's participation in the tender for the construction of another power unit of the Dukovany NPP (Gonchar, 2022). But the sanctions should be supplemented with more effective military assistance to Ukraine so that its armed forces do not have the feeling that Europe is tired of war and aims to end it at any cost. All historical analogies prove the futility of appeasing the aggressor; the price of hesitation will be too high.

So, Ukraine's allies have several main problems: indecision in the fight against a nuclear power, an emphasis on economic sanctions without urgent military assistance, and a lack of consensus in the EU. The origins of these problems seem to be related to one super-problem—the lack of a strategic vision for the future agenda.

6 Conclusion

If Russia does not use nuclear weapons against Ukraine, tomorrow's agenda will be determined by Russia's nuclear blackmail, because it changes the quality of modern international relations. The new era began with threats to Chornobyl, the Kharkiv "Neutron Source," ZAES, PAES, etc. The response of the states involved in the conflict varied. If Ukraine has refused to negotiate and make concessions to terrorists, the West has already made several statements that have filled the Kremlin with confidence that Ukraine will not be protected and a return to *business as usual* is still possible. The main blame for erroneous policies falls on the leaders of the free world. But there are outlines of new leadership from a group of states more determined to repel the terrorist state. These are the United Kingdom, Poland, Lithuania, Latvia, and other countries of the former communist camp that are better aware of the consequences of Russia's impunity.

With his method of nuclear blackmail Putin inspires autocratic states to imitate his behavior, and those who do not have nuclear weapons to seek them. As for the states of the democratic world, Europe and the US for a long time did not respond enough to Russia's violation of international principles. The dysfunction of the UN and the IAEA has prompted the Kremlin to use a hybrid nuclear escalation mechanism and the idea of a so-called reflexive management strategy. The modern version of Russia's nuclear strategy has the main new feature of nuclear blackmail as a combination of traditional bomb threat rhetoric with threats of creating a situation of global catastrophe due to the destruction of NPPs on the territory of Ukraine. Thus, the threat of nuclear power plants is considered more effective than the threat of a bomb, so if this tactic works, Russia will constantly repeat it in relation to other countries in the region which it considers "the sphere of its vital interests" (Strategiya, 2009).

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Part II

Missile and Disruptive Technologies

Emerging and Disruptive Technologies in Russia's War against Ukraine



Sitki Egeli

Abstract At least three emerging and disruptive technologies (EDT) were used right from the opening phases of Russia's War in Ukraine. Thanks to the operational experience, some of the hype and the unknowns surrounding those three categories of EDTs have now been reduced. Regarding hypersonic weapons, concerns and warnings about their destabilizing and disturbing impact were proven to be largely exaggerated. Yet, analysts should display caution in applying the lessons to future crises and conflict scenarios involving different adversaries, contingencies, and geostrategic circumstances. As for cyber threats, alarmism around them was also shown to be overblown. The evidence on the ground suggests that when both sides have moderate to advanced cyber defensive and offensive capabilities, the cyber playing field is quickly leveled. Finally, concerning counter-space activities, Russia attempted to harass and obstruct the services of third-party satellites used extensively by Ukraine. This signified an uptick mainly because counter-space techniques were used for the first time as part of an all-out war between two state adversaries. Still, Russia refrained from targeting those satellites themselves, possibly out of fear of escalation or reprisals. Instead, Russia's counter-space activity picked on terrestrial elements of third-party satellites and took the shape of cyberattacks.

Keywords Emerging technologies · Hypersonic · Weapons · Cyberthreats · Counterspace · Russia's war on Ukraine

1 Introduction

On February 24, 2022, the Russian Federation has launched an unprovoked, full-fledged military offensive against its neighbor Ukraine. Russian leadership did not feel much urge to hide their objective to eradicate Ukraine as a sovereign state. Ever since, political, geopolitical, economic, legal, strategic, tactical, and operational

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aspects and ramifications of the ensuing conflict have been scrutinized and debated at length by observers and commentators around the world. A dimension to have received comparatively scant attention has been the use of “Emerging and Disruptive Technologies” (EDT) by both Russia and Ukraine during the conflict. The focus of this chapter will thus be on EDTs and the short- and medium-term ramifications of the first time ever employment of several EDTs in this major conflict between two state actors.

A good starting point will be defining the term EDT and identifying its scope and coverage. Yet, this is easier said than done, as “there is little agreement on what the terms ‘emerging’ and ‘disruptive’ refer to or on what is or not new” (Futter, 2021, p. 2). In this respect, the element of “emerging” within the term could be taken as a reference to the technology areas in which rapid progress is witnessed and/or ground-breaking developments are expected in the near future. “Disruptive” on its part refers to technological developments that carry the potential of altering the current balances and stability between states and creating in the process corrosive influences and challenges for the existing international order in such respects as the states’ deterrent postures against one another, arms control arrangements, and escalation and crisis management (*ibid.*).

EDTs in this sense could be rounded up within the bracket of military and non-military capabilities taking advantage of the emerging or rapidly progressing technologies, whose existence and ultimately use against other actors within the international system encompasses the danger of creating disruptive effects over the existing order and stability. A vivid example is provided by the missile defense technologies into which the United States (US) invested several hundred billion US Dollars in recent decades. What the Americans saw themselves and expected others to also perceive as a purely defensive capability triggered offensive reactions from other nuclear weapon states, primarily Russia and China (Erastö & Konda, 2021), because the latter saw technological progress and the resulting growth in US missile defense capabilities as a direct threat for their strategic nuclear weapons and their second-strike capability. Strategic benefits and opportunities promised by missile defense capabilities convinced the US to walk out of the Anti-Ballistic Missile (ABM) Treaty, whereas the consequent arms race and the renewed interest in offensive missiles brought eventually the demise of yet another cornerstone of nuclear arms control—namely the Intermediate Nuclear Forces (INF) Treaty. Thence, the treatment and categorization of missile defense technologies and capabilities as a typical example of EDT by certain observers (Futter, 2021, p. 5).

A particularly challenging property of the term EDT is the fact that there is little or no consensus among the academia, defense circles, or policymakers on which technologies and resulting capabilities, systems, and weapons should be seen and handled as EDTs. Which technology is genuinely new, and which one is not? Which one is likely to witness a breakthrough in the short term, and which ones are more distant or farfetched? Which technology is more likely to have a deep impact on the current order, as against those incorporating a strong dose of alarmism or exaggeration? Answering such questions entails lots of assumptions, value judgments, and unavoidably a strong dose of subjectivity. Further complicating the task in this

Table 1 Emerging and Disruptive Technologies per different reports and studies

Science & Technology Trends Report (NATO, 2020)	Challenges posed by EDT—EUNPDC Paper #73 (Futter, 2021)	Weapons of Mass Distortion—KCL-CSSS (Favaro, 2021)	Negative multiplicity—IFSH #010 (Favaro et al., 2022)
Hypersonic	Hypersonic	Hypersonic	Hypersonic
AI	AI & Automation	AI-assisted cyberattacks	AI—C4ISR, weapons, cyber ops, info warfare
Autonomy		Robot swarms	
Space	Space & Counter-Space	Small satellites, RPO, ASAT	ASAT
		Directed energy	Directed energy
		AI-assisted sensing	
	Computer network operations		
Quantum			Quantum—hardening/exploitation, C4ISR
Biotech and human enhancement			Human enhancement
			Synthetic biology
Data			
	Ballistic missile Defense		
		Deepfakes	
Novel materials and manufacturing			

respect is the veil of secrecy, ambiguity, and at times deliberate misinformation surrounding many of the new, progressing, or promising technologies. Table 1 illustrates the difficulty of identifying EDTs by revealing the large variety of technology domains shown as EDTs in some of the recent reports and studies released by various scholars, think tanks, and international organizations. It is self-evident that the candidate technologies display a great variety despite some overlaps, and there is little consensus among analysts on what technologies should be considered as EDT.

Shifting our attention now toward the developments since the outbreak of the conflict in Ukraine, out of the large variety of technologies listed under Table 1, we are going to focus on three categories of technologies and capabilities to have been employed by either or both Russia and Ukraine during the opening and subsequent phases of the conflict. Those are (1) hypersonic weapons, (2) cyberattacks, and (3) counter-space operations. A main criterion for selecting those three EDTs over others has been their use for the first time as part of a full-scale war between two state actors. Meanwhile, this should not be taken and treated as an exhaustive list of all EDTs pressed forward during Russia’s War in Ukraine. On the contrary, there are others (e.g., artificial intelligence (AI), autonomy, and robot swarms) to have been

pressed in by both sides of the conflict. But the circumstances and evidence of their employment happen to be equivocal, or their use too recent and still unfolding to allow reliable analysis and deductions. Hence, the author has chosen to leave them to others for future and more comprehensive studies. Reckoning those limitations, this chapter shall try to briefly analyze the circumstances surrounding the use of the three EDTs in Russia's War in Ukraine, their respective effectiveness, and the short- and medium-term implications and lessons that could be drawn from their employment.

2 Hypersonic Weapons

The term hypersonic weapon is used for missiles that can travel at speeds of at least five times the speed of sound. Yet, their real differentiating property is not their high speed to which they owe their name, but rather their ability to execute abrupt maneuvers while traveling at such high speeds. Otherwise, ballistic missiles fielded and used since the Second World War are also capable of reaching speeds of five, ten, or up to twenty-five times the speed of sound. However, ballistic missiles do not qualify as hypersonic weapons, because they travel along a more predictable "ballistic" trajectory. In other words, ballistic missiles cannot execute dramatic trajectory alterations during their journey to targets. All the while, cruise missiles built to fly at very low altitudes to remain below early warning and tracking radars' field of view to avoid detection are highly maneuverable, but they are not categorized as hypersonic weapons either due to their low, typically subsonic flight speed. On this account, hypersonic weapons could even be characterized as a distinct missile category combining the high speed of ballistic missiles with the agility and high maneuverability of cruise missiles to circumvent a rival's air and missile defense systems.

During the Cold War, both superpowers spent considerable resources researching and developing hypersonic weapons (Acton, 2014). But in the post-Cold War period, Russian Federation has been the side to have invested first and foremost in hypersonic weapons. The reason was rather simple: concerned by the technological leaps achieved by the US in the field of missile defense, Moscow sought to preserve the deterrent value of its nuclear strategic missile arsenal by adding new, exotic gadgets in its armory to penetrate US missile defenses. Hypersonic weapons promised such penetration capability. Building upon its legacy Cold War programs, in 2018 Russia became the first state to rush into service three different types of hypersonic weapons. Those are an aircraft-launched derivative of the Iskander tactical ballistic missile called *Kinzhal*; a sea-launched hypersonic missile known as *Zircon*; and the nuclear-tipped *Vanguard* hypersonic glide vehicle carried atop an intercontinental ballistic missile.

Roughly 4 weeks after launching its offensive against Ukraine, the Russian military fired a *Kinzhal* hypersonic missile from a *Mig-31K* jet fighter and hit a Ukrainian ammunition storage facility. This signified the first time ever use of a hypersonic weapon in combat (Tucker, 2022a). During the first few months of the

conflict, Russia fired more than a dozen *Kinzhal* missiles against Ukrainian targets according to Western sources, whereas Russian officials admitted launching only three *Kinzhals* (Copp, 2022; Reuters, 2022a).

The *Kinzhal* missile has a range of approximately 800 kilometers. But by adding the combat radius of the aircraft that carries it, the range figure goes up to over 2000 kilometers (Majumdar, 2018). As compared to other air-launched precision-guided munitions, *Kinzhal*'s differentiating property is its very high speed—up to *Mach 10*, or ten times the speed of sound, according to Russian sources (Axe, 2020). Setting *Kinzhal* apart from the more conventional ballistic missiles is its ability to execute agile maneuvers while flying toward its target. This means *Kinzhal* would not only conceal its actual target until the very last moment, but it would also minimize the reaction time available to defenders and complicate as such the task of missile defense systems. During the conflict in Ukraine, there is little doubt that *Kinzhal* missiles lived up to their *raison d'être* by destroying their targets. What is more ambiguous and puzzling though is the reason why Russia preferred a precious weapon like *Kinzhal* that is presumably in short supply—less than a few dozen could have been produced (Axe, 2020)—against a rival like Ukraine that did not possess any sophisticated air or missile defenses to merit the use of an experimental and very expensive weapon like *Kinzhal* (Tucker, 2022a). Put differently, if the real *forte* of hypersonic weapons like *Kinzhal* is to overcome the opponent's missile defense measures, in the absence of such Ukrainian capability, the same mission could have as well been fulfilled by the more abundant and traditional ballistic and cruise missiles like *Iskander* and *Kalibr*.

One plausible explanation is the Russian military's desire to demonstrate and/or test its novel weapons—a practice witnessed systematically in Moscow's intervention in Syria, during which a whole range of new and old Russian-built weapons made their combat debut (Myers & Schmitt, 2015). A second line of argumentation concerns Russia's depletion of its stocks of modern missiles during the first few weeks of its campaign against Ukraine, and the consequent decision to retain a minimum strategic stockpile of effective cruise and ballistic missiles against North Atlantic Organization Treaty (NATO) (Johnson, 2022). Alternatively, Russian decision-makers may have sought to intimidate the Ukrainian population and the international community, or else to boost the spirits of their population by resorting to a new, exotic, and spectacular weapon like *Kinzhal* (Johnson, 2022). Finally, it is also plausible that Russian leadership might have seen an opportunity in *Kinzhal* for signaling to Western countries lined up behind Ukraine that Russia would not hesitate to escalate the conflict by introducing new capabilities—now hypersonic weapons, and ultimately nuclear weapons, too.

Whatever the thinking and justification of its decision-makers, Russia's employment of hypersonic weapons against Ukraine did not have an impact on the course of the conflict. Thus, at least in the case of this conflict, concerns, and warnings about the destabilizing and disturbing impact of hypersonic weapons at tactical, operational, and strategic levels were proven to be unfounded and exaggerated. Still, analysts are urged to display extreme caution in applying the lessons of this particular example to the crises and conflict scenarios involving other adversaries, contingencies, and geostrategic circumstances. After all, in Russia's war in Ukraine,

hypersonic missiles were not really needed and their use did not have a real impact, primarily because the side at their target did not possess any missile defense capabilities. Conversely, hypersonic weapons could play more significant, perhaps destabilizing, and escalatory roles in crises and conflicts involving one or both adversaries in possession of nuclear weapons and sophisticated missile defense capabilities. Further complicating the picture and augmenting the risk is the fact that besides the three leading nuclear weapon states—US, Russia, and China—several others like India, France, Japan, Australia, North Korea, and Iran also showed keen interest in deploying hypersonic weapons. Hence, there is an ever-increasing likelihood of future confrontations involving belligerents who resort to hypersonic weapons for deterrence, coercion, and/or actual warfighting. Indeed, with the ever-increasing numbers of hypersonic weapon programs and states seeking them, the time has arrived to start treating hypersonic weapons not as exotic, futuristic weapons, but rather as operationally proven elements of modern battlefields. In other words, whereas Russia's employment of hypersonic weapons against Ukraine did not achieve any immediate military ends, it has nonetheless transformed a prospective technology into the concrete reality of current and future conflicts.

3 Cyberattacks

Interference and incursions aimed at reducing the effectiveness of hardware, software, and networks used by states and other private and commercial actors have been a constant, growing concern for at least the last two decades. Large-scale denial of (internet) services during 2007 Russo-Estonian tensions and the 2008 Russo-Georgian War, coupled with the 2010 Stuxnet malware to have targeted an Iranian uranium enrichment facility, and the cyber disruptions to have accompanied Russia's 2014 invasion of Crimea already removed the tag "novel" from the notion of cyber warfare and rendered it rather mundane. On this account, it could even be argued that a cyberattack does not qualify as an EDT anymore. On the other hand, Russia's War in Ukraine "is the first full-scale battle in which traditional and cyberweapons have been used side by side, and the race is on to explore the never-before-seen dynamic between the two" (Sanger & Barnes, 2022). Thus, scrutinizing cyberattacks here is deemed well-justified and warranted.

In this regard, the cyber warfare campaign launched by Russia against Ukraine was the most extensive on record and comprised multiple cyberattacks not only during the first days of its all-out conventional offensive but also during the few preceding days (The Economist, 2022). Attacks using malware to wipe data on government networks were accompanied by cyber interference in the operations of a third party—in this case American—satellite communications networks in the hopes of crippling Ukraine's war effort. They constituted "a formidable, intensive, even ferocious set of attacks [...] coordinated from different parts of the Russian government" (Sanger & Barnes, 2022). In this sense, the warnings on the next big

state-on-state military confrontation starting with cyberattacks were proven accurate (Gruss, 2022; Rid, 2022).

On the other hand, omens of cyber paralysis or “cyber–Pearl Harbor” scenarios at the very beginning of the next major conflict did not materialize. Russia has been reputed for years for possessing sophisticated cyberweapons capable of crippling its ill-prepared and vulnerable Western adversaries. Living up to expectations, and in parallel with its physical offensive, Russia deployed a wide array of those cyber weapons not only against Ukraine but in certain cases against its western allies as well. One study reported network intrusions not only in Ukraine but in 42 countries during the first few weeks of the conflict (Microsoft, 2022). Yet, echoing the Russian military's dismal performance on the physical battlefield, most of those cyberattacks failed, their impact was short-lived, and any resulting damage was quickly fixed by Ukraine and its supporters. Subsequently, Russia's cyberattacks have had little if any impact on the course and conduct of tactical operations. Meanwhile, in those cases where their cyberattacks succeeded, the Russian military appears to have failed to integrate the proceeds within the broader military campaign. Put it differently, there is no information on Russian computer network operators integrating and combining their efforts in direct support of traditional operations (Rid, 2022).

While there is little doubt about the subpar planning, performance, and exploitation surrounding Russia's cyber operations, one should not overlook the fact that a main reason why Russian cyber effort failed was also due to the Ukrainians being very well prepared this time and defending themselves better than many expected (Corera, 2022). Since the 2014 invasion of Crimea, Ukrainians have been continuously subjected to Russia's intense and vicious cyberattacks. This had increased their familiarity with the challenge and forced them to improve the redundancy and resilience of their networks. The outcome has been any intrusion and subsequent damage being quickly fixed and the effects negated thanks to the resilience built into Ukraine's networks over the years. For example, a major cyberattack using a malware called *FoxBlade* managed to wipe out data on Ukrainian government networks the day before the war began. But there was enough redundancy built into the Ukrainian networks and the attack did not have a lasting impact (Sanger & Barnes, 2022).

Equally decisive has been Ukraine's ability to have built and fielded top-notch cyber defensive and offensive capabilities in the course of the last few years. Ukraine deployed a massive cyber army comprising individuals from the country's burgeoning technology sector as well as volunteers contributing from around the world (Ling, 2022). In this regard, Ukrainians have shown themselves adept in enrolling the support and building coalitions among groups that normally have nothing to do with one another, ranging from foreign military partners to global IT corporations and cyber vigilante groups (Tucker, 2022b). For instance, when Russia launched cyberattacks against KA-ASAT and Starlink satellite-based communications services used extensively by Ukrainian forces, it was the commercial operators of those American-owned constellations to have come up with software fixes within hours to restore the service (Albon, 2022; Insinna, 2022). Noteworthy enough, this large, makeshift army of cyber actors, professionals, and volunteers proved to be

highly dynamic and adaptable. Conversely, Russia's much smaller network of state-based hackers housed largely inside the spy services excelled in pre-planned, relatively static cyber operations against moderately prepared network structures. When faced with well-prepared networks protected by high levels of defensive capabilities, their effectiveness vanished (Ling, 2022; Tucker, 2022b).

All the while, the US as Ukraine's chief foreign military partner did not feel much urge to hide its straightforward support and even direct involvement in countering and responding in kind to Russian cyberattacks. Roughly 3 months before the outbreak of hostilities and in what equals to one of its largest deployments ever, the US Cyber Command sent to Ukraine cyber teams with personnel drawn from across US armed services (Corera, 2022). In the words of a senior US official, "we've conducted a series of operations across the full spectrum; offensive, defensive, information operations" (Lyngaas, 2022). This rare public acknowledgment of offensive cyber operations indicates that "cyberspace is a domain in which Biden administration feels comfortable countering Russia without fear of escalation" and cyberattacks constituted an interesting deviation from the US administration's pledge not to engage directly with Russia militarily so long as the US and its allies are not attacked (Lyngaas, 2022). Conversely, NATO and several of its member states believed to have contributed with their respective cyberwarfare capabilities remain tight-lipped on cyber operations in support of Ukraine. Notwithstanding, Ukraine's struggle against Russia in the cyber domain has by no means been an effort carried out solo. Rather, it was a combined effort bringing together Ukraine's cyber experience and capabilities acquired over the years with the know-how and resources of multiple state and non-state partners and friends across the world.

In retrospect, all those factors enabled Ukraine to turn the tables on Russia in the cyber domain, whereby from being defensive at the outset, Ukraine's cyber effort transitioned toward cyber counterattacks taking the cyber fight onto Russia. The outcome was unprecedented disruption and breaches in Russia's information systems, to the extent that Moscow was forced to limit foreign internet traffic in a desperate attempt to mitigate those attacks (Ling, 2022). All the while, by forcing Russian cyberwarriors to shift their focus toward countering Ukrainian cyberattacks, there is little doubt Ukraine's cyber counteroffensive caused distraction and brought an additional benefit of reducing the intensity and effectiveness of Russia's cyber offensive.

All told, Russia's War in Ukraine has shown the alarmism around cyber threats to be overblown and cyberattacks being comparatively manageable (Mueller, 2022). The evidence on the ground suggests that especially in those state-on-state conflicts in which both parties have moderate to advanced cyber defensive and offensive capabilities, the cyber playing field would quickly be leveled. This would leave the floor to conventional armaments—missiles, artillery, airpower, and so on—to rule the day and determine the course and possibly the outcome of the conflict.

4 Counterspace

Ukraine does not possess satellites of its own, but it nonetheless relies heavily on space-based assets of others for obtaining real-time satellite imagery of the battlefield, for communication and Internet access, and for geo-positioning and navigation using signals broadcast from satellites. Besides, there is convincing evidence of the US military and government agencies passing on real-time satellite imagery to Ukraine on the location and movements of Russian forces, so that Ukraine could strike them (Harris & Lamothe, 2022). Not surprisingly, their extensive and effective employment by Ukraine has placed those third-party satellites and their terrestrial extensions in the crosshairs of Russia's counter-space action, several examples of which have been detected during and before Russia's invasion of Ukraine. Whereas such interference with satellites' operations has already been witnessed elsewhere (Lewis & Livingstone, 2016), the war in Ukraine signified an important uptick, because counter-space techniques are being used for the first time as part of an all-out war between two state adversaries.

It is no secret that ever since the placing in orbit of the first satellite in 1957, techniques have been persistently pursued to harm satellites or to interrupt and compromise their services. The range of options is multiple: anti-satellite missiles fired from the surface of the Earth, electronic jamming and spoofing, directed energy beams—e.g., lasers—sent toward satellites, attacks by other satellites that are themselves positioned in orbit, and finally cyberattacks targeting not only satellites but their terrestrial access points and control centers as well. Russia is known to have invested and acquired significant capabilities in all those counter-space options (Weeden & Samson, 2022).

As recently as November 2021, Moscow tested what is known as a Direct-Ascent Anti-Satellite (DA-ASAT) missile to destroy one of its own defunct satellites (Hoffmann, 2021). The counter-space tools that found favor with Russia in its war against Ukraine appear to be cyberattacks and electronic (RF spectrum) jamming and spoofing. The reader must be reminded in this respect that attempts to interrupt space-based services do not have to zero in on satellites. Those satellites' terrestrial extensions in the form of ground control stations and communications nodes and terminals, as well as transmissions traveling back and forth to satellites, could also be suppressed, polluted, or compromised.

Russia's cyberattack against a high-throughput geostationary telecommunications satellite owned by Viasat (KA-SAT), a satellite communication system owned and operated by a US-based company has been the most widely publicized case of counter-space activity of the conflict. Communication connectivity provided by KA-SAT is used extensively not only by the Ukrainian military but also by a large number of clients spread across Eastern and Central Europe. Consequently, when Russia struck the KA-SAT ground terminals a few hours before launching its ground offensive, the initial outcome was a huge loss of services both inside Ukraine and several Eastern and Central European countries. Yet, the outage was fixed and the service was quickly restored through software updates rushed in by Viasat—an

American company operating the satellite (Albon, 2022; Rid, 2022). Around the same timeframe, a second set of attacks targeted Starlink satellite communication terminals that were donated to Ukraine by US company SpaceX before the outbreak of the hostilities. According to some accounts, this was a series of electronic attacks in the RF spectrum, jamming the terminals for hours at a time. Once again, the impact was short-lived thanks to the corrective measures introduced almost instantly by SpaceX engineers to bypass the jamming (Suess, 2022).

A third group of counter-space activity involved Russia's attempts in and around Ukraine at jamming and spoofing Global Positioning System (GPS) signals emitted by American satellites in space. Those signals are used extensively by the Ukrainian military for geo-location, navigation, and homing guided weapons onto their targets. During the timeframe since Russia's 2014 invasion of Crimea, the Russian military's sporadic spoofing of GPS signals had become an annoyance for military and civilian sailors and aviators operating on the eastern fringes of NATO territory (Natalucci, 2019). What was surprising in this respect was not Russia undertaking GPS jamming against Ukraine, but why such jamming was less aggressive and extensive than expected. One possible explanation is Russia's electronic warfare gear and techniques not being as good as advertised. A second line of explanation pointed out at Russian forces' desire to avoid attracting Ukraine's accurate counterattacks because GPS jammers' strong and consistent transmission can be easily located and attacked. And a third plausible and somewhat paradoxical explanation is that Russian forces themselves use and need GPS signals because they did not possess enough receivers for GLONASS—the Russian equivalent of the American GPS technology (Goward, 2022).

All in all, whereas Russia undertook several counter-space acts against spaceborne services provided to Ukraine by primarily commercial operators from other countries, it has refrained from targeting the satellites themselves. This was possibly out of fear of escalation or reprisals against Russia's smaller, thereof more vulnerable inventory of satellites. Instead, Russia's counter-space activity picked on the terrestrial elements of satellite constellations and the signals associated with space-based services and took the shape of cyberattacks as well as electronic jamming and spoofing. However, as the conflict drags on and the military balance continues tilting in Ukraine's favor, there are no guarantees that the caution and restraint displayed so far by Moscow would persist. Unfortunately, more recent indications are to the contrary. Eight months into the conflict, Russia turned up the heat by announcing that because of their indirect involvement in the military conflict, some commercial satellites went beyond the harmless use of outer space. Therefore, the statement carried on, such "quasi-civilian infrastructure may become a legitimate target for retaliation" (Davenport, 2022). This strong warning builds upon earlier criticism by a top Russian space official that the "entire conglomerate of private and state orbital groupings is now working exclusively for our enemy" (Reuters, 2022b). A few weeks into the conflict, the same official had warned that off-lining satellites would be seen by Russia as a *causis belli*, or cause of war (Hitchens, 2022).

It is rather paradoxical that despite being the party in the conflict to have first resorted to counter-space activity, Russia finds itself at ease in issuing high-dosed

threats to others to refrain from using the same option. Beyond revealing their extreme unease with the extent and effectiveness of Ukraine's employment of spaceborne services, Russian officials' strong dose may also reflect a realization of their western adversaries' superiority in space and counter-space domains, thereof their frustration, and despair.

In stark contrast with the ever-increasing stiffening observed in Russia's statements, since the outbreak of hostilities in Ukraine, the US declaratory policy over anti-satellite activity appears to have moved in the opposite direction. A US policy revision introduced in 2018 did not rule out nuclear retaliation in the event of "significant non-nuclear attacks" on the US, allied, or partner critical (i.e., space) infrastructure (Sagan & Weiner, 2021). Yet, a few weeks into the Russia-Ukraine war, American officials announced that jamming of GPS signals and communication satellites was considered by the US as "routine wartime activity," and as such "a far cry from act of war" contended by their Russian counterparts (Hitchens, 2022). If Russia's bold warnings against adversaries' counter-space activity are a sign of vulnerability, then the shift in US posturing toward tolerating and normalizing counter-space operations may be indicating boosted American self-confidence in its capabilities as a consequence of first-hand experience during the conflict. While likely to produce the outcome of further deepening Russia's fears and concerns over counter-space activity, this shift also increases the likelihood of counter-space operations becoming a routine and normal part of future conflicts.

5 Conclusion

Thanks to their operational fielding and employment during the war in Ukraine, the hype and some of the unknowns surrounding the three categories of EDTs—hypersonic weapons, cyberattacks, and counter-space activity—have now been reduced. Warnings and fears over their extremely destabilizing and escalatory properties were proven wrong—at least within the context and the circumstances of the conflict between Russia and Ukraine. Likewise, alarmist omens that the shape of the next military confrontation between major powers would be determined by paralyzing cyberattacks and/or decapitating hits targeting each other's space assets turned out to be grossly exaggerated. Especially in those conflicts in which both sides are well-prepared and deploying moderate to advanced capabilities, the playing field for cyberwarfare and counter-space appears to become leveled, and the accruing benefits are subsequently marginalized.

All the while, all three EDTs analyzed in this chapter have now solidly taken their front seat in modern battlefields. From now on, it is not whether but rather how and to what extent they will be employed in future conflicts. Besides, thanks to Russia's cyber and counter-space operations interrupting services in dozens of other countries, the truly transnational nature of cyberwarfare and counter-space activity has been illustrated. Consequently, future conflicts should be expected to have wider, more global, and more unanticipated repercussions for third parties and bystanders

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Role of Missiles in Russia's War on Ukraine and Its Implications for the Future of Warfare



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Abstract In this chapter, the authors investigate the extensive use of missiles during the first 10 months of the Ukraine war, analyzing Russia's missile attacks and its changing tactics, as well as Ukraine's small missile arsenal bolstered by the North Atlantic Treaty Organization (NATO) supplies of Multiple Launch Rocket System (MLRS). The authors examine Russia's missile barrages against civil infrastructure and assess its stockpile based on open sources and previously known estimates. In addition, the authors briefly shed light on Russia's extremely limited use of hypersonic aero-ballistic Kinzhal missiles, detailing possible targets hit and estimating the number of Kinzhal launchers. Also, the authors trace Ukraine's missiles expertise to its Soviet heritage and analyze how effectively Ukraine has used missiles (and rockets) from both NATO and its stockpiles. Finally, the authors scope out potential future development scenarios for Ukraine's own cutting-edge missile systems after the war's end, considering its deep expertise in this field, military necessity, and incorporation of battlefield experience and tactics.

Keywords Missiles · Russia's war on Ukraine · Nuclear proliferation · Security

1 Introduction

Wars are deadly serious affairs. But they also resemble trade shows when it comes to weapon systems. States use wars to forge new doctrines for existing weapons, to develop and test new weapons, and to demonstrate their capabilities, thus generating demand from other countries for weapons seen as particularly effective. In the Ukraine war, many of the weapons demonstrated in the war theater were missiles,

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including new or relatively untested systems. This chapter will first provide background on Russian and Ukrainian missile (and rocket) systems, then examine the extensive employment of missiles in the Russia–Ukraine war, and finally consider the potential consequences for international security of the widespread acquisition and possible deployment of such weapon systems.

Back in 2021, it was hard to believe that such two culturally entangled countries as Russia and Ukraine would be stuck in a horrifying twentieth-century-style war involving massive, slow-moving, and frequently stalemated ground campaigns. Nor could analysts correctly foresee the intense role that missiles would play for both sides in attempting to break this deadlock. This chapter examines how missiles became the weapons of choice for both sides in the Russia–Ukraine war, especially as Moscow’s ground offensives were stalled and reversed, prompting Russia to try to leverage its massive military arsenal—largely developed to counter North Atlantic Treaty Organization (NATO) and the United States (US)—in an attempt to weaken its less sophisticated neighbor.

1.1 Russia

Before the war began, Russia was believed to have the most powerful military in Europe, having undergone a nearly 20-year-long period of reforms and drills, drawing some lessons and standards from the performance of the US and its allies in conflicts such as the two Persian Gulf Wars.

Russia’s top brass made improving the military’s stand-off capabilities a focus of its military modernization, building on the deep legacy of Soviet missile technology. In the previous decade, the Russian military increased production of precision-guided missiles to the point that by late 2020 the Russian Ministry of Defense (MoD) claimed it had “40 times more longer-range cruise missiles” compared to the late 1990s (Interfax, 2020). Even if the increase by “40 times” was inflated for propaganda purposes, the current war demonstrated that the Russian military received hundreds of additional stand-off missiles, both modernized Soviet and brand-new types. Some of these were first tested on the battlefield in the Syrian campaign, including the air-launched Kh-101 (the Russian air-launched equivalent of the US Tomahawk cruise missile) and air- and sea-launched Kalibr cruise missiles. The Syrian war served to demonstrate Russia’s progress in both the quality of its stand-off capabilities and its ability to integrate these capabilities into the tactics of modern warfare, thus raising Western estimates of Russian military capabilities.

The 2019 demise of the Intermediate-Range Nuclear Forces (INF) Treaty then allowed the MoD to ramp up production orders for an increased-range version of

Kalibr's ground-based variant—the 9M729 missile launched from Iskander-K mobile launchers.¹

The last decade of rapid military modernization also yielded a new missile for the Russian arsenal—the Kinzhal air-launched missile. Deployed in 2018, it was controversially labeled as hypersonic, despite just being an aero-ballistic missile that reaches high speeds during the descent phase (Komsomolskaya Pravda, 2018). Just five days before the war began, Russian MoD reported that a MiG-31K wing carried out electronic test launches of Kinzhals in Syria (Interfax, 2022).

1.2 *Ukraine*

In Soviet times, Ukraine hosted a significant share of the Soviet Union's weapons production facilities, including in the missile technology development and production sector. For example, M. K. Yangel Yuzhnoe (now Pivdenne) Design Bureau and Yuzhmash (now Pivdenmash) Machine-Building Factory were at the forefront of Soviet space and ballistic missile programs with their own unique technological solutions. These two corporations along with Luch Design Bureau have allowed Ukraine to remain a world leader in missile-related technology.

In early 1992, Ukraine had approximately 5000 strategic and tactical nuclear weapons. In 1991, the country had 60 RT-23 (SS-24) Intercontinental Ballistic Missiles (ICBMs) that were produced at Yuzhnoe, as well as 130 UR-100N (SS-19) and 600 Air-Launched Cruise Missiles (ALCMs) and gravity bombs left from the dissolution of the Soviet Union (Kristensen, n.d.). By May 1992, Ukraine removed approximately 3000 tactical weapons from its territory and returned them to Russia. By 1998, Ukraine had either dismantled its remaining strategic missiles and related infrastructure or had transferred them to Russia, all with the assistance of the Nunn-Lugar program. For delivery systems, Ukraine inherited some Soviet OTR-21 Tochka (SS-21 Scarab) mobile launch systems, and possibly some air-launched cruise missile systems.

Until 2014, Yuzhmash and Yuzhnoe Design Bureau were in close partnership with Russia's Roscosmos state-owned space agency. Ukraine retained and enhanced some of its missile technology capabilities, concentrating on the civilian sphere: satellites and space launch vehicles. Although Ukraine had the capability to produce and develop its own missiles, Ukraine's leaders were not particularly interested in doing so, or in carrying out military modernization more generally.

Since 2014, however, Ukraine has ramped up the development of its Hrim-2 (also known as Sapsan, Hrim, and Grom) mobile Short-Range Ballistic Missile (SRBM) launcher—based on an older Iskander variant; using newly deployed R-360 Neptune

¹The INF treaty banned ground-launched missiles with ranges of 500 to 5000 km and the US withdrew from the treaty in 2019 after accusing Russia's testing and deployment of the 9M729 of violating the treaty an allegation Russia denied.

anti-ship missiles—an overhauled variant of the Soviet Kh-35 (SS-N-25) in the war; and recently deployed and used the Vilkha heavy multiple rocket launcher system, which fires guided missiles to ranges from 70 to 130 km (BBC News Ukraine, 2018). Vilkha is derived from the Soviet BM-30 Smerch system. Ukraine may have produced a relatively large number of Neptunes, which Kyiv claims the Lutch Design Bureau significantly modernized and produced at the Pivdenmash factory in Dnipro. Ukraine's Ministry of Defense reported it had received 92 R624 Vilkha rockets (70 km range) for the Vilkha Multiple Launch Rocket System (MLRS), over the course of 2019 and 2020; thus, a “back-of-the-envelope” calculation indicates that Ukraine could have had as many as 140–150 rockets of such type by the time of the war.² Ukraine also has an unknown number of R264 (M) rockets with a reported range of 130 km (Defense Express, 2021). Many of these Vilkha systems could likely have been destroyed by November 2022 either used in Ukrainian attacks or destroyed by Russian ones.

A close relative of Tochka-U and Iskander-M's R-500 ballistic missile, Hrim-2 derived from the canceled Sapsan project and was supposed to lob tactical ballistic missiles at ranges of 280 km as an MTCR-compliant export variant, and 450 km for home forces (Trevithick & Rogoway, 2022). However, Hrim-2 development prior to the war was underfunded, limiting development efforts. Neither the Hrim-2 nor the development of the Korshun-2 cruise missile, which is somewhat similar to the Kalibr, was near to being produced in large quantities before the 2022 war. In July 2022, Ukrainian Air Force press secretary Yuriy Ihnat noted with chagrin that if Ukraine had “a thousand [of Hrim-2] missiles, there would have been no cause for war” (Defense Express, 2022). We know that the Ukrainian military received only one home-variant Hrim-2 battery in 2021, according to a declassified part of the Ukraine Armed Forces' 2021 annual contract (Ukrainian Military Pages, 2021). Ukraine may also have ended up with a few unanticipated Transporter-Erector-Launchers (TELs) as Saudi Arabia was to receive the shorter-range export variants of Hrim-2 in 2022 (Fitzpatrick, 2021). The exact number of Hrim-2s produced is unknown but surely insignificant.

2 Missiles Used in the 2022 Russia–Ukraine War

Russian operational doctrine applied in its full-scale invasion of Ukraine in February 2022 strongly resembled an integration of the old Soviet Tikhachevsky Deep Operational Theory with lessons that the Russian General Staff took from the 2003 US invasion of Iraq (Felgengauer, 2019).³ That doctrine called for using highly

² Assuming that in 2019 and 2020 Ukraine produced 92 rockets for Vilkha, it is possible to project that Ukraine may have produced around half of this number over 2021 and maybe some small number on top of that in the first months of 2022 and possibly produced some during the war.

³ Deep Operation Theory implies that large battlefield tank formations—Operational Maneuver Groups of around 500 tanks—would pierce through the enemy's lines of defense and by being small enough to move quickly and heavy enough to overwhelm and destroy intercepting enemy forces.

maneuverable light battlegroups, trucks, tanks, and armored personnel carrier formations all supported by quick aviation raids and large missile attacks against valuable military targets such as airbases, war infrastructure, perceived personnel locations, and anti-aircraft systems. According to Russian plans, the sheer “show of power” would have ended in special forces raids and internal opposition groups taking over Ukraine in days without significant losses. Yet, this strategy failed due to poor intelligence and communications, and Ukraine's quick and relentless mobilization.

As the war has dragged on, Moscow has relied heavily on traditional covert operations, sometimes frontal military assaults, missile attacks against civilian and military infrastructure, and final, non-stop artillery barrages against Ukraine's armed forces. Russia's prolonged missile strikes have severely damaged Ukraine's power infrastructure, but rarely appear to correlate to the frontline activity and have done little to bring Russia closer to victory. Since the massive barrages of the first two months of the war and subsequent missiles and Shaheed drone attacks, Russia has lost, not gained ground.

Meanwhile, Ukraine has thrown everything it has, including its pre-war missile stock into the fight. Using many fewer domestically produced missiles along with arms supplied by the West, its armed forces have pinpointed and destroyed Russian targets in a much more limited but precise fashion. NATO-supplied High Mobility Artillery Rocket System (HIMARS) and M270 MLRS systems have played significant roles in neutralizing Russian frontline command posts, supply lines, depots, infrastructure, personnel barracks, and even warships. Ukraine has been unable to strike deep even into most of the occupied territory, but after the collapse of the Russian frontlines in the fall of 2022, Ukraine has been able to strike across the Russian internationally recognized border targeting mostly fueling stations and oil depots as well as smaller power installations as well as some drone on Russia's strategic airbases (e.g., Engels-2).

2.1 Russian Missile Attacks

Since Russia began its renewed invasion of Ukraine in February 2022, Russian forces have utilized an extensive missile arsenal against a variety of targets as detailed in Table 1 below. Russian missile usage and targeting have gone through several stages: starting with a premeditated “show” of its capabilities in the first weeks of the conflict, to increasingly indiscriminatory use, as Ukraine's September counteroffensive progressed too far for the comfort of Russian military commanders and President Putin.

All of the missiles listed in the table have been launched from Russian or Belarusian territory: some from as far away as the Caspian Sea (Tu-22M3, Tu-95, Tu-160), a large number from controlled parts of the Black Sea (all P-800 Oniks, and all Kalibr missiles), and some as close as from Iskander bases in the Russian border region of Belgorod Oblast and from Belarusian territory. In the initial stretch of the

Table 1 Russian missiles used in Ukraine

Type	Ground-launched	Air-launched	Sea-launched	Range, max	CEP	Guidance	New ^a	Confirmed use in Ukraine
Intermediate-range missiles								
Kh-101		X		5000 km	10 m	INS; TERCOM; TV Terminal guidance; GLONASS SatNav, DSMAC		Multiple occasions
Kh-555 NATO: AS-15 Kent-C		X		2500 km	25 m	INS; TERCOM	X	Multiple occasions
Iskander-K R-500 NATO: SSC-7	X			500 km	5–7 m	INS, optical DSMAC/TERCOM, GLONASS SatNav	X	Multiple occasions
3M-54 Kalibr NATO: SS-N-27 Sizzler			X	1000–2500 km	3 m	NS; TERCOM; GPS; Terminal-Phase Active Radar Seeker		Multiple occasions
Kinzhal NATO: Killjoy		X		2000 km	10–20 m	INS, TERCOM and optical DSMAC, GLONASS SatNav, (similar to 9M729)	X	Multiple occasions
Kh-32		X		800 km	50 m	INS, terminal active radar homing		Multiple occasions
Kh-22 (N/NA) NATO: AS-4 Kitchen		X		460–600 km	50 m	INS, ARH, TERCOM for Kh-22N/NA		Multiple occasions
Shorter-range missiles								
Iskander-M SRBM 9M723 SS-26	X			–500 km	5 m	INS, TERCOM optical DSMAC, GLONASS Nav		Multiple occasions
K-300P Bastion-P (Oniks) NATO: SS-C-5 Stooge	X			450 km	4–8 m	INS, GLONASS SatNav; Active Radar Seeker	X	Multiple occasions

P-800 Oniks NATO: SS-N-26 Strobile			X	300 km	1.5 m	INS, GLONASS SatNav; Active Radar Seeker		Multiple occasions
Kh-35 (3K60 Bal) NATO: SSC-6 Sennight	X			300 km	4–8 m	INS, GLONASS SatNav; Active Radar Seeker	X	Multiple occasions
R-37 NATO: AA-13		X		300 km	1–2 m	INS, SARH	X	Use unconfirmed
Kh-59MK/ MK2 NATO: AS-19 Kazoo		X		285 km	10 m	INS, TV guidance, active radar seeker		Multiple occasions
Kh-35U/V NATO: SS-N-25 Switchblade		X		260 km	4–8 m	INS, GLONASS SatNav; Active Radar Seeker		Multiple occasions
Kh-35 (Uran- E) NATO: SS-N-25 “Switchblade”			X	260 km	4–8 m	INS, Active Radar Seeker		Multiple occasions
Kh-31 NATO: AS-17 “Krypton”		X		70–250 km	5–8 m	INS, ARH		Multiple occasions
OTR-21 Tochka-U SS-21 Scarab	X			120 km	50–100 m	INS, GLONASS SatNav; Active Radar Seeker		Multiple occasions
9M83ME (S-300P/V SAM) SA-10 Grumble	X			80–100 km	Unknown	SARH by TELAR		Multiple occasions

^a Introduced after 2010

invasion, the world witnessed an historic volume of attacks with precision-guided missiles with Russia lobbing as many as 600 in the first 2 weeks (Pietsch et al., 2022). Such an extensive volume of missile use is comparable to barrages undertaken by the US and its allies in Gulf Wars and conflicts in Bosnia and Kosovo. Unusually, the missiles were also launched in dense numbers from all types of launchers (air, ground, and sea).

In the war's early days, the Russian military aimed many of these missiles at tactical groups of Ukrainian troops and constellations of armored vehicles. The Russian military also emphasized destroying foreign-supplied arms, e.g., on August 21, the command reported knocking out HIMARS rockets storage and two M777 howitzer batteries with Kalibr sea-launched missiles (Pietsch et al., 2022). This particular strike came down on the southern region of Odesa, close to the Black Sea coast.

In another case, Russian MoD press secretary General Igor Konashenkov announced the foreign-supplied S-300 Surface-to-Air Missiles (SAMs) were destroyed along with 25 staff members hidden in a hangar in the Dnipropetrovsk region (Izvestia, 2022a). Still, it is impossible to confirm and assess the credibility of intelligence the MoD is relying on prior to using high-precision missiles.

For Russian missiles targeting, there is a problem specifically with intelligence related to target missions. Radio-electronic intelligence is limited due to Ukrainian electronic warfare systems (RBC News, 2022). Aerial reconnaissance is carried out by drones, but many of them are easy prey for Ukrainians equipped with Man-portable air-defense systems (MANPADS). While Russia's two optical reconnaissance satellites provide limited imagery, restricting flight missions for missiles to long-planned strikes (Hendrickx, 2022). These satellites pass over the same territory only once every 16 days making it impossible to quickly receive updated data or to perform dynamic targeting.

A few months into the invasion however as the Kremlin's strategy of a "quick operation" failed, Russia changed its tactics and targeting, as its military began to fear that its precision-strike missile inventory was threatened with depletion.

In one indication of this looming shortage, on May 11, Russia's MoD released a short video of a Tu-22M3 long-range bomber launching an old Soviet-built Kh-22 ALCM (Zoka, 2022; Roblin, 2022). This was the first officially confirmed occasion of the launch of such an old missile (designed in 1967). Due to MoD's secrecy, it is hard to estimate the total number of cruise and tactical missiles the Russian military possessed *ante bellum*. The stockpiles of older missiles no longer mass-produced, such as the Kh-22 or Kh-555 (a non-nuclear variant of Kh-55), might have numbered around 1000–1200 both types combined (Luzin, 2022).

On October 14, the Ukrainian Main Intelligence Agency of the Ministry of Defense estimated the total number of Russian precision-guided missiles as 2453, with 1844 of them used (Reznikov, 2022). This estimate is not perfect: It does not include the P-800 Oniks and 9M729 Ground-Launched cruise missiles (GLCMs), nor it does distinguish between Kh-555 and Kh-101 ALCM types. Also, such estimates may be in all fairness published for propaganda purposes. Though, Russia did use a lot of its precision-guided missiles in the first three months of the

war. Already in July, Ukraine reported Russian strikes carried out unexpectedly by S-300P/V SAMs against ground targets in Mykolaiv, presumably, from nearby Russian-controlled areas of the Kherson region (Newdick, 2022). Russia has many of these systems and may be retrofitting them with precision guidance to fill in gaps in Russia's PGM stocks. Russia may have decided that "disposing" of these older weapons on the battlefield provided significantly more "benefits" than paying the costs of long-term maintenance.

In the latter months of 2022, Russian missile attacks moved from destroying the Ukrainian Armed Forces' critical infrastructure, airfields, munitions storages, and fuel depots, to a larger array of targets. While alleged by the Russian MoD to have been improvised military warehouses or barracks, some of these turned out to be innocent civilian targets. As the initiative in the war clearly slipped away from the Kremlin, the Russian Air Force kept launching heavier missiles into Ukraine, including the Kh-22 (a warhead with 980 kg of high explosive) that hit a public market in the city of Kremenchuk. Another barrage of eight cruise missiles, possibly Kh-22 or Kh-555, destroyed parts of a dam on a river near Zelensky's hometown of Kryvyi Rih causing minor flooding for several days (Dnipropetrovsk Oblasna Derzhavna Administratsia, 2022). These and other older missile types have been used as weapons of terror against civilian targets since April.

By late November 2022, some 4700 Russian missiles had flown into Ukraine's airspace, according to Ukrainian estimates (Zelenskiy, 2022b). Over the first 9 months of the war, the rate of strikes eased and their scale of destruction decreased significantly. From February 24 to May 11, 2022, Russia fired around 2150 missiles—which makes for an average rate of 51.2 missiles per day. In the next 5 months, Russia launched only some 1750 missiles, thus shrinking the average rate down to 11.6 missiles per day (United States Department of Defense, 2022a). With staggering frequency, the Ukrainian local municipal or regional officials report *prylyoty* (literally, "fly-ins") of Russian missiles hitting civilian targets, with the Russian MoD claiming only hits on military targets and denying any civilian targets have been hit.

Having failed to achieve a quick defeat with an overwhelming barrage at an initial stage, Russia's use of missiles in warfare switched to the tactics of hitting smaller, often less important targets, and seeking to terrify the Ukrainian public and army. MoD conducted massive air strikes on October 10 and 11 with more than 100 missiles and an unknown number of Shaheed, claiming it as revenge for a Ukrainian strike on the Kerch bridge and destroying one-third of Ukraine's energy infrastructure. However, it is clear that the strike was planned at least one month before the bridge strike, with Tu-160s and Tu-95s deploying to airfields closer to Ukraine and target planning taking place more than a week beforehand (Grozev, 2022). Russia likely increased the number of strikes in the context of the bridge attack, drawing some of these missiles from different storage sites across the country. For comparison, in April 2018, the USA, in coordination with France and the United Kingdom, launched 105 missiles at three Syrian scientific installations—a "one time shot" in response to a perpetrated chemical attack, according to then US Defense Secretary James Mattis (cit. in Stracqualursi, 2018).

September saw the use of Iranian-made Shaheed-136 drones by the Russian military. The drones (with the likely addition of a new operating system) were renamed by Russian officials as the M294 Geran. Approaching targets in “salvos,” multiple drones were intended to “pave the way” for precision-guided missiles distracting the missile defense systems of the Ukrainian military; or for replacing precision-guided missiles for certain missions, while also absorbing Ukrainian anti-air assets.

Shaheed/Geran drones are small planes fitted with a 50hp piston engine and some 30–50 kg of high explosive, with an operational range of at least 600 km, including loitering capability. In October, hundreds of these drones were used alongside precision-guided stand-off missiles, 233 in the first 20 days of the month alone, according to Ukrainian President Zelenskyy (2022a). All told, from August to November 2022, Russia allegedly used 400 of them to attack mostly civilian infrastructure (Warrick et al., 2022). Mass use of these drones has proven to be a problem for the Ukrainian air defense systems and thus civilian and military installations due to their smaller radar footprint, and the high cost of air defense systems necessary to shoot them down. Ukraine hastily sought help from NATO partners to defend against these kamikaze drones (Boffey, 2022). Western intelligence believes that Russia might be seeking to import an entire production line from Iran to assemble Shaheed drones on its territory. While there is no concrete data on this, it may have been a topic of the meeting between Russia’s Security Council Secretary Nikolai Patrushev and Iranian counterparts in November 2022 (Warrick et al., 2022).

2.1.1 Russian Missile Stockpiles

Will Russia be able to replace the newer missiles relatively quickly it has expended in the conflict? An initial analysis appears to indicate that even with additional production the depletion of stockpiles is unlikely to slow given the high rate of missile use. For example, prior to 2022, Russia had been producing an estimated 225 missiles annually, including about 50 Iskander-M missiles (Novyi Oboronnyi Zakaz, 2019) and 55 P-800 Oniks anti-ship missiles (Peshkov, 2020) (Luzin, 2022). The production rates of most cruise missiles, including the 3M-54 Kalibr, Kh-555, Kh-59, and others, are significantly impacted by the availability of three turbojet engines that are produced in large quantities, specifically the R125-300, TRDD-50A, and TRDD-50AT. There are two possible scenarios concerning the production rates: (1) They may be ramped up while sacrificing their quality or (2) they may be slowed down due to the sanctions-enforced cutoff from high technology. The second scenario seems to be more realistic, as the actual production output may be even less than it was before the war, due to sanctions on dual-use technologies, e.g., microelectronics, radars, and optical imagery (Korolev et al., 2022). Still, the total missile stockpile may be high, as even in mid-November, after the Ukrainian forces pushed the frontline in the east and south of Ukraine, the hits on the Ukrainian military and civilian infrastructure were done with the same Kh-101s, Kh-22s,

Kh-55s, Kalibrs, and—for high-value far-away targets—with Kinzhals. However, it had become clear by November 2022, that Western analysts had underestimated Russian missile stockpiles before the war (Jakes & Santora, 2022). Russia has apparently used already dozens of missiles it prepared “just in case” of a conflict with NATO—given a Kremlin view that Russia is already fighting the “collective West” in Ukraine.

2.1.2 Use of the Kinzhals

The air-launched Kinzhal aeroballistic missiles were confirmed by MoD to have only been used three times in the war, supposedly due to this type's scarcity (likely, around 50). Kinzhal missiles resemble a modified, air-launched variant of the 9M723 ballistic missile. Indeed, its first reported use in the conflict was against a Ukrainian bunker that formerly stored nuclear weapons destroying “an underground arsenal” near Ukraine's city of Delyatin, Ivano-Frankivsk Region, in what may have been a deterrence signal by Russia (TASS, 2022). The same strikes also targeted large fuel depots near Konstantinivka in Mykolaiv Region. The missiles, according to MoD Press Secretary Konashenkov, flew “more than 1000 km in 10 minutes” (ibid.). Their use marked a global precedent for the use of any “hypersonic” weapon in war, potentially providing Russia with bragging rights, weapons sales, and military advantages (Fig. 1).

Twenty-three days later, a second Kinzhal strike took place. According to Konashenkov, a Kinzhal hit a Ukrainian command bunker close to the Eastern

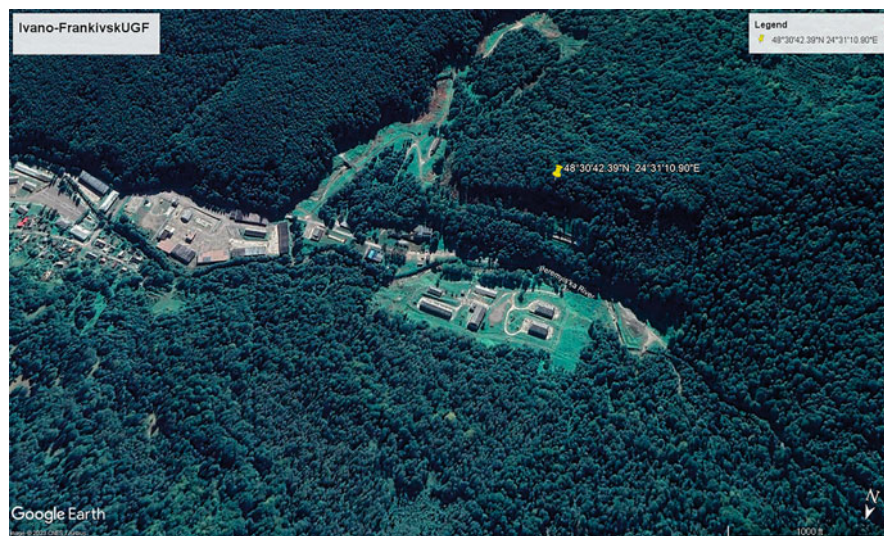


Fig. 1 Ivano-Frankivsk-1, a former nuclear storage site, and the possible target of the first Kinzhal near Delyatin. *Source:* Image Google Earth, © 2023 / CNES / Airbus



Fig. 2 A possible target of the second Kinzhal near Chasiv Yar. *Source:* Image Google Earth, © 2023 / Maxar Technologies

front: “On the afternoon of April 11, near Chasiv Yar, Donetsk region, the Kinzhal air-launched missile destroyed a reinforced dug-in command post of a grouping of Ukrainian troops,” Konashenkov said (Instupino News, [2022a](#), [2022b](#)) (Fig. 2).

On August 7, 2022, the alleged third Kinzhal struck a Ukrainian Air Force command post in Vinnitsya region. The Ukrainian Air Force confirmed the use of Kinzhals in Vinnitsya but did not provide any other details (Povitryani Syly ZS Ukrainy / Air Force of the Armed Forces of Ukraine, [2022](#)). A Russian MoD statement two days later specified the target was a command bunker near Voronovysya, Vinnitsya region, but did not state that it was with a Kinzhal, only “a high-precision missile” (Izvestia, [2022b](#)). A structure that appears to meet the Russian MoD’s description does exist near Voronovysya and bears similarities to the one near Chasiv Yar (Fig. 3).

The precise number of Kinzhals Russia has used is unknown. Ukrainian sources claim up to a dozen strikes, some of which do not coincide with Russian MoD statements. But we do know that a limited number of Russian aircraft can launch Kinzhals. Since 2017, the Russian Air and Space Force has had a bomber wing of ten MiG-31K bombers (1 missile per aircraft,) deployed in the Southern Military District, as well as two or three Tu-22M3M bombers capable of carrying four missiles apiece (Gazeta.ru, [2021](#)); and there only a handful of the planned 30 Tu-22M3Ms modernized and flying (Forsvaret, [2021](#)). At the same time, serial production of MiG-31 aircraft was discontinued nearly 30 years ago (in 1994) and only 10 of the remaining ones are of the MIG-31K variant currently capable of launching Kinzhals. In August 2022, three of the latter aircraft were redeployed to

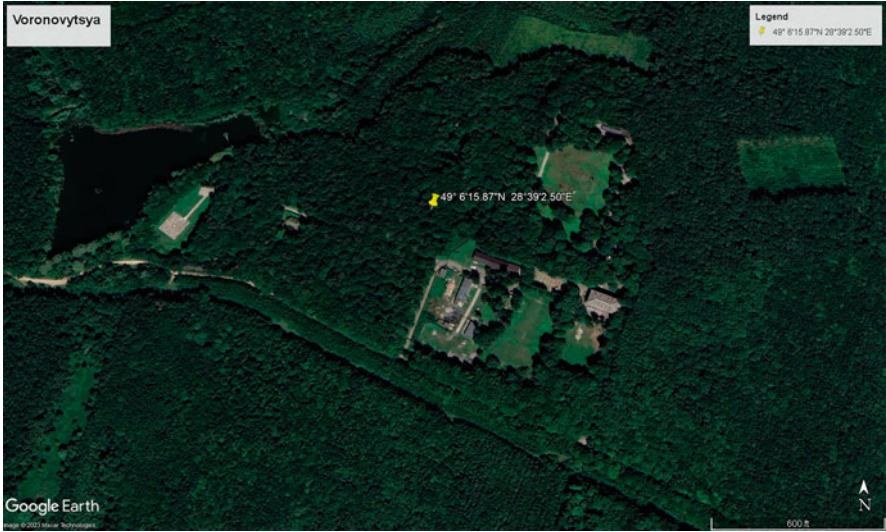


Fig. 3 A possible target of the third Kinzhal near Voronovytssa. *Source:* Image Google Earth, © 2023 / Maxar Technologies

the Chkalovsk airbase in Kaliningrad oblast—the Russian exclave region in Europe (Izvestia, 2022c, 2022d). Thus, to date, it appears that less than ten aircraft can strike targets in Ukraine with Kinzhals launched from Russian territory.

Below is a table of new and old Russian missiles used in the conflict in the form of the following matrix table. The table does not include smaller anti-armor or anti-aircraft systems. For the majority, the range and CEP are estimated.

2.2 Ukrainian Missiles Used in the Ukraine War

As noted above, after 2014, Ukraine has striven to regain its former expertise in missile technology and is on the verge of producing several sophisticated, Soviet-derived missile systems—but to date has only produced a very small number. The country also had some obsolete Tochka-U theater SRBMs—that it used in the 2014–2016 phase of the war (Fig. 4).

The most concrete success of these efforts to date involved the use of Neptune anti-ship missiles. These missiles have not been employed extensively in the current war, relative to other types, due to their apparent scarcity. But Ukraine did apparently use some effectively, destroying the Black Sea Fleet flagship *Moskva*, though this judgment is still contested in the expert community (see below). It also remains unclear which missiles were used for the strike on the Saky Airbase in Crimea.



Fig. 4 Hrim-2 mobile SRBM system on parade in Kyiv, 2018. *Source:* Image Sergienkod, © 2018 / Creative Commons

In terms of foreign support, before February 24, 2022, Ukraine had been mostly receiving non-lethal military aid, valuable intelligence, staff, and Special Forces training, as well as a smattering of lethal weapons. After the February 2022 renewed invasion by Russia, the Ukrainian Armed Forces received several dozen US HIMARS and UK M270s Guided Multiple Launch Rocket System (GMLRS), and Harpoon coastal defense missile systems (United States State Department, 2022; Ukrinform, 2022). In addition, the US supplied an unknown number of air-launched laser-guided missiles, AGM-88 High-speed Anti-Radiation Missile (HARM) to destroy Russian ground radars and surface-to-air missile systems. Ukraine has modernized its MiG-29 fighter bombers to launch HARM missiles—a modification few had anticipated but was confirmed by Russian military bloggers in August (D'Urso, 2022).

To date, we do not possess publicly confirmed information that any Western countries have supplied other lethal systems, but suspicions abound among experts. There is additional speculation of foreign involvement in the Ukrainian attack against the Saki airbase in Crimea, and alternative explanations of what caused *Moskva* to sink, although the latter was highly likely accomplished by two Neptune anti-ship missiles in an interplay with an unmanned aerial vehicle UAV (Oakford & Sohyun, 2022; Atlamazoglou, 2022). Ukrainians have also been pushing the Biden Administration to provide them with US HIMARS-launched Army Tactical Missile System (ATACMS) ballistic missiles, with an effective range of 300 km. To date, the US has not supplied ATACMS due to concerns that Ukraine would use them against Russian territory, risking further escalation.

Ukraine has received several, higher-quality, longer-range Western air-defense systems—namely, NASAMS and promises of Patriot batteries from the US and an IRIS-T from Germany—that will play a major role in deterring close-in Russian Air Force sorties (Sullivan & Bowman, 2022). But Ukraine has already achieved success with older SAM systems: After a massive strike on October 10, Ukraine reported it took down 42 missiles out of 83 launched on that day (United States Department of Defense, 2022c). Not all of the Ukrainian missile defense seems to work perfectly. S-300 anti-missiles especially have gone astray either failing to home on their targets or malfunctioning in mid-air. Famously, one such counter-missile allegedly flew into the Polish town of Przewodow, killing 2 farmers operating a tractor (Stepanenko, 2022). This grave incident caused a few hours of uncertainty, showcasing how any missile flying astray from a warzone could be the source of major escalation. This article predates the publication of an official evidence-based analysis.

Due to Ukraine's increased air defense capability, the Russian Air Force has been forced to use other variants of its long-range missiles, e.g., to hunt Ukrainian air targets from stand-off range with longer-range air-to-air missiles like the R-37 (AA-13 "Arrow").

Below is a table of missiles used by Ukraine in the war. The table does not include smaller anti-armor or anti-aircraft systems. For the majority, the range and CEP are estimated (Table 2).

These missile systems have received far less attention than the HIMARS artillery rocket system used against Russian artillery, logistics, fuel stations, and ammunition storages, which has been lionized for its range, precision, and increased mobility. In the stalemated summer artillery duels, HIMARS systems integrated with British-transferred M777 155 mm howitzers were more effective than Russian artillery and missiles in concentrating firepower at certain selected frontline locations. Ukraine also has a decisive advantage in dynamic targeting, striking time-sensitive Russian targets—including concentrations of senior leadership—with high frequency. Ukrainian leadership has continued to seek Western delivery of ATACMS to tackle Russia's Iskander missiles and other targets in Russia's rear area (Ismay, 2022). ATACMS supplies would be a game-changer and would threaten targets across Crimea, notably the Black Sea Fleet. Through 2022, Western militaries appeared to have provided just enough firepower to tilt the war for Ukraine and not cross Russian "red lines."

3 Role of Missiles in Russia's War Against Ukraine

Russia and Ukraine have used missiles in similar ways on the battlefield but at vastly different scales. Both sides have hit civilian targets. But Russia has struck hundreds of civilian targets across Ukraine, destroying houses and civilian energy infrastructure. Ukraine has also hit civilian targets, for instance in the Donetsk region (ZNUA, 2022). There are multiple reports by Russian media of Tochka-U strikes against the townships of Golovchino and Graivoron which are situated near the Russian

Table 2 Nomenclature of tactical missiles used by Ukraine

Type	Ground-launched	Air-launched	Sea-launched	Range, max	CEP	Guidance	New	Confirmed use in Ukraine
Hrim-2 (Sapsan)	X			280–300 km	50–100 m	INS, SatNav (?), ARH	X	Unconfirmed, use disputed
R-360 Neptune	X	X	X	280 km	4–6 m	INS SatNav (?), ARH	X	Multiple occasions
AGM-88 HARM		X		150 km	3–5 m	Proportional Navigation with ARH		Multiple occasions
Tochka-U	X			120 km	50–100 m	INS; SatNav (?); Active Radar Seeker		Multiple occasions
RGM-84 Harpoon	X			100 km	4–6 m	Sea-skimming, ARH		Multiple occasions
M31A1 GMLRS	X			70–84 km	10 m	INS, SatNav		Multiple occasions
Vilkha (Olkha)	X			70 km	10 m	INS, SatNav (not GPS)	X	Multiple occasions

national-level nuclear warhead storage facility, the border townships of Belgorod and Kursk oblasts, and Belgorod city's infrastructure (Moskovskiy Komsomolets, 2022; Radio Svoboda, 2022; RIA Novosti, 2022). These cases raise serious doubts about Russia's air defense capabilities, especially in regions bordering Ukraine.

Russia has used a vast number of missiles against Ukrainian targets from the early stages of the war. The Russian military has relied heavily on missiles, particularly precision-guided missiles, in part because the Russian Air Force failed to establish air superiority over Ukraine. Early in the war, strikes on Ukrainian military infrastructure in certain circumstances prevented Ukraine from concentrating forces, allowing Russian ground forces to regroup and replenish when under pressure, and in some places maintain the frontline or conduct some offensive operations. But the effect of these strikes has been far from decisive.

One reason this may be is that the Russian missiles may have a higher failure rate than previously anticipated, according to US Department of Defense (2022b) estimates. In late March, the Pentagon estimated that "anywhere from 20 to 60 percent" of Russian missiles, especially cruise missiles, had failed mid-flight, or were "duds", i.e., did not explode on impact (ibid.). Russian newer missiles may also have problems with guidance due to poor system integration or malfunctioning electronics. For comparison, the success rate of the Tomahawk (Block-II) used during Operation Desert Storm was 85 percent for 300 missiles (Center for Strategic and International Studies, 2016). There is even some evidence that brand-new Kinzhals are not immune to going down in mid-flight. On September 14, Russian locals reported what looked like a failed Kinzhal launch with a missile falling in the Stavropol region, vaguely corresponding with its possible trajectory if launched from the Caspian Sea (JR2, 2022). The crashed missile resembled an Iskander-M missile and appeared to have not ignited its first stage.

Because of their higher cost and dual purpose, Russian longer-range stand-off missiles have to be used sparingly for conventional missions, and so cannot be effectively used against smaller moving ground targets. As a result, most are aimed at stationary multi-story buildings, reinforced compounds, depots, and civilian objects such as key nodes in Ukraine's electric grids (Stern et al., 2022; Novoe Izdanie, 2022). The extensive use of new types of missiles by Russia has not proven to be decisive in a war against a very mobile and well-informed adversary. Small Ukrainian battlegroups have had success in breaching the Russian-held positions all along the 1500-km-long frontline. This rapid mobility has helped Ukrainians to gain an upper hand in some parts of the front and launch successful counter-offensives, capturing not only land, but also Russian armored vehicles, artillery, and supplies. When the main events happen so fast on the frontline, it becomes much harder to designate targets for launches of stand-off missiles.

On a territory as vast as Ukraine, inflicting damage to immobile and empty command posts, hangars, and power transformers rather than to dispersed armored brigades risk proving an eternal struggle, i.e., Sisyphean labor. There are no deserts or otherwise uninhabitable land, with clear strategically important clusters of urban and industrial areas, such as in Iraq or Syria. Ukraine is a densely populated country

with hundreds of smaller towns and villages situated around major regional capitals, with its population particularly concentrated along the banks of the Dnipro River.

As the war progressed, the many areas of Donbas, such as the small townships of Lyman, Izyum, or Balakliya, have proven to be important strategic outposts for both sides. Ukraine's dispersed military infrastructure, which had been hastily redeveloped in the last 8 years before the war, has proven to be resilient to months of missile strikes, even if Russia's increasingly focused attacks on Ukraine's electric grids seem to be taking a toll. Put simply, Russia's stand-off missile manufacturers cannot win the race against Ukraine's maintenance teams and builders.

Russia's missile attacks also failed to sufficiently terrorize civilians to cow Kyiv, again demonstrating a well-established limitation of strategic bombing campaigns stretching back to German attacks on the UK during the Second World War and similar air attacks on Nazi Germany by the UK and the US (Spangrud, 1987).

4 Conclusion

When Russia launched its renewed invasion of Ukraine in February 2022, its newly enhanced missile capabilities appeared to offer a compelling advantage, quantitatively and qualitatively. However, particularly when taking HIMARS into account, Ukraine's much more limited missile force appears to date to have been more successful on the battlefield because of the strategic choices made by rival commanders, including the use of the missiles themselves as well as systems of supply and logistics.

Had the Russian model been successful, the blunt approach to continuous missile strikes on hostile territory from above and afar with missiles, both old and new, could have been a model for some of the world's militaries. In light of deepening Russian-Iranian military and R&D cooperation, Iran may have been attached to this strategic dogma. China is another world power that could employ extensive use of missiles in a regional conflict. Nevertheless, for a hypothetical war between mainland China and Taiwan, the PLA may have drawn significant lessons that overwhelming missile strikes would not necessarily serve to decisively coerce an adversary that fights for its land and people. Picking from other regional actors, Saudi Arabia, North Korea, and South Korea have also invested in acquiring missile systems for their subsequent extensive use against potential adversaries. Another set of hard cases is India and Pakistan—both militaries have spent billions of dollars in order to achieve precision-strike superiority over one another. India has partnered with Russia on creating a BrahMos anti-ship cruise missile, and currently is working on its hypersonic variant—BrahMos II.

Moreover, to a degree wars are like trade shows for military technology, in general the poor performance of Russian missiles and the Russian military is likely to prove a major setback for Russian arms sales. On the other hand, in almost any case, win, lose, or draw, Ukraine could become a “confident” actor in missile production and sales, possibly once again raising questions for the international

missile technology counterproliferation regime. Even after three decades of high corruption and now destructive war, Ukraine will emerge as a leader in missile-related technology. The country's military-industrial sector has not lost its proficiency in guidance systems, navigation electronics for combat vessels and submarines, and radar for military jets. Moreover, Ukraine now and in the future will be in severe need of funds to restore its economy. Once the conflict eases, Ukraine may find interest in further proceeding with its missile program to deter possible threats to its security, as well as producing export variants for NATO allies and partners to deter Russia.

Ukraine has received a large amount of NATO-countries missile technology and used it on the battlefield, e.g., HARM and HIMARS upgraded guidance systems are very sophisticated for their class. In the future, one can envisage Ukraine developing, testing, and deploying missile systems building on the Hrim-2, Korshun-2, and Neptune that could combine Soviet-heritage and NATO technology solutions. Ukraine already possesses the satellite system Sich, and UAV technology that is already used for missile guidance systems. Ukraine could become a much bigger player on the "missile market," as Tochka-U may be modified to become the Iskander's rival, integrating NATO standards in radars and microelectronics. By uniting these solutions, e.g., simplicity and efficiency, Ukraine's future missile systems could be the only equally available, not to mention cheaper, variants for possible customers among the developing countries. Ukraine could also provide indirect assistance in employing such systems by sending their military professionals, scientists, and training officers to interested countries. Ukrainian military could also become a model for C3 (command, control, and communications) and unit integration for "smaller" militaries.

To be sure, Ukraine's missile proliferation record is not clean. From confirmed data, Ukraine had its first contracts with Iran vis-à-vis weapons sales in 1992 and was then notorious for pushing conventional arms on the black market through commercial firms (Kristensen, *n.d.*). Ukraine is also believed to have clandestinely exported missile technology (i.e., RD-250 rocket engine) to North Korea in the 1990s, amid widespread political corruption and economic instability (Elleman, 2017). On May 13, 1994, the US and Ukraine signed a Memorandum of Understanding on the Transfer of Missile Equipment and Technology.⁴ This agreement committed Ukraine to adhere to the Missile Technology Control Regime (MTCR). Ukraine later adhered to the 2002 Hague Code of Conduct against Ballistic Missile Proliferation.⁵ Ukraine has complied with the MTCR since: It carried out arms trade agreements under the regime, e.g., the Hrim-2 deal with Saudi Arabia. Ukraine will also assist in producing MLRS systems for NATO countries per recent agreements (Kyiv Independent, 2022). If Ukraine were invited to join NATO in this

⁴The 1987 Missile Technology Control Regime (MTCR) focuses on technical intricacies of export controls for both its 35 suppliers and customers. For more information, see <https://mtcr.info/>.

⁵Under the 2002, Hague Code of Conduct countries pledge to abide by certain practices in the sharing of space-launch vehicles technology. For more information, see <https://www.hcoc.at/>.

decade, the NATO trade frameworks with partner countries will also apply to Ukraine's possible ability and willingness to export missile technologies. NATO membership would likely help bring Ukraine into broader conformity with the relevant missile technology and arms trade restrictions.

The allure of missiles could also exacerbate existing fissures along NATO's east. Thus, one likely outcome is that we could observe countries like Poland, Romania, the Baltics, or Georgia engaging in cooperation on missile technology with Ukraine. Due to Turkey's large stake in military partnership with Ukraine (The Kyiv Independent, 2022), future Turkey–Ukraine cooperation is a particularly likely outcome and could even extend to an array of joint missile systems development projects, if Ukraine would later choose to invest in its missile systems. Since the mid-2010s, Turkey's Baykar UAVs producer has supplied hundreds of its Bayraktar TB-1/2 UAVs to Ukraine. Baykar is constructing an assembly factory in Ukraine by late 2024 to produce heavy Bayraktar Akinci UAVs which will be fitted with Ukrainian AI-450T turbofan engines and air-to-air missiles (Panasovskyi, 2022). Turkey has also built an Ada-class anti-submarine corvette *Hetman Ivan Mazepa*—the first out of six ordered navy ships of such type (Ozberk, 2022).

The MTCR emerged as an attempt to stem global missile proliferation beyond the US and the Soviet Union. It set global limits on missiles and missile technology proliferation focusing on preventing exports of ballistic missiles capable of delivering a 500-kilogram warhead at a range of 300 km or more. Today, the MTCR aims to prevent the proliferation of WMD-capable ballistic missiles, cruise missiles, UAVs, and related technology. It has had some notable successes, e.g., preventing the joint Argentina–Egypt–Iraqi Condor II ballistic missile program, and slowing down missile programs in India, Libya, and South Korea. However, today the regime is clearly under strain, with successive US Administrations progressively waiving limits on South Korea, culminating with a full waiver of all MTCR limits on South Korean missiles by President Biden (Kim, 2021).

Another significant challenge to the current missile proliferation regime is technological trends that could be observed in the group of nations that produce and sell missiles and missile technology. The growing competition among them has been fueled by the demand for more and ever more efficient systems. Ballistic missiles previously were seen as being less useful, but the performance of Iskander may drive greater ballistic missile proliferation in the coming years.

The war in Ukraine also has showcased the effectiveness of high-precision missile systems such as HIMARS. The conflict also lends support to arguments for high-precision missile systems performing a larger number of roles in warfare. Future war planning may depend more on the possession of smaller, cheaper, smarter, more effective, and extremely precise battlefield weapons. With the introduction of cheaper and higher quality electronic components, leading producers may develop increasingly integrated and multi-role missiles and UAVs.

In conclusion, the war in Ukraine, as with Azerbaijan's defeat of Armenia in Nagorno-Karabakh, has shown that reaching a qualitative technical advantage in munitions delivery and reconnaissance over the adversary could become a decisive factor, even in the face of significant personnel, air, and armor disadvantages. The

need for a “radical rethinking and revitalization” of the missile control regime was evident before the Ukraine-Russia war; now it is ever-more imperative” (Alberque, 2021).

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Part III
Arms Control Deadlock and the Possible
Ways Out

War in Ukraine and US–Russian Arms Control: Is It Needed? Is It Possible?



Nikolai Sokov

Abstract The Russian war on Ukraine has triggered the most acute international crisis in four decades and has put the nuclear disarmament agenda on the back burner, at least among nuclear weapon states. The network of agreements developed since the end of the Cold War is rapidly unraveling. Instead, the United States and Russia need to return to the original notion of arms control as it was conceptualized in the early 1960s—prevention or, at least, reduction of risk of nuclear war. Today, this task is more challenging than in the past as military balance is more complex and can no longer be limited just to nuclear weapons—it may need to incorporate long-range conventional weapons and missile defense. Both sides have declared interest in arms control, but whether domestic and international constraints will allow for serious engagement remains uncertain. The risk of an unrestricted arms race, including nuclear, remains dangerously high and it is likely that in 2026, after the expiration of New START, the two countries will, for the first time in decades live under conditions of unregulated nuclear balance.

Keywords Arms control · Disarmament · Deterrence · Strategic balance · Conventional missiles · New START · Nuclear stockpiles

1 Introduction

Russia's aggression against Ukraine in February 2022 has dramatically changed the global environment moving it, effectively, toward a war footing. Besides the “hot” war that is transpiring in Ukraine's territory, large-scale assistance to Ukraine by the United States (US) and other members of the North Atlantic Organization Treaty (NATO) (assistance that included not only provision of arms and other supplies, but also sharing of intelligence and targeting information); the mobilization of Russia for a long-term war, including the political system, economy, and, starting in September, also the population; as well as

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unprecedented political and economic sanctions, which effectively drew the line across Europe—all this means that we need to talk about the global nature of that war. Although several major powers, including China and India, and dozens of mid-level countries have formally remained neutral, that state of affairs might not last too long and one has to contend with the possibility of a broader conflict beyond the war in Ukraine.

We are witnessing once again a systemic conflict. This time it is not so much about socio-economic and political systems (although that component is present) but rather about the rules of conduct and decision-making in the international system. The United States is pitted not only against the Soviet Union and its bloc, but against a more diverse range of states, among which Russia is by far not the strongest one. Yet, it remains a peer to the United States in the nuclear realm. As the global system has embarked on a violent transition, one wonders whether the traditional—some would even say, indispensable—element of international life, arms control, is desirable and whether it is possible?

2 Arms Control: Back to Basics

Before answering that question, one should define arms control more clearly. The original conceptualization of arms control was quite limited. That approach dates back to the early 1960s and was primarily intended to “make war less likely,” while reducing the probability of nuclear war between the two Cold War superpowers, the United States and the Soviet Union (see Schelling & Halperin, 1961; Bull, 1961; Jervis, 1993, p. 239). Its main goal was to remove or at least reduce the incentives for surprise large-scale nuclear first strike. This goal was operationalized as “efforts to limit the numbers, types, or disposition of weapons” (Nye, 1991, p. 145). Underlying that goal was the assumption that imbalance, which gives one of the parties a theoretical capability to win a nuclear war is dangerously (perhaps mortally) destabilizing: At a minimum, it is bound to trigger an arms race as the disadvantaged party seeks to catch up. In any event, unregulated arms race and associated fear that the opponent might acquire nuclear preponderance was considered dangerous and in need of regulation. Accordingly, US–Soviet arms control efforts during the Cold War concentrated on three closely interrelated goals:

- Achieving a rough balance of deployed (i.e., ready-to-use) delivery vehicles and, at a later stage, the balance of warheads attributed to deployed delivery vehicles;
- Adopting measures to enhance the predictability of modernization to guard against unanticipated real or perceived breakthroughs; and
- Measures to avoid war as a result of an accident or misunderstanding.

As such, arms control predates the nuclear era and the main tenets summarized above are but an adaptation of the earlier principles embodied in the Hague Conventions (1899 and 1907), the 1922 Washington Naval Treaty, and other measures. The presence of nuclear weapons increased the salience of arms control because an

unregulated arms race could end the human race—an outcome that previous attempts at arms control did not have to face. It is not surprising that the same principles were also used in conventional arms control, for example, the 1990 Conventional Forces in Europe (CFE) Treaty, which emphasized limiting the capability of NATO and the Warsaw Pact to launch a large-scale surprise attack.

Arms control is fundamentally different from disarmament as embodied in a range of UN resolutions (beginning with the very first resolution of the UN General Assembly in 1946), the 1968 Nuclear Nonproliferation Treaty (NPT) and its highest point, the 2020 Treaty on the Prohibition of Nuclear Weapons (TPNW). Disarmament and arms control are fundamentally incompatible, at least at a theoretical level, because the goal of the former is the elimination of weapons while the latter seeks to regulate the arms race. They can be compatible, however, at a tactical level: Disarmament may use some arms control tools to ensure that road to zero is pursued in a balanced and safe manner.

Nonetheless, after the end of the Cold War, the difference between arms control and disarmament became dimmer, at least in public perception. The end of the geopolitical conflict seemed to open the way to the elimination of nuclear weapons. The increasingly wide gulf between the rather bleak outcome of arms control negotiations and the goal of nuclear disarmament created a conflict, which, in the end, led to the TPNW, which was intended to delegitimize nuclear weapons and make the status of nuclear weapon states untenable.

The revival of a comprehensive systemic conflict inevitably creates major tension between the high hopes for nuclear disarmament, which developed after the end of the Cold War, and the new reality, in which nuclear weapon states will treat nuclear disarmament as an untenable proposition. This particularly applies to Russia, whose nuclear status is effectively the only guarantee against open military operation by the overwhelmingly powerful coalition of states led by the United States. China's unexpectedly large-scale buildup of strategic forces clearly indicates that that country intends to rely on nuclear weapons in all its plans for the future; furthermore, it seems likely that the buildup betrays plans to have a full-fledged nuclear balance with the United States similar to the strategic relationship the Soviet Union had.

The war on Ukraine has also revived concerns about nuclear proliferation. The weakening of the institutional and legal constraints on the use of force may stimulate the acquisition of nuclear weapons by countries that believe they have strong reasons to be concerned about their security. Alternatively, they may seek the protection of allies: For example, Ukraine's membership in NATO may be considered not only by Ukraine, but by others as a viable alternative to nuclear status.

3 Is There a Need for Arms Control?

Historically, systemic conflicts used to be resolved through war. World Wars I and II serve as an example. Nuclear weapons introduced a major change in that pattern: War between the United States and the Soviet Union would not have victors, hence

that systemic conflict was resolved decades later as a result of the Soviet collapse, which was caused primarily by domestic causes. The same is true for the ongoing conflict—the presence of nuclear weapons protects Russia from military action by the West and, moreover, serves as an enabler for the Russian war against Ukraine.

As we contemplate the future of arms control, including and especially bilateral US–Russian arms control, it is worth noting that we are not talking about the restoration of what was achieved during the last years of the Cold War and after it; instead, we need to discuss a new stage. The post-Cold War arms control framework does not exist anymore. All that is left are one bilateral (the Treaty between the United States and Russia on Measures for Further Reduction and Limitation of Strategic Offensive Arms, also known as the New START) and one multilateral (the Comprehensive Test Ban Treaty, or the CTBT) treaties. The European arms control framework has taken a particularly hard hit. The Intermediate Nuclear Forces (INF) Treaty is no more, as is the CFE Treaty (and CFE-2, which never entered into force). The main confidence-building measure, the Vienna Document, and the Chemical Weapons Convention (CWC) look dead more than alive, although they formally remain in force. The list can be continued. Worse, New START, which is the only remaining treaty that regulates US and Russian strategic weapons, was intended to be a “bridge” toward a more comprehensive treaty, which never got negotiated, and parties failed to even begin talks on such a treaty.

In a way, this abysmal picture should have been anticipated. Arms control achievements reflected the realities of the previous bipolar international system while the immediate post-Cold War negotiations followed the trodden path. Reality had to catch up, and agreements, which reflected the bipolar system inevitably began to unravel. The fate of the CFE Treaty, which was concluded between NATO and the Warsaw Pact is an example. Indeed, Russia is equal to the United States only in the nuclear realm; in all other respects, it is a second-rank power—influential and capable of upsetting the goals of the United States and its allies, but lacking the ability to proactively shape events.

Furthermore, even the implementation of existing treaties began to encounter serious challenges—the situation at the Organization for the Prohibition of Chemical Weapons (OPCW) or the failure to fully employ the INF Treaty’s Special Verification Commission testify to that feature. It is possible—even likely—that the change of the operative mode of the United States and its allies at the OPCW from seeking consensus to leveraging the majority will eventually result in the collapse of the OPCW and the Chemical Weapons Convention (CWC).

Even in the area where Russia remains the peer of the United States, nuclear weapons, no progress has been registered. Treaties did not enter into force (START II), negotiations did not conclude (START III), or were fundamentally faulty (the Strategic Offensive Reductions Treaty, or the SORT). The only exception was New START and the only reason negotiations succeeded was the need to restore the transparency system that had been lost with the expiration of START I. As such, New START represented a “quick fix” for the immediate problem, but did not address other issue-areas, which Moscow wanted to raise, such as missile defense and long-range conventional weapons; already at the signing of that treaty, Moscow made it clear that exclusion of these issues was a concession and that it would refuse to conclude the next treaty without addressing them. Worse, even when Russia

demonstrated, in 2015, the long-range conventional capability, the US approach to nuclear arms negotiations did not change. Effectively, Washington gave Russia free hand in pursuing missile defense, anti-satellite (ASAT) weapons—the *Nudol* ASAT weapon was eventually tested in 2021—and long-range conventional weapons, which are now being extensively used against Ukraine. The lax approach to arms control has also allowed Russia to develop and begin deployment of weapons systems, which have strategic or theater capability but are not subject to either New START or the now-defunct INF Treaties.

Finally—and this appears to be the main reason for the failures briefly described above—arms control lost the priority status it had enjoyed during the Cold War. Serious negotiations require an investment of political capital, and such investment has been lacking. A bird’s-eye view of the arms control scene in the West would reveal the existence of three groups: One favors progress in arms control as a path toward nuclear disarmament, the other objects to any arms control whatsoever believing that the United States is sufficiently powerful to not need it, and the center, which during the Cold War used to be the main proponent of arms control, is not particularly interested.

A further complication has been introduced by China, which, quite unexpectedly, engaged in a massive buildup of its strategic forces, which potentially creates a “nuclear triangle” where the strategic balance—and associated arms control—has traditionally been bilateral. Russian–Chinese military cooperation has also become—or, at least, should become—a major headache as well: China is now covered by the Russian early warning and air defense system, the two countries undertake joint patrols of strategic bombers, etc. This trend predates the war in Ukraine by several years and clearly reflects a strategic, long-term decision by the two countries, which will hardly be reversed regardless of how and when the ongoing war ends.

In this environment, there exists a need to return to the traditional arms control agenda, that of regulating the arms race to maintain strategic stability defined as the ability to respond to a surprise attack. Given the level of tension that is unprecedented in the last three and a half decades (the current situation can only be compared to the 1962 and the 1983 crises), one cannot realistically discuss deep reductions of nuclear weapons or similarly radical measures, much less nuclear disarmament. The crisis of the international system will make key states rely more on nuclear weapons than at any point after the end of the Cold War because nuclear weapons, in fact, stand in the path of a global conventional war. An unrestricted and unregulated arms race, on the other hand, is fraught with serious destabilization of the global nuclear balance and ultimately may result at least in a further arms race and the worst case in a nuclear war. Hence, the ambitious arms control and disarmament plans need to be abandoned and nuclear states need to “return to the basics.”

The “basics” today are more complicated than in the 1970s, the age of “classic” arms control. The environment is characterized by a fusion of various capabilities—nuclear and conventional (for Russia, also dual-capable), offensive and defensive, as well as the fast development of information technologies. Nuclear weapons remain the backbone of strategic stability, but large-scale wars can now be conducted with conventional weapons alone. This makes the task of maintenance of military balance

more challenging than in the past, but also much needed: Even elementary transparency measures with respect to long-range conventional weapons would have made it more difficult for Russia to concentrate large numbers of such weapons vis-à-vis Ukraine in the run-up to war.

Russia was the first to catch the drift, which is hardly surprising given that it has been behind the United States in the non-nuclear realm. Its “security equation” concept foresaw the inclusion into the next treaty, besides nuclear weapons, of long-range conventional weapons, missile defense, and space weapons (a category that has remained poorly defined). The United States, however, after the entry into force of New START continued to insist that the next treaty should only address nuclear weapons and that the coverage should be expanded to include both strategic and non-strategic as well as deployed and non-deployed nuclear weapons. While the attempt to expand treaty coverage to nuclear weapons stockpiles is commendable, this fundamental difference in the frameworks doomed negotiations after 2011.

Modest progress was achieved only in the summer and fall of 2020 after, for the first time in almost a decade of Strategic Stability Dialogue (SSD) (regular meetings of high-level representatives of the two countries, which lasted only a day or two), the two countries agreed to create working groups, which allowed for more in-depth discussions. The main achievement of that period was Russia’s agreement to freeze nuclear stockpiles, but only as a political obligation; since the United States insisted on a commitment to negotiate a verification system for that measure, the agreement was not reached.

Strategic Stability Consultations resumed in the summer of 2022, but only by the end of the year the parties once again managed to establish working groups. Details about the US position have not been made public, but the term frequently used by US officials has been “strategic environment,” which sounds similar to the Russian “security equation.” A high-level US official confided, without disclosing details, that in-depth discussions in the working groups revealed that the approaches of the two sides were not as different as they appeared on the surface. Obviously, these talks were terminated (or indefinitely postponed) when Russia invaded Ukraine, but once negotiations resume, they may have a chance of success. At least, the US government appears ready to resume negotiations when political conditions allow it; Moscow has also expressed interest in arms control at an undefined date in the future.

The shape of arms control agreements will be different from the “classic” Cold War era that was also practiced afterward. The old approach will still work for nuclear weapons, most likely, as each weapon is significant and has to be accounted for. Action on long-range conventional weapons and missile defense need not be as technically complex and need not take as strict accounting. More likely an in-between between CBMs and classic arms control—a new animal that we have not yet tried. Optimal would be a set of regimes with different status and different accounting and verification; links between domains will be presumed rather than explicit. There seems to be a consensus on that approach—both Russia for quite a long time and more recently US experts have been talking about that.

The principal stumbling bloc will be the fundamentals: As noted above, the relationship is asymmetric, hence the time-proven, traditional approaches to fashioning an agreement or a package of agreements will hardly work this time, especially since after the war Russia will be in a very weakened state. How arms control can be pursued in such a relationship remains an open question: There has been no precedent to build upon and the parties will need to fashion something in the process.

A further complication will be the increased military—especially nuclear—the capability of China and the close relationship between Russia and that country. A nuclear triangle is, by definition, unstable. Were the United States to insist on a capability that allows it to reliably deter both Russia and China, this would give it clear superiority vis à vis either of them; moreover, such an attempt would bring China and Russia even closer together, which is not the most desirable outcome. On the other hand, equal limits for all three countries would give China–Russia combination superiority over the United States, which is unacceptable as well.

Finally, there is a factor of time. The New START expires in February 2026, and there is very little chance a new multi-level agreement or a package of agreements can be negotiated until then. This means that in about three years there will be no transparency and predictability regime on nuclear weapons between the United States and Russia—a highly undesirable, but perhaps unavoidable state of affairs. Perhaps it would make sense to pursue, in parallel to full-scale negotiations, a more limited set of measures to ensure transparency and war prevention agreements, such as a variety of notifications, strengthened communication lines (it is unacceptable that US officials were unable to contact their Russian counterparts for several months after the beginning of the war), and a consultation mechanism to discuss concerns and clarify uncertainties, etc.

4 Role of Nuclear Weapons in the War on Ukraine

Whether arms control—especially US–Russian nuclear arms control—will have a role to play in the new international system will be defined by two variables. One is traditional—the maintenance of strategic balance and reduction of the risk of nuclear war. The other is the role nuclear weapons play in the war on Ukraine.

Contrary to the common narrative, the fact that a nuclear state, Russia, attacked a non-nuclear state, Ukraine, in violation of international law is not unique. The ongoing war is the fourth case since the end of the Cold War of such a scenario. The other cases were Serbia in 1999, Iraq in 2003, and Libya in 2011. Moreover, in all four cases force was used either in violation of the UN Charter (1999, 2003, and 2022) or involved a reinterpretation of a UN Council resolution (2011).

The war on Ukraine differs from the other three cases in many aspects, primarily its geopolitical and ideological characteristics. When it comes to nuclear weapons, Russia openly invoked them: Something the United States (as well as France and the United Kingdom in 2011) did not and did not need to do in 1999, 2003, or 2011.

Effectively, from the role of a “last resort” asset, the “backbone” and stabilizer of international relations, nuclear weapons appeared to once again acquire the role of an operative tool. On February 24, 2022, in the announcement of the “special military operation,” Vladimir Putin (2022a) declared:

No matter who tries to stand in our way or, moreover, create threats for our country and our people, they must know that Russia will respond immediately, and the consequences will be such as you have never seen in your entire history.

A few days later Putin announced enhanced alert status for Russian strategic forces, which he later attributed to a “reckless statement” by UK Foreign Secretary Liz Truss, who “blurted out that NATO could get involved in the conflict” (The Kremlin, 2022a, 2022b). It turned out that the “enhanced alert status” did not affect the posture of Russian nuclear forces and apparently only applied to command and communication systems, although initially, it caused serious concern, even panic in the West.

These statements amounted to a major departure from Russia’s declaratory nuclear policy. Whereas the official policy, set out in multiple official documents (foremost, all editions of its military doctrine and the 2020 Nuclear Deterrence Decree), foresaw using nuclear weapons only in response to a large-scale attack against Russia (the so-called defensive deterrence), the February 24 statement sought to use nuclear weapons in support of a war that Moscow started (offensive deterrence). While the explicit threat of escalation helped deter the West from directly interfering in the war on the side of Ukraine, the offensive deterrence mode is not particularly compatible with the main premise of traditional arms control, the assured response to an attack by the other side.

Obviously, this attempt failed, and by the middle of the summer, Russian officials began to play down nuclear threats insisting that nuclear weapons could only be used in accordance with the Military Doctrine (i.e., in response to a large-scale attack that threatens the existence of Russia). Putin (2022b) cemented that narrative in a statement on September 21, 2022, that announced partial mobilization: “In the event of a threat to the territorial integrity of our country and to defend Russia and our people, we will certainly make use of all weapon systems available to us. This is not a bluff.” This language conveyed a set of important messages:

It was explicitly addressed to the West—the United States and NATO as a whole. Putin framed the war as a proxy war against NATO (Russian minister of defense, Sergey Shoigu, even said that NATO was already party to that war).

By implication, this meant that Russian leadership did not contemplate the use of nuclear weapons against Ukraine as long as NATO forces are not directly engaged.

Nuclear weapons were still used in the framework of “offensive deterrence”—a cover for aggression rather than deterrence of others’ aggression.

The red lines still displayed a considerable degree of uncertainty—this time, with respect to parts of Ukraine, admitted into Russia following referenda in territories under Russian control.

Perhaps more importantly, it represented a tacit admission that nuclear weapons did not have utility beyond deterrence of war and could not yield political benefits

(such as preventing the West from assisting Ukraine in any ways except direct military interference).

A special statement of the Ministry of Foreign Affairs of the Russian Federation (2022) issued in early November confirmed these elements. Overall, the evolution of the Russian approach to the role of nuclear weapons (re)confirmed that these weapons have limited utility: They can deter an attack but cannot do much beyond that.

While Russian aggression against Ukraine and especially the attempt to leverage nuclear status to constrain the West have negatively affected the prospects of arms control, careful consideration of the mode(s) in which nuclear weapons were invoked suggests that at least in theory arms control negotiations can be resumed. Despite aggressive rhetoric in the early phase of the war, in the end, Moscow gravitated toward the same conceptual and doctrinal foundations that had existed before February 24, 2022. Russian nuclear strategy still concentrates on two missions—standard strategic deterrence (maintenance of the capability to respond to the hypothetical first strike by the United States) and de-escalation (limited nuclear use in response to the use of superior conventional forces by NATO).

Moreover, the depletion of Russia's own modern long-range precision-guided conventional stockpile will undoubtedly force it to rely on the de-escalation mission more than in the last five or so years (it demonstrated conventional deterrence capability for the first time in the fall of 2015 by launching strikes against targets in Syria). Put differently, Russia will go back to the conceptual and doctrinal foundations that existed before 2015. This means that the de-escalation mission may complicate negotiations, but will not make them impossible: The United States will find itself on familiar terrain.

That said, the prospects of resumption of arms control dialogue between the United States and Russia will depend on one condition and one major uncertainty.

The condition is that Russia does not use nuclear weapons against Ukraine. There is no indication that it has ever seriously contemplated such a scenario: Assertions in Ukrainian and Western media and among experts have not been supported with hard data and should be classified as conjecture. These assertions have rested on the assumption, popular after Ukraine returned significant parts of its territory in late summer-early fall of 2022, that facing a defeat from Ukrainian forces the Kremlin will, out of desperation, resort to nuclear weapons. In real life, as we know, it turned to a more realistic option, mobilization. Still, that condition has to be kept in mind: Nuclear use against a non-nuclear state would undermine all the key elements of the global nuclear order and will likely trigger serious proliferation efforts. Obviously, no negotiations will be possible.

The uncertainty that may affect the prospects of arms control is the game of brinksmanship Russia has been playing since February 24, 2022, and will likely continue to play as long as active warfighting continues. Brinksmanship is a logical and expected behavior under these circumstances. Red lines are intentionally vague and any new qualitative stage in Western support for Ukraine risks crossing that line; accordingly, Russia may resort to a broad variety of symmetric and asymmetric

responses supported by the existence of nuclear weapons (or, in the worst case, overt nuclear threats).

Brinksmanship—the operative threat of nuclear war similar to the 1962 Cuban Missile Crisis—is certainly not conducive to serious arms control negotiations. On the other hand, that environment calls for measures to reduce the risk that brinksmanship gets out of hand; consequently, dialogue on measures to prevent the accidental use of nuclear weapons or use as a result of a misunderstanding appears very much possible. The Biden Administration has expressed interest in measures to reduce the risk of nuclear war and it is possible that Moscow will be interested in such measures, too: It is one thing to threaten nuclear use and quite another to engage in it. More serious negotiations pertaining to the stabilization of nuclear and perhaps, more broadly, military balance will need to wait until the crisis somewhat subsides.

5 Conclusion

Both the United States and Russia need to engage in arms control to stabilize military—especially nuclear—balance, prevent an unregulated arms race and, above all, avoid war, which can easily escalate to a nuclear level. Yet, shared interest is not a guarantee that action will be taken, much less that interaction will be successful.

Arms control is a largely technical endeavor in a political coating. It needs a political impulse to begin, political support while negotiations continue, and even greater political support during ratification. This is virtually absent today. Understanding of the need is primarily limited to experts with only a few inroads into the political establishment. The dominant perceptions are two (1) you cannot negotiate with Russia and (2) negotiations are a concession to Russia and it must “pay” for the US/NATO to agree to talk.

Whether negotiations begin depends first and foremost on how the war develops. At the moment, the expectation is that Ukraine with the assistance of the West may win the war, perhaps in several months or a year. The United States will hardly begin negotiations as long as the war continues and especially if Russia is expected to lose.

Furthermore, if Russia loses, the loss is expected to be so complete that arms control may not be necessary—rather, there will be a conversation about the denuclearization of Russia, regime change, reformatting the country, “decolonization” (breakup into smaller parts), etc. Obviously, economic pressure will not only continue after Ukraine’s victory but will further increase to facilitate these goals.

Thus, we can hardly expect a political decision to resume arms control contacts (dialogue) with Russia in the near future, and most likely not right after the end of the war. Political processes in the United States and NATO will simply not allow this. If and when such a decision is made, it will need a political impulse. Usually, such an impulse is made as a result of a summit meeting, but a meeting between Biden and Putin is next to impossible (not completely impossible but so unlikely we can discount it). Even a ministerial seems unlikely—Blinken and Lavrov did not talk

during the G-20 ministerial, although a short conversation on the margins was possible. Of course, it is possible to resume the SSD at the level of deputy ministers but even a Sherman-Ryabkov meeting would be difficult to organize and more difficult to have a result-oriented conversation.

Everything points at a long pause in the arms control process. We will probably have to wait until the next Russian and US presidents—beyond Putin and beyond Biden—or at least one of them (most likely, Putin, since it is hard to imagine any US president talking to Putin face-to-face whether in person or in a call). We may need to get used to the thought that after February 2026 for the first time in decades, we will have to live without any restrictions on US and Russian nuclear arsenals or active negotiations.

Whether New START may be extended remains an open question. Legally, the treaty allows for only one extension, which was used in 2021. It is not impossible to have an informal agreement to abide by New START limits, as it was done in 1981 with respect to the Strategic Arms Limitation Talks (SALT) II. Yet, numerical limits are perhaps the least important part of New START, and in any event, the treaty does not address the majority of new weapons systems Russia has developed or is developing. The truly valuable part of New START, the transparency and verification regimes, may require congressional action, which is not easy to obtain. Overall, the situation is uncertain and it is worth starting thinking about it and laying the ground for a formal or informal extension of New START as early as possible.

There appears to be only one contingency, which could sweep domestic and alliance politics aside: a major nuclear confrontation at the scale of the 1962 Cuban Missile Crisis. If the world comes dangerously close to nuclear war and if we survive that crisis, the proposition about urgent interaction to reduce the risk of war and regulate nuclear weapons as well as perhaps other critical elements of military balance will likely enjoy near-universal support. It is, of course, better to avoid such a crisis even if it could spell the resumption of arms control interaction.

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Strategic Arms Control Deadlock and the Possible Ways Out



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Abstract Strategic arms control was in crisis even before the renewed Russian attack against Ukraine in February 2022. The New START was the only treaty limiting strategic delivery systems and nuclear warheads of the United States and Russia. There was also no willingness from China to engage in arms control talks. After February 2022, US–Russia strategic stability dialogue (SSD) on a new arms control treaty was halted and is unlikely to be resumed without durable peace in Europe. The New START may not be succeeded in 2026 by a successor bilateral treaty. Alternatives to formal arms control agreements can be pursued, for example through work on the risk reduction agenda or strengthening global norms against nuclear use. However, these options have significant weaknesses as compared to formal strategic arms control. After the pause caused by the war, major nuclear powers can find it beneficial to re-engage in strategic arms control, which may need to move from a bilateral to a multilateral format.

Keywords Arms control · New START · Nuclear weapons · Russia · United States

1 Introduction

Even before the new phase of the Russian aggression against Ukraine, which started with the all-out attack on February 24, 2022, strategic arms control was considered to be in deep crisis. A number of arms control agreements dating back to the end of the Cold War and the 1990s period of closer cooperation between Russia and the West had been discarded or side-lined. This included the Intermediate Nuclear Forces (INF) and the Open Skies Treaties, as well as the Conventional Forces in Europe agreement.

China showed no willingness to engage in strategic stability or arms control talks with the United States (US) or, trilaterally, with the US and Russia. This position was maintained by Beijing despite first the pressure from the Trump administration and

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later diplomatic overtures from President Biden. Multinational fora for negotiation of arms control agreements, most notably the Geneva-based Conference on Disarmament (CD), remained blocked. The work of the CD was paralyzed by countries pursuing their conflicting agendas and constrained by the procedural requirement of consensus.

On the positive side, in February 2021, the Treaty between the United States and Russia on Measures for Further Reduction and Limitation of Strategic Offensive Arms (New START) was extended to 2026. Following the June 2021 joint statement by presidents Biden and Putin, in which they declared their shared aim of “lay[ing] the groundwork for future arms control and risk reduction measures,” the so-called Strategic Stability Dialogue (SSD) was initiated to discuss the outline of a possible follow-on bilateral agreement to New START treaty on strategic arms control (The White House, 2021). In January 2022, the leaders of the five nuclear weapon states agreed on a statement that highlighted that “nuclear war cannot be won and must never be fought” and also declared their intention to “continue seeking bilateral and multilateral diplomatic approaches to avoid military confrontations, strengthen stability and predictability, increase mutual understanding and confidence, and prevent an arms race” (The White House, 2022a).

Even before the February attack, the United States and Russia were far from agreement on the next steps in arms control. The two countries held differing views regarding the scope of future bilateral negotiations and indeed the definition of strategic stability as such. In parallel, all nuclear weapon states continued with their modernization programs encompassing both nuclear weapons and their delivery vehicles. These programs included Russia working on new strategic weapon systems such as the Avangard hypersonic missile and the Poseidon underwater nuclear drone, China constructing new silos for intercontinental ballistic missiles, the US moving forward with the deployment of low-yield warheads for some of its sea-launched ballistic missiles, and the United Kingdom (UK) and France making progress with plans for a new generation of strategic submarines and warheads. Nuclear weapon states continued to invest also in a range of non-nuclear systems and capabilities which could upset the strategic situation and thus reduce the incentives for reductions of nuclear arsenals, such as long-range conventional missiles.

This chapter looks into the options for overcoming the deadlock in strategic arms control. First, it analyses the impact of the Russian aggression against Ukraine, examining the arguments for and against resuming bilateral arms control negotiations between the United States and Russia. Then, it looks into some alternatives to pursuing legally binding agreements, namely the nuclear risk reduction agenda and the normative approach. In the final section, it makes the case for strategic patience in strategic arms control, arguing that the second part of the 2020s may bring more favorable conditions to pursue negotiations between the US, Russia, and China.

2 The Effects of the 2022 February Attack on Arms Control

The direct consequences of the Russian aggression against Ukraine on international and regional security, its nuclear rhetoric, as well as the increased likelihood of the use of nuclear weapons are analyzed elsewhere in this volume.

With regard to the arms control angle, the Russian aggression had the immediate effect of halting the bilateral US–Russia strategic stability talks (suspended by the US) as part of the rupture of most of the non-crisis-related diplomatic interactions with Russia. Even the continued adherence of both sides to the New START was put under question after the Russian side objected to the US attempt to resume on-site inspections of nuclear installations after the COVID-19-related break. Russia put forward conditions regarding the assurance of freedom of movement of Russian inspectors and the ability to fulfill their verification mission, which it claimed could be compromised by the introduction of the sanction regime against Russia. Additionally, Moscow no longer considered Switzerland—the traditional place for meetings—as an impartial side for talks. These disagreements were supposed to be discussed during the meeting of the Bilateral Consultative Commission planned to be held in Cairo from late November—early December 2022, but the meeting was ultimately postponed by the Russian side (Reuters, 2022).

Consequently, in January 2023 the US State Department declared that it cannot certify Russia’s continued compliance with the treaty. On 21 February, President Putin declared that Russia “suspended” the New START due to hostile policy of the United States. As clarified by the Russian Ministry of Foreign Affairs, Russia would voluntarily comply with the warhead and delivery vehicles limits of the treaty. Still, the Russian decision called into question not only the status of the New START, but also the likelihood of ever resuming strategic stability talks between Russia and the Biden administration.

As for the next steps, according to a February 2023 Statement of the Russian Federation,

The decision to suspend the New START Treaty can be reversed if Washington demonstrates the political will and takes honest efforts towards general de-escalation and the creation of conditions for resuming the comprehensive operation of the treaty and, consequently, its survival. This is exactly what we urge the American party to do. Until then, any steps to accommodate Washington with regard to New START are absolutely out of the question (Ministry of Foreign Affairs of the Russian Federation, 2023).

Washington’s position before the Russia “suspension” was that while it was willing to “expeditiously” negotiate a new arms control framework to follow the New START, talks with Russia would require a “willing partner operating in good faith” (Bugos & Foye, 2022). No specific US conditions were offered in the public domain regarding the “good faith” requirement. It can be assumed that, at minimum, it would entail halting the Russian attack against Ukraine, the return of Russian forces to their bases, and a durable ceasefire. Preferably, Russia would demonstrate its good faith by the withdrawal of its forces from all areas occupied since February 2, 2022, as well as agreeing on a peace arrangement fulfilling the expectations of

Ukraine. The commencement of the post-war reconstruction of Ukraine without interruption from Russia could also confirm Russia's good faith.

3 To Engage or Not to Engage... Bilaterally

The renewed Russian attack against Ukraine undermined the previous rationale of the bilateral strategic arms control approach, which since the end of the Cold War was pursued essentially as a cooperative US–Russian endeavor. Given the illegality and brutality of the Russian attack against Ukraine, as well as the personal responsibility of the Russian president and its leadership for the crime of aggression and numerous war crimes, it may be questioned whether the resumption of arms control talks leading to a new agreement with Russia could be morally justified. It could also indirectly legitimize Russian behavior and provide the regime with a diplomatic lifeline. From a strategic viewpoint, since the US goals now include making Russia's war against Ukraine a "strategic failure," as well as pressuring Moscow (e.g., through sanctions) to change its aggressive foreign policy, stabilizing the relationship through arms control measures may be seen as contrary to main objectives of the US foreign policy.

Additionally, given the complete breakdown of trust with Russia and the past record of its non-compliance with arms control obligations, there may also be questions (especially in the Senate) as to whether Washington can ever have the necessary minimum level of confidence regarding faithful implementation of arms control commitments by Moscow. Considering all these arguments, it may be suggested that the "deadlock" on bilateral arms control can be actually better for the integrity of the US and Western policy and achieving their policy goals that reaching out too early to Russia. For a number of Western states, arms control is no longer at the center of attention. NATO's new Strategic Concept adopted in Madrid clearly states that arms control and risk reduction efforts "complement" the Alliance's deterrence and defense posture. This reinforces the argument that arms control with Russia can only be pursued if it is consistent with overall Western policy goals.

There can also be, however, a contrarian perspective, according to which continuation of bilateral US–Russia arms control can be pursued in the absence of a peace arrangement ending the Russian–Ukrainian war. According to this line of argumentation, the need to prevent direct war between the two nuclear superpowers remains, more importantly, and urgently than before, due to the dangers inherent to the escalation of tensions between the US and Russia around Moscow's war against Ukraine. Continuation of the SSD cannot, therefore, wait for the cessation of hostilities or manifestations of the Russian "good faith." Given that the Russian leadership might remain in power for another decade or more, the West should be prepared to talk to Moscow on nuclear arms control.

This line of reasoning directly or indirectly calls to return to the Cold War roots of arms control, namely re-discovering its role as one of the tools for managing the

highly dangerous confrontation between the nuclear powers, a relationship based on the concept of mutual assured destruction. During the Cold War, arms control would serve the purpose of limiting or eliminating the incentives for a nuclear first strike (crisis stability) and also to reduce incentives to race towards nuclear superiority (arms race stability). It would thus serve as an instrument of shielding the international community from the danger of the general nuclear war between the two powers rather than pave way for major reductions of arsenals. Providing some degree of predictability, transparency, and confidence regarding the nuclear potential of both opponents would mean returning to the basic arms control aims identified in the early 1960s, e.g., by Tom Schelling and Morton Halperin.

Another argument in support of engagement has to do with the duration of the New START constraints and verification regime, and the argument that letting the agreement expire without a successor would increase the danger of nuclear war. Without treaty constraints, Russia could have incentives to increase its strategic arsenal in a manner that would be less visible to the US. Combined with the increase of the Chinese nuclear stockpile and delivery systems, this may put the US and its allies in a disadvantageous position. Given that the year 2026—when the New START will expire—may be seen as being “just around the corner,” and taken the complexity of any potential negotiations with Russia, it can be argued that the pause in the SSD should be as short as possible.

Regardless of the strength of the argument highlighting the need for maintaining bilateral arms control, however, agreeing on a new arms control arrangement to replace the New START would be extremely difficult. At the first meetings of the SSD, different approaches of the US and Russia were already visible. As regards Russia, Moscow called firstly to broaden the overall agenda to include a joint review of the security concerns of each side, moving beyond narrow arms control-focused approaches to strategic stability towards a more comprehensive discussion of the bilateral relationship. Secondly, Russia called to develop a “new security equation” which would include “the entire spectrum of both nuclear and non-nuclear offensive and defensive arms that have a strategic capability” (Ryabkov, 2021). That would broaden the scope of negotiations to include US missile defense capabilities and some conventional long-range strike systems.

In its October 2022 National Security Strategy, the Biden administration declared its interest in “preserving strategic stability [with Russia] and developing a more expansive, transparent, and verifiable arms control infrastructure to succeed New START” (The White House, 2022b, p. 26). This confirmed and reinforced the previous position of the administration, with highlighted the need to capture, in the new agreement, some of the newly developed Russian strategic weapon systems (such as the underwater Poseidon drone), and—crucially—non-strategic and potentially also non-deployed nuclear weapons. The importance of limiting Russian non-strategic nuclear warheads, a category in which the Russians have a large numerical advantage over the Americans, was highlighted by the US Senate during the process of ratification of the New START. It has also been brought up by a number of US allies who consider themselves directly threatened by these Russian capabilities.

A number of experts considered these gaps and diverging preferences to be fully bridgeable in the process of bilateral negotiations. Various formulas were proposed, including—for example—“trading” US advantage in missile defense and long-range conventional strike systems for Russian acceptance of some constraints on its non-strategic nuclear weapons. Another approach could be agreeing on one ceiling for all types of nuclear warheads with some freedom to mix, and with relevant verification measures (see Gottemoeller, 2022).

The February 2022 Russian aggression against Ukraine adds however the additional level of difficulty. It is problematic to see for example how the US–Russian SSD could be detached from the question of the stability of the European security order and the future shape of the European security architecture, which may include an arms control component. European allies and partners of the United States (first and foremost Ukraine) would expect that the threat of renewed Russian aggression and the continued existence of Russian capabilities (nuclear and conventional) for waging a large-scale war and engaging in strategic coercion in Europe would need to be addressed in the negotiations. Weakened Russia may be more interested to add to the “strategic equation” to some of the American and potentially NATO non-nuclear weapon systems deployed in Europe, capable of striking targets inside Russia. This may mean the need to consider not just a potential resumption of the SSD, but also the creation of a broader multilateral framework of parallel negotiations on conventional arms control, perhaps akin to CFE talks of the late 1980s and early 1990s.

4 Beyond Bilateral Arms Control—The Risk Reduction Agenda

The uncertain prospects of formal arms control negotiations between the US and Russia (even before the February 2022 aggression), coupled with the heightened sense of nuclear danger, resulted in a renewed interest in other avenues of addressing the problem.

The nuclear risk reduction agenda seemed to be the most promising of the approaches potentially uniting all the five nuclear weapon states. Their leaders subscribed in January 2022 to the statement that nuclear war must never be fought, and the US, Russia, China, France, and the United Kingdom were among the group of countries in the November 2022 G20 declaration from the Bali meeting described the use or threat of use of nuclear weapons as “inadmissible” (Group of Twenty, 2022, p. 1). This ostensibly created a common platform for action. The risk reduction approach seems to be also best suited to the current circumstances, in which the dangers of nuclear use are related not just to the US and Russia but to a multitude of international actors, and the threat of inadvertent or accidental escalation looms large not just in Europe.

Nuclear risk reduction has its roots in Cold War strategic and ideological competition between the United States and the Soviet Union (see Krepon, 2001).

Especially after the Cuban crisis of 1962, there was a growing realization of the danger of nuclear war caused by a lack of understanding of the other side's intentions, posture, and actions, miscalculations, misinterpretation, accidents, or incidents. These concerns translated into a high level of interest in risk reduction measures from the top decision-makers in the US and Soviet Union, including as a topic for summit meetings. In the later stages of the Cold War and post-Cold War period, these technical risk reduction measures were overshadowed by arms control negotiations and agreements, but they did not lose their importance for strategic stability.

Importantly, the risk reduction agenda included a mix of cooperative and unilateral measures (visible or communicated to the other side), for example, connected with the high reliability and improvements to nuclear command and control systems, as well as the safety and security of nuclear weapons to guard against the accidental or unauthorized use of nuclear weapons under the control of particular states. They also included a combination of political and technical approaches.

The political dimension involved an implicit or explicit acceptance of the general *status quo* in the relations between the nuclear weapon states, avoiding challenging others in crucial areas, as well as accepting that there are no viable pathways to defeat the other side militarily without the unacceptable threat of nuclear war. Such "rules of the game" can be stipulated by the leaders, with the 1985 Reagan-Gorbachev Geneva Declaration that "nuclear war cannot be won and must never be fought" as a frequent reference point (Reagan Library, 1985).

Such political declarations were also accompanied by technical arrangements. For example, the establishment and maintenance of physical direct communication link ("hotlines") for political and military leadership, agreements on notifications and communication in case of nuclear accidents or incidents, and prior notifications on strategic missile launches or major strategic exercises. There was also the establishment of the "technical rules of the road" for minimizing the chances of and managing the consequences of incidents involving armed forces operating in close proximity (e.g., the 1972 Incidents at Sea agreement or the 1989 Agreement on the prevention of dangerous military activities), nuclear forces de-targeting agreements, as well as the establishment of dedicated national nuclear risk reduction centers or cells.

Beyond the context of Russian aggression against Ukraine, the return of interest in risk reduction can be linked to a couple of factors. Among them are the increased divergence of interests and strategic competition in the US–Russia–China triangle; erosion of formal arms control tools and re-assessment of the role of nuclear weapons in national doctrines; a higher level of concern over the inadvertent or accidental escalation of tensions to the nuclear level, and development of new technologies and non-nuclear strategic systems entangled with the nuclear ones.

Strategic risk reduction can be seen as the return to "square one" in terms of introducing the basic guardrails into the US–Russia and US–China relationship. Nuclear risk reduction can also be presented to the broader international community as part of the responsible nuclear states' agenda consistent with the NPT, an

approach that highlights the restrained behavior of the P5 states in the nuclear sphere and their readiness to reduce risks.

The basic weakness of the risk reduction agenda remains its limited character. While it is difficult to argue the vital importance of limiting the danger of inadvertent or accidental escalation to the nuclear level, there is no automatic advancement from risk reduction to agreeing on verifiable limitations of numbers or types of nuclear weapons. Actually, the opposite may be the case: An engagement in risk reduction may be cited by certain nuclear weapon states (for example China) as a justification for not contemplating committing to formal arms control, or downplaying the importance of arms control agreements and moving towards nuclear disarmament. It should also be highlighted that the existence of political commitments and technical risk reduction arrangements does not guarantee to increase in the level of security between the nuclear powers. Their stabilizing impact should not be overestimated. During the Cold War, incidents and periods of heightened tensions occurred between the US and the Soviet Union also after the establishment of the range of risk reduction instruments.

5 Norms to the Rescue?

Another avenue for bypassing the deadlock of formal arms control is to focus on the “meta-level” up from the legally binding agreements between states. This would include identifying and strengthening the norms of behavior which provide the foundation for interactions between the states in the areas connected with nuclear weapons or establishing new norms of responsible behavior in the emerging areas of strategic competition. Norms can be understood as “rules of behaviour rooted in shared values and societal expectations of appropriate conduct,” which provide a set of collectively agreed guidelines of what “good” and “bad” conduct constitutes (West, 2021). Michael Krepon (2011) identified three essential norms for sustaining the nuclear security order: no use of nuclear weapons, no testing, and non-proliferation. Norms of responsible state behavior have also been suggested in the areas of cyberspace and outer space. This approach may be also better suited to deal with a range of capabilities that may not be approached with the traditional quantitative arms control tools, such as the use of Artificial Intelligence in nuclear command and control systems.

The main advantages of the norms-focused approach over the process of agreeing to a legally binding international agreement may be the collective and non-formalized process of their creation and sustainment (see Finnemore, 2017). International norms are derived from the prevailing values, activities, and behaviors that are shared and practiced by a significant group of stakeholders. They also involve a shared specific understanding of both permitted and prohibited activities. They are also dynamic in the sense of being subject to evolution or refinement as new developments arise and circumstances change. A norm is also not made invalid by a particular action of a specific actor (e.g., the norm of non-testing and North

Korean nuclear tests), as long as such action is recognized and stigmatized by others as a violation of a norm or irresponsible behavior.

The main problem of the norms-based approach to arms control remains the limited ability to have an impact on the behavior of the “outsiders” and “spoilers.” Facilitating the convergence of national policies around the norms of responsible behavior is also difficult without the legal mechanisms for measuring compliance and regulating accountability for violations provided by most arms control treaties. With regard to the nuclear sphere, the utility of general norms of behavior, such as non-testing or no use, seems to be particularly fragile, since any rejection or transgression of the norm by just one nuclear weapon possessor may fundamentally change the global situation. The norms-based approach may thus not be sufficient to offer predictability and stability comparable to the formal US–Russia arms control.

6 Conclusion

The renewed Russian aggression against Ukraine drew international attention to the catastrophic consequences of the use of nuclear weapons. It created an increased global pressure on Russia to exercise prudence and caution, but also on other leaders of nuclear weapon states. Some countries and civil society representatives claimed that the recent developments generally

...highlight now more than ever the fallacy of nuclear deterrence doctrines, which are based and rely on the threat of the actual use of nuclear weapons and, hence, the risks of the destruction of countless lives, of societies, of nations, and of inflicting global catastrophic consequences (United Nations Office for Disarmament Affairs, 2022).

Still, there seems to be a clear distinction between the approach of the US, France, and the UK to nuclear deterrence and that of Russia, which has been using nuclear weapons as a tool of coercion and a cover against facing consequences for its invasion of Ukraine. Recognizing differences between Russia and China in the nuclear sphere, the advances of the Chinese nuclear arsenal, and its doctrinal opacity must also be taken into account. This provides the context for the discussion about the future of strategic arms control and disarmament. From the viewpoint of a number of states forming part of the Collective West, total rejection of nuclear deterrence practices is not a viable political option. The requirement to effectively deter nuclear attack or coercion by adversarial countries puts some limits on the pursuit of arms control solutions.

The “deadlock” in arms control cannot be overcome with one decisive move or initiative on the part of the West. Even if the US would offer to enter into negotiations with Russia on a strategic arms control agreement without any Ukraine-related preconditions, this would not lead to a quick settlement of the major differences between the parties regarding the aims and scope of a post-New START agreement. A potential victory of a Republican Party candidate in the 2024 US presidential elections, and the lack of clarity regarding the future of

Vladimir Putin may also complicate any negotiating process. One has to also take into account the likely negative response inside the US political and expert community and among some American allies and partners to any suggestions of resuming arms control negotiations without putting an end to the Russian aggression. This would be seen as moving towards normalization of the relationship with Moscow.

In US–China relations, there is likely to be widespread international support for launching a bilateral strategic stability dialogue as a way to stabilize the relationship. There may be much less enthusiasm among the Asian allies of the United States towards any arms control agreement which would constrain US military presence in the region at the time of growth of the Chinese conventional and nuclear arsenal.

With regard to US–Russia relations, it may be self-defeating for Washington to treat the year 2026 and the expiry of the New START treaty as an unbreakable deadline to reach a new agreement with Moscow and to consider a failure to do so as a major strategic setback. Russia is likely to exploit any such sentiments to persuade the US to prioritize the strategic stability level at the expense of its commitments towards Ukraine and European allies. As long as Russia is aiming to overthrow the European security system and establish a new territorial and political reality in Ukraine, it cannot be considered a status quo power with which stability through arms control arrangements can be pursued. China is similarly unlikely to become seriously interested in reciprocal arms control as long as it remains determined to build up its nuclear arsenal.

The more favorable conditions for bilateral or trilateral strategic arms control may arise within the timeframe of 2026–2030. By that time (and hopefully much sooner), Russian aggression against Ukraine should be defeated. Russia will probably remain an authoritarian and nuclear-armed state, but will be weakened by the war to the extent that it could seek re-engagement with the US and stabilization of the nuclear relationship without preconditions. The Chinese nuclear modernization would most likely not be finished by then, but Chinese leadership could have a much clearer understanding of the costs of a nuclear arms race, and thus more incentives to stabilize the relationship with the US through arms control. Finally, the United States should, by that time, be firmly on track in pursuing the modernization effort involving all elements of its nuclear triad. That should provide it with the confidence to engage its two major competitors in dialogue on strategic arms control. A window of opportunity for trilateral arms control may thus open up.

Such a scenario may appear far-fetched or even fanciful at the beginning of 2023. It would constitute a new beginning for strategic arms control, rather than a continuation of previous efforts. It would therefore require substantial investments in expert dialogues for the preparation of new approaches to negotiations, and for identifying the potential scope and conditions of talks, as well as new information exchange and verification concepts.

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Gender Perspectives in Arms Control and the Risks Deriving from Russia's War on Ukraine



Federica Dall'Arche

Abstract This chapter addresses the connection between gender issues, weapons, disarmament, and arms control, underscoring a link that, while crucial, still fails to be duly recognized or given proper attention. The chapter offers an introduction to the topic, illustrating how the probability of becoming a victim of certain weapons can differ greatly depending on individuals' physical and biological characteristics (sex) as well as on the cultural expectations assigned to individuals by society (gender). By providing a series of case studies, this chapter demonstrates how weapons can also produce different short and long-term effects on victims depending on their sex and/or gender. The link between gender and weapons is also explored from the angle of women's meaningful participation in negotiation and peace processes. Finally, the chapter concludes by analyzing the Russian war on Ukraine, underlining the gender-specific risks deriving from the conflict.

Keywords Arms control · Disarmament · Weapons of mass destruction · Gender lens · Russia's war on Ukraine · Women's meaningful participation

1 Introduction

The likelihood of becoming a victim of certain weapon systems can differ greatly depending on individuals' physical and biological characteristics (sex) as well as the structural and cultural expectations assigned to individuals by society (gender). Sex and gender can also greatly influence the short and long-term effects produced by weapon systems, the ability of victims to access medical care in the aftermath of an attack, as well as individuals' level of participation in political contexts, including negotiations of treaties and peace processes. In light of this, understanding the link between sex, gender, and weapons and applying the so-called "gender lens" or

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“gender perspective” to arms control, nonproliferation, and disarmament issues become paramount.

This chapter explores this crucial link, investigating how and why biological characteristics and societal attributions are determining factors in producing systematically differentiated risks for individuals of different sex and/or gender. By dismantling the common misconception whereby the application of a gender lens serves a certain agenda (which automatically translates into the sole protection of women’s rights, somehow resulting in a “loss” of men’s rights), the chapter offers a series of examples of the gendered short- and long-term effects produced by weapons and by conflict situations. In doing so, the chapter demonstrates the necessity for the international community to address gender inequalities in order to ultimately guarantee the universal protection of human rights. The chapter, successively, analyses the current Russo-Ukrainian war through a “gender perspective,” underlining the gender-specific risks and needs deriving from the conflict, and the importance of adopting targeted, efficient, and inclusive prevention, protection, as well as assistance strategies and mechanisms.

Divided into four parts, the chapter is the result of an extensive literature review of reputable sources and insights from practitioners in the field.

2 Definitions

To understand the link between gender issues and weapons, nonproliferation, arms control, and disarmament regimes, it is important to preliminarily clarify what is meant by “gender” and how this concept differentiates from that of “sex.”

2.1 Gender

Gender is a social and cultural construct. It refers to those specific characteristics that society assigns to women, men, girls, and boys. These characteristics include not only behaviors and roles, but also attributes, norms, and responsibilities that impact, for instance, the way individuals dress, speak, or behave. A clear example is the idea that, still in many societies, the division of labor sees women as the main caregivers and men as the main breadwinner. Another example is the expectation for women to be polite, accommodating, and nurturing, while men are expected to be strong, resolute, and assertive.

The concept of gender develops over time, is handed down from generation to generation, varies from society to society, and impacts every aspect of life, from an individual level to a local, national, regional, and global one (De Jonge Oudraat & Brown, 2020; Dall'Arche, 2020a). Societal attributions and expectations can

generate inequalities, as well as economic and family imbalances, and can result in, among other things, unequal access to education, job opportunities, and health care.¹

The term gender is often mistakenly used interchangeably with the term sex. The two concepts, however, have different meanings (Arquilla & Newman, 2021).

2.2 Sex

Sex refers to a set of biological attributes and physiological characteristics, such as chromosomes, hormones, and reproductive organs (World Health Organization, n.d.). Based on these characteristics, individuals are typically assigned their sex at birth (Government of Canada, 2020).

A further distinction concerns the concept of “gender identity” which refers to the deeply personal experience of an individual, for which identification with a gender that may or may not correspond to the sex assigned at birth (World Health Organization, n.d.).

3 The Differentiated Impact of Weapons

Once the distinction between “gender” and “sex” is clear, it is possible to understand how these concepts interact with those of nonproliferation, arms control, and disarmament. More specifically, this part of the chapter analyzes how weapons expose individuals of different gender and/or sex to dissimilar risks and produce unlike impacts.

3.1 *Gender, Sex, and Their Connection with Arms Control: Applying a Gender Perspective*

An increasing number of studies demonstrate how sex as well as gender roles and attributes can greatly influence: the likelihood of being targeted by weapons systems; the effects produced by these systems; as well as the ability to access medical care in the aftermath of an attack (United Nations Office for Disarmament Affairs, 2001a, 2001b; Ozasa et al., 2012; Borrie, 2014; Borrie et al., 2016). This acknowledgment

¹Recruitment processes themselves can be, in fact, influenced by gender stereotypes. Gender inequalities often intersect with other social and economic inequalities or with other factors of discrimination, such as ethnicity, socioeconomic status, geographical origin, gender identity and sexual orientation, age, and disability, among others. This phenomenon is known as intersectionality. For more information, see United Nations (2021) and Taylor (2019).

calls for a relatively new study approach toward arms control, nonproliferation, and disarmament issues, applying what more and more experts define as “gender lens,” “gender perspective,” or “gender analysis.”

A “gender lens” can be described as the effort to make gender visible in any social phenomena, analyzing specific issues or situations in considering the existing differences between women, men, boys, and girls. Judith Howard et al. (2022) define such concept as a process that questions “if, how, and why social processes, standards, and opportunities differ systematically for women and men, recognizing that gender inequality is inextricably braided with other systems of inequality.”

Applying a gender perspective (or “gender lens”) to arms control, nonproliferation, and disarmament is a useful exercise to assess the relationship between weapons and those attributes, norms, and opportunities associated with a specific sex, enhancing the ability of the international community to address potential inequalities, ultimately guaranteeing the universal protection of human rights.

The universal protection of human rights is a key point. A common mistake is to believe that the application of a gender lens serves a certain agenda, automatically and necessarily translating into the sole protection of women’s rights, somehow resulting in a “loss” of men’s rights. This great misconception is at the core of the resistance toward the application of a gender approach (United Nations Office for the Coordination of Humanitarian Affairs, 2019; Gillard, 2019; European Institute for Gender Equality, 2017; Council of Europe, n.d.). On the contrary, analyzing the trade, possession, and use of certain weapons through a gender perspective allows for recognizing the different risks for (and impacts on) women and men. This ultimately facilitates more targeted, efficient, and inclusive prevention, protection as well as assistance strategies that address women’s and men’s specific needs.

3.2 *Some Key Examples*

An immediate example of the differentiated/gendered impact of weapons is reported by the data of the International Campaign to Ban Landmines (ICBL), which shows that men and boys represent 85% of the victims of explosive devices left on the territory following an armed conflict (commonly called ERW—*explosive remnants of war*) (ICBL, n.d.; ICBL, 2010). This happens mainly due to strict gender norms and roles that, still in some societies, impose on women limited access to public spaces outside the domestic context (De Jonge Oudraat & Wattenberg, 2021).

A similar example concerns the different vulnerability to pathogens and micro-organisms, which in some cases is greater in men than in women. This greater vulnerability often results from gender norms. A study on Ebola infection and mortality in the early 2000s showed that men were more prone to infection and death, given their role as “bread-winner,” which in many cases included the disposal of family members’ bodies or infected animals’ carcasses, significantly increasing male exposure to the virus (Anker et al., 2007). It is not difficult to imagine that a similar result could also be recorded following an attack with biological weapons,

especially in cultural contexts that foresee a division of labor based on social norms highly influenced by gender stereotypes.

Another interesting example concerns the effects of exposure to radioactive material. A study conducted by the International Law and Policy Institute (ILPI) on the effects of radioactivity released from nuclear power plants accidents (e.g., Chernobyl and Three Mile Island), by nuclear testing (such as the Marshall Islands), and by nuclear weapons' use (Hiroshima and Nagasaki), found that ionizing radiation has disproportionate effects on both sexes, causing almost twice as many cancer incidents in women than in men (Dimmen, 2014). This result is due to the metabolic differences between men and women and the fact that "women have 50 per cent more high-risk body tissue such as sensitive reproductive and fatty tissues" (Borrie et al., 2016; Olson, 2016).

The disproportionate effects due to physical and biological factors are also found in cases of exposure to biological and chemical agents. A study conducted by United Nations Institute for Disarmament Research (UNIDIR) suggests that males are at greater risk of developing various neurodevelopmental and neurodegenerative disorders following a chemical attack and are more susceptible to infectious diseases, including deriving from agents that could be used in biological warfare. On the contrary, females record greater long-term effects, which can affect reproductive health leading to perinatal deaths, spontaneous abortions, and birth defects (Hessmann Dalaqua et al., 2019b).

Other examples of differentiated impact of weapons are reported in other studies conducted by UNIDIR, which identify different short- and long-term effects in men and women, following explosive detonations as well as different probabilities of being targeted by weapon systems using artificial intelligence (United Nations Institute for Disarmament Research, 2021; Chandler, 2021).

Access to health care following an armed attack can also be affected by gender norms, resulting in disproportionate levels of healing and/or mortality among victims.

An example in this sense was recorded following the chemical weapons attacks in Syria starting in 2012. A project by the Global Public Policy Institute (GPPI), supported by the Government of Canada, the German Federal Foreign Office, the Robert Bosch Stiftung, and the Ghazi and Badrieh Foundation and dedicated to the impact of these attacks, has shown that the female death rate was much higher than that of men. This is mainly due to gender norms and the greater obstacles encountered by women in accessing medical care (El Bakry & Schneider, 2021a). As a matter of fact, cultural contexts and social norms made it difficult to quickly activate the health practices necessary following a chemical attack such as, for example, the complete undressing of the victims to allow a timely and complete wash-off of chemical agents (El Bakry & Schneider, 2021b). Additionally, the lack of proper knowledge among medical personnel and health professionals about female-specific health needs also played a role in the higher female mortality rate (El Bakry &

Schneider, 2021b).² Notably, studies on the effects of these agents, and medical studies in general, are by default always conducted on male bodies, leaving out important and different results that could emerge from medical studies carried out on female bodies. As a result, it is difficult to assess true female-specific medical implications and risks, and this ultimately hinders fair and universal access to appropriate medical care. This aspect is not secondary if one considers, for example, how COVID-19 infections have also shown different levels of morbidity and mortality among men and women due to genetic predispositions and biological sex (Pan American Health Organization, 2022; Ghouaibi, 2021; Purdie et al., 2020; Wenham et al., 2020; Davies et al., 2020; Care International, 2020).

Stereotypes, stigma, and discrimination, direct products of strict gender norms, also contribute to unfair access to medical care. This applies, for example, to women victims of gender-based violence, used as a weapon of war and facilitated by the uncontrolled circulation of weapons (Office of the UN High Commissioner for Human Rights, 2008; Gaggioli, 2015; United Nations Security Council, 2008). It also applies to victims of weapons with gender identities non-corresponding to their assigned sex or with different sexual orientations, as well as to men and boys who, by virtue of rigid notions of masculinity, often refuse to undergo therapy and accept medical care (Margalit, 2019; Farrimond, 2012). These “barriers” to health care can result in serious psychological implications, also negatively affecting victims’ mental health.

The above-mentioned examples make it evident how weapons can produce different impacts on victims depending on their sex and gender. The application of a gender lens, therefore, becomes paramount as it permits uncovering and understanding these different impacts, enabling a more educated, inclusive, and sensitive negotiation approach toward the adoption of more complete, effective, and, therefore, sustainable agreements and treaties.

4 Participation in Negotiation Processes

The issue of participation in negotiation and peace processes is another important aspect to consider when applying a gender lens to arms control, nonproliferation, and disarmament regimes. While studies on the differentiated effects of weapons are relatively recent, the international community has long recognized the strong and differentiated impact that armed violence and armed conflicts generate on women and girls and, consequently, the need for them to take part in trials, negotiations, and peace processes as interested parties.

The Beijing Platform for Action of 1995 can certainly be considered a starting point in this sense. The Platform recognizes the need to include women in all types of

²Needs related to reproductive health, for example, including pregnancy and fertility complications following women’s exposure to chemical agents.

decision-making processes (including economic, social, and political ones) laying the foundations for the United Nations Security Council Resolution (UNSCR) 1325, the cornerstone of the later established UN Agenda on Women, Peace and Security (WPS Agenda). Adopted unanimously on October 31, 2000, UNSCR 1325 is a turning point, establishing a formal norm against gender discrimination in negotiations, decision-making processes, and at all stages of peace processes, recognizing women as active parties in maintaining security and achieving sustainable peace. The Resolution underlines the importance of “equal participation and full involvement” of women and “the need to increase their role in decision-making with regard to conflict prevention and resolution,” considering that “their full participation in peace processes can significantly contribute to the maintenance and promotion of international peace and security” (United Nations Security Council, 2000).

Over the years, the principles of the historic Resolution have been strengthened by nine successive resolutions: UNSCR 1820, 1888, 1889, 1960, 2106, 2122, 2242, 2467, and 2493, formally establishing what is now known as the aforementioned WPS Agenda. The core objective of the Agenda is the adoption of political commitments by the member states of the United Nations toward gender equality (Dall’Arche, 2020b).

Nevertheless, and despite the adoption of the United Nations General Assembly (UNGA) Resolution 65/69, which effectively complements the WPS Agenda by urging member states to ensure equal participation of women in arms control, disarmament, and nonproliferation negotiation processes, the number of women involved in these processes is still extremely low. More than twenty years after the adoption of UNSCR 1325, 68% of the delegates participating in these fora continue to be men and of the remaining 32%, only a very minor part is composed of female heads of delegation (Hessmann Dalaqua et al., 2019a).

This lack of representation is worrying and deleterious because it can lead to the adoption of arms control, nonproliferation, and disarmament agreements and treaties that do not take into consideration gender-specific needs deriving from societal attributions and individuals’ biological differences, ultimately resulting in an unfair guarantee and protection of human rights.

5 Russia’s War on Ukraine

Like any war, besides the obvious implications such as disruption and destruction, the recent Russian invasion of Ukraine is resulting in a series of detrimental consequences and harmful risks that differently impact men, women, boys, and girls.

In general, on one hand, the war that Russia has waged against Ukraine has cemented old gender roles and norms, with the imposition of forced conscription of men in Ukraine and partial conscription of men in Russia, revitalizing the dichotomy of men being the “defenders/protectors” and women the “care-givers” and “fragile beings needing protection.” On the other, in a depraved fashion, it has closed one eye to gender stereotypes with Ukrainian women now being able to access job and

military positions that just a few years ago were banned from holding (Bondar, 2022). The latter is a rather common outcome in conflict situations and something that we have witnessed already during the First and Second World Wars (National WWI Museum and Memorial, n.d.; Imperial War Museums, n.d.). The real challenge is to ensure that those recently acquired rights and the recently evolved gender roles will be maintained and ensured once emergency times are over.

5.1 *Gendered Impact of the War*

For decades, experts have been analyzing the different risks that wars impose on men, women, girls, and boys (also known as gendered risks. PeaceWomen, 2018), and already several studies have been conducted on the diverse effects that the Russian war on Ukraine is generating on different groups of society (Durham, 2022; Humanitarian Law & Policy Blog, 2022; University College London, 2022). For example, already in 2017, Anna Nemtsova raised the issue of the disproportionate costs that Ukrainian women have been bearing for what at the time appeared to be already an endless conflict (Nemtsova, 2017).

The war started in the Spring of 2014 in Eastern Ukraine and since then, in most cases, women became the only ones responsible for children, disabled, and elderly family members. Without the customary support of their partners, women have been left to navigate ways to safety and security both for themselves and for those in their care. This has resulted, at “best,” in job resignations with alarming consequences on women’s financial security and, at worst, in an extremely high probability of being exposed to exploitation and gender-based violence (Bryant, 2022; Moaveni, 2022; RFE/RL’s Ukrainian Service, 2020). This is because, as Azadeh Moaveni and Chitra Nagarajan report in an article for Al Jazeera, “women without men are seen as more vulnerable, they are more likely to be preyed upon” (Moaveni & Nagarajan, 2022). Several reports have also evidenced the risks of human trafficking both for women and young girls, particularly following displacement (United Nations Office on Drugs and Crime, 2022). Other reports have documented atrocious cases in which women and children have been raped, tortured, and unlawfully confined by combatants (Independent International Commission of Inquiry on Ukraine, 2022). Other studies have reported the specific barriers that women, mothers, and young children are facing accessing healthcare and caring practices, including the inability to carry out obligatory medical tests and check-ups during pregnancy or inaccessibility to psychological care, an issue often “overlooked by traditional humanitarian response” (Nidzvetska et al., 2017).

Men are also subject to a series of risks that go beyond the natural trauma of living during a conflict. For example, many studies have shown how the imposition of forced conscription in Ukraine and of partial conscription in Russia are problematic, as they can result in discrimination toward those men who do not wish to join the fight nor remain in the countries (Toeniskoetter et al., 2022). Forced conscription is also problematic for those people who do not identify with the sex assigned to them

at birth. Since the beginning of the war, a number of episodes of transphobia have been registered, with stories of trans women (identified as men in their legal documents) being harassed and prevented from fleeing (Cohen, 2022). A study conducted by the University of Massachusetts reports that 65% of Ukrainians believe that the travel ban should be lifted, as “most men could better support the war effort working abroad and sending money home or that many would not make good soldiers because they are not trained properly or do not wish to fight” (University of Massachusetts’ Human Security Lab, 2022; Westerman, 2022).

The universal enlisting of civilians without previous military experience it is, per sé, also problematic, as it could lead to, on one hand, a blurry line between fighters and non-combatant civilians, making all people a fair target (Bryant, 2022; Langfitt, 2022). On the other hand, it could lead to high levels of human rights abuses, war crimes, and violations of international laws. This is due to hasty combat training which tends to focus primarily on arms handling rather than on ways to wage war in manners compatible with international humanitarian law, including prisoners of war’s protection (Cumming-Bruce, 2022; Browne et al., 2022). Other analyses have indicated the specific risks for young Ukrainian men in Russian-occupied territories. Allegedly, Ukrainian men aged 18 to 35 are forbidden from leaving such territories and forced into conscription for the Russian army, enduring grave psychological consequences (Koshiw, 2022; Beaumont & Mazhulin, 2022).

The Russian invasion of Ukraine and related mobilization campaigns associating the West with degradation due to LGBTQ+ rights recognition have also fed homophobic stands (Mackinnon, 2022; Taylor, 2022). As a result, members of the LGBTQ+ community are increasingly exposed to discrimination, sexual violence, and lack of appropriate medical assistance (i.e., about hormone treatments) as well as a series of safety and psychological risks, as reported by the European Parliamentary Research Service (European Parliament, 2022).

5.2 Gendered Impact of Weapons

From an arms control point of view, it is important to look at the gendered impact of the weapons used in the conflict, as well as at the level of female participation in the military, decision-making, and potential negotiation processes.

An investigation conducted by the New York Times reports how attacks in Ukraine have made repeated and widespread use of weapons banned by the international community, such as cluster munitions, antipersonnel land mines, and incendiary weapons (Ivory et al., 2022). As already examined in the first part of the chapter, and as reported by different studies conducted by UNIDIR, the Geneva International Centre for Humanitarian Demining (GICHD), and the Cluster Munition Coalition, to name a few, these weapons produce different effects depending on whether the victims are women, men, girls, or boys (The United Nations Institute for

Disarmament Research, [n.d.](#); Geneva International Centre for Humanitarian Demining, [n.d.](#); Cluster Munition Coalition, [n.d.](#)).³

Reports also record the use of new technological systems that rely on artificial intelligence (Dave & Dastin, 2022; Kryvenko, 2022). The risks of gender bias and discrimination in systems using artificial intelligence for *civilian* purposes are well-known and have been profusely revealed (European Commission, 2020; European Council and Council of the European Union, [n.d.](#); D'Ignazio & Klein, 2020; Perez, 2020; Rustagi & Smith, 2021). New research is now exposing how *military* applications of AI might also be affected by built-in biases, making the use of these systems particularly controversial and worrisome (United Nations Institute for Disarmament Research, 2021; Chandler, 2021). For example, Human Rights Watch (HRW) describes how, in the past, target profiling based on gender differences has been used in semi-autonomous weapons (i.e., armed drones) to specifically target militants resembling aged males. This use reinforces the assumption that all men are active parties in a war, blurring once again the distinction between civilians and combatants and facilitating the perpetration of male-specific gender-based violence (International Campaign to Stop Killer Robots, [n.d.](#)).

5.3 *Women's Meaningful Participation*

The analysis of women's participation in this war is also important.

Ukrainian women now comprise almost 25% of the military personnel (50,000 women in combat and non-combat roles) and constitute an essential part of the civilian response contributing, for example, as first responders (Elizondo, 2022; O'Neil et al., 2022). Most Russian women have also taken an active stand, often voicing their dissent toward the war, risking their life (Al Jazeera, 2022; Amnesty International, 2022; Feminist Anti-War Resistance, 2022). That being said, there is little evidence, however, that including women in formal decision-making processes or post-conflict transition, phases is a priority for any of the governments involved. This lack of intention is reflected in the negotiations that occurred between the two countries between 2014 and 2019, "during which no women were sent by Russia and only two were sent from Ukraine out of 12 total delegates" (Bachelet, 2022).

Failing to meaningfully engage women in these processes is harmful and near-sighted. It will not only neglect gender-specific needs, ultimately reinforcing inequalities and preventing universal protection of the human rights of all parties involved, but it will also strongly compromise rebuilding efforts as well as efforts toward a sustainable peace (Paffenholz et al., 2016; Krause et al., 2018).

³For further in-depth analysis, see the studies from the United Nations Office for Disarmament Affairs (2001a, 2001b), Ozasa et al. (2012), Borrie (2014), Borrie et al. (2016) as well as the ICBL ([n.d.](#), 2010) reports.

6 Conclusion

This chapter explored the connection between gender issues, weapons, arms control, nonproliferation, and disarmament demonstrating how the prospects of becoming a victim of certain weapon systems and the effects that these systems produce can differ greatly depending on the victim's sex, gender, or even sexual orientation. The chapter also highlighted how victims' sex and gender can influence healthcare assistance, resulting in disproportionate levels of healing and/or mortality among victims. These findings make it of utmost importance that negotiations toward the adoption of arms control, nonproliferation, and disarmament treaties and agreements take into account the differentiated impact of weapons on different genders in order to ensure the universal guarantee and protection of human rights. Failing to do so will perpetuate the neglect of gender-specific needs, strengthen inequalities, and ultimately undermine efforts to create inclusive treaties and agreements, as well as sustainable peace.

The link between gender and weapons was also explored from the angle of women's meaningful participation in political contexts, including decision-making and peace processes. On the same wavelength as many studies on the matter, the chapter emphasized how not engaging all genders adequately in the negotiation of (arms control, nonproliferation, and disarmament) agreements and treaties, in decision-making, as well as in all stages of the peace process is harmful and nearsighted, among other reasons being all genders interested and active parties in all of the above-mentioned contexts.

Finally, the chapter investigated the gendered impacts of the war that Russia has waged against Ukraine, arguing that while on one hand, the conflict has cemented old gender roles and stereotypes (women = caregivers in need of protection; men = fighters/protectors), on the other, paradoxically has given women access to rights and positions that just until a few years ago were banned from holding. The disproportionate costs that all genders have been bearing during the war as well as the gender-specific risks and need deriving from the conflict (and from the use of certain weapons) were also explored in the chapter, remarking the importance of adopting targeted, efficient, and inclusive prevention, protection, and assistance strategies and mechanisms both during the conflict and after its conclusion.

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Part IV
**The NPT Regime: Competing Narratives
on Nuclear Deterrence and Disarmament**

Nuclear Deterrence in Russia's War on Ukraine: The Credibility Dilemma



Polina Sinovets and Iryna Maksymenko

Abstract Russia's invasion of Ukraine, accompanied by the threats of nuclear weapons use, has raised a number of concerns regarding the global nuclear order. The article aims to analyze Russian nuclear threats in the context of the deterrence theory framework as well as deterrence policy components, defining limits and capabilities of nuclear coercion as well as deterrence effectiveness.

Keywords Deterrence · Russia · Military policy · Nuclear weapons · Security · NPT

1 Introduction

The year 2022 brought a systemic crisis in the field of international security. The Russian nuclear blackmail of the West, coercing states from the direct military support they brought to Ukraine refreshed the functions attributed to nuclear weapons, adding some more threats and concerns to international security. Russia has become the showcase of how nuclear weapons gradually changed their role from being obsolete tools of conflict up to becoming inherent drivers of power projection and an umbrella to secure states' military interference in their "spheres of influence."

The chapter aims to analyze the effectiveness of the deterrence strategy in the framework of Russia's and the United States' (US) policies in the course of the war on Ukraine.

The main hypothesis is that nuclear deterrence credibility plays a crucial role in the interactions between Russia and the West during Russia's war on Ukraine. Therefore, the main research questions are as follows:

- (1) To what extent does classic deterrence theory matters as a research tool examining the Russian war on Ukraine in the framework of global nuclear order?

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- (2) How the credibility of deterrence threats can measure the scope and the intensity of the conflict, i.e., the threat of nuclear escalation?

The methodology is mostly based on three main tools. The first is a comparative analysis between the Russian and the US deterrence strategies in the war on Ukraine. It aims to interpret their behavior as challengers and defenders of the international security order. The second method is the content analysis of the Russian officials and the US President's speeches regarding messages related to deterrence they contain. The third mobilizes deterrence theory's framework, which examines deterrence in two versions: basic and broader. The basic version can be addressed to Freedman's definition of deterrence as "an act of persuasion that the costs of the potential attack will overwhelm any benefits from it" (Freedman, 2018, p. 4). The broader interpretation of deterrence, which is mostly about coercion, means "the power to dissuade other party from doing something which one believes to be against one's own interests achieved by the threat of applying some sanction" (Snyder, 1960, p. 163). The latter definition involves influencing not only the considerations of the opponent to attack but also the range of decisions he might make up in the general course of actions.

In this regard, one of the most important elements of deterrence is credibility. It basically means the art of making the opponent believe that the state is eager and ready to use its nuclear arsenal if the enemy breaks the "red lines" performing an undesired course of action. In this regard, the understanding of Russian and Western strategies is of the highest relevance, which gains some more clarity being evaluated via the deterrence theory apparatus. In Russia's war on Ukraine, deterrence theory helps not only to explain the behavior of the attacker, but also contributes to developing tools to affect its behavior in the future. Moreover, this conflict shows the direct implications of the growing role of nuclear deterrence for international security and the present nuclear order.

On February 24, 2022, Russian president Putin announced a "special operation" against Ukraine which has become de-facto a full-scale war. In his TV speech dedicated to the start of military actions, Putin sent an intimidating message "for those who may be tempted to intervene in the ongoing events": "Whoever tries to hinder us or threaten our country or our people, should know that Russia's response will be immediate and will lead you to consequences that you have never faced in your history" (Al Jazeera, 2022a). Putin's words were widely interpreted as a direct hint at the possibility of Russia using nuclear weapons for the purpose to preemptively "de-escalate" conflict by coercing any possible opponents eager to provide military support to Ukraine. Three months later, Putin's message was echoed by Russian MFA Lavrov, who pointed to the high likelihood of nuclear war with the North Atlantic Treaty Organization (NATO) being at "the essence" of it [by supplying Ukraine with weapons] (Al Jazeera, 2022b). Summing up it can be racked that Russia's playing with the escalation threats becomes an inherent part of the Kremlin strategy.

Though autumn brought some new escalation signals from Russia, a certain decrease in the Kremlin's nuclear rhetoric intervened by the end of 2022, which is an interesting case from the standpoint of the US deterrent strategy.

Therefore, the war on Ukraine presents one of the most interesting cases since the Cuban missile crisis for understanding the capabilities and limitations of deterrence in its theoretical and strategic dimensions.

2 Russian Coercive Nuclear Threats at the Initial Stages of the War

A couple of months after the beginning of the war, the proponents of the Treaty on Prohibition of Nuclear Weapons (TPNW) rushed to declare: "Ukraine war shows nuclear deterrence doesn't work. We need disarmament." Elaborating on this idea, they claimed that Putin was not deterred from going to war, because he calculated that NATO would hold back, frightened by the possible involvement of nuclear weapons in the conflict (Johnson, 2022).

However, it is reasonable to suggest that this very case shows the opposite: deterrence worked, but not on the side of the United States. Here, the credibility of deterrence plays a key role. Initially, it was clear that NATO, or the US alone, would not stand for Ukraine through direct military involvement.

The whole range of theories within the broad domain of deterrence studies connects the credibility of deterrent threats with states' motivation. The credibility curve developed by Joynt and Corbett (1978, p. 27) claims that deterrence effectiveness is highly connected with the notion of interests; in particular, one is proportionate to the other. So, if the credibility of the state's deterrence is almost absolute when it comes to the protection of its territory, it starts slightly declining in the spheres of influence or the territory of the allies and then reaches zero when we speak of the "other interests" (ibid.). Ukraine is not a NATO member and does not present a vital interest to the US. Therefore, it was reasonable to expect that the reaction of the US would not go as far as the mobilization of military power to defend Ukraine.

While Russia's views and interests in Ukraine can be described by President Putin's (2021) article entitled "The historical unity of Russians and Ukrainians," who by that time was probably designing plans of invasion, uttering that:

...when I was asked about Russian-Ukrainian relations, I said that Russians and Ukrainians were one people – a single whole. These words were not driven by some short-term considerations or prompted by the current political context. It is what I have said on numerous occasions and what I firmly believe.

Russia, which considers Ukraine as a part of its territory, presents more than a vital interest. Consequently, the probability of using nuclear weapons in case of the West interference was pretty high; especially considering the red line publicly drawn by Putin on February 24, 2022.

Three days later, on February 27, Putin reiterated his nuclear threat, declaring that he had put Russia's nuclear deterrent forces on high alert (Roth et al., 2022). On March 2, in an interview given to Al-Jazeera, Lavrov warned that "World War III

will be a devastating nuclear war,” sending NATO a further signal to stay away from providing direct military support to Ukraine (Joffre, 2022). This strategy of active nuclear coercion was directed at dissuading the US from assisting Ukraine with a no-fly zone, which Kyiv had been asking for persistently at that time.

3 US Strategy at the Initial Stage of the War

According to Patrick Morgan (2003, p. 239), the deterrent side can control the situation only if the motivation of the rival is low enough. In this regard, the main task of the deterrer is to persuade the enemy that saving the protégé state has no alternative for him. Indeed, the strategy of the United States can be described as a showcase in progress. In particular, during the initial period of war (spring-summer), Washington has clearly shown that there are limits to their dedication to saving Ukraine. Moreover, the statement President Biden made on the eve of the war, in which he stressed that the US would not support Ukraine with military forces, to avoid possible nuclear war with Russia gave Moscow a direct understanding of the way the US perceived the situation. To some extent, it was further reinforced by Biden’s June 2022 statement on the need to continue the engagement with Moscow on strategic stability and nuclear arms control, aiming “to reducing the existential threat posed by nuclear weapons, protecting the American people, and reinvigorating the global nuclear order to reduce the risk of use and proliferation of nuclear weapons” (Bugos, 2022).

Moreover, the US responded to the Russian declaration related to nuclear deterrence forces’ high alert status in the way Moscow anticipated. The White House publicly reiterated its intention not to interfere directly in Russia–Ukraine conflict and canceled a deal planned for Poland to supply Ukraine with Soviet-era MIG aircraft in exchange for US F-16s (Borger & Wintour, 2022). In addition, the US postponed the test flight of an intercontinental ballistic missile (ICBM) to avoid it being interpreted by Russia as a provocative step (Stewart & Idrees, 2022). Such actions clearly demonstrated to Moscow that its heavy reliance on nuclear deterrence was justified. Unlike its conventional plans and operations, which proved a huge overestimate of the Russian army’s capabilities, the role power of nuclear weapons was estimated correctly.

Meanwhile, the US has demonstrated certain limits of Russian deterrent capabilities, showing that acting beyond the “red line” cannot be affected by nuclear coercion. Since the beginning of spring 2022, Moscow’s declarations on the unacceptability of the US weapons supplies to Ukraine combined with “unprecedented consequences” threats were ignored by the Americans mostly for the reason that such threats of Russia contained very low credibility. The threat of military actions to punish the supply of weapons to Ukraine turned out to be ineffective as the probability of starting the large-scale, and possibly nuclear conflict with NATO was not regarded as serious as a reaction for such actions.

However, it turned out that the relevance of arms transfers differed depending on the particular types of weapons Ukraine could receive. In late May 2022, when the US adopted a bill on comprehensive military help to Ukraine, Moscow emitted a new threat, considering “intolerable” the supply of long-range systems to Kyiv (Stanton, 2022). Putin himself emphasized that Russia had “sufficient quantities [of weapons] to strike those facilities that we are not attacking so far,” hinting at a possible escalation of war if the long-range missile systems were supplied to Ukraine (ibid). In response, President Biden declared that the US will not give Ukraine missile systems that could reach Russia (Holland, 2022). Washington has shown it understood Russian “red lines” and demonstrated its clear intention to follow a relatively safe course of conflict management.

Russia practiced three types of deterrent threats during the initial stage of the conflict. The first one was to prevent NATO in general, and the United States in particular, to interfere in its war against Ukraine. This threat turned out to be credible, as Ukraine, considered by Russia as a vital interest, was a red line for the West. The US was very explicit in declaring that it was not going to send its troops to Ukraine. Therefore, Russia's deterrence of the West worked perfectly in this regard. The second threat, accompanied by putting Russian nuclear forces on high alert, was aimed to coerce the US from providing Ukraine with a no-fly zone. The action also turned out to be successful. At the same time, Russia's war on Ukraine has shown the limits of deterrence and coercion as political tools, where the credibility of the threat can be considered as the main criteria of nuclear deterrence's effectiveness. While the warnings of Russia against supplies of conventional weapons to Ukraine were ignored by the US, it blocked the supplies of specific long-range missiles able to hit Russian territory. The latter shows that deterrence, based on credible military threats, becomes a powerful tool of Russian policy, bringing back nuclear deterrence discourse in global politics.

4 Deterrence Paradox and the Growing Likelihood of Nuclear Weapons Use

In general, the probability of the use of nuclear weapons by Russia in this war is quite low, although it cannot be excluded completely.

The reason can be found in one more peculiarity which nuclear deterrence demonstrated during the war. Contrary to the popular claim that “nuclear actors are more likely to prevail when facing non-nuclear states” the main paradox of this conflict is that Ukraine seems to be not deterred by Russian rhetoric to use tactical nuclear weapons (Beardsley & Asal, 2009, p. 278). Despite active Russian signals that the destruction of Crimea's bridge was unacceptable, the counteroffensive actions of Ukrainian armed forces managed to push Russians back from Kherson at the Southern front (Radio Sputnik, 2022). Deterrence theory can bring some light on this phenomenon for a number of reasons.

First, the “tradition of nuclear non-use,” introduced by T.V. Paul (2009, p. 37), explains the non-use of nuclear weapons against non-nuclear states by a range of factors, including strategic, reputational, and even “destabilizing and absolute character of nuclear weapons which limited their strategic utility.”

T.V. Paul (2009) called wars between nuclear and non-nuclear states “limited.” He underlined that in such types of wars, none of the non-nuclear states were deterred by the nuclear arsenals of their opponents. He concluded that “the tradition enters the picture in such a way that it undermines the prospects of nuclear use and, therefore, deterrence at the sub-strategic level” (*ibid.*, p. 57). Therefore, a limited war allows a weaker non-nuclear opponent to wage, and conceivably win, an asymmetric war involving a larger nuclear power.

Second, this circumstance, to some extent, can be explained by Kahneman and Tversky’s (1979) prospect theory when the relative value of the loss is much higher than the relative value of the gain in the war. The latter defines the higher resolve of the one who is losing territories, sovereignty, etc. Here, motivation also boosts the credibility of the threat. Indeed, the motivation of Ukraine to liberate its lands was much higher than the motivation of Russian soldiers coming to take over the territories of their neighbor, which was obvious from the beginning of the war (Sinovets & Vicente, 2022). To a certain extent, it may explain autumn 2022’s increase of nuclear signals from Russia. Moscow tried to connect the formal annexation of four Ukrainian regions with the clause of defending its territorial integrity which comes under the provisions of the “Basic Principles of State Policy on Nuclear Deterrence” as the main object protected by the states’ nuclear deterrence (The Ministry of Foreign Affairs of the Russian Federation, 2020).

In particular, in his TV speech on September 21, 2022, Putin underlined: “If the territorial integrity of our country is threatened, we will without a doubt use all available means to protect Russia and our people - this is not a bluff” (NDTV.com, 2022). The latter combined with the official annexation of the four Ukrainian regions and references to the Hiroshima precedent, created by the United States (President of Russia, 2022), made Russian nuclear hints much more credible than ever before.

According to the French classic of deterrence theory by General André Beaufre (1965, p. 115), the effect of strategy rests on the fear that the other side will strike first. As if there is no fear, there is no deterrence. However, at the same time, the more often the deterrent threat is used, the less effective it is. It needs additional support to remain credible.

It is possible to interpret Putin’s September announcements as an attempt to enhance his deterrence signals. Using Shelling’s “game of chicken” by officially annexing the Ukrainian territories and making them official parts of Russian territory, Putin presented himself as a driver who was not able to stop. To some extent, it can be compared to Kennedy’s strategy during the Cuban missile crisis when he signaled Khrushchev that he wished he could stop but circumstances and generals prevented him from a more cautious behavior. Besides, as far as the favorite Russian code of conduct has become to justify its actions by something which has been already done by the United States (the aggression against Ukraine had a direct reference to the Serbia operation of 1999 and the liberation of Kosovo), Putin also

referred to Hiroshima nuclear bombardments in his speech of September 30, 2022. The aim—to coerce Ukraine to Russia's terms, was simultaneously supposed to coerce NATO to pressure Ukraine to abide. The credibility of such moves in the context of Ukraine increasing its counteroffensive was earlier underlined by Richard Betts (2022), who did not exclude the use of nuclear weapons in Ukraine, but only in one case: if "the war were to turn decisively in Ukraine's favor." In this regard, Russia's main aim might be to prevent its defeat "by shocking Ukraine and its NATO supporters into standing down." Foreseeing this kind of development became critical for the West to send proper deterrent signals to Russia and prevent such a scenario. And this probability may become critical for the global nuclear order as, in the end, it will show the capacity or non-capacity of nuclear weapons to coerce states to their adversary's conditions.

5 The Evolution of the US Deterrence Signals

A serious change in the US deterrence strategy occurred in the middle of 2022.

In May 2022, Russian hints were met by a statement by the US president: "Any use of nuclear weapons in this conflict on any scale would be completely unacceptable to us as well as the rest of the world and would entail severe consequences" (Bugos, 2022). The latter presented a red line for Russia using nuclear weapons in Ukraine; however, the vagueness of the notion of "severe consequences" was too vague to be interpreted by Russia in an adequate way.

However, the Russian president's nuclear signals were met by the US seriously and responded in a more explicit way than in the first part of the year. In particular, on October 7, President Biden declared that for the first time since the Cuban Missile Crisis, a direct threat of using nuclear weapons emerged. "I don't think there's any such thing as the ability to easily (use) a tactical nuclear weapon and not end up with Armageddon," he added (Fossum et al. 2022). The latter can be interpreted as a direct warning to Russia that any use of nuclear weapons might end up with an uncontrolled nuclear escalation.

Moreover, President Biden's comments just reinforced the strategy that National Security Adviser Jake Sullivan vocalized in his late September 2022 interview. In particular, he stated that America and its allies would act "decisively" if Russia was to use nukes against Ukraine, having added that the US has "communicated directly, privately and at very high levels to the Kremlin that any use of nuclear weapons will be met with catastrophic consequences for Russia" (Helmre, 2022). Such words can be interpreted as a threat of retaliatory military actions against the Russian forces, involved in nuclear strikes over Ukraine. Probably those actions would be non-nuclear, and not immediate, but their prospect is still credible enough to back up the words of the US President on the word-scale catastrophe which would be a wider military escalation.

There is a certain ground to believe that the US signals were properly understood by Russia as late October–November 2022 brought a certain downscale of the

Russian nuclear rhetoric. In particular, in his Valdai speech, on October 27th, Putin mentioned that the West was intentionally trying to find additional arguments to confront his country, while Russia did not need to use nuclear assets in Ukraine as it lacks any military or political utility (Komsomolskaya Pravda, 2022). Moreover, in its early November statement, the Russian MFA declared that Russia is adhering to the most immediate task “to avoid any military clash of nuclear powers” because “nuclear war can never be won and must never be fought.” Also, the possibility of using nuclear weapons only if the existence of the state is in jeopardy was proclaimed (TASS, 2022).

The general lesson of US–Russia deterrent signals during this autumn shows that US informal communication on the potential use nuclear of nuclear weapons persuaded Russia to downscale its nuclear signals at least for a certain period. The main question here is: Why has the US signaling proved to be successful even though Ukraine keeps not being a NATO member for an observable period of time? Coming back to Joynt and Corbett’s (1978) “credibility curve,” the US deterrence did not have any chance of confronting Russian threats. However, it worked, probably as, in this case, it was not just Ukraine which was at stake, but the whole international security architecture, which is paradoxically based on both nuclear deterrence and a tradition of the non-use of nuclear weapons.

The use of nuclear capacities in the war on Ukraine would open Pandora’s box for Russia to start threatening other former Soviet Union states like Georgia, Moldova, or even other states from the former Soviet Union. Furthermore, other revisionist states, such as China, North Korea, and Iran may follow Russia’s example and use their nuclear assets or proceed to nuclear blackmail to expand their political and territorial interests in their regions. This likelihood would pave the way for states to legitimize nuclear use and undermine the NPT regime, which would end irreversible the tradition of the non-use of nuclear weapons, with unpredictable consequences for world peace.

6 Conclusions

Russia’s aggression against Ukraine challenged the international security order significantly. The growing role of nuclear weapons tends not only to show the collapse of the current treaties framing the background of the global nuclear order but also to endanger the future of disarmament and nonproliferation. As far as this situation follows a scheme close to the Cold War confrontation, but at a new and more dangerous level, one considers it necessary to return to the classic theory of this bipolar era. Being developed as the theory exploring states’ rivalry under the threat of nuclear attack deterrence provides a sufficient methodology and the research apparatus not only for exploring the current stance of the Russian aggression against Ukraine but also in its wider sense, which is Russia’s conflict with the West.

In this regard, deterrence appears as a contradictory phenomenon: On the one hand, it presents a perfect methodology to explore the conflict, but on the other hand,

deterrence policy practices provide the aggressor with the tools of pressuring the opponents and blackmailing them with nuclear war. The war on Ukraine presents therefore an interesting case of exploring deterrence limits and capacities based on the actors' signals, reactions, and strategies.

The credibility of threats appears to be the main pillar that dictates the limits of deterrence power.

Above all, the ability to coerce the West from its active military interference in the war with Ukraine has demonstrated that nuclear weapons still carry a strong coercive power and can be regarded as a political tool of power projection serving as an umbrella for states which plan to perform conventional aggression within their "sphere of influence." In particular, revisionist states having nuclear weapons programs and developing offensive plans can be inspired by Russia's aggression against Ukraine.

Moreover, the search for the credibility of the threat may at some point push Russia to further escalation which, in the end, might put the world on the verge of a global nuclear conflict.

At the same time, research shows certain limits of nuclear deterrence policy when it comes to coercive nuclear threats. Those limits are directly correlated with the credibility of deterrence which turns out to be the decisive tool for measuring the potentiality of future conflicts.

First of all, coercive nuclear threats are not credible against non-nuclear states, as the Ukrainian example keeps proving. This case might present a continuation of a tradition of non-use of nuclear weapons, undermining the perspectives of deterrence at the sub-strategic level.

Second, coercive nuclear threats cannot influence the supply of tactical arms to Ukraine. Still, some of these threats are viable when it comes to arms supply, capable of damaging the nuclear rival strategically.

Third, the need to increase the credibility of nuclear use by Russia does not lead to the fulfillment of its ambitions regarding Ukraine but, on the opposite, triggers the involvement of the United States, which send direct deterrent signals to Moscow. The following example shows the limited capabilities of nuclear coercion when it comes to the clash with the vital interests of another nuclear power projecting deterrence. In this regard, it is worth saying that though the US deterrent threats were not nuclear, any risk of military conflict between nuclear powers retains the "threat which leaves something to chance" paving the way to nuclear escalation (Schelling, 1966).

Finally, the growing role of nuclear deterrence in the future of nonproliferation also brings interesting teachings. The example of Ukraine not being deterred by the Russian nuclear arsenal may have a double meaning for the future of proliferation and nonproliferation as well. On one hand, being a non-nuclear state not deterred by its opponent's nuclear arsenal presents an inspiring example for a state to remain non-nuclear. But on the other hand, this war has also proved that nuclear-weapons states can be deterred only by nuclear rivals. This example may encourage other revisionist states to develop the necessary tools to implement nuclear deterrence, which in the end may affect current regimes and treaties, endangering the fragile

consensus established between nuclear and non-nuclear states in the framework of the NPT. The further successes of the Russian deterrence policy may initiate a further split between supporters and opponents of nuclear deterrence, which might end up in the collapse of the NPT and the increase of anarchy within the global nuclear order.

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The Future of the Nuclear Nonproliferation and Disarmament Regime



Adérito Vicente

Abstract The Russian invasion of Ukraine, on February 24, 2022, led to a war between the two former republics of the Soviet Union. Moscow's aggression marked a critical juncture and a deeply disturbing challenge to the current global nuclear order. It also deepened the breach in the 1994 Budapest Memorandum on Security Assurances, in which Kyiv committed to renunciate its Soviet-era inherited nuclear weapons in exchange for security assurances against the use of force that would potentially compromise Ukraine's territorial integrity and political independence. This chapter focuses on comprehending the impact of Russia's war on Ukraine on the nuclear nonproliferation and disarmament regime and characterizes the kind of regime we face now. First, I analyze how this war weakened the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT) regime. Second, I explore the current challenging issues for the regime, at both multilateral and bilateral levels. Third, and ultimately, I examine why renewing the commitment to arms control, nonproliferation, and nuclear disarmament dialogue is important to assure the future and survival of the NPT regime.

Keywords Ukraine · Russia · NPT regime · Nuclear weapons · Nonproliferation · Nuclear disarmament

1 Introduction

The existence of nuclear weapons has been a persistent security concern since the early days of the nuclear age. Over the decades, international efforts and cooperative measures have been designed and centered around what might be called the global nuclear order to mitigate nuclear dangers, inhibit arms races, prevent the spread of

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nuclear weapons to additional states, and, more importantly, create conditions for their elimination.¹

At the heart of this nuclear order lies the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (hereafter the NPT), which has led to a tangled web of global institutions, principles, norms, rules, and practices, to address the security issues concerning these weapons (United Nations, 1968). This treaty, which entered into force in March 1970 and was extended indefinitely in 1995, remains today, for better or worse, the cornerstone of the global nuclear disarmament and nonproliferation regime.

In essence, the NPT is a grand bargain between states that had a nuclear arsenal at the time of this treaty's negotiation, the five recognized nuclear weapon states (NWS), coincidentally the five permanent members sitting at the key institution of the United Nations (UN), the Security Council (commonly known as P5, which include the United States, Russia, China, France, and the United Kingdom), and all the nonnuclear weapon states (NNWS). In exchange for the support of peaceful nuclear energy programs and a general promise to forgo nuclear weapons by the former, the latter vowed to refrain from developing or acquiring nuclear weapons.

Thus, up to the present day, this nuclear nonproliferation and disarmament regime has been based on a delicate balance between three key pillars of the NPT: nonproliferation (Articles I–III); assistance to develop peaceful uses of nuclear energy (Article IV); and disarmament (Article VI).

In terms of preventing the spread of nuclear weapons, historically, the nuclear nonproliferation and disarmament regime has been extraordinarily successful (Walsh, 2005). Only four countries (India, Israel, North Korea, and Pakistan) have developed and maintained an independent nuclear weapon capability since the entry into force of the NPT, while more than 20 countries have renounced their weapon programs (Monteiro & Debs, 2017).

Currently, the NPT enjoys near-universality, with only the aforesaid four states possessing nuclear weapons and South Sudan remaining outside the treaty, which is a very rare achievement in the realm of international security. However, the regime's success depends to a large degree on important long-term changes. More specifically, the discrimination between NWS and NNWS as enshrined in the NPT is only sustainable if the latter states are content with the pace of the disarmament efforts of the NWS. The truth is that complete nuclear disarmament "will be more difficult to achieve in a nuclear-armed state with an active nuclear weapons complex attended by a network of vested interests resisting abolition (Egeland, 2022, p. 110).

Notwithstanding, Article VI of the NPT sets no specific timeline for achieving nuclear abolition or criteria for what counts as compliance with its obligations. Thus, these obligations are in turn linked to the even broader aim of general and complete

¹I follow Kenneth Waltz's (1981) concept of the "spread" of nuclear weapons (and weapons-applicable nuclear technology and information), to states which are not recognized as "nuclear weapon states" by the 1968 NPT. Waltz (1981, p. 1) argues for *spread* rather than *proliferation* because most nuclear weapons have proliferated only vertically as the major nuclear powers have added to their arsenals. Horizontally, they have spread slowly across countries.

disarmament. In a 1996 ruling, the International Court of Justice (1996 para 105, 2F) concluded that the threat or use of nuclear weapons is permitted under international law, i.e., if all requirements of Article 51 of the UN Charter which deals with states' rights to self-defense are met. But the Court also concluded that Article VI of the NPT does involve a legal requirement to achieve nuclear disarmament (*a pactum de contrahendo*).

Since the early 2000s, the NPT regime has been characterized by a profound "crisis of multilateralism" caused by a growing dissatisfaction with the regime outside Europe, particularly in the United States and the Global South (Edward et al., 2007). The nuclear tests conducted by Pakistan and India, in 1998, were already a bad omen, but in the following decades, the lack of progress and outright failures of the nuclear nonproliferation and disarmament regime became even more palpable. Examples abound: the powerlessness of the regime to resolve the Iraq problem before the 2003 US invasion, the continuing inability to resolve the Iranian and North Korean nuclear crises, the inability of states to agree on the rapid entry into force of the 1996 Comprehensive Nuclear Test Ban Treaty (CTBT), the ongoing blockage of India to negotiate a proposed Fissile Material Cut-off Treaty (FMCT) at the Conference on Disarmament in Geneva, or the continuous lack of success in establishing a Middle East Zone Free of Nuclear Weapons and Other Weapons of Mass Destruction.

Moreover, the failure of both the Ninth and Tenth NPT Review Conferences (RevCon) to agree on a consensus final document also contributed to the deterioration of multilateral negotiations in the field of nuclear nonproliferation and disarmament. The Ninth RevCon led to profound divergences between NNWS and NWS (and their allies) on the nature of nuclear disarmament obligations, which were exposed in the Humanitarian Initiative (HI) and during the negotiations of the 2017 Treaty on the Prohibition of Nuclear Weapons (TPNW).² While the Tenth RevCon failed to agree on the final document due to Russia's position on the war in Ukraine (United Nations, 2022).

These failures point to the increasingly dysfunctional structure of the nuclear nonproliferation and disarmament regime. As Harald Müller (2010, p. 196) warned, without "correcting the inequalities within the regime, as required by Article VI of

²The HI is a group of states that evolved within the NPT framework to tackle a direct answer to the lack of progress in nuclear disarmament. One hundred and fifty-nine states subscribed, including the last iteration of the initiative's Joint Statement in 2015 delivered by Austria (United Nations, 2015a, 2015b). However, since 2013, the debate on the HI led to a series of conferences exploring the Humanitarian Impact of Nuclear Weapons, culminating in the Humanitarian Pledge on December 9, 2014, issued by the Austrian Government, to "fill the legal gap for the prohibition and elimination of nuclear weapons" (The Pledge has been endorsed by 127 states, most from the Non-Aligned Movement) and it offered a platform from which they launched negotiations on the 2017 TPNW (Bundesministerium für europäische und internationale Angelegenheiten, 2014, 2015). Sweden voted in favor of the Austrian Pledge but did not formally endorse it. However, Finland, who subscribed to the HI at the 2015 NPT Review Conference, neither formally endorsed nor voted in favor of this Humanitarian Pledge.

the NPT, that is, by the unequivocal move of the NWS towards disarmament, the regime will not grow for much longer.”

Additionally, due to the growing perception of a great-power realignment that pits the existing US-led, Western-dominated “liberal” international order against revisionist powers led by Beijing and Moscow, the post-Cold War era witnessed the worsening of the international security environment (Ziegler, 2020–2021; Vicente, 2022a). Among other ontological, historical, security, and political mostly driven by President Vladimir Putin’s imperial expansionist policy that has defined the Russian state for so much of its history, this deteriorating security environment also contributed to the likelihood and onset of the Russian–Ukraine war (see Sinovets, 2022; Hartnett, 2022; Laruelle, 2022; Zaporozhchenko, 2023).

The Russian invasion of Ukraine, on February 24, 2022, marked a critical and deeply disturbing challenge to the current global nuclear order and the NPT regime. This ruthless act of war violated Article 2(4) of the United Nations Charter, which prohibits the use of force against the territorial integrity of another state (United Nations Office of Legal Affairs, 2021, pp. 31–44). It also deepened the breach in the 1994 Budapest Memorandum on Security Assurances, in which Kyiv committed to renunciate its Soviet-era inherited nuclear weapons in exchange for security assurances by the United States, the United Kingdom, and Russia against the use of force that would potentially compromise Ukraine’s territorial integrity and political independence (United Nations, 1994).³ Moscow had already grossly violated these assurances in 2014 when it occupied Crimea and Donbas (Yost, 2015).

In this context, the objective of this article is to assess the effects of Russia’s war on Ukraine on the nuclear nonproliferation and disarmament regime and to characterize the kind of regime we face now.

2 Russia’s War on Ukraine is Weakening the NPT Regime

Considering the increasingly dysfunctional structure of the nuclear nonproliferation and disarmament regime and the progressive deterioration of the international security environment, the current Russia’s war on Ukraine has effectively confirmed the advent of a new European and global nuclear (dis)order. It enhanced and produced at least three key negative outcomes for the current nuclear order, and as a result, contributed to the weakening of the NPT regime.

First, we have been witnessing the continuous deterioration of nuclear norms. With the end of the Cold War, “in an effort to avoid miscalculation and unintended nuclear use, US and Russian leaders sought to stabilize deterrence by embedding it

³In this case, the Memorandum refers to negative security assurances which are guarantees by NWS that it will not use or threaten to use nuclear weapons against NNWS. For an authoritative debate on the history and breach of the Budapest Memorandum with regard to Ukraine, see the works of Mariana Budjeryn (2014, 2018, 2022).

in arms control and other security cooperation agreements” (Tannenwald, 2018, p. 11). Since the beginning of the 2000s, however, the United States and Russia have been essentially reversing their previous progress in building bilateral agreements and other measures intended to limit and reduce their nuclear arsenals such as Anti-Ballistic Missile Treaty (ABM), Strategic Offensive Reductions Treaty, and Intermediate-Range Nuclear Forces (INF) Treaty.

Debates over the justice and fairness of the NPT regime’s rules are essentially about the “haves” versus the “have-nots” (see Tannenwald, 2013, 2018). Thus, through different US–Russia bilateral arms control agreements, the post-Cold War era brought dramatic reductions in their nuclear arsenals (such as the INF treaty and various Strategic Arms Reduction Treaties), “a new norm of disarmament emerged” despite being “deeply contested” (Tannenwald, 2018, p. 6). Nonetheless, the increasing animosity between the two nuclear superpowers in the context of the Russian–Ukrainian War led to a decisive corrosion of both arms control and disarmament norms.⁴

As a result, despite Moscow’s decision to suspend, which includes prohibiting on-site inspections of its nuclear weapons-related facilities subject to, the Treaty between the United States and Russia on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START), the treaty remains the only nuclear arms control and disarmament agreement between the United States and Russia in effect. Following its extension in February 2021, however, it will expire in 2026 (United States Department of State, 2023). Barring any renewed *détente* between Washington and Moscow, it too could also be at risk, particularly if the Russia–Ukraine conflict worsens or persists (Vicente, 2022a).

⁴On the one hand, the arms control norm is attached to the constraints and/or limitations on nuclear weapons and armed forces that serve the stability of the military situation between opponent parties. These constraints are meant to create mutual predictability, enhance transparency, and limit options for a successful, territory-grabbing, massive attack. All these specific goals contribute to crisis stability, strategic stability, and arms race stability, which are arms control’s central and overarching aims (Vicente, 2022b, p. 37). On the other hand, “although there is no agreed-upon legal definition of what nuclear disarmament entails within the context of international agreements, a general definition is often understood as the process of reducing the quantity and/or capabilities of nuclear weapons and/or forces. Thus, I argue that nuclear disarmament is both the act of reducing and/or eliminating nuclear weapons.” (Vicente, 2022b, p. 39). The norm can be understood both as a process and the desired end state, as it seeks the complete elimination of these weapons. I follow the understanding that the process (and not the desired end state) of nuclear disarmament ideally should not destabilize deterrence between two or more NWS. Note that, unlike nuclear disarmament, nuclear arms control practices are philosophically fully compatible with the norm of nuclear deterrence. For the elaboration of this argument, see, for example, Mutimer (2011). For the evolution of the arms control idea in the context of nuclear deterrence during the Cold War, see Adler (1992). Yet, for example, John Maurer (2018, 2021, 2022) underlines that arms control has always had competitive elements in it as well as disarmament preferences. Since arms control “can (but may not necessarily) imply weapons reductions, it goes along, to a certain extent, with disarmament” (Vicente, 2022b, pp. 38–39). The two will divorce when arms controllers see stability optimized while disarmers insist on going to zero (ibid.).

Moreover, the disruption of the 1994 Budapest Memorandum may lead more NNWS that do not have security guarantees with NWS, such as Finland and Sweden in Europe, to align themselves with one of these NWS in a nuclear alliance, or to pursue their nuclear weapons to avoid a possible conventional confrontation with a NWS. This circumstance will undoubtedly undermine the nonproliferation norm.⁵

In addition, the introduction of new hypersonic weapons combined with the increasing threat of Russia potentially using low-yield nuclear weapons in Ukrainian territory. The likelihood of this event would shatter the most resilient norms i.e., the nonuse of nuclear weapons since Hiroshima and Nagasaki. In this context, the end of the nuclear taboo could normalize the use of nuclear weapons against NNWS.⁶

Second, we have been observing a latent nuclear arms race. There are signs that the post-Cold war decline in nuclear arsenals is ending, and of course, the advent of Russia's war on Ukraine is contributing to a new vertical proliferation of nuclear weapons. Although at a much slower pace than the US–Soviet arms race that prevailed during the Cold War, from 1949 until 1987 (the year when the landmark INF treaty was signed and nuclear weapons started to decrease), the number of nuclear warheads in global military stockpiles has been increasing once again (Stockholm International Peace Research Institute, 2023). This new arms race promises to upend strategic calculations.

All P5 members continue to modernize and expand their nuclear arsenals and appear to be increasing the salience of nuclear weapons in their military strategies. Russia has even made open threats about possible nuclear weapon use in the context of the war in Ukraine. Bilateral US–Russia strategic stability talks have stalled because of the war but also to provide Russia an advantage in designing its war against Ukraine. The result is that none of the other nuclear-armed states are pursuing arms control negotiations (*ibid.*). Furthermore, the P5 members have voiced opposition to the TPNW, and negotiations to maintain and revive the Joint Comprehensive Plan of Action (JCPOA) have not yet reached a resolution.

Russia's war on Ukraine is also reigniting the hypersonic weapons race among P5 members, namely Russia, China, and to some extent the United States. Russian officials have cast nuclear-armed hypersonic craft as a hedge against future US prowess at shooting down ICBMs, which could undermine nuclear deterrence (Stone, 2020; Saylor, 2023).

Other states possessing nuclear weapons such as India and Pakistan have continued to expand their nuclear arsenals. Since 1998, both South Asian countries are increasing ten nuclear warheads per year, while North Korea continues to prioritize its nuclear weapons and ballistic missile program as a central element of its national security strategy. The Stockholm International Peace Research Institute Yearbook

⁵Nonproliferation can be defined as a norm that dissuades and/or prevent states from developing, acquiring, or maintaining nuclear weapons. For example, articles I, II, and III of the NPT.

⁶The nuclear taboo creates a nonuse norm (no use of nuclear weapons in warfare), therefore, a general inhibition over their use (Tannenwald, 1999).

2023 estimates that the country has now assembled up to 30 warheads, and possesses enough fissile material for a total of 50–70 warheads (Kristensen & Korda, 2023).

Third, Russia's war on Ukraine increased the likelihood of nuclear weapons use (or of a nuclear war). According to the Basic Principles of State Policy of the Russian Federation on Nuclear Deterrence, one of the conditions for Moscow to use nuclear weapons is in a conventional war, if the very existence of the Russian state is threatened (The Ministry of Foreign Affairs of the Russian Federation, 2020). In addition, one of the main values of Russia's nuclear deterrent is to protect its territorial integrity (*ibid.*).⁷ In this regard, the notion of an "existential threat" to Russia seems to apply, in fact, to the scenario of a direct attack on territory considered by Moscow to be legally Russian (Tertrais, 2022).

Hence, "the illegal referendums and the following joining of the annexed Ukrainian regions (besides their basic mission to expand Russian territory) were aimed to demonstrate Moscow's increasing resolve to use nuclear weapons" (Sinovets & Vicente, 2022, p. 3).

Furthermore, the Ukraine war introduced new ways of warfighting such as deploying combat drones (also known as unmanned combat aerial vehicles) along with misinformation and digital disinformation, which has made the nature of warfare more complex and messier. In addition to the increasing use of cyberwarfare and artificial intelligence, both emerging technologies and new ways of warfighting could jeopardize the credibility and effectiveness of nuclear deterrence.

Considering the negative impact of the Russo-Ukraine War on the present security environment and nuclear order, what kind of regime do we face now? In sum, the current nuclear nonproliferation and disarmament regime is being weakened by a progressive deterioration of nuclear norms, a latent nuclear arms race, and by increasing the likelihood of nuclear weapons use (or of a nuclear war).

Thus, the new NPT regime, instead of being characterized by cooperative security measures in the fields of nuclear arms control, nonproliferation, and disarmament to tackle states' current security challenges, nuclear weapons are being relegitimized in states' security policies. As a result, various challenging issues will continue to affect, in the near future, the current nuclear nonproliferation and disarmament regime.

⁷ According to Article 4, Russia's state policy on nuclear deterrence "is defensive by nature, it is aimed at maintaining the potential of the nuclear forces at the level sufficient for nuclear deterrence and guarantees protection of national sovereignty and territorial integrity of the State, and deterrence of a potential adversary from aggression against the Russian Federation and/or its allies. In the event of a military conflict, this Policy provides for the prevention of an escalation of military actions and their termination on conditions that are acceptable for the Russian Federation and/or its allies" (The Ministry of Foreign Affairs of the Russian Federation, 2020).

3 Challenging Issues

A diverse set of challenges are affecting today's nuclear nonproliferation and disarmament regime, which have been highlighted by Russia's war on Ukraine. In general, US–Russia bilateral nuclear arms control and disarmament negotiations have been more effective than multilateral negotiations in making sure that nuclear weapons are eliminated and scrutinized; but they reached a stalemate. The New START treaty is currently the only surviving agreement, but it is currently suspended and it is uncertain how much longer it will last. Nonetheless, nuclear nonproliferation and disarmament issues continue to be discussed at NPT Review Conferences and several UN-led forums (Conference on Disarmament, UN General Assembly First Committee, UN Disarmament Commission, etc.) but are not currently negotiated in an effective way. Why? Because in the current deteriorating international security environment, previously-agreed arms control and disarmament agreements are increasingly under threat. As a result, all major nuclear multilateral and bilateral negotiations are and continued to be stalled in the international arena. These include, in general, the following challenges:

- the NPT review process is not providing an agreed or consensus document since 2010;
- FMCT is not signed nor ratified, and negotiations at the Conference on Disarmament are stuck for years due to Pakistan and China's opposition;
- CTBT did not enter into force, there is a list of important countries that did not ratify the treaty, and negotiations for other states to adhere are very slow or inexistent;
- Pakistan and India continue to refuse to adhere to the NPT and CTBT;
- North Korea continues to reject the dismantling of its nuclear weapons program and the denuclearization of the Korean Peninsula;
- Israel continues to maintain its *amimut* policy and negotiations on the Middle East Nuclear Free Zone have been progressing very slowly for the past decades;⁸
- efforts at the UN General Assembly and Conference on Disarmament by the EU to restore the defunct INF treaty are “going nowhere”;
- the US–Russia nuclear bilateral dialogue is almost frozen and the New START has been suspended and has not been renewed yet;
- Profound divergences between NNWS and NWS (and their allies) on the nature of nuclear disarmament obligations, which have been continually exposed during negotiations and meetings on the TPNW at multilateral fora;
- And, efforts by states at the UN Disarmament Commission on Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities are not progressing.

⁸Unlike the typical nuclear posture of other NWS in which defending those nuclear weapons in order to be an effective deterrent cannot be kept secret, *amimut* in Hebrew “refers to the taboo-like social aspects of Israel's prohibitions and restraints in connection with its nuclear weapons” (Cohen, 2010, p. xxxii).

This section distinguishes the most relevant multilateral and bilateral issues affecting the current NPT regime. On the one hand, I pay attention to the issues discussed at multilateral negotiations which include the revival of the proliferation of nuclear weapons, the challenge posed by the TPNW, and the failure of the Tenth RevCon to reach a consensus document. On the other hand, I examine a set of outstanding issues and individual cases that have been mostly discussed through bilateral negotiations or in a limited joint manner.

3.1 Multilateral Issues

As mentioned, the post-Cold War era saw the spread of nuclear weapons (horizontal proliferation) to at least three states: India, Pakistan, and North Korea. Similar to Israel, which possesses nuclear weapons since the late 1960s, India and Pakistan had never signed the NPT (Miller & Scheinman, 2003; Cohen & Burr, 2006). However, North Korea, which had been an NPT member since 1985, announced its withdrawal from the treaty in 2003 and became a state in possession of nuclear weapons as of 2006, when it tested its first device (Korean Central News Agency, 2003).

Moreover, despite progress in reducing nuclear weapon arsenals since the Cold War, the number of warheads in global military stockpiles has been increasing once again. While the United States is still reducing its nuclear stockpile and France and Israel have relatively stable inventories, China, India, North Korea, Pakistan, the United Kingdom, and Russia, are all thought to be increasing their nuclear inventory (vertical proliferation) (Kristensen & Korda, 2023). Thus, the current NPT regime has not prevented horizontal proliferation in the post-Cold War era nor is averting vertical proliferation and modernization of new nuclear weapons in the wake of Russia's war on Ukraine.

Another multilateral issue of utmost importance is the challenge posed by the TPNW to the current nuclear nonproliferation and disarmament regime, as to the authority of the NPT regime itself. Since NPT's Article VI only loosely demands that the NWS started negotiations on disarmament, the 2017 TPNW aimed at strengthening the unimplemented pillar of the NPT. While the NPT reflected the need to prioritize nonproliferation over the long-term goal of disarmament, the TPNW represents the view that, half a century after the adoption of the NPT, progress on disarmament is long overdue (Erästö, 2019).

Thus, the TPNW and other governmental and nongovernmental move toward a world free of nuclear weapons fill a gap between nuclear nonproliferation and disarmament while pushing the NWS to abandon nuclear weapons (Abbasi, 2022, p. 7). But the TPNW has fashioned a normative movement that created frustration and caused a rousing debate between deterrent supporters (NWS) and those who advocate the treaty (NNWS) "calling its alleged incompatibility with the NPT" (Erästö, 2019). While the TPNW seeks to make nuclear weapons illegal for all countries, the NPT provided a monopoly on such weapons to the five countries that had proliferated before 1968 (Abbasi, 2022, p. 7).

The major challenge is that the NWS did not participate in the negotiations of the TPNW, nor did the other states possessing nuclear weapons outside the NPT such as India, Israel, Pakistan, and North Korea. Hence, there is a need to bridge the gap between NWS and NNWS by creating a balance between states' security needs and disarmament (Abbasi, 2022, p. 9). The question arises to know how should the balance be maintained between some states' aspirations for disarmament and other states' need for an effective nuclear deterrent for their national security? In the absence of any nuclear weapon possessor state joining the TPNW, the norm against nuclear weapons is not likely to lead to a practical ban on nuclear weapons until certain new conditions are set and the new security environment is created to address states' disparities and differences (ibid.; Fihn, 2017; Maitre, 2022). Particularly when a NWS (Russia) is using its nuclear deterrence to prevent another NWS (the US) or a nuclear alliance (the North Atlantic Treaty Organization commonly known as NATO) from interfering directly in a conventional war against a NNWS (Ukraine).

Additionally, the failure of the Tenth RevCon to reach a consensus on a final document also poses a major multilateral challenge for the current nonproliferation and disarmament regime. This outcome contributed to various factors, such as the deterioration of key nuclear agreements (INF treaty, JCPOA), the halt of the New START inspections, the lack of acceptance of the TPNW or its norms, and how they can interact with the NPT architecture, along with the perpetual inability of states to agree on the rapid entry into force of the CTBT, the multilateral negotiations at the Conference on Disarmament toward the signature and ratification of FMCT, and the establishment of a Middle East nuclear weapon free zone and their means of delivery.

Nonetheless, the failure to reach a consensus on a final document was mostly due to Russia's stance about the ongoing war on Ukraine, especially its irresponsible use of the grounds around the Zaporizhzhia Nuclear Power Plant, which made it impossible to achieve common positions. Indeed, agreed final documents are the exception rather than the rule at NPT Review Conferences (Alberque, 2022). They did "get relatively close, but Russia vetoed the statement in the final hour" (ibid.).

The greatest surprise may not be that the Tenth RevCon ended without an agreement, "but how close the participants reportedly got to one" (Kulesa, 2022). This RevCon confirmed long-standing disagreements on several issues, mainly the progress (or lack thereof) on nuclear disarmament, nuclear policy of NWS, nuclear sharing, nuclear declaratory policy and negative security assurances, and verification standards (ibid.; Mohan, 2022). New disagreements also arose, including concerns about Australia's acquisition of nuclear submarines (Mayhew, 2022). The diplomats "reportedly managed to find a compromise on all these issues" (Kulesa, 2022). However, as mentioned, the "bad news is that the cracks over nuclear disarmament may endanger the foundations of the NPT" (ibid.). Despite their profound differences, the P5 and their allies rely on nuclear weapons for existential deterrence, limiting the constraints they are willing to accept. A large group of NPT states is rejecting this limited approach, including members of the TPNW.

The disagreement could result in a permanent stalemate of review cycles. If the NPT review evolves into an empty diplomatic ritual, it may jeopardize the norms of nonproliferation and nonuse of nuclear weapons embodied in the NPT.

3.2 *Bilateral Issues*

The first bilateral challenge, there is a freeze on the US–Russia nuclear agreements. As mentioned, the New START Treaty remains the only (arms control and disarmament) agreement in place between Moscow and Washington as relations hit “rock-bottom” over the conflict in Ukraine. Both countries deployed strategic nuclear forces within the limits set by the New START. Note, however, that this treaty does not limit total nonstrategic nuclear warhead inventories (United States Department of State, 2023).

In mid-August 2022, allegedly due to Washington’s military support to Ukraine, Moscow decided to prohibit on-site inspections of its nuclear weapons-related facilities subject to the New START, which led Russia ultimately to block a consensus on the final draft document of the Tenth RevCon.⁹ On February 21, 2023, President Putin (2023) decided to suspend Russia’s membership in the New START Treaty.

On the one hand, this decision means that the parties will not have inspections or meetings of the Bilateral Consultative Commission (BCC), but it is also the end of the exchange of information and notifications about the strategic nuclear armament of the two countries; without ruling out the possibility of a return to nuclear testing.¹⁰ On the other hand, the suspension of the New START treaty could contribute in the medium term to the resurgence of a nuclear arms race between the two nuclear superpowers, which had ceased since the celebration of the now-extinct INF Treaty of 1987.

Thus, prospects for follow-on the New START negotiations are bleak. This situation could have spillover effects. For example, China has studiously refrained from participating in any arms control talks with the United States, and that was before tensions between the two reached a new high given the recent Taiwan Straits crisis.

The second challenge is the threat of the spread of nuclear-sharing states. Since Russia’s disruption of the 1994 Budapest Memorandum and 2022 Moscow’s full-fledged invasion of Ukraine, more NNWS that do not have security guarantees with nuclear powers may be more willing to align themselves as nuclear-sharing states.

⁹In fact, the inspections have been paused since March 2020 due to the corona virus pandemic, and they have not resumed ever since.

¹⁰The treaty establishes the BCC as a compliance and implementation body that meets at least twice each year unless otherwise agreed (United States Department of State, 2023). Compliance or implementation questions may be raised by either Party in the BCC (ibid.).

This nuclear status allows states without nuclear weapons of their own to participate in the planning for the use of nuclear weapons of a preeminent NWS (the US or Russia), or a nuclear alliance (NATO or the Collective Security Treaty Organization).

Presently, with exception of Belarus which approved recently hosting Russia's nuclear weapons, there are at least four individual cases that may be eager to turn themselves into nuclear-sharing states under US or NATO umbrella (Osborn 2023). These include the individual cases of Japan, Sweden, Finland, or more recently Poland which proposed the status of a NATO-sharing state (Hernández 2022).

Most of these cases which in their recent past saw the possession of nuclear weapons as the primary source of global insecurity and a threat to human survival now see their possession as essential to their national security. This shift greatly undermines NPTs' grand bargain between NWS and NNWS and nuclear nonproliferation and disarmament in delegitimizing the use of nuclear weapons for security purposes.

The third challenge is the risk of undermining nuclear nonproliferation agreements such as the JCPOA. Due to the US withdrawal from this nuclear accord in May 2018 and the reimposition of a new series of extraterritorial sanctions, which had a huge negative impact on Iranian trade and the economy, Teheran's behavior toward the necessity of remaining on JCPOA started to change (Vicente, 2022b). Despite EU efforts to bring Iran to fulfill JCPOA requirements, Teheran seems to choose to leave the nuclear deal (Vicente, 2022c). In addition, Russia's actions on Ukraine may contribute to Iran's idea of pursuing its own nuclear weapons to avoid a possible conventional confrontation with a NWS.

Finally, for the reasons mentioned above, a fourth challenge is that Russia's war on Ukraine increased the likelihood of nuclear weapons use, including, potentially, a nuclear war. Not just in Ukraine but elsewhere. North Korea's continuous rogue behavior and increased provocations with the United States and its regional allies (i.e., South Korea and Japan) may lead the parties to a nuclear confrontation.

4 Conclusion

This chapter has disentangled the relationship between Russia's war on Ukraine and its impact on the current nuclear nonproliferation and disarmament regime. I argued that this war is weakening the NPT regime due to essential three key negative outcomes.

First, Russia's war on Ukraine led to the deterioration of nuclear norms, which include arms control, disarmament, nonproliferation, and nonuse (or nuclear taboo) norms. Second, this war is contributing to a latent nuclear arms race which can be translated into an increase in the number of nuclear warheads in global military stockpiles. This surge is encouraged by the following factors: (i) P5 members continue to modernize and expand their nuclear arsenals, (ii) the hypersonic

weapons race, (iii) the continuous expansion of nuclear stockpiles by non-NPT states that possess nuclear weapons such as India, Pakistan, and North Korea. Third, the destabilizing nature of the conflict increased the likelihood of nuclear weapons use or of a nuclear war, which is shaped not only by emerging technologies and new ways of warfighting but also by Russia's nuclear doctrine and the ineffectiveness of its deterrence to halt Kyiv forces in the four Ukrainian regions partially occupied and illegally annexed by Moscow.

Considering the negative impact of Russia's war on Ukraine on the present nuclear nonproliferation and disarmament regime, in which nuclear weapons are being relegitimized in states' security policies, I identified various bilateral and multilateral issues that are affecting the NPT regime.

These challenging issues can be distinguished as follows. First, we are witnessing a vertical proliferation and modernization of nuclear weapons within the NWS and other states possessing nuclear weapons. Second, by a horizontal proliferation of the precedents of Iraq, Libya, and now Ukraine, insecure states or regimes may have a new incentive for developing nuclear weapons. Third, Putin's aggression toward Ukraine sets a dangerous precedent by abrogating the Budapest Memorandum and undermining the wider framework of security assurances and guarantees that the NWS offer to the NNWS. In addition, as an NPT signatory, Russia had pledged to disavow the use of negative security assurances. Fourth, despite efforts to promote the stigmatization, prohibition, and elimination of nuclear weapons under the TPNW, disarmament negotiations are stuck at a multilateral level.

Thus, there is a need for a new nonproliferation and disarmament agenda. For those states who see nuclear weapons as the primary source of global insecurity and a threat to human survival, an agenda that does not begin with a pledge to eliminate those weapons is insufficient. However, Russia's war on Ukraine deepened the idea that NWS may continue to possess and rely on nuclear weapons, while NNWS such as Finland, Belarus, and Japan now see these weapons as essential to their national security. As a result, it may be difficult for the United States, Russia, or any other NWS to cooperate in reducing their nuclear arsenals in the next few years. Under these circumstances, an agenda that focuses on risk reduction, rather than weapons reductions, "may not only serve as a temporary venue for negotiations but may also create opportunities for the parties to address and resolve those security concerns that are blocking the path to nuclear disarmament" (Woolf, 2021, p. 318).

In short, the nuclear NPT regime is increasingly plagued by a complex tension between the NWS (and its allies) who rely on nuclear weapons for their security but argue for a traditional short-term emphasis on nonproliferation, and the NNWS (mainly the proponents of the TPNW), who see these weapons as an existential threat to their security and as result demand their immediate elimination. To make things even more complicated, Russia's war on Ukraine just contributed to the deterioration of the US–Russia bilateral dialogue on nuclear weapons, undermining greatly the dialogue between states on nuclear disarmament issues. As a result, this state of affairs may have irreversibly challenged and weakened the NPT regime's foundation.

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U-Factor: Russia's War on Ukraine and the Deterrence vs. Disarmament Discussion. Pragmatic Internationalism



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Abstract Russia's offensive war against Ukraine, led by explicit and implicit nuclear threats, exposed many core international challenges in the nuclear realm. A powerful yet dangerous message is out: security assurances failed, international security instruments failed, while nuclear deterrence works. Russia's coercive applications of nuclear threats, continued reliance on nuclear weapons by the whole P5 against the spirit and obligations according to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), as well as solid opposition to the Treaty on the Prohibition of Nuclear Weapons (TPNW) as a legally binding disarmament mechanism incentivize proliferation and create additional risks. To avoid the complete erosion of the nonproliferation norm, expansion of the number of nuclear weapons possessors, and repeated invasive wars under nuclear threats, the international community should recognize the TPNW's complementarity to the NPT and come to realistic and pragmatic gradual nuclear arms reductions.

Keywords Deterrence · Disarmament · Pragmatic internationalism · Ukraine · Nuclear proliferation · TPNW

1 Introduction

Global nuclear order and security are under threat due to the Russian offensive war against Ukraine. The war of 2022 has made the existing challenges more explicit and will become a precursor to the global paradigm shift. Whether the change threatens *Bellum omnium contra omnes* (war of all against all) or opens a door for postmodern pragmatic internationalism purely depends on the international community's ability to adequately react to international law violations and think about global affairs in terms of a positive-sum game (rather than a zero-sum game).

In both civilian and military applications, the nuclear factor plays a significant role. Russia seized and partially destroyed Ukrainian civilian nuclear infrastructure

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and used nuclear weapon threats to deter any external actor's conventional military support. Ironically, in 1994, Ukraine gave up the third-largest nuclear arsenal under a promise that its territorial integrity would not be threatened. In 2022, humanity received a powerful yet dangerous message: security assurances failed, international security instruments failed, while nuclear deterrence works.

The situation leads to questions: How can the world's nuclear future look like? Can the nonproliferation norm be considered obsolete with the return to hardline realism in international relations and proliferation? Is there momentum for disarmament?

2 International Security and the Role of the P5

The international security architecture showed limited capabilities to mitigate the situation. The UN Security Council (UNSC) has been deadlocked by the Russian veto applied to the UNSC resolution demanding that Moscow immediately stops its attack (UN News, 2022). The situation one more time exposed a fundamental flaw of the UN system: the international body with the most crucial role—the Security Council—is dominated by the P5 (the United States, the United Kingdom, Russia, China, and France), which are also the five official nuclear weapons possessors according to the NPT (that was created as a pragmatic and hegemonic treaty under the leadership of two superpowers).

Today, the UN cannot prevent or stop aggression if the aggressor is a permanent member of the UNSC. A historical look at the uses of vetoes shows that each member always defends its national interests, and the resulting policies are more painful for the concerned regions (Security Council Report, 2020). In this context, an association that nuclear weapons allow actors to promote their own agenda, even if it is offensive, is unavoidable.

A proper and timely reform process could have helped the UN become more functional in this war because the problem itself is not new. The legacy of the 2005 World Summit is a call for “the permanent members, in their individual capacities, to pledge themselves to refrain from the use of the veto in cases of genocide and large-scale human rights abuses” (Security Council Report, 2020). Russia's actions in Ukraine include elements of both. Nevertheless, Russia was able to block the UNSC resolution calling for the immediate cessation of the attack and the removal of Russian troops. The aggressor remained largely unpunished due to veto existence and Russian explicit nuclear threats (UN News, 2022). The resulting incapacitation decreased the credibility of the UN as an institution created to prevent and stop violent conflicts and increased the prominence of nuclear weapons' role. Similarly, the UN cannot send its peacekeepers to Ukraine because of the Russian veto power. Czech Defense Minister Jana Černochová rightfully argued that this inability raises questions about the UN's existence (Wesolowsky, 2022).

This war is a precursor to a global paradigm shift, where the UN is either going to adapt or crumble as it keeps losing credibility.¹ Thus, the time has come for the UN to reform. Otherwise, it faces a tangible risk of turning obsolete. Becoming one of the first steps in this direction, the elimination of the veto power can relieve the tension related to the P5–nuclear weapons nexus. Such a change would at least detach nuclear weapons from the UN power structure. The initiative to convene the UN General Assembly whenever UNSC members exercise their veto power and its support by the United States is a decent first step toward a broader discussion: as mentioned earlier, contemporary international institutions are pragmatic and realist, as they serve the interests of the powerful (Hernandez, 2022).

At the same time, it would be unreasonable to say that the world functions in an entire realist paradigm. The level of international support for Ukraine and Ukrainian refugees became unparalleled. Undoubtedly, it is in the states' own interests to prevent the war from creeping over the continent and deter Russia. Since the actual fight mainly involves Ukrainians and volunteers, the war comes at a limited expense for those not directly involved.

However, extensive humanitarian support and acceptance of refugees burden the supporters in ways that would not be acceptable according to realist theories. These are signs that states are moving toward a broader acceptance of an analogy of egoistic altruism (Kurzgesagt, 2018) in international relations, which can be called *pragmatic internationalism*: a system based on the deep understanding (and proper reasoning) that enhancing security and prosperity anywhere in the world is not just a noble goal but a security, economic, and environmental necessity.

In addition, the invasion threatens to increase global hunger, economic instability, and prices and to disturb supply chains. It disrupts global logistics and perspectives for international development, making the future unstable for everyone. The war against Ukraine is more than a local conflict. Most notably, it weakens international agreements, exposes the UN and international law flaws, and changes the post-Second World War order. It can easily trigger an escalation of regional tensions or, even worse, a potential Third World War.

Security is at the cornerstone of international regimes, which are precise tools to enhance it and create a predictable environment for the states' benefit. With a proper level of security, the states can allocate more money to economic development or social protection. At the same time, if a neighbor's environment is secure if its citizens enjoy economic stability and contribute to global innovation, it ends up being a positive-sum game. This is what pragmatic internationalism is about.

In order to support and enhance international security and cooperation in the face of Russian aggression and beyond, the UN should, hence, show resilience and action. Getting rid of the UNSC veto would be one of the significant steps to unblock UN decision-making. It can also become a strong signal detaching the ability to exercise power in the international arena (in this case, the ability to block

¹There is also an option that its mandate reduces solely to minimally questionable humanitarian functions.

decision-making in the Security Council) from the P5 (nuclear possessors) and hence from nuclear weapons themselves and the role they played in Russia's war against Ukraine.

3 Deterrence and Signaling

According to its nuclear doctrine, Russian deterrence policy worked precisely how it was supposed to work: nuclear threats prevented escalation of military actions and aimed at termination on terms favorable to Russia (Putin, 2020), i.e., using compellence.² Russia issued a threat that was interpreted as nuclear precisely on February 24, 2022, promising to those external actors who dare to get involved “consequences they have never seen in their history” and emphasizing that Russia is ready for any outcome (FRANCE 24, 2022). Hence, powerful allies exercised extreme caution in providing any help for Ukraine to protect against Russia's conventional aggression.

Russian President Vladimir Putin seems to produce his threats not to trigger a nuclear strike but to frighten Ukraine and the North Atlantic Treaty Organization (NATO) and compel them into the desired actions: giving up Ukraine's sovereignty, European aspirations, and Ukrainian identity. This is a coercive tactic: there is not exactly tactical military utility in using nuclear weapons against Kyiv, and much can be done utilizing Russia's conventional arsenal. Thus, the nuclear threat bears an informational purpose that helps to keep NATO deterred and demonstrates resolve to fight long in Ukraine. It is even conceivable that Russia could conduct a nuclear test as a radical show of power and the next signal on the escalation ladder. However, Russia still strongly opposes proliferation and thus may not want to undermine the authority of the Comprehensive Nuclear Test Ban Treaty as a nonproliferation mechanism. The level of deployment of nuclear weapons did not increase, and, oddly, the experts had difficulties interpreting the true meaning of the notorious “special alert” beyond being a coercive element: seemingly, nothing changed when it was announced (Alberque, 2022).

Whereas one cannot doubtlessly argue that NATO powers refrained from direct military involvement solely due to Russian nuclear threats, it is fair to say that Russia succeeded in raising costs for potential involvement manifold. Ukraine's partners refused to establish a no-fly zone despite multiple requests from Ukrainian leadership and the fact that the petition calling for it got more than a million signatures (Kostiuk, 2022).

In this context, media coverage highlights the stark contrast between how the United States put boots on the ground in Iraq for highly dubious reasons but now is refusing to do the same in Ukraine, adding to the evidence that deterrence works

²Compellence is a form of coercion that attempts to get an actor to change his behavior through threats to use force or the actual use of limited force.

(Al Jazeera, 2021). The third day of the invasion was marked by the claim that Russian deterrence forces were transferred into a special mode of combat duty, then an intercontinental ballistic missile test exercise followed (Sagan, 2022; The Kremlin, 2022b). These signals belong to nuclear escalation ladders and became an explicit nuclear threat. The United States and NATO have not publicly threatened Russia with a retaliatory nuclear strike but said they would provide a proportional response to a weapon of mass destruction attack (Chao-Fong et al., 2022). While a conventional conflict with Russia is undesirable, it is Russia's nuclear deterrence that made NATO states rule out direct intervention and no-fly zone and constrained the type and range of munitions supplied to Ukraine (de Dreuz & Gilli, 2022).

Nuclear weapons enable Russia to project the idea that this war still risks becoming global. Ukraine's supporters started testing boundaries and supplying heavier weapons as the situation developed. To which extent weapons supplies to Ukraine would manifest "further threats" for Russia became the main question. With the latest decision to send western tanks to Ukraine, top-ranking Russian officials have been sending mixed signals: on the one hand, downplaying the role of the tanks in future engagements, on the other—saying that they signify the West's direct involvement, which, as is mentioned above, can become a pretext for nuclear escalation (Reals, 2023).

Nuclear signaling is an obscure area: signals are what show resolve and intent on top of the technical capability to inflict damage. The blurriness of red lines in Russia's nuclear signaling persists to this day. Annexing Kherson and claiming it was "the territory of the Russian Federation," they emphasized readiness to defend the territorial integrity of the Russian Federation using all weapons systems available (read: including nuclear), saying, "This is not a bluff" (The Kremlin, 2022a). However, Ukrainians deoccupied Kherson, and, luckily, the world did not witness a resulting nuclear strike. Putin has threatened nuclear use many times but has not followed through, making the threat less credible and more dangerous because the world can become too complacent in ignoring his nuclear rhetoric and underestimating his intent, as some suggest (Rofer, 2022; Bilak, 2022). If the level of ambiguity is exceptionally high (preserving limited ambiguity is a standard part of nuclear deterrence) and the threat is disproportional, there is a possibility of crossing the red lines easier and ending up in a nuclear war scenario.

Concluding this part, one can regrettably admit that the dangerous message that nuclear deterrence works even when covering up for unjustified aggression is out, which makes nuclear weapons more desirable for some. The world, especially the nuclear weapons states, thus, has to mitigate the consequences. Making sure Russia's offensive attempts to compel Ukraine as a smaller nonnuclear actor will not be tolerated is set to play a role in constraining, for example, China from changing the status quo with Taiwan and the Democratic People's Republic of Korea (DPRK) with the Republic of Korea (ROK). It will be a significant input in avoiding proliferation because Russia's nuclear threats and cooperation with the DPRK have already triggered deterrence thinking in ROK (The White House, 2023; Yoon, 2023). It is worth remembering how perilous it is to walk the fine line and avoid nuclear escalation with a limited number of nuclear states involved. This

complexity would grow exponentially with any potential new nuclear weapons possessor. If nuclear signaling is not reasonably clear, deterrence becomes less stable, and there is no certainty that a miscalculation would not lead to a nuclear exchange.

4 Security Assurances

The Budapest Memorandum breakage raises a question of the relevance of positive and negative security assurances, which is a dangerous trend triggering second thoughts in nations facing powerful nuclear-capable adversaries. Negative security assurances are

the promise of nuclear-weapon States (NWS) not to use or threaten to use nuclear weapons against non-nuclear-weapon States (NNWS). In contrast, in accordance with the UN Charter, positive security assurance is a pledge by NWS to provide immediate assistance to an NNWS that is the victim of an act or threat of aggression in which nuclear weapons are used (Nuclear Threat Initiative, 2022).

According to the NPT preamble, negative security assurances condition that NNWS would not be threatened by nuclear weapons and by force in general with reference to the UN Charter (United Nations, 1968). Security assurances aim to address the sources of insecurity that might motivate a target state's behavior (Knopf, 2012).

According to the findings of an assurance study, "the influence of positive assurances rests to an important degree on the normative delegitimizing of nuclear weapons associated with the NPT" (ibid.). At the same time, negative security assurances were believed to work in Ukraine's case before (ibid.). One of the main reasons for the Ukraine case to have been considered a success was the absence of conflict between Ukraine and other actors. However, as soon as Russia infringed on Ukraine's sovereignty in 2014, the security assurances failed: they faded into insignificance in case of a critical threat. Thus, both positive and negative security assurances fail to create a more stable international environment and instead expose the negative effects of reliance on nuclear deterrence.

At the same time, the NPT addresses only one explicit qualification of noncompliance: when an NNWS does not comply with the IAEA safeguards agreement. Thus, there is no specific mechanism set out within the NPT to address the noncompliance of the nuclear weapons states with their negative and positive security assurance obligations—only through the reference to the UN Charter and the Security Council along the lines of the general principle of nonuse of force. Thus, the scheme is ineffective again due to the veto power that any of the NWS in the Security Council can exercise in a questionable moment while, obviously, none of them would self-punish.

Additionally, were NNWS to suggest an amendment to the NPT to address the NWS noncompliance, it could be blocked because the amendment mechanism is set

in a way that reinforces the power of the powerful: “a majority must approve any amendment to this Treaty of the votes of all the Parties to the Treaty, including the votes of all nuclear-weapon States Party to the Treaty” (United Nations, 1968). Two UNSC resolutions tried to address the issue of security assurances. The UNSCR 255 (1968) set out a provision that aggression against any NNWS parties would require immediate UNSC’s action. UNSCR 984 (1995) expanded the application: the NPT NNWS received assurances that the UNSC (all its permanent members) would act immediately according to the relevant provisions of the UN to protect the NNWS against attacks or threats of aggression in which nuclear weapons are used. This is yet another oxymoron created by this system because the UNSC’s permanent members are the nuclear weapons possessors in question that hold the veto power.

Historically, wars with significant global impact changed the systems of international relations for the better. This war exposed the current system’s flaws that need to be corrected because it is discriminatory. The world has the power to adapt the system before it plunges into a Hobbesian *Bellum omnium contra omnes*, which the world actually risks by sending a message that security guarantees failed, international instruments failed, and nuclear deterrence (i.e., hard power) worked.

5 Proliferation Risks

Nonproliferation exists and survives as the norm because it is primarily upheld (there is an international consensus that this norm should sustain). Proliferation can happen if the realist mindset prevails (opposite consensus), bearing in mind how Russia’s war against Ukraine reemphasized the power associated with nuclear weapons and devalued security assurances. The whole international system, including the non-proliferation regime, has been exposed. It was built to uphold the power of the powerful and has little to no mechanism to ensure they receive retribution for a wrongdoing.

In the case of Russia’s war against Ukraine, the international community received significant incentives to rely more on hard power and nuclear weapons. Many say that if Ukraine had nuclear weapons, it would not have been attacked (Broad, 2022). Others disagree and suggest that Ukraine, having kept its nuclear arsenal, would have become a pariah like Iran or DPRK in addition to not being able to gain effective control over the nuclear weapons on its territory. While the historical events of Ukraine’s nuclear disarmament hint that Ukraine would have indeed received the same treatment, there should have been a vast difference (Sinovets & Budjeryn, 2017).³ Ukraine, its facilities, and scientists actually participated in creating Soviet nuclear weapons and thus participated in conducting nuclear tests before January 1, 1967, according to the NPT. For that reason, treating Ukraine as a violator would

³For example, how Ukraine was pressured and incentivized to disarm both from the East and from the West.

have been wrong and discriminatory, and, in fact, the pressure Ukraine experienced back in the day was such. So, it is fair to consider Ukraine a state that forewent its nuclear status and disarmed.

Even if it did not control the weapons at that point, Ukraine could have legally kept the status of a nuclear weapons state. Of course, it would be imprudent to assert that nuclear weapons entirely deter all forms of aggression.⁴ Undeniably, they influence conflicts' dynamics and outcomes. Their role is subject to interpretation, though: Sagan and Waltz (2013) have opposing views over the 1999 Kargil war between Pakistan and India that happened after the 1998 nuclear tests. According to Waltz, nuclear deterrence worked; Sagan says it failed (*ibid.*).

What is certain is that Ukraine dismantled its nuclear arsenal in exchange for negative security assurances in the Budapest Memorandum, including a commitment to refrain from economic coercion (United Nations, 1994). It deserved and was entitled to special support in protecting its territorial integrity. However, the whole world witnessed what happened instead in 2014 and in 2022. With this and the high importance P5 assign to their nuclear weapons in mind, the international community should be reasonably cautious about potential proliferation. While not every actor would be able to afford a nuclear arsenal, for example, because of its costliness and technical complexity, not every state would want to have one anyway, the world risks plunging into a chaos of "haves" vs. "have-nots."

On top of that, some might try to exercise nuclear bargaining (similar to Iran) to gain benefits for forswearing nuclear status (even without real intent to go nuclear in the first place). The interaction dynamic would also change: nuclear powers would more explicitly exert pressure over nonnuclear neighbors, instilling a powerful will and making the world a much more uncomfortable environment. Moreover, more nuclear weapons in the world would mean a more complicated system with many more potential "broken arrows"; while we already know that, at times, it was just luck that saved us from a nuclear war.⁵

The proponents of nuclear weapons insist that nuclear deterrence prevents a Third World War. However, as demonstrated before, the risk of nuclear escalation still exists and is probably at one of the historically highest levels. Moreover, not physically used, nuclear weapons are responsible for killing Ukrainians as they enable Russia's conventional aggression and limit partners' support. Frequently called the "weapons of deterrence," nuclear weapons became the weapons of compellence covering up unjustified offensive aggression.⁶

The world negotiated the NPT with complete disarmament in mind. However, the NWS had no actual intent to come to zero nuclear weapons. Without significant

⁴For example, India–Pakistan and India–China clashes demonstrate that it is possible indeed.

⁵A "broken arrow" is defined as an unexpected event involving nuclear weapons that results in the accidental launching, firing, detonating, theft, or loss of the weapon (Konrad-Adenauer-Stiftung, n.d.). For examples, please consult <https://www.kas.de/en/web/multilateraler-dialog-wien/to-the-third-nuclear-age-a-timeline>.

⁶In this context, deterrence means to prevent challenging the *status quo*, while compellence means to challenge the *status quo*.

disarmament efforts, the threat of being attacked by a nuclear-capable power remains for the rest of the world. Thus, it can be a natural incentive for any state to acquire nuclear weapons because the most powerful ultimately attach power to them, bearing in mind their deterrence and power role emphasized by the Russian war against Ukraine since 2014. Unless the NWS undertake disarmament efforts in good faith and endorse the TPNW.

6 The Case for Disarmament

Overall, the situation gives momentum to the TPNW. It is worth emphasizing that this chapter does not argue for immediate, unilateral disarmament as it indeed would create an opportunity for those not willing to disarm to abuse the vulnerable state of the disarmed and exercise coercion for malicious purposes. Instead, it argues that disarmament negotiations in good faith and recognition of the TPNW as complementary to the NPT, along with further practical steps to achieve disarmament (including arms control) will help mitigate the damage inflicted on the NPT by Russia's war against Ukraine. Realistically, it will be a longer reciprocal process.

The NWS have lately been emphasizing the need to rely on nuclear weapons due to the deteriorating international security environment instead and, consequently, eroding the nonproliferation norm and instigating proliferation further. Russia's war against Ukraine became a hard hit for the NPT since all of its three pillars—nonproliferation, disarmament, and peaceful use of nuclear energy—were undermined. However, even under such unfavorable circumstances, the NWS (P5) did not show full comprehension of how their continued reliance on nuclear weapons erodes the nonproliferation regime. Not only the failed final document of the NPT Review Conference 2022 (RevCon) just acknowledged the adoption of the TPNW without any further endorsement but it also lacked any meaningful steps to address concerns over the lack of nuclear disarmament steps by the NWS (Mukhatzhanova, 2022).

Thus, first and foremost, it is critically important to ensure that the negotiations on disarmament and arms control as an interim measure continue in good faith and that the NWS take practical steps aimed at disarmament as set out in the NPT, as they:

pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control (United Nations, 1968).

As is known, such a treaty was adopted in 2017 and entered into force in 2021—the TPNW.

While the TPNW faces criticism from the NWS and their allies, it was their choice to oust themselves from the negotiation process, which violates the NPT-established provision. They voted against the UN General Assembly (2015) Resolution 70/33, which decided to establish the open-ended working group on

nuclear disarmament (contrary to the RevCon 2010 Action Plan, which the NWS and their allies had previously used as an excuse to avoid participating in the Conference on the humanitarian impact of nuclear weapons) (United Nations, 2010; Reaching Critical Will, 2013). They voted against the UN General Assembly (2016) Resolution 71/258 to initiate negotiations on a treaty banning nuclear weapons and did not participate in the United Nations (2017) conference to negotiate a legally binding instrument to prohibit nuclear weapons.

NWS' biggest criticism of the TPNW was its lack of validity (Erästö, 2019). First and foremost, saying that the TPNW will erode the NPT because of potential withdrawals is criticizing the passage above from the NPT itself: no matter the name, the NPT calls for a treaty on general and complete disarmament and, according to their logic, any such treaty would be eroding the NPT. Additionally, TPNW ratification does not alter the requirements for withdrawal from the NPT. At the same time, the ratifying state must maintain its existing IAEA safeguards and is not allowed to downgrade its obligations.

The next criticism that TPNW can undermine trust in extended deterrence has a logical error in itself: if the world achieves complete nuclear disarmament, there will be no nuclear deterrence of any kind; while as long as the process is ongoing, deterrence, including extended deterrence, will apply. Besides, for decades, there have been doubts if the United States would be willing to sacrifice Washington for Brussels even without the TPNW in the first place. In addition, the criticized lack of time boundaries for complete disarmament in the TPNW text was fixed by the agreement on the 10-year limit at the First Meeting of States Parties of the TPNW in 2022 (International Campaign to Abolish Nuclear Weapons, 2022).

Reflecting on how all three NPT pillars were hit by Russia's aggressive actions in its war against Ukraine and how Russia's nuclear threats violated UN Charter, the NPT RevCon 2022 still failed to provide an adequate response (Rosa, 2022). It is fair to say that genuine (even if long-term) NWS and allies' commitment to disarmament through the TPNW, as an internationally negotiated treaty on general and complete disarmament, according to the NPT, would strengthen the nonproliferation norm. Ultimately, bearing in mind all the risks and suffering nuclear weapons can bring and are bringing already to Ukraine (as discussed above), as well as pragmatic calculations of collateral costs of maintaining a nuclear arsenal and, in contrast, ever-developing advanced conventional capabilities and emerging technology, the world should come to complete and verifiable nuclear disarmament (Congressional Budget Office, 2021).

Arms reductions can be painless: if all the nuclear weapons between the United States and Russia permitted under current limits of the Treaty between the United States and Russia on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START) were used in a nuclear exchange, according to climate modeling, they would for sure cause a nuclear winter (Robock & Toon, 2012). Moreover, after using a certain number of bombs, there would not be too much-added benefit in using more and inflicting more damage (major cities would already be destroyed and infrastructure, as well as the economy, totally wrecked). Thus, true incentives for reductions exist.

Many agree that the arms control prospects are deplorable. However, moving to minimum deterrence can help de-escalate the situation and deter proliferation on a short-term basis. If the moderates win and there is a regime change in Russia (Radio Liberty, 2022), there will be potential for arms control and reductions. This is important because the world should not be complacent and just assume that all the rogue nations like DPRK, Iran, and other powers potentially interested in nuclear weapons would have already indicated themselves. After all, it would be extremely hard to control once the genie is out of the box. Even in the US–Russia relations, the longest existing nuclear diad, the blurriness of red lines at this very moment risks triggering nuclear use. Nuclear risks will rise in geometric progression with each potential new nuclear weapons holder in addition to the currently existing uncertainties among nine *de facto* nuclear possessors.

Otherwise, the U-factor of this war, coupled with the lack of strong responsive actions within the NPT mechanisms and overreliance on nuclear weapons by the NWS, can crumble the nonproliferation norm and incentivize nuclear proliferation, which risks the war chaos between haves and have-nots and the exponential growth of the probability of broken arrows. Disarmament-directed actions will enhance global security by curbing proliferation. Therefore, disarmament is pragmatic, even if it seems to belong to pure liberal institutionalist agenda at first glance.

7 Conclusion

Russian war against Ukraine is a systemic crisis that goes far beyond nuclear aspects but touches every one of them. More broadly, the system was unsuccessful in halting the aggression due to its fundamental flaw—the possession of veto power by P5, which also coincides with the official NWS status. The movement toward the cancellation of the veto power will detach the factor of nuclear weapons possession from the UN decision-making and mitigate the effects of the message that nuclear deterrence works. At the same time, while a temporary measure, encouraging more explicit nuclear signaling, may help prevent nuclear escalation due to misinterpretation and make deterrence more stable.

Ultimately—nuclear disarmament is desirable: nuclear weapons killed many in Ukraine, not even used, by covering the brutal Russian offensive with deterrence. As arms control perspectives indeed seem limited at the moment, the absence of arms reductions and continued reliance on nuclear deterrence/compellence send dangerous signals under current circumstances and can trigger proliferation. Therefore, disarmament is pragmatic and motivated by underlying security considerations. Momentum for the TPNW and new arms reductions has come. The key point is that proper adjustments must start immediately before the world faces bigger uncontrollable threats.

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Part V
The Impact of Russia's War Against
Ukraine on Regional Cases

Anchoring US–Russia Relations: Perspectives, Strategic Cultures, and Nuclear Posture



Valentina Cassar

Abstract This chapter argues that the respective strategic cultures of the United States and Russia are reinforced through their nuclear doctrines, and explores the way they continue to anchor one another's post-Cold War strategic outlook in this regard. Strategic culture is defined here as the mode of strategic thinking that political and strategic communities have been socialized into. The conditioning factors that are reinforced within their strategic cultures and nuclear postures are their geopolitical outlook; the maintenance of primacy; the defense of political values; and maintaining an extended political reach. The posture of the United States (US) has remained concerned with Russia, particularly in view of its nuclear capabilities. Yet other imminent or systemic threats have over the past decades taken a greater place within US strategy. On the other hand, Russia continues to see the US as a threat that is seeking to contain Russia. It is argued that Russia's motivations in Ukraine may be understood in terms of the global influence and parity that it seeks to retain with the US, and indeed parity with China within the US strategy.

Keywords United States · Russia · Strategic culture · Nuclear posture · National security · Primacy

1 Introduction

Russia's war against Ukraine has brought to the forefront the tensions and incompatibilities in the worldview that exist between Russia and the United States (US). The two countries are inextricably linked through their shared Cold War history and their shared status and responsibility as nuclear powers (Cimbala, 2020). In 1985, Reagan and Gorbachev asserted that nuclear war should never be fought and could never be won (Reagan Library, 1985). This has been reasserted over the years, more recently in January 2022 as part of a P5 statement (White House, 2022a). Yet

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Russia's aggression against Ukraine and nuclear saber-rattling have threatened such norms and convictions.

The current developments may be understood through the lens of US and Russian strategic cultures, and the inextricable role played by their nuclear postures. Their respective strategic cultures emerged out of the Second World War and became shaped by the development of nuclear capabilities and the Cold War. The past three decades have been characterized by tumultuous events—including the collapse of the Soviet Union and the subsequent shifts in the international order, 9/11, financial crises, the US overstretch, the rise of China, concerns over proliferation by rogue states and nonstate actors, and increasingly polarized domestic politics. Through this, Russia and the US remained central points of concern for one another and remain continuous features within their global and nuclear posturing.

Following a discussion of the principal features of their strategic cultures that, it is argued, are reinforced through nuclear doctrines and postures, this chapter will examine the way they continue to anchor and weigh down one another's strategic outlook within their post-Cold War strategic doctrines, despite the emergence of often more urgent and systemic challenges. It will be argued that Russia's actions may be understood as part of a broader resistance toward shifting balances of power within the international community and as part of its efforts to anchor its status within a changing global and nuclear order.

2 Conceptualizing Strategic Culture

Whilst the prevalence of culture in International Relations (IR) discourse came of age during the post-Cold War period, the significance of cultural factors in strategic theory had always been inferred. The term "Strategic Culture" was introduced by Snyder (1977) in his paper, "The Soviet Strategic Culture." Subsequent "waves" of strategic culture scholarship have explored the instrumentality of culture, and organizational and societal culture (Johnston, 1995). More recent scholarship has examined the utility of strategic culture to explain continuity or change (Adamsky, 2022; Bloomfield, 2012).

Yet cultural considerations and national approaches to war and strategy have long been identified (see Liddell Hart, 1932; Lind, 2006; Weigley, 1973). von Clausewitz (1983, p. 732) argued that the factors that influence the making of policy and strategy—including "the character of the peoples and their governments"—cannot be detached from the war itself. Literature on strategy and the causes of war also maintain that the strategic approach is "rooted" in an understanding of the vulnerabilities and influence of the cultural and political base (Howard, 1983).

Such notions were also expressed in Soviet literature. The seminal work on "Military Strategy" by Sokolovsky (1963, p. 307) states that "in preparing the nation and armed forces for war, each country relies on its economy, science, technology, and culture, and also takes into account the forces and capabilities of the probable enemy." This definition is almost synonymous with the notion of strategic culture and embraces many of the concepts underlined within the literature.

Despite decades of fluctuating attention, the definition of the concept remains nebulous (Bloomfield, 2012; Echevarria, 2013). This chapter defines strategic culture as the mode of strategic thinking that political and strategic communities have been socialized into (Snyder, 1977). It represents the way a country has been socialized to think about itself, its role and place within the international community, and how it perceives threats and the use of force in relation to its broader domestic and foreign policy goals and strategic objectives (see Booth, 1991; Gray, 1981). It is the values, geopolitical outlook, objectives, and behavior patterns regarding strategy and the use of force that are common to members of a particular strategic community. This provides the lens through which strategic scenarios are perceived, policies formulated, and strategic decisions are taken.

It will be argued that the strategic cultures of the US and Russia may be observed and traced through scrutiny of policy documents and statements. Bloomfield argues that a clearer distinction should be made between policy and behavior (Bloomfield, 2012). Whilst behavior should not be discarded or discounted, strategy documents give an insight into the strategic vision states have of themselves and their objectives before their intentions become derailed by circumstances. Furthermore, it helps us to understand the broader foreign policy and strategic thinking through which state actors may approach international developments.

3 Mapping US–Russian Strategic Cultures and Nuclear Postures

The strategic cultures of the US and Russia have been underpinned by the possession of nuclear capabilities, whereby the following parameters serve as conditioning factors for both their strategic cultures and nuclear postures: a particular geopolitical outlook; the maintenance of primacy; the defense of political values; and maintaining an extended political reach. These can be observed within their broader policy statements, strategy documents, their nuclear postures, and across the varying “fluctuations” between subcultures in policy and behavior. Moreover, their nuclear capabilities and postures in turn sustain the broader strategic culture and views maintained.

3.1 Geopolitical Outlook

The outlook of the US is molded by its geographic expanse and isolation, and the sense of exceptionalism that has in part emerged from this (Gray, 1981). As a result of the Cold War, the US became an active player in regions far beyond its own (Klein, 1988). Following the end of the Cold War, the US sought to adjust its global posture yet its geopolitical outlook retained many of its Cold War strategic

assumptions (Dueck, 2006). It considers itself a key player in other continents and appeared to embrace its responsibilities for underwriting international security (Chollet & Goldgeier, 2008; Lewis, 2012). This outlook is facilitated and reinforced by its nuclear capabilities, together with other political and economic resources (Klein, 1988; Sperling, 2010).

Russia has also been profoundly impacted by its historical experiences and geopolitical realities, with extensive continuity from the Tsarist to the Soviet period, until the present day (Tsygankov, 2022). Russia's geopolitical outlook has remained consistent, despite considerable geopolitical changes. Subsequently, a primary feature of Russia's strategic posture is the expectation that geopolitical realities should conform to its geopolitical outlook, rather than vice versa. This is a perspective that is reaffirmed and facilitated by Russia's Nuclear Policy.

3.2 *Primacy*

Both the US and Russia have historically viewed themselves as exceptional. In his assessment of Cold War history, Gaddis (1998) observed that the roots of US and Russian ambitions for grandeur predate their post-Second World War rivalry. He cites Alexis de Tocqueville (as cited in Gaddis, 1998, p. 1), who, in 1835, wrote:

There are now two great nations in the world, which starting from different points, seem to be advancing toward the same goal: the Russians and the Anglo-Americans... Each seems called by some secret design of Providence one day to hold in its hands the destinies of half the world.

Over the past decades, this sense of exceptionalism has been bolstered by their nuclear capabilities.

US primacy rests on political, economic, and military primacy as well as technological superiority (Troxell, 2012). These principles have long been engrained within its outlook (United States National Security Council, 1950). Its nuclear capabilities continue to play a central role in securing its primacy (Kroenig, 2018). Moreover, the US is driven by the need to maintain its advantages or relative parity. Over the past decades, its nuclear posture remained concerned by Russia's nuclear abilities, yet Russia was not the sole nuclear concern. Other issues and actors, such as a rising China, rogue states pursuing nuclear ambitions, or the role played by nonstate actors, also dominate the US posture.

Inherent in Russia's strategic culture is its demand for primacy and a messianic sense of self, which is deeply rooted in historical, cultural, and ideological tradition (Sinovets, 2016). Russia inherited the Soviet Union's super-power mindset (Miller, 2004), together with the perspective that it is a great power and expects to be treated as such (Kuchins & Zevelev, 2012). This outlook also brings with it an engrained expectation for victory, yet is also accompanied by a sense of vulnerability, perpetual threat, and encirclement (Götz & Staun, 2022). Russia's nuclear credentials play a central role in upholding its domestic primacy and afford it a sense of international

status and parity that may otherwise not be achieved (Blank, 2010; Gottemoeller, 2004; Schneider, 2008).

3.3 Defense of Political Values

The US and Russia have remained defensive of their respective political values and systems. Central in US Strategy documents and narratives has been the defense of US national identity, its way of life, liberties, and freedoms. Indeed, what may be described as the blueprint of US strategic culture emerged from the 1950 National Security Council Report NSC68, which prioritized the US' defense of individual freedoms and liberties, in sharp contrast to the authoritarian values of the Soviet Union (United States National Security Council, 1950). The 1953 NSC162/2 also emphasized the centrality of values, the protection of the American way of life, and economic interests as vital to US security (United States National Security Council, 1953). These themes have remained a recurring feature within subsequent policy documents. It has also maintained a vision of itself as the international defender and guarantor of liberalist principles, despite criticisms that the US has not sufficiently done so over the past decade (Ikenberry, 2018; Kagan, 2018). Moreover, democracy promotion is presented as the foundation of US nuclear posturing (see Bush, 1991; United States Department of Defense, 1993; The White House, 1995).

Russia has also remained sensitive regarding its sovereign politics. Russia's state ideology is shaped by its geographic expanse and historical experiences and prioritizes the supposed collective interests of the state above individual interests and needs. The assurance of both a strong state, as a national objective, and a strong leader, is required to ensure such goals. The characteristic of Russia's state ideology is also the perception that ensuring democratic credentials is not a priority in the face of ensuring Russia's international stature. Russia's political system has remained characterized by the strong and central leadership, together with an acknowledgment that democracy has not yet been fully achieved (Sakwa, 2011).

3.4 Maintaining an Extended Political Reach

The US has maintained an extended geopolitical reach and prioritized alliances, taking comfort within multilateral frameworks or "coalitions of the willing." Nonetheless, the US has continued to assert—and implement—the ability to go it alone when support is not forthcoming (Sperling, 2010). Multilateral assurances and extended deterrence have remained consistent aspects of US nuclear posture and strategic culture, even during more inward-looking periods of international engagement.

Whilst Russia has been more inclined to act unilaterally, it recognizes the need to maintain external relations that enhance its power projection and has consistently

sought to maintain a sphere of influence or interest (Doris & Graham, 2022). Over the past two decades, Russia has denounced the unilateral behavior of the US and called for the establishment of a multipolar international order (Putin, 2007a). Russia has raised particular objections regarding the expansion of the North Atlantic Treaty Organisation (NATO) into countries that historically fell within Russia's sphere of influence. And this is precisely what we have seen escalate over the past years. Russia perceives itself to be politically and militarily encircled, and views its nuclear strength, or the threat thereof, as the best way to guarantee its security.

4 The US, Russia, and One Another

The strategic cultures and world views of the US and Russia are reinforced by their nuclear capabilities. It is useful to examine the place they hold within one another's geopolitical outlook and nuclear posture, and the way they have remained tethered to one another in this respect. Their outlooks have remained cognizant of one another, and each plays a central role in shaping the way they view their strategic roles within the international system, the way they view one another, and the way they value or interpret the utility of their nuclear capabilities. This helps us understand them so easily slipped back into a Cold War-style *modus operandi* in 2022.

During the early years of the Cold War, a set of parallel telegrams framed the way the US and the Soviet Union would view each other. The perspectives and tropes within these documents continue to ring true within current discourse and documents.

In 1946, Kennan's "Long Telegram" from Moscow to Washington set the tone that would characterize the Cold War. He argued that the Soviet regime was driven by antagonism toward capitalism as well as the Kremlin's historical sense of infallibility. He, therefore, recommended that US policy should focus on a long-term "containment of Russian expansive tendencies" (Kennan, 1991).

In a parallel telegram sent from Washington to Moscow that year, Soviet Ambassador Novikov (1991) warned that US foreign policy was imperialistic and geared toward global supremacy and indicated concern that American ambitions would threaten Soviet primacy. He also maintained that the US saw the Soviet Union as an obstacle to US supremacy.

The nuclear capabilities being developed would play a key role in retaining a deterrence-based balance of terror over the next four decades. Even in the aftermath of the Cold War, US and Russian nuclear postures would remain steeped in Cold War concerns, despite repeated efforts at engagement and dialogue (Stent, 2014). The relationship experienced a steep decline after President Putin's return to office in 2012 and following Russia's 2014 accession of Crimea. Russian interference in the US 2016 Presidential Election and President Donald Trump's rhetoric made the relationship more problematic. Writing in 2019, Tsygankov argued that it was misleading to interpret the deterioration in relations as a new Cold War, noting differences within the global context, including the absence of an ideological

dichotomy, and a rigid alliance structure. He, therefore, preferred to characterize the relationship as an asymmetric rivalry (Tsygankov, 2019).

Russia's invasion of Ukraine in February 2022, Western sanctions and NATO's rebooted *raison d'être* have led to an unprecedented low in US-Russian relations that appear to leave little room for re-engagement under the status quo.

5 The US in Russian Strategy and Nuclear Doctrine

If Russia's nuclear capabilities have anchored its claims to "great power" status, Russia's concerns over the US posture and its encroachment into its spheres of influence have been an inextricable aspect of this.

With the collapse of the Soviet Union, Russia inherited its historical status, outlook, international seat, and nuclear arsenal, as well as its fraught relationship with the United States. In the following years, Russia would remain bolstered by its nuclear capabilities, and apprehensive about the US. Within an international order in flux, the early years of the Russian Federation saw a weak state under weak leadership seeking to adapt. These years were characterized by a "Westernist" approach (Tsygankov, 2022) and efforts to overcome the mistrust between the two blocs (Yeltsin, 1992).

Yet Russia would continue to assert its status within the international system and rely on its nuclear capabilities to "eliminate the danger of nuclear war by deterring the launching of aggression against the Russian Federation and its allies" (President of Russia, 1993). Russia relied on its nuclear weapons as both a military and more importantly, a political tool to compensate for its status and shortcomings in conventional capabilities when compared to its counterparts (Sokov, 2000).

By the time President Putin took office in 2000, he inherited Russia that was highly decentralized with a weak foreign policy (Migranyan, 2004). He sought to centralize control of Russia's politics and restore its international status.

Nuclear Deterrence would become the main leitmotiv of Russian Military Doctrine in response to nuclear as well as conventional aggression (President of Russia, 2000a). Dialogue and the pursuit of Arms Control agreements were also prioritized within the Foreign Policy and National Security Concepts (Ministry of Foreign Affairs, 2000; President of Russia, 2000b).

Concerns over US dominance also remained prevalent (President of Russia, 2000b). Antagonism was heightened following the 2003 Iraq War (Putin, 2003), while critiques of Russian "authoritarianism" were viewed as hostile toward Russia's self-reliance (Putin, 2004). Putin's (Putin, 2007a) address during the 2007 Munich Security Conference reflected a culmination of the criticism of the US posture, stating, "I consider that the unipolar model is not only unacceptable but also impossible in today's world." Russia remained gravely concerned by the expansion of NATO into its traditional sphere of influence and the subsequent deployment of American missile defense capabilities (Putin, 2007b).

During Medvedev's Presidency (2008–2012), a more reconciliatory tone prevailed. Whilst Russia's primacy and concerns over marginalization remained, a less antagonistic approach was adopted and a more constructive strategic partnership was pursued (see Ministry of Foreign Affairs of the Russian Federation, 2008; President of Russia, 2009).

Putin's Presidency since 2012 has seen Russian power projection amplified. While mention is made of the need for collaboration, a harsher tone characterizes references to the US (Ministry of Foreign Affairs of the Russian Federation, 2013). Putin (2013) asserted that Russia does "not claim to be any sort of superpower," but highlighted Russia's responsibility as a guarantor of global stability. Seemingly in contrast to the US, he stated that Russia does not "encroach on anyone's interests, impose our patronage onto anyone, or try to teach others how to live their lives" (ibid.).

The 2014 Maidan, followed by Russia's annexation of Crimea, further exposed tensions in Russia's relations with the West and manifested Russia's perception of hostility. Putin criticized American and Western disregard for international law and a sense of exceptionalism (Putin, 2014). As Tsygankov (2014) noted, "the Kremlin is no longer willing to accept the US and the EU-favored outcomes."

Subsequent foreign policy documents would continue to assert Russia's "position as a center of influence in today's world" (Ministry of Foreign Affairs of the Russian Federation, 2016). Amid strained bilateral relations, the 2016 Foreign Policy Concept stressed the importance of building "mutually beneficial relations with the United States" (ibid.) due to their shared responsibility for strategic stability. The document inferred the parity that Russia seeks via its nuclear capabilities, and in turn, arms control negotiations (ibid.).

The more recent "Basic Principles of State Policy of the Russian Federation on Nuclear Deterrence" issued in 2020 also reflected Russia's concerns regarding US posture and encirclement. Russia's nuclear weapons would assure deterrence against a "potential adversary" and any aggression against Russia would be met with "the inevitability of retaliation" (Ministry of Foreign Affairs of the Russian Federation, 2020). In a not-so-veiled reference to NATO, the document refers to potential adversaries as both "individual states and military coalitions" (ibid.).

The circumstances or scenarios within which Russian deterrence would be considered are described, including scenarios that were echoed within Putin's nuclear saber-rattling since February 2022. These include the buildup of forces and "nuclear weapons delivery means," and the deployment of missile defense systems and other capabilities in territories bordering Russia and its allies (Russian Federation 2020).

Over the past decade, Russia has adopted a more assertive and aggressive posture, whilst continuing to rely on its nuclear capabilities to bolster its global status. As tensions escalated, Russia would revert to narratives that have long prevailed within its doctrines. During an address in December 2021, Putin stated that "It is extremely alarming that elements of the US global defense system are being deployed near Russia" (President of Russia, 2021). He elaborated on his proposed assurances that NATO should not expand, and blamed the US for the "escalation of tensions in

Europe” (ibid.) that was evolving at the time, and ultimately culminated with Russia’s war against Ukraine beginning in February 2022.

The war has been justified by Russia based on historical, ethnic, and territorial grounds, (Hill & Stent, 2022; Putin, 2021). In September 2022, he also blamed the West for fueling the developments that led to the breakup of the Soviet Union (Putin, 2022). He accused the West of seeking to weaken Russia through Russophobia and turning “the Ukrainian people into cannon fodder” and pushing them into a war with Russia (ibid.). He claimed that Russia was given no option but to engage in a preemptive military operation to liberate Donbas. He condemned the “nuclear blackmail” that was being targeted against Russia and reiterated Russia’s willingness to “make use of all weapon systems available” in the event of a threat to Russia’s territorial integrity (Ibid.).

A review of Russia’s nuclear doctrines and its concerns regarding the United States also confirms that Russia has utilized this war to reassert itself as a leading regional and global power at par with the United States, at a time when its status within international order was shifting and becoming sidelined, particularly by the rise of China.

6 Russia in US Strategy and Nuclear Posture

Nuclear capabilities play a central role in maintaining US Strategic Culture. While other issues and actors have dominated the US’ security agenda over the past decades, it is useful to explore the way Russia has featured within US strategy documents and remained engrained within its geopolitical outlook. These narratives are pertinent to explore within the context of shifting perspectives toward China, and the restructuring of US and European posturing following Russia’s war against Ukraine.

With the end of the Cold War, the Bush administration was aware of the need to reconstruct its strategic outlook and adjust to new realities (Chollet & Goldgeier, 2008). During the 1989 Malta Summit between Bush and Gorbachev, their discussions show a mutual desire to redraft the bilateral relationship in the context of the dramatic changes taking place (The White House, 1989). A tangible example of improvement was the 1991 Strategic Arms Reduction Treaty (START) Treaty, which reiterated that nuclear war cannot be won and must never be fought, and sought to shrink the burden of their respective nuclear arsenals.

Yet deterrence would remain the cornerstone of US posture, and the improvement in relations would not remove the Soviet Union, or later Russia, as a potential adversary (White House, 1990). The 1990s also saw power projection concerns begin to shift away from Russia (United States Department of Defense, 1992). Nonetheless, US nuclear posture would continue to provide extended deterrence. Whilst NATO allies were not prepared to reduce their dependence on American nuclear weapons (Wolfowitz, 2011), the US saw value in retaining Cold War

alliances that would provide political, economic, and security advantages within the new era (United States Department of Defense, 1993).

US strategy under Clinton remained concerned with uncertainty and adaptation. The influence of identity and national beliefs remained prominent, together with endeavors to retain a role of primacy, albeit one should be more engaged (White House, 1995). The US would maintain its nuclear deterrent and sought to balance “a world with fewer weapons and hedging against the unexpected” (United States Department of Defense, 1995). The Administration also recognized that proliferation, rather than “the nuclear arsenal of a hostile superpower, poses the greatest security risk” (*ibid.*, p. 84). Nonetheless, concerns over Russia remained, not due to hostility but due to the potential threat posed by its nuclear arsenal. Yet, the end of the Cold War allowed for reductions in nuclear forces.

The Bush Administration’s outlook was inevitably shaped by 9/11. In the immediate aftermath of the attack, Putin was reportedly the first Head of State to call Bush, leading Condoleezza Rice to observe that this symbolized that the Cold War was truly over (Rice, 2011). The 2002 NSS reflected a continued effort to build a new strategic relationship, asserting that “the United States and Russia are no longer strategic adversaries” (White House, 2002). For a time, the dynamic between the US and Russia remained distinctive but was not defined by direct contention.

Yet as the post-9/11 rapprochement dwindled, their relations declined during the post-NATO 2004 enlargement and post-Iraq War climate. The administration would become increasingly concerned by the state of Russian democracy and Moscow’s reliance on its nuclear capabilities to sustain its international posture (United States Department of Defense, 2006, 2008).

Obama was elected on the promise of reform, and his administration projected a new vision for US nuclear policy as epitomized by his 2009 Prague Speech (White House, 2009). Yet its defense posture was characterized by continuity. Change and uncertainty, concerns regarding rogue states, nonstate actors, and proliferation would remain fundamental aspects of US doctrine (United States Department of Defense, 2010). The administration was also concerned about the rise of other powers, notably China.

Following the so-called 2009 “reset,” strategy documents continued to underline the importance of maintaining stability (White House, 2010). The New START Treaty with Russia was signed in April 2010, and its ratification was described as an assurance that the button that unleashes nuclear destruction “will never be pushed” (United States Department of State, 2011).

The 2010 NSS noted that “the specter of nuclear war” between major powers had declined, yet still underscored nuclear threats as “the gravest danger to the American people and global security” (White House, 2010, pp. 1–8). Reflective of the administration’s broader concerns, the 2010 Nuclear Posture Review (NPR) underlined the importance of dialogue to ensure “strategic stability” with both Russia and China (United States Department of Defense, 2010, p. 4). The NPR described Russia as “America’s only peer in the area of nuclear weapons capabilities” and expressed concern regarding China’s modernization efforts (*ibid.*, p. 4).

Following Russia's annexation of Crimea in 2014, the 2015 NSS expressed greater concern regarding Russia's capabilities (White House, 2015). The document stated, "we will deter Russian aggression, remain alert to its strategic capabilities, and help our allies and partners resist Russian coercion" (White House, 2015, p. 25). However, it also left open the possibility of collaboration.

Trump's election led to debate over whether this administration marked a shift in rhetoric or substance (Hill & Hurst, 2020). The administration underscored a revival of American leadership (White House, 2017) and was concerned by a prolonged systemic rivalry posed by "revisionist" powers—China and Russia. Challenges posed by rogue states and transnational organizations remained. The "nuclear" nature of such challengers was elaborated upon in the 2018 NPR (United States Department of Defense, 2018).

Russia's place as a primary source of exasperation persisted as a disruptive and revisionist actor. The 2018 NPR observed that:

Russia is not the Soviet Union and the Cold War is long over. However, despite our best efforts to sustain a positive relationship, Russia now perceives the United States and NATO as its principal opponent and an impediment to realizing its destabilizing geopolitical goals in Eurasia (United States Department of Defense, 2018, p. 30).

Thus, the NPR acknowledged the problematic threat perception gap that had become more amplified between the two countries. The document expressed greater concern regarding Russia's threat of limited nuclear escalation, and what it described as Russia's "escalate to de-escalate" doctrine (ibid. p. 30). It argued that "Moscow threatens and exercises limited nuclear first use, suggesting a mistaken expectation that coercive nuclear threats or limited first use could paralyze the United States and NATO and thereby end a conflict on terms favorable to Russia" (ibid, p. 30). The Review also indicated Washington's exasperation with Moscow over ineffective arms control efforts, in particular its noncompliance with the INF. The administration eventually withdrew in August 2019 (Bugos, 2019).

Concerns remained regarding China's efforts in both conventional capabilities and nuclear modernization and sought to engage China in dialogue and arms control efforts (United States Department of Defense, 2018).

The Biden Administration published an Interim National Security Strategic Guidance that indicated the administration's thinking (White House, 2021). Emphasis was placed on the preservation of democracy, shifts in the global distribution of power, and the need to defend liberal institutions and norms. The strategy placed greater concern on China but described Russia as playing a disruptive role.

The document also reaffirmed the commitment to Arms Control and nonproliferation and the extension of the New START Treaty. The interim strategy declared the intention to "reduce the role of nuclear weapons in our national security strategy" (ibid.) by balancing deterrence with dialogue and strategic stability with China and Russia.

The October 2022 National Security Strategy (NSS) and National Defense Strategy (NDS), including the NPR, were cognizant of Russia's aggression in Ukraine, its nuclear blackmailing, and the revived attention toward the prospect of

nuclear war. The 2022 NSS declared the post-Cold War period to be over and emphasized the challenges posed by Russia and China (White House, 2022b). Whilst Russia was described as an immediate disruptive concern and threat to a free and open international system, China was described as the greater systemic challenge. The 2022 NDS also maintains a heavy focus on China, with the Pivot to Asia initiated under the Obama administration settling into an established posture (United States Department of Defense, 2022). Whilst Russia continues to be described as an irresponsible disruptor, China is clearly a greater concern.

The 2022 NPR, published within the NDS, affirmed the role of nuclear weapons to “deter strategic attacks, assure allies and partners, and achieve US objectives if deterrence fails” (United States Department of Defense, 2022). The document diverts from the principle maintained since the end of the Cold War and declares that “Hedging against an uncertain future’ is no longer a stated role for nuclear weapons” (*ibid.*, p. 7). The review also reiterates the importance of arms control and nonproliferation efforts to maintain strategic stability. Once again, emphasis is placed on the bilateral agreements between the US and Russia, but also on the need to include China in future arms control discussions.

A notable aspect of the NPR is China’s portrayal as the more pressing concern for US deterrence (United States Department of Defense, 2022). Whilst Russia remains “an enduring existential threat” through its revisionist posture, nuclear threats, and modernizing nuclear arsenal (*ibid.*, p. 4). The 2022 NPR also considers the possibility of nuclear threats on two fronts from two competitors, stating “We will rely in part on nuclear weapons to help mitigate this risk, recognizing that a near-simultaneous conflict with two nuclear-armed states would constitute an extreme circumstance” (United States Department of Defense, 2022, p. 12).

7 Conclusion

The United States and Russia remain entrenched within one another’s strategic outlook, which defines the way they view themselves, but also the challenges posed to one another’s strategic interests. Since the end of the Cold War, they have continued to view one another with concern—concerns that have once again become a center stage with Russia’s war against Ukraine.

This chapter has explored the way narratives and concerns regarding one another have evolved within their respective strategy documents and doctrines, whereby they have remained anchored within each other’s strategic cultures and deterrence postures. The parameters that define their strategic cultures—that is, their geopolitical outlook; their primacy; the defense of their political values and sovereignty; and their efforts to maintain an extended political influence—both inform their posture toward one another and mutually reinforce their respective doctrines and policies. Nonetheless, US strategic concerns have also evolved around other more urgent or systemic security concerns. Whilst Russia has been a central concern anchoring US nuclear posture, it has not been the only concern. Over the past decade, the rise of China and

the systemic challenge that it poses have started to feature more prominently within US' strategic concerns and also within its nuclear posture. On the other hand, as the US has acknowledged within its strategies, Russia continues to see the United States as a systemic threat that is seeking to contain Russia's place in the world. This challenges Russia's view of its primacy and the idea that it is a great power and should be treated as such, whereby it has seen itself becoming edged out in its pursuit of parity and great power status.

Exploring and understanding these narratives is even more pertinent within the context of Russia's war against Ukraine. Russia's motivations may be understood not only in terms of the regional and historical claims to unity and influence but also in terms of the global influence that it seeks to retain.

The delays in the publication of the United States 2022 NSS and NPR indicate a necessary reassessment of the United States' outlook in view of the war on Ukraine. China has long been and continues to be defined as the more consequential and long-term systemic concern in the eyes of the United States. Whilst Russia's actions in Ukraine have not removed the predominant concerns regarding China, it has ensured that Russia has retained parity as a disruptive actor that has succeeded in revising the European and global international security agenda together with shaking up the assumptions and norms regarding the global nuclear order that have long been taken for granted.

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NATO's New Strategic Concept: The Changing Role of Nuclear Weapons, from Collective Security Back to Collective Defense



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Abstract The strategic concept of the North Atlantic Treaty Organization (NATO) is a tool historically used by the Euro-Atlantic community to create a common vision of deterrence and defense policy that is now also actively used to signal adversaries about the redlines. The twenty-first century has brought new challenges and reinforced old threats. These changes, which were made under a step-by-step process, are reflected in the working documents of the Alliance while building a common understanding of response among member states. Once a consensus was reached, the unclassified strategic concept was published. In 2010, it reflected a favorable strategic environment and hopes for nuclear zero, while in 2022 strategic concept was shaped by deteriorating world order and features a return to collective defense as a priority combined with a much higher focus on the role played by nuclear weapons. Russian unprovoked attack in February 2022 has played a decisive role in this strategy change, reinforced the unity of NATO, and pushed allies to translate strategic decisions into practical steps.

Keywords NATO · Collective defense · Strategic concept · Nuclear weapons · Deterrence · Euro-Atlantic security

1 Introduction

If the Latin adage states *Si vis pacem, para bellum* (“If you want peace, prepare for war”), the war in Ukraine shows how many human lives, military equipment, and noncombatants’ sufferings democratic values and European choice cost in the twenty-first century. It is especially true when your contesting neighbor did not follow your denuclearization example and tries to change the international rules-based order by force.

The twentieth century will be always remembered for two World Wars shortly followed by the Cold War. But it was a great hope for a new generation, of Western

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political thinkers and ideologists that the twenty-first century will be remembered for cooperation and a new age of peaceful economic development. On the one hand, such to such thinking made the famous Latin adage forgotten and neglect the differences in the strategic culture of international actors neglected by Western society. On the other hand, it is understandable how great ethical, moral, financial, and political difficulties pose to preparing a democratic society for a nuclear war, especially when considering an Alliance composed of 30 independent member states based on democratic values as in the case of the North Atlantic Treaty Organization's (NATO). Moreover, it is important to define an adequate response to avoid an arms race or further escalation.

In 2022, NATO released its new Strategic Concept which stipulates a new approach to international challenges for the next decade, while trying to find a new balance (North Atlantic Treaty Organization, 2022). This chapter analysis to which extent NATO's New Strategic Concept is different from the previous one, revealed in 2010, and how Russian unprovoked aggression against Ukraine, in particular, has been reflected in these changes.

2 The Evolution of NATO Security Strategy

The basis of NATO's security strategy can be found in the Washington treaty and summed up to two founding pillars: (1) "all for one and one for all" also known as Article 5, and (2) "nuclear umbrella" (North Atlantic Treaty Organization, 1949a). These two pillars have been kept by NATO throughout time and became more than ever relevant, as well as attractive for new counties to join the alliance, in more aggressive international settings.

To better coordinate the actions of the allies, learn from the experience and anticipate future needs, NATO Defense and Military committees have produced, during the Cold War, a number of secret strategic concepts, starting already in 1949 with document DC 6/1 (North Atlantic Treaty Organization, 1949b). These strategies were recently declassified and mainly reflect a quantitative and qualitative balance of power between the United States (US) and the Soviet Union, as well as the economic situation, allies position, internal political situation, public opinion, military developments, and structural changes in the international system (Melnik, 2018). They show how, after the West lost its monopoly in nuclear weapons, allies moved from the idea of "massive retaliation" (deterrence by punishment) to its mix with a forward strategy of denial that became known as a "sword and shield" strategy; further transformed into a more "usable" flexible response (Monaghan, 2022).

After the dissolution of the Soviet Union, a new type of nonclassified strategic concept was introduced. They differ from the previous ones and while they still reserve the coordination and projection function of the strategic paper, they have become more wage in a military sense. These modern nonclassified concepts are more focused on the new key function—information. This function should signal the red lines and capacities to adversaries as well as reassure the allies that new and old

threats will be responded to by the Alliance as a whole, in the spirit of its Article 5. They are also periodically complemented by a classified document, only for internal use.

3 Threat Perception and NATO Strategy Change on the Edge of the Twenty-First Century

NATO's Strategic Concepts of the 1990s were shaped by a boost in arms control agreements, such as the Intermediate-Range Nuclear Forces (INF) Treaty in 1987, the Strategic Arms Reduction Treaty (START) in 1991, and the START II in 1993. While nuclear forces were still referred to as valuable and constitute part of the military mix together with conventional forces, existing back in the 1990s strategic environment enabled to review of the threats. The Russian Federation was no longer mentioned as an enemy or opponent, and the focus switched from collective defense to collective security.

Adopted in 2010, NATO's Strategic Concept of "Active Engagement, Modern defense" was inspired by former US President Barack Obama's Prague speech (North Atlantic Treaty Organization, 2010; Obama, 2009). It shifts the focus further away from nuclear deterrence to nonproliferation, disarmament, and arms control. Defense strategy moves toward the use of conventional precise-guided weapons supported by missile defense which, together, are seen as a possible replacement for nuclear deterrence in the future, to reach "nuclear zero" or a "world without nuclear weapons" (see Obama, 2009). The strategic concept is intrinsically peaceful and aims at a true strategic partnership with Russia as part of a cooperative security task (North Atlantic Treaty Organization, 2010). Two other core tasks concern collective defense for the member states, reflecting Article 5 of the Washington treaty, and Crisis management outside of the NATO members' territory.

Contrary to expectations, adversaries such as the Russian Federation perceived a shift from nuclear to conventional as an attempt to stipulate US hegemony in the area of disparity and missile defense as a means to disable their second-strike capabilities. Overall, the world order did not become more favorable to nuclear disarmament, but got even more complicated, with the multiplication of nuclear actors, the development of new technologies, a crisis of arms control, and the lowering of states' nuclear thresholds (Sinovets & Melnyk, 2020). While NATO's Strategic Concept has not changed from 2010 to 2022 and was only slightly complemented by the Deterrence and Defense Posture Review, in 2012, the security environment significantly deteriorated (see Vicente, 2019).

Russian continuous revisionist policy featured by its invasion of Ukraine in 2014 and further escalation in 2022, constant cyber-attacks against NATO and European Union (EU) members, interference in elections, violations of air space, provocation through the migration crisis on the border between Poland and Belarus, military buildup of both Russia and China, failure of international treaties, and end of arms

control agreements represent some of the key external challenges to the Euro-Atlantic system. NATO has also lived an internal crisis of underfinancing of armed forces by European members. On the one hand, American statements made by former US President Donald Trump were doubtful of two founding pillars of the Washington treaty, i.e., mutual defense and nuclear umbrella.¹ Such unstable circumstances demanded a strong and united NATO response through practical actions, including a common declaratory strategy. On the other hand, while no change in strategy rose doubts about ununited NATO, the production of an unconsolidated or weak document could have been an even worse signal.

The solution was found in these de facto strategy changes that were constantly reflected through NATO summit *communiqués*, starting from the Wales summit in 2014, half a year after Russian military aggression against Ukraine (see North Atlantic Treaty Organization, 2014). NATO summit in Warsaw in 2016 and Brussels in 2021 have fully reverted the focus, from collective security to collective defense (see North Atlantic Treaty Organization, 2016; 2021). NATO came back to its initial function of protecting its member states as a core priority, and nuclear deterrence reinstated its role as a guarantor of sovereignty for NATO members that used to be part of the Russian sphere of influence during the Cold War.

Such a return to nuclear deterrence and its crucial role to deter Russian military escalation was controversial in a democratic community polarized more than ever. Both proponents and opponents of strengthening nuclear deterrence as a response to Russian use of the threat of nuclear attack as a tool in its war in Ukraine wanted to live in a safe and peaceful international environment. Opponents of nuclear deterrence revigorated their efforts to abolish nuclear weapons, including through the new mechanism of the Treaty on Prohibition of nuclear weapons, and stressed how, in the wrong hands, these weapons can be misused, operationalized, and destabilize the international community. This highlights the possible benefits of a world without nuclear weapons.

However, countries such as North Korea or lately Russia questioned the international rules-based order, underpinning their aggressive rhetoric and actions with a nuclear arsenal as well as substitute deterrence by coercion. Such behavior is perceived as irresponsible by the Western society that would like to avoid such actors to possess weapons of mass destruction, but in international law, the rules are only obliging those actors that sign to these rules. These countries are unlikely to soon decide to abandon nuclear weapons due to their conventional-nuclear capabilities mix that depends on the most on the nuclear component. These states pose the largest resistance to denuclearization. 2018 US Nuclear Posture Review (NPR) states that “other nuclear-armed states have not followed our lead” (United States Department of Defense, 2018). The world did not follow Ukraine, which gave up the third nuclear arsenal in the world in the 1990s and is suffering a full-scale war on its

¹For example, conditioning protection of the allies by saying “if they fulfill their obligation to us, the answer is yes” or calling NATO “obsolete” (Trump, 2016; Freisleben, 2017).

territory in the 2010s; and it did not, indeed, follow the US' example of developing only nonnuclear hypersonic weapons to avoid misperception.

Unfortunately, such actions as unilateral risk reduction, disarmament, and denuclearization were and are perceived as a sign of weakness by adversaries of the West and one can only imagine how full denuclearization would be perceived by such countries that identify only the presence of the same/similar capability as a precondition for arms control and disarmament negotiations. Moreover, an everlasting issue is posed by the irreversibility of knowledge and capacity to build a nuclear weapon by the countries that already possessed it once.

These disputes on the future of nuclear weapons in combination with a full-fledged war in Europe in the background, and the arrival of a new US President Joe Biden, from the Democratic party, which promised to return to Obama's pledge on diminishing the role of nuclear weapons, set the stage for the adoption of NATO's New Strategic Concept.

4 The Systematization of Change Through NATO 2022 Strategic Concept

As mentioned in the previous section deteriorating international environment which among other things features by active use of coercion and nuclear blackmail brings a new context and pushes NATO allies to create a coordinated response. According to the task of reflecting the new security challenges in a solid form that the member states have set at the Brussels summit, the new Strategic Concept was developed just in time for the next Madrid Summit in 2022. The strategy had to protect common values, reinforce NATO military power, strengthen resilience, adopt a global outlook, and solidify the link between Europe and North America (Lindley-French, 2022). As a result, NATO continues to be a nuclear alliance and its nuclear capabilities fulfill the fundamental purpose of "preserving peace, preventing coercion, and deterring aggression" (North Atlantic Treaty Organization, 2022).

The question of preventing coercion and nuclear blackmail became of particular importance in the course of the Russian war in Ukraine. It was expected that the international community will not stay aside from clear violation of international treaties, norms, and principles unless there will be a constraining factor. Such restraining factor has been instrumentalized by the Russian Federation through nuclear intimidation as an attempt to influence decision-making in the Western capitals. This attempts to exert pressure on the West and cut off its help to Ukraine in the form of direct involvement in the crisis, or even shielding the Ukrainian sky, worked but the more such argument is used, the less power it has and Russian threats to use nuclear weapons in response to the supplying weapons to Ukraine had a low level of credibility (see Sinovets, 2022).

Even more counterproductive was the Russian attempt to threaten nuclear use when the battlefield dynamic became favorable to Ukraine. US, EU, and NATO

responses were firmly expressing that the use of nuclear weapons, regardless of their scale, by a nuclear weapon state against a nonnuclear one will be against the international rules-based order as a whole and will not threaten them but, on the contrary, lead to their direct involvement into the conflict. Even the countries that now try to keep a neutral position such as China or India would not be able to stay supportive of Russia in such settings.

“NATO does not seek confrontation,” but it does realize and prepare a response to the key threats, among which the Russian Federation is recognized as posing “the most significant and direct threat to Allies’ security and to peace and stability in the Euro-Atlantic area” (North Atlantic Treaty Organization, 2022). This makes a huge contrast with the text of 2010, where the Alliance calls for a “true strategic partnership” with Russia (North Atlantic Treaty Organization, 2010). Regardless of a difficult geopolitical situation, NATO is still “willing to keep open channels of communication” which seem to be blocked on the Russian side due to internal fear of leaks of sensitive information to the West even in areas that were historically considered sacral as arms control or fight with international terrorism (North Atlantic Treaty Organization, 2022).

The new Strategic Concept is more than ever stressing the defensive character of the Alliance, the defensive character of the posture itself, and posing no threat to the Russian Federation. While the latter statement was already present in the 2010 Concept, the idea of communicating the defensive nature of NATO’s actions appears first in the Wales Communiqué and is referring to the Ballistic Missile Defense program (North Atlantic Treaty Organization, 2014). This concept was further developed through the following summits and found its full reflection in the new strategy (see North Atlantic Treaty Organization, 2016, 2021). Considering the growing military force of the Alliance, a stronger role dedicated to nuclear deterrence, and the more militarized character of the Concept in general, such a declaration of peaceful intentions was extremely necessary this time to underline that the reasoning behind this “preparation for war” is “willingness of peace” and not invasive or imperial aspirations of the Alliance.

The People’s Republic of China (PRC) is outlined as a “systemic challenge” (North Atlantic Treaty Organization, 2022). “China’s stated ambitions and coercive policies [that] challenge our interests, security, and values” appear for the first time in NATO’s strategy (ibid). It echoes Biden’s recent NPR, where the PRC is characterized as the “overall pacing challenge” due to the “ambitious expansion, modernization, and diversification of its nuclear forces and . . . nascent nuclear triad” (United States Department of Defense, 2022). NATO is more focused on Chinese “malicious cyber and hybrid operations,” “confrontational rhetoric and disinformation,” as well as cooperation with Russia and support to its attempt to “undercut the rules-based international order” (North Atlantic Treaty Organization, 2022).

It is important to mention here that such states as Poland, Latvia, Estonia, Lithuania, and the Czech Republic, the Parliamentary Assembly of the Council of Europe, and The Conference of Parliamentary Committees for Union Affairs, NATO’s Parliamentary Committee have already recognized the Russian regime as

a terrorist, due to its constant violations of the rules of war, its attacks on civilians, and its damages to nuclear power plants in Ukraine (Moller-Nielsen, 2022). In the case of the creation of a strong international coalition to recognize the Russian Federation as a terrorist state, all other states cooperating with this country will be counted as sponsoring terrorism. The question of a fight against international terrorism is traditionally one of the key tasks of the North Atlantic Treaty Organization, and Trump's NPR mentioned that "a terrorist nuclear attack against the United States or its allies and partners would qualify as an extreme circumstance" (United States Department of Defense, 2018).

North Korea and Iran are briefly mentioned in the New Strategic concept as such countries that continue developing nuclear and missile programs (see North Atlantic Treaty Organization, 2022). Cyber security and security of space, together with risks and benefits that can bring emerging technologies, become more and more present in the strategy. Climate change and energy security are also introduced to build stronger resistance across the alliance in face of natural and man-made hybrid challenges.

Broadly speaking, the Alliance is trying to counterbalance adversaries' strategy to exploit horizontal and vertical "gray zones." In this context, horizontal gray zone probes can be illustrated by Ukrainian or Georgian cases. These countries were seen by the Western partners as the EU as so-called "common neighborhood" that can be effectively developed in economic and political cooperation with both Western and Russian organizational structures but regardless of their sovereign wish to join the European and Euro-Atlantic community were left outside the system "to not irritate Russia" and avoid the war. It was seen as a compromise to keep these countries in the European Eastern Neighborhood and Russia's Near Abroad paradigms at the same time. In reverse, the Russian perception of this "gray zone" was that these countries are of no interest to the West and as such can be easily contested.

About vertical "gray zones," they represent another spectrum of adversaries' attempts to challenge the limits of Article 5 and NATO's nuclear umbrella in the sense of nonlinear attacks. Commonly known as hybrid wars, they have no start date and no declaration of war. They use peaceful means such as trade, media, and new technologies to conduct hostile information activities, espionage, and targeted attacks (Lindley-French, 2022). The crisis prevention and management section are now also covering building resilience in the Euro-Atlantic area, while still mentioning missions abroad and international partnerships for tackling crises around the globe.

Part of the Strategic Concept dedicated to cooperative security becomes more realistic with Russia-related issues, together with arms control being transferred to the first deterrence and defense section (see North Atlantic Treaty Organization, 2022). Now cooperative security enlarged the section on strategic partnership with the EU as a deeply institutionalized alliance that becomes more and more juridically harmonized and increases common military planning (ibid.). This section also focuses on tailored partnerships and for the first time mentions the Indo-Pacific region (ibid.). This can also lead to the further signing of Enhanced Operational

Partnerships with Japan and South Korea as it already exists with Australia (Hamilton, 2021).

Arms control and its current challenges take another central part of the document. At the same time, considering the strong prodenuclearization position of countries such as Norway, disarmament and nonproliferation are also mentioned as they “strongly contribute to the Alliance’s objectives” (North Atlantic Treaty Organization, 2022; see Ellehuus et al., 2022).

5 Complex Euro-Atlantic Deterrence System

To be effective, the whole Euro-Atlantic deterrence system demands a strong commitment from the US to protect Europe with its nuclear arsenal. This can be done by US tactical nuclear weapons (TNW) in Europe as well as with US strategic force. It plays a role of “deterrence by punishment” (so-called “sword”) and European military preparedness (to participate in the use of tactical nuclear operation at par with nonnuclear strength) that plays a role of “deterrence by denial” (also known as a “shield”). When both pillars are well combined, they mutually enforce one another, and one discourages the adversary from checking the strength of another (Mazarr, 2018).

According to the Defense Investment Pledge from the Wales Summit to spend at least 2% of GDP on defense and at least 20% on innovations, most NATO member states have increased their spending and also different kinds of involvement in the defense policy of Alliance (Kirk-Wade & Balakrishnan, 2022; North Atlantic Treaty Organization, 2014). These targets are also mentioned in the EU framework, which creates additional pressure on the countries that are part of both structures.

The US has fully returned to Europe and, after the times of uncertainty under Donald Trump’s presidency, it fully restated its readiness to support the allies. More practically, the multinational battlegroups in Estonia, Latvia, Lithuania, and Poland, established after 2014, are being upgraded into brigades and additional ones should complement them in Bulgaria, Hungary, Romania, and Slovakia. These small forces initially had to ensure the involvement of countries that are far from Eastern NATO frontiers and the raging war there. Similarly, the US TNW are stationed in Europe and mainly play the role of additional guarantee for US involvement in a potential European war. Now they become more and more convincing and come closer to the numbers of six to seven brigades that military simulations have shown as absolutely necessary to resist the first Russian wave of attack (see Tertrais, 2016). These multinational forces at the frontiers will not be left as a victim but reinforced in times of crisis with the deployment, within 30 days according to the “Four 30s” plan, of 30 troop battalions, 30 squadrons of aircraft, and 30 warships.

More than ever after the Cold War, NATO member states are involved in nuclear, conventional, and missile defense planning and its integration into one single complex defense system. This was also reflected through NATO structures, with a new NATO Arms Control, Disarmament, and Weapons of Mass Destruction

Nonproliferation Center (ACDC). Many participate in nuclear exercises, such as “Steadfast Noon,” this year, and operate dual-capable aircrafts that can be used as part of the common nuclear defense operation (see Kristensen, 2022). The input of these countries, as well as those hosting US TNW, is increasingly emphasized with every next strategic document that is published.

While TNWs are not on high alert, and that decision-making process combined with technical procedures to de facto use these weapons can take from days to weeks, the fact that Belgium, Germany, Italy, Netherlands, and perhaps Turkey still participate in the nuclear sharing program ensures, first and foremost, the US involvement in the case of a military threat to European NATO allies. It also makes European countries involved in military planning and decision-making and enlarges the spectrum of military options for the Alliance as a whole. Moreover, similarly to the role of the independent French and British nuclear arsenal, it increases the number of actors involved and complicates the elimination of all forces by one strike. The important value of British and French nuclear arsenals for Euro-Atlantic security and the contribution of these separate centers of decision-making to the complication of the calculations of potential adversaries are also traditionally underlined in the Strategic Concept.

6 Conclusion

NATO was created in 1949 as an alliance based on a particular set of values that include human rights, democracy, and rule of law. These values are important for the Alliance and play a sacramental role in a framework that determines the range of decisions by this international organization. Countries and nonstate actors that are now recognized by NATO as a threat try to reject these values and undermine the global rules-based world order by force, including in the nuclear field, particularly rules of nuclear nonuse, and the fundamentals of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

Such aspirations of adversaries have to be thoroughly confronted as other actors are closely watching the red lines, monitoring if a wrong precedent is set, and could then repeat successful scenarios of using “gray zones” to conquer neighbors’ territories and challenge the international rules-based order. This explains that the willingness of the West to support Ukraine against Russian aggression is composed of both moral and practical reasons; especially as the Russian Federation has often underlined that they do not fight Ukraine but a “proxy war” with NATO. It perceives de facto NATO as already a party to the conflict (Livingstone, 2022). International support is creating an indispensable element for bringing back a world order based on the rule of law and not the law of force. The precedent of an unpunished attack of a nonnuclear one (that was denuclearized years ago) by a nuclear state followed by threatening the international community with nuclear war to keep it silent cannot be set as not only immoral but also an opening way for a future more severe crisis.

Broadly speaking, the Russian war in Ukraine changed the whole nature of the international security environment, reshaped NATO, transformed, and interlinked its

three core tasks. While the conflict is not on the territory of any ally and should be out of deterrence and defense tasks, Ukraine represents and is fighting for the Alliance's fundamental values. NATO member states are placed at the edge of a conflict and suffer all the time from the spill-over effects: be it missiles falling in Poland, cyber-attacks in Baltic states, or the risk of energy shortage. The issues of the Russian Federation and arms control talks were transferred to the first deterrence and defense task, as usually these kinds of agreements are conducted with enemies to reduce tension and increase transparency. Cooperative security with a focus on cooperation with the EU, most of which members are at the same time members of NATO, as well as resilience building in crisis management, is now also inextricably connected to deterrence and defense goals. As a military-political organization, NATO has proved to be resistant and within certain limits effective in defending its members from adversaries. To do so, a new Strategic Concept communicates its vision of deterrence and defense in the twenty-first century.

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How Did the Russian Invasion of Ukraine Influence Iran's Approach to the Nuclear Threshold?



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Abstract The Russian invasion of Ukraine and understanding of the political power of nuclear weapons strengthened Iranian belief in self-defense importance. It reflects in Iranian changing behavior, as it created new opportunities for Iran to advance its interests, such as Iran–Russia relations, which have reached an unprecedented peak: countries signed a \$40 billion energy deal and the drone deal. After the Joint Comprehensive Plan of Action (JCPOA) negotiations were deadlocked, the further deterioration of relations with the United States (US) and European Union (EU) continued and ultimately demonstrated the failure of the revival of the agreement or a new similar deal. The gap between sides was wider after the Biden Administration's threat to use military force to stop the Iranian nuclear program. Accordingly, this chapter consists of the most important stumbling blocks in the JCPOA negotiations: the Islamic Revolutionary Guard Corps (IRGC), Iranian success in its missile and space programs, and the nationwide protests across the country. The Iranian strategic thinking, ambitions, and rivalry in the Middle East region explain the drastic change from negotiations to confrontation as soon as they see an opportunity in increased cooperation with Russia and China.

Keywords JCPOA · Nuclear program · Revolutionary guards · Russian invasion · Ballistic missiles · Iranian protests

1 Introduction

The Russian invasion of Ukraine creates new international challenges and uncertainties. One of them is the growing role of nuclear weapons, which, as Russia has demonstrated, can be used to shield conventional aggression. This tendency is directly related to the nonproliferation regime, as Russia's example could prompt

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some states to rethink their status as non-nuclear weapon states for deterrence and/or power projection purposes.

United Nations (UN) Secretary-General António Guterres began his opening speech at the Tenth Review Conference with the following words: “Today, humanity is just one misunderstanding, one miscalculation away from nuclear annihilation” (Diaz-Maurin, 2022). He emphasized that the Russian invasion of Ukraine, the Middle East, and the Korean Peninsula deepened the nonproliferation crisis.

The negotiating process has become even more complicated because of the mistrust of all international agreements, as Russia’s invasion has helped erode trust and demonstrated the political power of nuclear weapons. The fact that nuclear-armed Russia is attacking Ukraine, — a country that got rid of its Soviet-era nuclear weapons in exchange for assurances of its territorial integrity, demonstrated the importance of deterrence.

Iran has been an issue of international concern for the last 20 years because of its nuclear and ballistic missile programs. Nowadays, the international tendency could have even more impact on how Iran might perceive the reliability of agreements and diplomacy, especially after the United States (US) withdrawal from the Joint Comprehensive Plan of Action (JCPOA) in 2018. As well as there are other alarm signals of the appeared mistrust: Saudi Arabia’s intentions to enrich uranium with up to 20%; Finland and Sweden’s sudden membership application to the North Atlantic Treaty Organization (NATO), which can cause concerns according to the country’s possible position toward nuclear weapons as well; and the potential transfer of highly enriched uranium to Australia as part of its submarine deal with the US and the United Kingdom could set a proliferation precedent of nuclear technology in other countries (Diaz-Maurin, 2022).

As Iran feels an existential threat from the US, Israel, and Saudi Arabia, it could push the country toward nuclearization. For example, Iranian Brigadier General Abolfazl Shekarchi stated that “The Americans and Zionists (Israel) know very well the price for using the word ‘force against Iran’” (Heinrich, 2022). This was a statement made after the Biden Administration warned Iran with using force as “last resort”; to keep Iran from nuclear weapons (Reuters, 2022). The question is how did the Russian invasion of Ukraine influence Iran’s approach to the nuclear threshold? Can it result in a shift from blackmailing to crossing the line?

Furthermore, the fact that JCPOA negotiations are stuck and Iran continues construction activities at its underground nuclear complex only reinforces this theory. The new wave of deepening relations with Russia, a new energy deal, and supplying Russia with drones by the Islamic Republic of Iran (IRI) demonstrates Iran’s possible new international role, which threatens global security even more.

In this regard, the chapter will highlight the process after the US withdrawal from the JCPOA and then review negotiations for its revival of it in the last years. The chapter then focuses on why the negotiations for the revival of the JCPOA failed and on changing the nature of Iran’s perceptions. Finally, the chapter will analyze how Russian–Iranian relations affect the Iranian nuclear program while pointing out the importance of the Russian invasion of Ukraine for Iran.

2 Changing Realities After the US Withdrawal from the JCPOA

After the US withdrawal from the deal and the restoration of the US sanctions in 2018 caused foreign investment to dry up and hit oil exports again. Since the US abandoned the deal in 2018, Iran has lost 90% of its oil exports, a key source of revenue. The result of the sanctions was heavy for the economy, as according to the International Fund, Iran's GDP contracted an estimated 4.8% in 2018 (International Monetary Fund, [n.d.](#)).

Historically, the European Union (EU) has been more interested in cooperation with Iran than the US, Europeans decided to skip the transatlantic unity after the US withdrawal and initiated a separate mechanism of trade with Iran called Instrument in Support of Trade Exchanges (INSTEX), aimed at trading with Iran bypassing the US sanctions (Sinovets & Gergiieva, [2019](#)). However, INSTEX could not directly resist the Trump administration's "maximum pressure" campaign, nor could it fully deliver on the JCPOA's economic promises. In June 2019, Iran announced that its "strategic patience" was over, and each month it would take one more step of withdrawal from the deal. After failed attempts, it became clear that the EU was unable to save the deal without the US.

In January 2020, the head of Iran's elite Quds Force, General Qasem Soleimani, was killed by a US drone attack in Iraq. He was widely seen as the second most influential figure in Iran, behind Ayatollah Khamenei. In the Quds Force, an elite unit of the Iranian Revolutionary Guards, General Qasem Soleimani reported directly to the Ayatollah and was mainly seen as a heroic national figure (Doucet, [2020](#)). This provoked a major escalation in tensions between Washington and Tehran, and Iran responded by enhancing its nuclear and further developing its missile programs.

The Iranian missile program is one of the biggest concerns for the Middle East countries as for the West. After the US withdrawal from the JCPOA, Iran managed to achieve some progress in its missile program. Iran has already constructed intermediate ballistic missiles, Shahab-3 and Shahab-4, which are able to deliver nuclear warheads to targets in Israel and South and Eastern Europe. Moreover, after launching several space satellites, Iran came very close to obtaining the technologies needed to create intercontinental ballistic missiles (ICBMs).

In January 2021, Iran began enriching uranium to 20%, and after Israel attacked Iranian nuclear facilities and assassinated nuclear scientists, Tehran generally responded by increasing enrichment to 60% (Davenport, [2021a](#)).

Iran also removed the four cameras from the Karaj facility in June 2021 after an obvious sabotage attack on the site that Tehran blames on Israel. In a letter to the International Atomic Energy Agency (IAEA) on October 28, 2021, Iran said it had no legal obligation to allow inspectors to replace the cameras and was "investigating whether the terrorists have used the IAEA's cameras to launch an attack on the complex" (IAEA, [2021a](#); Staff, [2021](#)).

3 Back to JCPOA Negotiations

After Trump's poor policy choice of ruining agreements, the newly elected US President Joseph Biden immediately indicated his willingness to rejoin the JCPOA in early 2021, there were six rounds of indirect talks in Vienna and some kind of hope for success, but the parties did not manage to agree before presidential elections in Iran. In June 2021, Ebrahim Raisi became a new President of IRI, and it had a bad sign as he was a hard-liner than Hassan Rouhani. The parties returned to the negotiating table only in late November 2021. The negotiations were complicated as Iran demanded more concessions from the US, and the new administration emphasized its dissatisfaction with the progress. State Department spokesperson Ned Price warned that if Iran's nuclear program advances to the point where the nonproliferation benefits of the deal cannot be restored, the US will change its course (Davenport, 2021b).

Despite the revival negotiations of the JCPOA, Iran continued to advance its nuclear capabilities. Due to the IAEA November 2021 report, Iran has installed more than 170 IR-6 machines at its Fordow nuclear facility since the September 2021 report, which can enrich uranium more efficiently than the IR-1 machines that were permitted for enrichment under the JCPOA (IAEA, 2021b). In addition, IAEA's November 2021 report mentioned the inability to receive access to the Karaj facility to install new surveillance cameras (ibid.).

In January 2022, the eight rounds of negotiations showed some progress and optimism, but in March 2022, as EU foreign policy chief Joseph Borrell mentioned in his Twitter post, talks were paused due to "external factors" (Bozorgmehr, 2022a). He did not clarify which "external factors" he meant, but it was obvious that the Russian invasion of Ukraine influenced the whole negotiation process. First of all, as Russia is one of the negotiating parties, and after February 24, the JCPOA was not a matter of importance, as well as Russia-West relations began to deteriorate. In March 2022, Russia disrupted the process by suggesting that Ukraine-linked Western sanctions on Russia would damage the prospects of achieving the revival of the JCPOA agreement (Foroutan, 2022). The negotiations were paused.

On June 9, 2022, Iran disconnected 27 surveillance cameras that were monitoring its nuclear sites, which caused an immediate reaction from the IAEA. However, Tehran's decision came after the IAEA (2022) issued a [resolution](#) on June 8 that condemned Iran for not explaining traces of uranium in at least three [undeclared locations](#) (Vicente, 2022). Nevertheless, it did not prevent parties from further negotiations, which began on June 28 in Doha — after a three-month break. Before, Joseph Borrell emphasized that "decisions are needed now if the parties want an agreement to restore the JCPOA" (Davenport, 2022c). The sides were trying to agree before the Review conference, as it would give a good outcome for the Nonproliferation regime, but they did not manage to.

After the final draft of a new version of the JCPOA on August 8, Josep Borrell mentioned: "what can be negotiated has been negotiated" and that if Washington and Tehran respond positively, "we can sign this deal" (Iran International, 2022).

Unfortunately, the final draft was not approved, and since the beginning of September, negotiations have been deadlocked due to the tough Iranian line. Iran asked for further guarantees that would secure Tehran's economic benefits of a new deal and demanded that the IAEA stop its investigation according to Iranian undeclared nuclear activities before 2003 (Liechtenstein, 2022).

4 New Realities and Stumbling Blocks for Negotiations

The complicated environment around the revival of the JCPOA talks could be explained by historical reasons, which formed Iranian strategic thinking and high ambitions. Furthermore, new possible world order can explain a new wave of Iranian behavior. The crucial issue to understand is that it is impossible to deal with Iran as in 2015 because of its increased possibilities and ambitions, which are exactly those stumbling blocks for the JCPOA negotiations. It should be noted that the successful negotiations were partly due to the soft power the EU had over Iran back in 2015. Exactly economic benefits made Iran accept the JCPOA's constraints on its nuclear program. However, it seems that European soft power has already diminished, which requires further concrete steps to revive the JCPOA or a similar new deal. For example, nowadays, Russia's isolation could be a great opportunity for Iran to take its place in gas supplies to Europe, and they were quite close to renewing the JCPOA, but it seems that the EU "carrot and stick" policy does not work for Iran anymore (Vicente, 2022).

First of all, Tehran demanded the removal of the Islamic Revolutionary Guard Corps (IRGC) as a foreign terrorist organization, which is a principal issue of a certain respect. IRGC's main task is to preserve the IRI and the ideals of the 1979 revolution, and it combines traditional military roles with a relentless focus on supposed domestic enemies (Counter Extremism Project, n.d.). IRGC answers to Supreme Leader who oversees the Iranian ballistic missiles force and nuclear weapons development. Removing it from the terrorist list is complicated as the IRGC was not designated as a foreign terrorist organization until April 2019, so it is not included in sanctions that the US would be required to remove to return to JCPOA compliance (Davenport, 2022a). The US negotiating team had the intention to agree if, in return, Tehran provided assurances of de-escalation of the tensions in the Middle East and no retaliation for the US killing of Qasem Soleimani, but Iran rejected those proposals.

The other matter of concern with Iran is the Iranian ballistic arsenal, which is the largest in the Middle East. Exactly ballistic missile technology was the reason for the renewed sanctions by the US in 2018. Iran insists that its missile program is not negotiable under any circumstances and claims it only has defensive measures (Izewich, 2017). Of course, it is potentially dangerous, but the level of this danger depends on Iran's decision whether to obtain or not to obtain nuclear weapons. If Iran is not going to produce nuclear warheads, its space and missile program will still

cause some tensions. However, the risks for international security will remain rather low and could be eliminated in the future if a new deal with Iran is reached.

The last Iranian success in its missile and space programs raised a new wave of concern. Iran has already constructed intermediate ballistic missiles, Shahab-3 and Shahab-4, which can deliver nuclear warheads to targets in Israel and South and Eastern Europe (Cheban, 2020). On April 22, 2020, Iran launched its first military satellite, Nour-1. This was a new turning point in the history of the Iranian space program and was achieved a few months after the US State Department announced that the US was imposing sanctions on the Iranian Space Agency (United States Department of State, 2022). Iran gets used to being more cautious in its actions and usually does something extraordinary as a response.

Though Iran denies its intentions to develop an ICBM, the successful launch of the military satellite was estimated as an argument for the successful Iranian movement in this regard, as it establishes the technical basis to develop long-range ballistic missile systems (Izewich, 2017).

The other issue of concern is the fact that nuclear traces were found, which could prove Iran had a secret nuclear weapons program until 2003 (Liechtenstein, 2022). In 2018, the IAEA began an investigation as it violated the safeguards agreement with the Agency, so since June 2020, the IAEA has provided regular inspections on four locations in Iran that contained undeclared nuclear activities before 2003 (Davenport, 2022b). In August 2022, Iranian officials insisted that the IAEA should finalize the investigation prior to the reimplementation of the deal, which is one of the reasons for the JCPOA's bad luck.

Since September 16, 2022, Iran has faced a new challenge — the nationwide protests across the country, which were provoked by the death of a young woman, Mahsa Amini, who died in the hospital after being beaten by police for what they called her “inappropriate hijab” (Rahimpour, 2022). The Iranian government blames the US and Israel for spreading the unrest. Nevertheless, the Iranian regime is too strong and has gotten used to holding on to its power, so it is far away from collapse. As well as it is not the first protest in Iran; it has faced several for the last ten years. The last protests took place in November 2019 after the government announced that the price of petrol would be increased by 50% (Wintour, 2019). Although the government forces brutally suppressed these protests, they demonstrated that Iranian people were disappointed with the economic situation, which was getting worse after US sanctions (Cheban, 2020).

Meanwhile, it is difficult to predict the consequences as demonstrations continue in various cities and activists call for more rallies and civil disobedience in the coming days. Today, many Iranians understand the importance of human rights, which complicates the regime's willingness to use barbaric violence to hold onto power (Vicente & Gergiieva, 2022).

The further Iranian achievements in its nuclear program and strengthened ambitions caused more and more controversial reactions. In a report dated October 10, 2022, the IAEA noted that Iran informed the Agency of its plans to install three additional cascades of IR-2 centrifuges, which can produce considerably more enriched uranium (Albright et al., 2022). The US-IRI relations continue to

deteriorate, as on November 2, during a meeting with students from across the country, Ayatollah Khamenei made remarks that a new world order is emerging worldwide, and the youths need to recognize Iran's role and position in the new world order. Also, he added that the US did not have an important position in the new order and was isolated, not the only dominant power in the world, which strengthened confidence in the JCPOA negotiations failure (Iran Daily, 2022). A US State Department spokesperson Robert Malley (cit. in Vicente & Gergiieva, 2022) said that "we believe Diplomacy is the best way not to allow Iran to obtain nuclear weapons, but President Biden has also been clear that we have got removed any option from the table and that the military option remains as a last resort." The Biden administration is also increasing pressure on Iran while negotiations remain stalled, including new sanctions targeting Iran's petrochemical sector announced in October.

5 Russia–Iran Cooperation: Then and Now. How Did the Russian Invasion of Ukraine Influence Iranian Motivations?

The current worsening climate around Iran and JCPOA negotiations can also be explained by the influence of the Russian invasion of Ukraine, which demonstrated the political power of nuclear weapons and deepened Russia–Iran cooperation. Russia and Iran share quite similar strategic thinking, which unites countries and fosters their cooperation. Both countries have significant energy resources, authoritarian regimes, aspirations for regional leadership, and historically complicated relations with the US.

Firstly, their vision of a multipolar world order, in which the US has a diminished role, is the same, especially it is noticeable when things are getting tougher with the West (Foroutan, 2022). Secondly, at the moment, both countries seem to be isolated, and clearly, both need friends, so their new wave of cooperation looks inevitable. Both countries have been facing economic sanctions, but Iran's regime has been under sanction for its nuclear program and human rights for a long time. It is a new experience for Russia because of its aggression against Ukraine (Marcus, 2022). Thirdly, their cooperation deepened after the Russian intervention in Syria, and they are fighting together in support of Bashar al-Assad's government, demonstrating their mutual interest in spreading friendly regimes in other countries (Liik & Geranmayeh, 2016).

The Russian war on Ukraine has created new opportunities for Iran to advance its interests (Foroutan, 2022). On July 19, Russian President Vladimir Putin visited Tehran, which was his second trip abroad since Russia invaded Ukraine in February 2022. The meeting was the first signal to the West about their deeper alliance (Foroutan, 2022). As part of the summit, the National Iranian Oil Company and Russia's Gazprom signed a \$40 billion energy deal, which caused some questions

regarding the complicated economic situation in both countries (Bozorgmehr, 2022b). Obviously, Russia's isolation could be a great opportunity for Iran to take its place in gas supplies to Europe, but Iran chose the dangerous path of convergence with Russia, which caused even more problems, as Russia is ready to provide big gas discounts, and it is difficult for Tehran to compete with Moscow on the cost of gas, so Iran should adjust. The Turkish market's competition is already intensifying, where gas pipelines are laid both from Iran and Russia (Smagin, 2022). In general, Russia is not interested in Iran getting out of its gas isolation, as it is clear that foreign investment can transform the Iranian gas industry in a few years. Moscow is trying to leverage the Iranian gas sector before Europe and some sanctions relief.

The drone deal between countries reflects the new level of Iranian–Russian cooperation. Iran first rejected the allegations of selling drones to Russia. Russia has used those drones in the war against Ukraine, including attacks on civilians (Hernández, 2022). Under the UN Security Council Resolution 2231, Iran is prohibited from exporting missile systems or unmanned aerial vehicles, such as drones, capable of delivering a weapon of mass destruction (United Nations Security Council, 2015). This resolution was adopted to support the JCPOA, and Iran was banned from exporting ballistic missiles until 2023.

Nevertheless, Iran is moving further with its cooperation with Russia, and on October 18, Tehran agreed to provide Moscow with surface-to-surface missiles and many additional cheap drones (Hernández, 2022). This demonstrates Iranian transformed motivation, which is not focused on negotiations with the West. The EU has already agreed to sanction multiple Iranian individuals and entities over arms sales to Russia (Vela, 2022).

The changing Iranian tactics can be explained by understanding the changing world order. Iran feels it can benefit from it. As Russia's war on Ukraine is on the highest agenda, supplying Russia with Shahed drones can give an important propaganda opportunity, as attracting new potential clients from rogue states in case they will face weapons difficulties. Drones are getting more attractive because of their low cost; for example, Russia's Kalibr cruise missiles, used widely by Moscow in the war, cost around \$one million each, and the Shahed-186 units cost \$20,000 (Feldstein, 2022).

During Shanghai Cooperation Organization (SCO) summit in September 2022, President Ebrahim Raisi stressed their support to Russia by mentioning the strategic nature of their relations and expressed intentions to expand in all political, economic, trade, and aerospace areas (Sinaee, 2022). In September, Iran signed a memorandum of obligations that will grant it full membership in the SCO, which includes China and Russia, after a 15-year wait and being an observer.

6 Conclusion

The increasing tensions between Iran and its regional adversaries (Israel, Saudi Arabia), and the US, can explain the Iranian desire to improve its defense capabilities, relying on its nuclear and ballistic missile capabilities. The Iraq–Iraq war,

double US standards, and disappointment of the EU's failed diplomacy attempts, formed Iranian strategic thinking. The Russian invasion of Ukraine and understanding of the political power of nuclear weapons strengthened Iranian belief in self-defense importance. The nuclear program and Iran's missile capabilities are a source of national pride, which complicates the JCPOA negotiating process. Despite the stalled negotiations of the JCPOA and further deterioration of relations with the US and EU, Iran still remains a non-nuclear weapon state. Iranian strategic behavior was always cautious; usually, it demonstrates new achievements as an answer to the West or Israel's actions. The threat of a nuclear Iran is closer than ever; nevertheless, Tehran is more profitable to maintain nonnuclear status and to continue its cooperation with Russia and China together with its missile technology improvement.

Iran–Russia relations have reached an unprecedented peak, fueled by military cooperation in Syria, a shared vision of the global order, and mutual criticism of Western policy in the Middle East. Countries signing a \$40 billion energy deal seems to be not as profitable for Iran as the possibility of taking Russia's gas place in Europe, as Iran cannot compete with Russian prices, so it needs to adjust. This deal has more benefits for Russia, as Russia is not interested in Iran getting out of its gas isolation. The drone deal between countries has caused a new wave of sanctions for Iran, but this can be an issue of propaganda opportunity for Tehran to attract new potential clients, as drones are much cheaper and still effective.

The convergence with Russia and China can provoke the deepening crisis around Iran, as it will not be interested in JCPOA or any other agreement. In 2013, Iran was ready to negotiate only after Russia and China's joining to the Western sanctions and stopped blocking UN Security Council's resolutions. So, in the future, we will not see any progress in negotiations with Iran.

Iran has been facing one more challenge since September 2022, the nationwide protests across the country, which demonstrates the nation's dissatisfaction with the regime. Even though protests are not a new tendency for IRI, the possible change of the ruling regime is still possible, though the new ruling elite could worsen the regional environment even more.

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The Impact of Russia's War against Ukraine on Finland and Sweden's Decision to Join NATO: Effects on the Global Nuclear Order



Adérito Vicente, Muhammed Ali Alkış, and Iryna Maksymenko

Abstract Russia's ongoing war against Ukraine has caused a shift in the traditional nonalignment stance of Finland and Sweden, leading them to seek membership in the nuclear alliance. This change in security approach has implications for the global nuclear order, particularly in terms of nuclear disarmament and deployment. Despite the presence of public support for NATO membership in both countries, Finland and Sweden encountered challenges in their accession process. These challenges included Hungary's delay in ratifying their applications and Türkiye's conditional support to the accession of the two Nordic countries.

Keywords Sweden · Finland · Nonalignment · Threat perception · NATO membership · Nuclear order

1 Introduction

On February 24, 2022, Russia's war against Ukraine upended decades of Finnish and Swedish security policy that sought to balance political, economic, and cultural ties to the West and relations with Russia. Considering the deterioration of the security environment and new reality prompted by Russia's invasion of Ukraine, Finland, and Sweden, which have a long tradition of neutrality and nonalignment, reconsidered their relationship with Russia and their traditional but hesitant approach

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to joining a military alliance (see Wieslander, 2022; Lundqvist, 2023; Alberque & Schreer, 2022). At the same time, public opinion in both states, which was previously generally opposed, has begun to support membership in the North Atlantic Treaty Organization (NATO) (Forsberg, 2022).

As a result, both Finland and Sweden simultaneously handed in their official letters of application to join NATO on May 18, 2022 (North Atlantic Treaty Organization, 2022a). On June 29, 2022, at Madrid Summit, heads of state and government from NATO's 30 member states unanimously agreed to invite Finland and Sweden to join the Atlantic Alliance and to sign the Accession Protocols (North Atlantic Treaty Organization, 2022c). Finland's and Sweden's applications marked a historic shift for these traditionally militarily nonaligned countries.

Moreover, as prospective NATO Allies, the two Scandinavian countries extended their full support to Türkiye against what it considers as threats to its national security, including their unwavering solidarity and cooperation in the fight against terrorism (North Atlantic Treaty Organization, 2022b). To that effect, NATO welcomed in Madrid, on 28 June, the conclusion of the trilateral memorandum between Türkiye, Finland, and Sweden (*ibid.*).

Still, Article 10 of the North Atlantic Treaty requires unanimous approval of all current members for a state to join the NATO alliance (North Atlantic Treaty Organization, 1949). In addition to the unanimous approval of the membership application, any state that plans to be a part of the Alliance is expected to meet five requirements: (a) upholding democracy and tolerating diversity, (b) existence of a market economy, (c) civilian control of military forces, (d) respecting the sovereignty of other states, and (e) working compatibility with NATO forces (United States Department of State, 2022).

Although both Finland and Sweden meet the criteria required for NATO membership and have strong support from most of the alliance's members, there were challenges that these countries faced in the process, including potential implications for the global nuclear order. In this context, this chapter aims to answer the following research questions: how has Russia's war on Ukraine impacted Sweden and Finland's decision to join NATO, and what are the security implications for the global nuclear order?

The first section briefly discusses how Sweden and Finland abandoned their traditional nonaligned policy after Russia's invasion of Ukraine and analyzes the impact of this critical juncture on their decision to join NATO. The second section maps and characterizes how this decision may affect the current global nuclear order. The third section explores the current challenges posed to their membership, including the position of Türkiye and Hungary, the two remaining NATO countries that have not ratified Sweden's accession to the Alliance, as well as Russia's potential reaction. Despite having similar motivations to apply for membership to the Atlantic Alliance, it is clear that Finland and Sweden go through separate paths to achieving it.

2 What Was the Impact of Russia's War on Ukraine in Finland and Sweden's Decision to Join NATO?

Finland and Sweden share a common heritage but pursued distinctly different foreign and security policies, and there was only very limited defense cooperation during the Cold War (Tiilikainen, 2006, p. 76; Lundqvist & Widen, 2016, p. 358). They differed because of Finland's common border with the Soviet Union and their 1948 Treaty of Friendship, Cooperation, and Mutual Assistance (FCMA), which explicitly prohibited Finland from pursuing certain policies (Lundqvist, 2023, p. 74).¹

The FCMA was a result of the Soviet Union's desire to secure its western border after Second World War, after Finnish victory during the Second Soviet-Finnish War (a conflict fought by Finland and Nazi Germany against the Soviet Union from 1941 to 1944); and the return of some of the territory ceded to the Soviet Union in the First Soviet-Finnish War (or Winter War, conflict between the Soviet Union and Finland that lasted from November 1939 to March 1940). However, under the FMCA, Finland agreed to pursue policies that were in line with the interests of the Soviet Union, such as restricting ties with the West and preventing its territory from being used by Western powers in any potential conflict with the Soviet Union (Korhonen, 1973). Additionally, the treaty required Finland to provide military and economic assistance to the Soviet Union if requested (*ibid.*). To make matters worse, Finland had to pay costly war reparations to the Soviet Union (St. Petersburg Times, 1952). While the treaty was seen as a necessary measure to ensure Finnish security at the time, it also limited Finland's independence and ability to pursue its own foreign policy objectives. Sweden, for its part, kept the largest defense expenditures among the Nordic states throughout the Cold War and developed close security links with the US (Wieslander, 2022, pp. 42–43).

After the Cold War, Finland and Sweden “pursued parallel foreign policy change processes that have, incrementally, become joint” (Lundqvist, 2023, p. 74–75). For example, both countries joined the European Union (EU) in 1995. On the one hand, Finland replaced its Cold War policy of neutrality with a commitment to European integration due to security concerns about its 1340 km common border with Russia (*ibid.*, p. 74). Sweden, on the other hand, smoothly transformed from a neutral entity to a nonaligned EU member state (*ibid.*, p. 82). Additionally, both countries established partnerships with NATO and participated in numerous operations, boasting advanced militaries that can work with the Alliance (Gould, 2022).

However, when Russia invaded Ukraine in 2022, Finland and Sweden's political leaders reassessed their security postures due to heightened security concerns (Finnish Government, 2022a; Government Offices of Sweden, 2022). This critical juncture produced two security-based notions that may disrupt the balance between nuclear weapon states (NWS) and nonnuclear weapon states (NNWS), and thus

¹Following the 1961 Berlin Crisis, Richard Lowenthal coined the pejorative term “Finlandization” to describe Russia's political influence over Finland in the Cold War (Laqueur, 1977).

posing a challenge to the existing European security order. As a result, the disruption of the 1994 Budapest Memorandum led more NNWS, such as Finland and Sweden, without security assurances or guarantees with NWS to align themselves with one of these NWS in a nuclear alliance (Vicente, 2022a).

The impact of Russia's aggression on Ukraine led to the decision of Finland and Sweden to join NATO. In this context, an important question should be addressed: what were the key factors that influenced Sweden and Finland's decision to join NATO? Our empirical research proposal relies on the argument that this policy (and strategic) decision was affected by the following three main conditioning factors.

First, the international security environment is usually a major factor when states decide about their foreign and security policy (Vicente, 2022b, p. 119). In this case, Russia's actions against Ukraine gave rise to a structural and long-term deterioration of both international and European security environments.

During the spring of 2022, the governments of Finland and Sweden produced various reports to examine the changed security environment following Russia's invasion of Ukraine and to deliberate a decision on whether these two Scandinavian countries should apply for NATO membership (Finnish Government, 2022a, 2022b). From Helsinki's side, the parliamentary debate of the first Finnish government report (Report on Changes in the Security Environment) took place on April 20, while the referral debate of the second government report (Report on Finland's Accession to NATO) took place on 16 May (ibid.). With regard to Stockholm's stance, the Swedish government set up, on March 16, a working group to deliberate on the changed security environment following Russia's invasion of Ukraine, encouraging a decision to apply to NATO (Government Offices of Sweden, 2022).

Second, this new security environment in which Finland and Sweden operate led to an increase in a common threat perception toward Russia (Finnish Government, 2022a; ibid.). Threat perception is a decisive factor between action and reaction in an international crisis (Vicente, 2022b, p. 120). At the same time, scholars in international relations schooled in political psychology have explored threat "perception" and "misperception," paying careful attention to the variance between what leaders perceive as threatening and what the evidence of intentions and military capabilities suggest (see Jervis, 1976; Stein, 2013). When a threat is not perceived by its political leaders, even in the face of objective evidence, there is no decision (Cohen, 1978). However, in the case of Russia's war against Ukraine, empirics show that this event led to a decision among Finnish and Swedish leaders.

Considering the current security environment in Europe, it is evident that Finland and Sweden, being geographically close to an adversary nuclear power and having a shared conflictual history with Russia, joined NATO due to threat perception.

Third, Russia's war on Ukraine also influenced public opinion in both countries, as it led to increased concern about Russia's actions and a greater willingness to consider adherence to NATO. As such, public support for NATO accession, and the added security of NATO's "Article 5" mutual defense clause, has skyrocketed in both countries since Russia's invasion of Ukraine (Forsberg, 2022). Recent polls



Fig. 16.1 Survey on perception of NATO membership in Finland 2014–2022. Source EVA (2022), Yle News (2022)

indicate support at 76% in Finland and 59% in Sweden (Yle News, 2022; Statista, 2022).

In relation to Finland, due to their long tradition of nonalignment, a majority of Finns had long opposed NATO membership; however, according to Yle polls, since February 2022, Finnish people's support for joining NATO has grown from 53 percent in February to 62 percent in March and 76 percent in May (Yle News, 2022). Please see Fig. 16.1 below.

With regard to Sweden, due to the country's historical neutrally posture, we witnessed the same behavior from the Swedes as we did with Finns; a majority of the population over the past years has supported Sweden's historical posture of neutrality; however, following Russia's invasion of Ukraine on February 24, 2022, there were more Swedes in favor of a NATO-membership (Statista, 2022). By May 2022, nearly 60 percent of the Swedes were in favor of the country joining the Atlantic Alliance, and in July 2022, nearly two-thirds of the respondents supported the Swedish Government's decision to join NATO (ibid.). Please see Fig. 16.2 below.

Russia's war on Ukraine influenced Finland's and Sweden's foreign policy decision-making and state behavior. Both countries recognized the need to adhere to NATO for regional security in the face of Russian aggression. This led to externalities such as an increase in military spending and cooperation with NATO, a decrease in public support for the withdrawal of US nuclear weapons from Europe, and a shift in public opinion toward NATO's nuclear posture (Bollfrass & Herzog, 2022; Onderco et al., 2023). As a result, Sweden and Finland abandoned their traditional nonaligned policy and applied to join NATO. The decision required the support of the government, parliament, and public opinion.

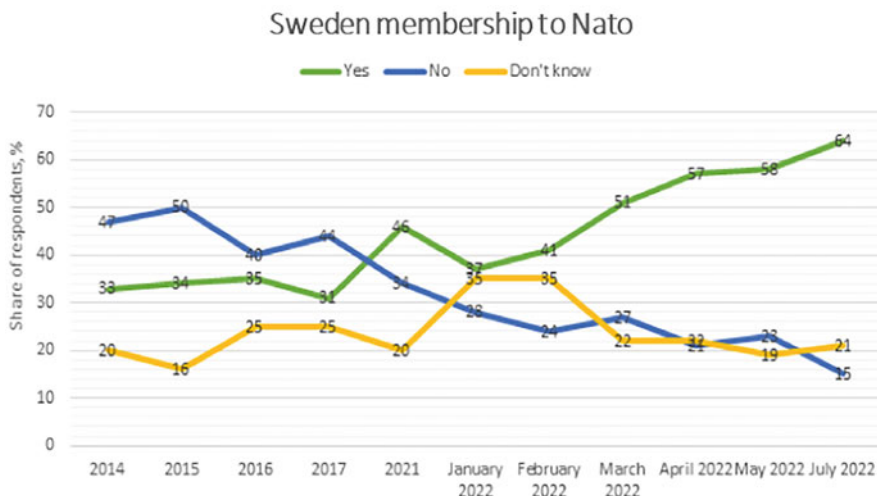


Fig. 16.2 Survey on perception of NATO membership in Sweden 2014–2022. Source Statista (2022)

However, despite the war's impact on their security concerns and public opinion, and despite both Nordic countries signing their accession protocols on July 5, 2022, only Finland has joined NATO. Sweden's accession to the Alliance has been hindered by the prerequisite that all Allies must ratify the protocols. As of the time of finalizing the writing of this chapter, it is noteworthy that both Türkiye and Hungary have not yet ratified these protocols, contributing to the delay in Sweden's membership in the Alliance (NATO Parliamentary Assembly, [n.d.](#)).

3 Unintended Consequences: The Ripple Effects of this Decision on the Global Nuclear Order

Russia's war on Ukraine increases the nuclear threat and thus deepening the idea that states should rely on nuclear weapons as essential to their national security. It changed completely the two Scandinavian countries' security paradigm that relied on the renunciation of these weapons and their commitment to multilateral diplomacy based on security cooperative measures (disarmament, nonproliferation, arms control negotiations, and agreements) for their national security².

²Nuclear renunciation describes "the set of decisions leading to the final outcome of a given actor not possessing nuclear weapons" (Pelopidas, 2015, pp. 337–48). On researching renunciation, see Kjølvi Egeland (2022), and Maria Rost Rublee (2009). For Sweden's renunciation, see Thomas Jonter (2016).

As mentioned in the previous section, in light of the fundamentally changed security environment following Russia's invasion of Ukraine, Finland, and Sweden decided that the best way for them to protect their national security was to join NATO and "running for cover" under the Alliance's nuclear umbrella (Finnish Government, 2022b; Government Offices of Sweden, 2022; Bollfrass & Herzog, 2022, p. 8). This choice had an impact on the current and future global nuclear order. At the present time, it is fair to note that this decision signals and promotes the notion to other NNWS (that do not have security guarantees with nuclear weapon states) to seek a nuclear umbrella with a nuclear power "to avoid a possible conventional confrontation" with another NWS (Vicente, 2022a).

Furthermore, the two Nordic countries' applications to join NATO have probably ended any hopes of these states, both Treaty on the Prohibition of Nuclear Weapons (TPNW) observers, actually joining the treaty (International Campaign to Abolish Nuclear, n.d.-a, n.d.-b). Hence contributing to the preservation of what some nuclear scholars designate as a "hegemonic nuclear order" (see Ritchie and Egeland, 2018; Ritchie, 2019; Considine, 2019).³

In relation to the future of the global nuclear order, Finland's and Sweden's adherence to NATO may have a significant impact on the former, at least in four different but interrelated areas. These effects include: (1) the potential spread of the nuclear umbrella and sharing states, (2) contributing to a regional nuclear arms race, (3) harming the global nuclear disarmament agenda, and (4) weakening effect on the nuclear disarmament and nonproliferation regime.

First potential effect. Finland and Sweden, which will probably be the Alliance's Northeastern flank, are "most vulnerable to Russian threats" and thus "will likely demand a more robust US extended deterrence commitment, including forward deployment of US nuclear weapons" (Budjeryn, 2022, p. 343). If both Nordic states were to join NATO and become part of the Alliance's nuclear-sharing program, it could lead to an increase in the number of countries that store or deploy nuclear weapons.

In conjunction with the latter, a second effect may occur. It could have a negative impact on the stability of the region, as it could lead to increased militarization and a potential nuclear arms race.

Third, it may harm the global nuclear disarmament agenda since both countries have relied on the renunciation of nuclear weapons and committed themselves to multilateral diplomacy based on security cooperative measures for their own security until recently.

³The concept of hegemonic nuclear order is a frequently employed descriptor for our current state of nuclear affairs, i.e., "a limited few countries are allowed to possess nuclear weapons, and the longterm promises of these nations to disarm their nuclear arsenals have not yet been fulfilled" (Jonter & Rosengren, 2022). Although this specific phrasing is relatively new, criticisms of the hegemonic nuclear order are not (ibid.). Indeed, histories of the hegemonic nuclear order, even those produced prior to the opening for signature of the NPT, "have often departed from or even challenged the narratives of those select few states who benefit from it" (ibid.). While Ritchie, (2019) describes the TPNW as a counter-hegemonic challenge to the present nuclear order, he supports Considine's (2019) argument that it does not challenge the hegemonic structure as such.

Although ideological opposition to nuclear weapons appears more prevalent in Sweden, certain moral opprobrium associated with such weapons has existed in Finland as well. But their approaches have been different (Atlantic Council, 2022).

As a historical advocate of global disarmament, since the late 1960s, Sweden maintained until recently its nonaligned policy by engaging in transatlantic cooperation and working with NATO without entertaining the prospect of joining the alliance (see Jonter, 2002, 2012; Rublee, 2009; Monteiro & Debs, 2017, pp. 194–5). In Sweden's case, the government approved the text of the TPNW but deferred any decision to sign the treaty (International Campaign to Abolish Nuclear, n.d.-a, n.d.-b). While in Finland's case, the government abstained from the UN General Assembly resolution 71/258 in 2017 and did not participate in the treaty negotiations (*ibid*; see Vicente, 2022b).

However, while Sweden has a civil society that has been actively organized and critical of nuclear weapons, Russia's war on Ukraine led both Swedish public opinion and the government to reconsider its comprehensive approach toward nuclear disarmament (Rapnoul et al., 2018, p. 4). For Sweden, its nuclear renunciation was critical in promoting a delegitimization and prohibition of nuclear weapons (Rosengren, 2022, p. 1431). As a result, Sweden's decision to reverse its role in the TPNW consultations may reduce its role as a promoter of nuclear disarmament in the global nuclear order.

Considering all three previous effects, it could weaken even more the NPT-led nuclear disarmament and nonproliferation regime, as other countries may be encouraged to align themselves with a nuclear alliance, providing nuclear weapons a forefront role for their security or developing nuclear weapons in response to the perceived security threat.

Overall, this potential situation may lead the current nuclear order to a profound crisis. In the worst case, this (dis)order may lead to nuclear anarchy, i.e., the absence of a centralized authority means that states must rely on their own nuclear deterrents for protection, which can lead to an unstable and unpredictable security environment.⁴

Conversely, a new nuclear order will ultimately be sustained, at best, by a system of nuclear deterrence based on the theory of nuclear stability in which the threat of mutual destruction that comes with a nuclear standoff keeps countries from engaging in war with one another (Walker, 2000).⁵ So, the premise is that for "as long as nuclear weapons exist and more than one country possesses such weapons in the world, the way to avoid a nuclear war is to deter an adversary from launching any

⁴Nuclear anarchy is a theory that refers to a state of international relations in which there is no central authority or mechanism for controlling the spread and use of nuclear weapons. On the concept of nuclear anarchy, see Robert Jervis (1989).

⁵Nuclear stability is a concept in international relations theory that refers to the idea that the possession of nuclear weapons by multiple states creates a stable balance of power and deters conflict. On the concept of nuclear stability theory, please see the seminal work of Thomas Schelling (1966) and Waltz (1981).

nuclear strike first by credibly threatening nuclear retaliation” (Budjeryn, 2022, pp. 339–340). In the system of deterrence, nuclear weapons are both the cause of existential threat and the remedy for it, as well as both the problem and the solution to nuclear risk (ibid.).

4 The Challenges for Finland and Sweden's Accession to NATO

As discussed above, the two Nordic states have shifted their security policies and announced their intentions to become NATO allies in the wake of the Russian invasion of Ukraine in February 2022. However, the membership process requires certain procedures to be completed, including unanimous approval of all current members for a state to join the NATO alliance. This requirement for unanimous approval has significantly contributed to the prolonged process for both Nordic states. While 28 other NATO member states have successfully completed the ratification process within their respective domestic legislative systems, Türkiye and Hungary have only done so for Finland, leaving Sweden pending (NATO Parliamentary Assembly, n.d.). In addition to this domestic opposition, Russia's position against the two Nordic countries' NATO membership has also played a (minor but contributory) role in influencing the process.

In this context, while it is an undeniable fact that Russia's war against Ukraine destroyed the neutrality of these two states, there were several challenges to Sweden and Finland's accession to NATO, which will be analyzed in the following sub-sections. These challenges include the legal processes, i.e., Türkiye and Hungary's ratification process, as well as the potential consequences of membership on relations with Russia.

4.1 *Türkiye*

Türkiye has been an ally of the nuclear alliance since 1952. However, Ankara has adopted a distinct position concerning ratification, specifically emphasizing the fulfillment of specific prerequisites by Finland and Sweden before the Turkish Grand National Assembly (TGNA) proceeding with the approval of NATO membership. Thus, it is important to grasp Türkiye's position to understand the ratification problem.

When the two Nordic countries announced their intention to join NATO, Türkiye did not comment until Turkish President Recep Tayyip Erdogan stated that Ankara follows the developments but did not have a positive approach towards Finland and Sweden's NATO membership, as they were actively supporting organizations considered by the Turkish Government as terrorists (Erdogan, 2022a). President

Erdogan (2022b) emphasized that Türkiye anticipated its NATO allies to understand and endorse its legitimate security concerns, as well as its endeavors to safeguard its borders.

In this context, Türkiye, as one of the top supporters of NATO activities, respects NATO's Open-Door policy but expects its security concerns to be considered. For example, Ankara's demands on organizations considered as terrorists by the Turkish government such as the Kurdistan Workers' Party (PKK), People's Defense Units of Syria (YPG), and other groups have been on the agenda as issues to be fixed before the ratification process.

Despite initial tensions, the NATO Summit in Madrid on June 28, 2022, resulted in Finland, Sweden, and Türkiye signing a trilateral memorandum. Ankara agreed to support the invitation of Finland and Sweden to become members of NATO at the 2022 Madrid Summit (North Atlantic Treaty Organization, 2022b). This support was a result of Finnish and Swedish commitments to respect Turkish sensitivities.

In addition, Finland and Sweden confirmed the PKK as a terrorist organization and committed to preventing the activities of terrorist organizations and their extensions. They also agreed to make their counterterrorism and public incitement-related legislation stricter, including facilitating the deportation and extradition of terror suspects (North Atlantic Treaty Organization, 2022b). The memorandum lifted all arms embargo on Türkiye, which was issued after the Turkish military operation in Northern Syria in 2019 (Weise & Barigazzi, 2019).

Within this framework, the Permanent Joint Mechanism (PJM) was established to implement the concrete steps decided in the memorandum. While there have been two meetings under PJM, during which developments were assessed, the third round of meetings was canceled for an undeclared period of time due to the reasons evaluated in the upcoming paragraphs.

After the NATO Summit's momentum in Madrid, Sweden lifted its arms embargo on Türkiye in September of 2022, followed by a visit from the newly elected Swedish Prime Minister, Ulf Kristersson, to Ankara in November 2022 (Euronews, 2022). During the visit, Kristersson stated that Sweden is committed to prioritizing law and order, including intensifying counterterrorism efforts (Associated Press, 2022a).

At the end of 2022, it appeared that Türkiye's concerns were primarily focused on Sweden rather than Finland. In this context, President Erdogan highlighted the contrasting approaches of Sweden and Finland in meeting Türkiye's security demands (Associated Press, 2022b). He further indicated that Türkiye was prepared to support Finnish membership due to the differing nature of relations with Finland compared to Sweden (ibid). As an expected result of this policy, Ankara ratified Finland's accession on March 30, 2023, leading to Helsinki's formal entry into NATO on April 4, 2023 (NATO Parliamentary Assembly, n.d.). The main reason is that there have been more PKK and YPG activities historically due to the sizable number of supporters living in Sweden compared to Finland (Çagaptay et al., 2022). Additionally, Swedish NGOs have engaged in Syria, where Türkiye fights against PKK's local affiliated group, the YPG.

Thus, despite Swedish counter-terrorism commitments to Türkiye, there were a series of unfortunate events from November 2022 to March 2023 that led Ankara's government to delay the ratification process of Sweden's membership to NATO. In November 2022, PKK and YPG supporters organized anti-Türkiye protests in front of the Turkish Embassy in Sweden, resulting in the Swedish Ambassador being summoned to reiterate that concrete steps must be taken in light of the commitments in the Trilateral Memorandum (Anadolu Agency, 2022a). In December 2022, Stockholm refused to extradite a refugee, who is considered by the Turkish government as a suspect of a terrorist group, living in Stockholm, further escalating tensions (Anadolu Agency, 2022b). In response, the Prime Minister Kristersson accused Türkiye of wanting things that Sweden could not give in early January 2023 despite his commitments in Ankara back in November 2022 (Euronews, 2023). Just a few days after the Prime Minister's comments, the PKK and YPG held an anti-Erdoğan protest again in Stockholm, resulting in the Swedish ambassador in Ankara being summoned again (Deutsche Welle, 2023). However, tensions continued to escalate after another protest organized by the PKK took place in Stockholm on January 21, 2023, involving a journalist with ties to Kremlin, and the holy book of Islam, the Quran, was burnt in front of the Turkish Embassy (Braw, 2023; Reuters, 2023a). Subsequently, Türkiye reiterated its negative position toward Swedish membership to NATO (Reuters, 2023c).

Despite facing various hardships, the Turkish President and Swedish Prime Minister successfully agreed on a roadmap for Swedish accession to the Alliance in a meeting facilitated by NATO Secretary General Jens Stoltenberg before the Vilnius Summit on July 10, 2023 (NATO, 2023a). This achievement was prominently mentioned in the Vilnius Summit Communiqué (NATO, 2023b). It resulted from Sweden's reconfirmation of its commitment to fully implement all elements of the Trilateral Memorandum, as well as its support for no restrictions, barriers, or sanctions on defense trade and investment among Allies (ibid). These commitments will be further reinforced by Swedish efforts to revitalize Türkiye's EU accession process, which includes the modernization of the EU-Türkiye Customs Union and visa liberalization (NATO, 2023a). As a result, the accession protocol is expected to be submitted to the TGNA. However, this Turkish legislative body might delay the Swedish NATO accession to a ratification vote until further concrete steps are taken. Considering the criticism for a hasty decision to agree on Swedish accession from other Turkish political parties, it would require Sweden to implement its counterterrorism law, which went into effect in June 2023, in a way which is satisfactory for Ankara (Anadolou Agency, 2023). Furthermore, both Türkiye and Sweden would need to reach an agreement on individuals to be extradited to Türkiye (Cagaptay et al., 2022). In addition, Sweden is expected to implement its Vilnius commitments such as Support for Turkish EU Membership and visa liberalization in a good faith. Until these concrete steps are taken, it is unlikely that Türkiye will ratify Swedish accession to NATO. The act of ratifying only Finland's accession demonstrates Ankara's willingness to do so if the necessary conditions are met by the Swedish side. In this context, it is likely that Sweden will not be subjected to a

protracted waiting period, largely owing to the significant support it has received from other states that have already ratified the essential accession documents. Additionally, following the 2023 NATO Summit in Vilnius, Türkiye is poised to pursue a similar course of action, contingent upon Sweden's sincere fulfillment of its commitments.

4.2 Hungary

Hungary's previous delay in the ratification process for Finland, which has since been resolved, and more recently for Sweden, has posed formal impediments to Stockholm's journey towards NATO membership. (Reuters, 2023d). This delay persisted until the NATO Summit in Vilnius, held on 11–12 July 2023, which coincided with the ongoing situation concerning Türkiye. Notably, during the summit, Ankara's government agreed to forward Sweden's bid to join the NATO military alliance to its parliament.

While Hungary has been a member of the nuclear Alliance since 1999, it has not provided any reasons for the delay (EUobserver, 2023). The uncertainty surrounding Hungary's stance on the matter was partly attributed to the relationship between Hungarian Prime Minister Viktor Orban and Russian President Vladimir Putin (Sanger, 2022). In a similar vein, Budapest has refused to support any sanctions or embargoes on Moscow since the beginning of Russia's war against Ukraine. Prime Minister Orban cites national interests in his vetoes, as Hungary depends heavily on Russia for energy supplies (see Chastand & Malingre, 2022; (Reuters, 2023b). For example, Russia supplies 85% of natural gas and 65% of the oil, as well as nuclear technology (Erlanger & Stevis-Gridneff, 2022). As a consequence, Hungary successfully secured an exemption in the EU's Russian oil embargo (Spike, 2022).

Thus, concerns were raised until Finland's adherence to NATO in April 2023 that Russia might exert pressure on Hungary to reject the NATO membership applications of both Finland and Sweden (Sanger, 2022). However, Hungary proceeded to ratify Finland's accession to NATO in late March (NATO Parliamentary Assembly, n.d.). As of the time of finalizing the writing of this chapter, it appears that the Hungarian government is on the verge of ratifying Sweden's membership as well (NATO, 2023a)

4.3 Russia

Russia opposes closer integration between NATO and Finland and Sweden, as it has long had an interest in exerting more control in the Scandinavian peninsula (Witte, 2014). Over the past decade, Russia has used aggressive displays of military force, such as exercises and territorial air and sea incursions, to signal its displeasure with enhanced cooperation between Finland, Sweden, and NATO (Gorenburg, 2019).

The Ministry of Foreign Affairs of the Russian Federation (2022) warned of the potential for military conflict with Moscow, stating that “Russia will be forced to take retaliatory steps” in response to Finland’s and Sweden’s NATO applications. However, Russian President Vladimir Putin (2022) downplayed the situation, stating that Finnish and Swedish accession poses “no direct threat for Russia.” Still, he emphasized that expanding military infrastructure could be viewed as a threat and could provoke a response (ibid.).

In this context, Russia has long sought to exert influence over Hungary and Türkiye, two NATO members with strategic importance. In recent years, this influence has grown, as both countries have become more dependent on Russia for energy imports and have pursued closer economic ties. This has led to concerns that Russia is using its economic leverage to pressure Hungary and Türkiye to adopt more pro-Russian foreign policies, including preventing the expansion of NATO.

In November 2022, the former Prime Minister of Finland, Alexander Stubb (cit. in Vicente et al., 2022), mentioned that there was no issue if Finland did not enter immediately in NATO, defending that the country has a well-equipped army and strong conventional deterrence against Russia.

At this juncture, the reality is that despite Finland and Sweden encountering certain challenges and delays in adhering to NATO, Russia was unable to exert enough influence over Hungary and Türkiye to prevent the two Nordic countries’ membership. As a result, both the Hungarian and Turkish governments ratified Finland’s successful attainment of full NATO membership, and following the 2023 NATO Summit in Vilnius, Sweden is now on the verge of achieving the same status.

5 Conclusion

Russia’s war on Ukraine has deepened the idea that states should rely on nuclear weapons for their national security, changing the traditional security paradigm of Finland and Sweden. In response, both Scandinavian countries have abandoned their nonalignment policies and have decided to join NATO to seek protection under the Alliance’s nuclear umbrella. Despite support from almost all NATO allies, Türkiye and Hungary delayed the process for Finland and Sweden’s membership to the Atlantic alliance.

This chapter discussed the impact of the Russian war on the decision of Finland and Sweden to join NATO and its security implications for the global nuclear order. The first section briefly examined the traditional nonaligned policies of the two Nordic states and scrutinized the reasons why Finland and Sweden reassessed their security postures to join a nuclear alliance. The decision to join NATO was influenced by three main factors, namely, the international security environment, threat perception, and public opinion.

The following section evaluated the possible effects of their membership on the current global nuclear order. Therefore, we argued that the decision of these two

Nordic countries to join NATO might have a negative impact on the global nuclear order in three ways: increasing the potential spread of the nuclear-sharing programs, contributing to a regional nuclear arms race, harming the global nuclear disarmament agenda, and a damaging effect in the nuclear nonproliferation regime. Alternatively, we also suggested that perhaps the new challenging nuclear order should rely more on the existing system of nuclear deterrence based on the theory of nuclear stability.

The final section explored the challenges and opposition to the membership process, focusing on the positions of Türkiye and Hungary, as well as Russia's potential role in this process. However, both Nordic countries' adherence to NATO may not be seen as unduly risky because their defense would be a common responsibility for the Alliance, to which the prospective new members have much to contribute (Alberque & Schreer, 2022). In this context, it is safe to state that while Finland and Sweden had virtually a perfect application, some unique challenges addressed in the chapter have delayed the accession process.

While Hungary did not differentiate between the applications by Finland and Sweden, Türkiye was particularly opposed to Sweden's adherence to NATO. Ankara's claims against Stockholm included allegations of supporting terrorist organizations, despite the existence of the Trilateral Memorandum (Reuters, 2023a). Thus, Türkiye exhibited Finland's membership to NATO at delayed yet smooth pace, acknowledging it as a new member state. However, in the case of Sweden, the Turkish government did not extend the ratification, thereby not granting its approval to Sweden's NATO membership. In this context, Ankara's stance on Sweden's accession can be characterized as one of conditional resistance, indicating that while it has expressed reservations about Sweden's bid for accession, it has not outrightly rejected it. Rather, Ankara has articulated specific conditions that must be fulfilled for its complete support of Stockholm's accession to the Atlantic Alliance. Notably, Ankara's conditional resistance was primarily motivated by security and political concerns, as it associates certain political groups, perceived as terrorists by the Turkish government, with the issue.

Overall, this two-way speed (accession) process clearly highlights the need for better cooperation among different government agencies to prevent foreign policy failures. Although the memberships of Finland and Sweden in NATO are expected to have significant effects on the nuclear order, the protracted and stagnant process of Swedish accession raises concerns regarding the prevailing challenges and potential ramifications on the cohesion of the alliance.

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Conclusion: Challenges and Prospects for the Current Global Nuclear Order



Adérito Vicente, Polina Sinovets, and Julien Théron

Abstract Articulating the major findings of this edited volume, this chapter assesses the implications of Russia's War on Ukraine for the future of the global nuclear order. First, the new challenges and threats to the global nuclear order are examined. Second, the chapter glances at the impact of missile and disruptive technologies in Russia's war against Ukraine. Third, new solutions and ways of overcoming the nuclear arms control deadlock are assessed, including the importance of adopting inclusive prevention, protection, and assistance strategies to address the gender-specific risks and needs resulting from the conflict. Fourth, by looking into competing narratives between nuclear deterrence and disarmament within the 1968 Treaty on the Nonproliferation of Nuclear Weapons (NPT) regime, this part offers three different perspectives on that debate. Fifth, the findings on the impact of Russia's war against Ukraine on Regional Cases are evaluated. The chapter concludes with a discussion of a potential new paradigm of the global nuclear order.

Keywords Nuclear order · Ukraine · NPT regime · Arms control · Deterrence · Nuclear disarmament

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A. Vicente et al. (eds.), *Russia's War on Ukraine*, Contributions to Political Science,

https://doi.org/10.1007/978-3-031-32221-1_17

1 Introduction

The impact of Russia's War on Ukraine on the future of the global nuclear order has been surrounded by an obvious sense of tension, uncertainty, and instability in study of nuclear politics, and, more broadly, on international relations. This concluding section provides a summary of each chapter and discusses the implications of the findings for the future of the global nuclear order. Several reasonable conclusions are drawn for the future of the global nuclear order, as its future framework will without any doubt be severely affected by Russia's war on Ukraine.

This final chapter attempts to provide key insights about the elements of a potential new paradigm of nuclear disorder for relations between major powers, relations between nuclear weapon states (NWS) and nonnuclear weapon states (NNWS), as well as its negative impact on an already weakened the Treaty on the Nonproliferation of Nuclear Weapons (NPT) regime and, eventually, for international peace and security.

2 The New Challenges and Threats to Global Nuclear Order

Sergiy Galaka discusses the impact of Russia's war on Ukraine on global security architecture and its nuclear order. This chapter finds that the ongoing war will likely result in the total collapse of the existing nuclear nonproliferation regime and arms control architecture. The author argues that world order as we know it is coming to an end, and existing mechanisms and institutions will either have to radically transform themselves or collapse. Thus, Galaka urges the expert community to suggest possible steps to reform what can be saved from the global security architecture, with the sphere of nuclear nonproliferation and arms control being a key part of the existing global security system. However, in its findings, the author warns that it is impossible to improve the existing regimes and treaties without transforming the major global and regional security institutions.

Julien Théron provides an overview of contemporary theories on warfare, which suggest that actors in conflicts are seeking to maximize the impact of their actions while implementing minimal actions. This can include using nonkinetic means and deploying proxies to limit exposure to high political, military, financial, and human costs. In this context, the author argues that Russia's behavior in its conflict with Ukraine can be understood as seeking to provoke dramatic changes in its regional environment and modify the global nuclear order. Thus, the question of using nuclear weapons in this conflict relates directly to Russia's search for decisive, change-making actions, and the high political cost of the war.

Based on three pieces of scientific literature (Jennings et al., 2018; Sinovets & Renz, 2015; Sokov, 2022), the study suggests that predictive scenarios building should be used to avoid cognitive biases in analyzing the situation. Theron focuses on Russia's behavior in the context of the ongoing war against Ukraine as a case

study, but the reasoning could apply to other states with nuclear capabilities. As a result, the author suggests that the probability of the five predictive scenarios (ranging from nuclear missile launches in the Arctic and Baltic seas to a dirty bomb exploding in Berlin and a live nuclear test in the Southern Atlantic) is difficult to measure. But their potential for surprise and success is high because of the adversary's unpreparedness. And the strategic benefit for Russia would be such that it could revert the outcome of the war at Moscow's benefit and severely impacts a global world order that many countries wish to transform.

Olga Brusylivska discusses the concept of nuclear blackmail, based on the threat of nuclear weapons or the destruction of civil nuclear infrastructure to influence the behavior of an adversary (Sechser & Fuhrmann, 2013). Russia's threat of using nuclear weapons against Ukraine (especially against their nuclear plants) has changed the quality of modern international relations and has begun a new era of threats and nuclear blackmail. In this context, the author notes that the specifics of the Russian case of nuclear blackmail have not been thoroughly studied. Her chapter also analyzed Ukraine's nuclear power infrastructure and the roles of various actors involved in Russia's war on Ukraine, including the evolution of Russia's nuclear strategy and the behaviors of Russia's allies (Iran, China) as well as Ukraine with its Western allies.

The response of states to these threats has varied, with some making concessions while others have refused to negotiate. Putin's method of nuclear blackmail has inspired autocratic states to imitate his behavior and has led democratic states to respond insufficiently to Russia's violations of international principles. The dysfunction of the United Nations (UN) and the International Atomic Energy Agency (IAEA) has prompted Russia to use a hybrid nuclear escalation mechanism and the idea of a reflexive management strategy (Gonchar, 2022). The modern version of Russia's nuclear strategy is a combination of traditional bomb threat rhetoric and threats of creating a global catastrophe by destroying nuclear power plants on Ukrainian territory. The threat of disrupting nuclear power plants by Moscow is considered more effective than the threat of a bomb, and if this tactic works, Russia is likely to repeat it with other countries in its sphere of interests (Strategiya, 2009).

3 Missile and Disruptive Technologies

Sitki Egeli examines the use of three categories of Emerging and Disruptive Technologies (EDTs)—hypersonic weapons, cyberattacks, and counter-space activity—in the context of Russia's ongoing war on Ukraine (Futter, 2021). The findings suggest that the hype and unknowns surrounding these technologies have been reduced, while some of the warnings and fears over their destabilizing and escalatory properties were proven wrong. However, these technologies have now become a regular part of modern battlefields, and their employment in future conflicts is expected to rise. The transnational nature of cyberwarfare and counter-space activity has also been illustrated by the impact of Russia's operations on dozens of other

countries (see Lewis & Livingstone, 2016; Hoffmann, 2021; Natalucci, 2019). Therefore, the dangers and negative repercussions of EDTs on international security and the global nuclear order should not be overlooked, as future conflicts are expected to have wider and more global impacts on third parties and bystanders.

Miles Pomper and Vasilii Tuganov discuss how missiles became the weapon of choice for both Russia and Ukraine in their ongoing war, assessing the performance of their missile capabilities. Using open-source intelligence sources and methods, the authors note that Russia's war against Ukraine has allowed the two countries to demonstrate their missile technology capabilities, and their use of missiles in the conflict could potentially lead to the widespread acquisition and deployment of missile systems by other countries.

Although Russia had enhanced missile capabilities, Pomper and Tuganov find that Ukraine's more limited missile force has been more successful on the battlefield because of strategic choices made by rival commanders, including the use of missiles themselves, and supply and logistics systems. The authors also highlight that Ukraine could become a leader in missile-related technology. As countries of the North Atlantic Treaty Organization (NATO) have already provided them with a significant amount of missile technology, Ukraine could also be envisaged as developing, testing, and deploying missile systems that could combine Soviet heritage and NATO technology solutions. In addition, despite Ukraine's missile proliferation record being tarnished by allegations of exporting missile technology to North Korea and Iran, Pomper and Tuganov defend that Ukraine has complied with the Missile Technology Control Regime and adhered to the Hague Code of Conduct against Ballistic Missile Proliferation (see Kristensen, *n.d.*; Elleman, 2017; Alberque, 2021).

Finally, their chapter suggests that as the allure of missiles could exacerbate existing fissures along NATO's east, it is likely that countries like Poland, Romania, the Baltics, or Georgia could engage in cooperation on specific technology with Ukraine, and Turkey could extend its partnership with Ukraine to include joint development projects if Ukraine chooses to invest in its missile systems.

4 Arms Control Deadlock and the Possible Ways Out

Nikolai Sokov argues that both the United States (US) and Russia need to engage in arms control to stabilize military balance, particularly regarding nuclear weapons, and to avoid a war that could escalate to a nuclear level (see Schelling & Halperin, 1961; Bull, 1961; Jervis, 1993). However, there is currently limited political support for arms control, with perceptions that negotiations are a concession to Russia and cannot be done. The likelihood of negotiations depends on the outcome of Russia's war on Ukraine, and it is unlikely that they will occur in the near future while the war continues. The author expects a long pause in arms control talks, potentially until the next Russian and US presidents, and the future of the Treaty between the US and Russia on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START) remains uncertain. Ultimately, Sokov suggests that the only

contingency that could lead to arms control talks is if a major nuclear confrontation occurs, similar to the Cuban Missile Crisis, which would lead to near-universal support for reducing the risk of nuclear war.

Łukasz Kulesa discusses the international response to the renewed Russian aggression against Ukraine, which had an immediate impact on arms control by halting the US–Russia strategic stability talks and putting the adherence of both sides to the New START under question (Bugos & Foye, 2022). The author also argues that this war has drawn attention to the catastrophic consequences of the use of nuclear weapons and created global pressure for prudence and caution toward NWS (United Nations Office for Disarmament Affairs, 2022). However, there is a distinction between the approaches to nuclear deterrence of the US, France, the United Kingdom (UK), and that of Russia, which uses nuclear weapons to deter retaliation from its mobilization of conventional coercion. The advances in China’s nuclear arsenal and its doctrinal opacity must also be taken into account. The “deadlock” in arms control cannot be overcome easily, and many factors will impact future negotiations, including US–Russia and US–China relations, the outcome of the 2024 US presidential elections, and the future of Vladimir Putin. A more favorable environment for bilateral or trilateral arms control may arise by 2030, but this would require substantial investments in expert dialogues to prepare for new approaches to negotiations.

Federica Dall’Arche explores the link between sex, gender, and weapons and how they can impact individuals differently in the context of Russia’s war on Ukraine. The term gender is often mistakenly used interchangeably with the term sex. The two concepts, however, have different meanings (Arquilla & Newman, 2021). One of the main findings is that the impact of weapons on individuals can vary greatly based on their gender, sex, and sexual orientation. Thus, this impact can be seen in terms of the likelihood of becoming a victim, healthcare assistance, and even mortality rates. As a second finding, Dall’Arche argues in its chapter that it is crucial for arms control, nonproliferation, and disarmament negotiations to consider these differences to ensure universal protection of human rights. Third, her chapter also highlights the importance of including all genders in political decision-making and peace processes to create inclusive agreements. Fourth, the author examines the gendered impact of the war between Russia and Ukraine, showing how the conflict reinforces gender stereotypes but also gives women access to rights and positions previously denied to them. Finally, Dall’Arche stresses the importance of adopting inclusive prevention, protection, and assistance strategies to address the gender-specific risks and needs resulting from the conflict.

5 The NPT Regime: Competing Narratives on Nuclear Deterrence and Disarmament

Polina Sinovets and Iryna Maksymenko examine the impact of nuclear deterrence on the conflict between Russia and the West during the war on Ukraine in 2022. Their study shows that Russia’s use of escalation threats became a part of its strategy, but

there was a decrease in its nuclear rhetoric by the end of 2022 (Betts, 2022). The main findings of their chapter are:

1. Russia's aggression against Ukraine challenges the global nuclear order and puts the future of disarmament and nonproliferation in danger.
2. The theory of states' rivalry under the threat of nuclear attack deterrence provides a suitable methodology to understand the conflict between Russia and the West.
3. The credibility of threats is the main factor that dictates the limits of deterrence power (Beaufre, 1965; Schelling, 1966; Joynt & Corbett, 1978).
4. Nuclear weapons still carry a strong coercive power and can be used as a political tool of power projection by revisionist states.
5. The limits of nuclear deterrence policy when it comes to coercive nuclear threats are directly linked to its credibility.
6. Coercive nuclear threats are not credible against nonnuclear states and cannot influence the supply of tactical arms to Ukraine.
7. The example of Ukraine not being deterred by the Russian nuclear arsenal presents both an inspiring example for states to remain nonnuclear and proof that nuclear rivals are the only ones capable of deterring NWS (Sinovets & Vicente, 2022).
8. The growing role of nuclear deterrence may initiate a split between supporters and opponents of nuclear deterrence and lead to the collapse of the NPT.

Adérito Vicente disentangles the relationship between Russia's war on Ukraine and its impact on the current nuclear nonproliferation and disarmament regime. He argues that this war is weakening the NPT regime due to essentially three key negative outcomes. First, the war has weakened the NPT regime by deteriorating nuclear norms and contributing to a latent nuclear arms race. Second, this war is contributing to a latent nuclear arms race which can be translated into an increase in the number of nuclear warheads in global military stockpiles (Kristensen & Korda, 2023). Third, the destabilizing nature of the conflict has also increased the likelihood of nuclear weapons use or a nuclear war. Considering the negative impact of Russia's war on Ukraine on the present nuclear nonproliferation and disarmament regime, in which nuclear weapons are being relegitimized in states' security policies, Vicente identified various bilateral and multilateral issues that are affecting the NPT regime, including:

1. Vertical proliferation and modernization of nuclear weapons.
2. The new dynamics of horizontal proliferation are set by the precedents of Iraq, Libya, and now Ukraine.
3. The abrogation of security assurances and guarantees.
4. The lack of progress in disarmament negotiations.

As a result, the author finds that the nuclear NPT regime is increasingly plagued by a complex tension between NWS and NNWS, with Russia's war on Ukraine exacerbating this tension and undermining both the multilateral and bilateral dialogue on nuclear weapons (Abbasi, 2022). The NPT regime is facing challenges and its foundation may have been irreversibly weakened.

Valeriia Hesse considers Russia's ongoing war against Ukraine as a threat to global nuclear order and security. Her chapter relies on the notion that the war will be a precursor to a global paradigm shift, and the international community's ability to react to international law violations and think about global affairs as a positive-sum game will determine whether this change will lead to a war of all against all or postmodern pragmatic internationalism. In this context, the author argues that nuclear factor plays a significant role through different dimensions.

First, due to the inability of the international security architecture to prevent the conflict caused by Russia's aggression in Ukraine, Hesse recommends moving toward the cancellation of the veto power to detach the factor of nuclear weapons' possession from UN Security Council decision-making and mitigate the effects of the message that nuclear deterrence works (Wesolowsky, 2022). Second, the author suggests that encouraging more explicit nuclear signaling as a temporary measure may help prevent nuclear escalation due to misinterpretation and make deterrence more stable. Third, Hesse highlights, however, that the failure of security assurances and the success of nuclear deterrence send dangerous signals that can trigger proliferation (Knopf, 2012). This situation raises questions about the future of nuclear disarmament and whether the nonproliferation norm is obsolete in the face of hardline realism in international relations. Ultimately, and fourth, the author discusses that the momentum for the Treaty on the Prohibition of Nuclear Weapons (TPNW) and new arms reductions has come, and proper adjustments must start immediately before the world faces bigger an uncontrollable situation. In sum, the chapter recommends nuclear disarmament as a pragmatic solution motivated by underlying security considerations.

6 The Impact of Russia's War Against Ukraine on Regional Cases

Valentina Cassar studies the tensions and incompatibilities in the worldviews of the US and Russia that have been brought to the forefront due to Russia's war against Ukraine and nuclear saber-rattling. In this context, the author argues that the US and Russia continue to view each other with concern, and their strategic cultures and deterrence postures have remained anchored within one another. On the one hand, while the rise of China has become a more urgent concern for the US, Russia remains a central concern anchoring its nuclear posture. On the other hand, Russia sees the US as a systemic threat that is seeking to contain Russia's place in the world. Understanding these narratives is especially pertinent in the context of Russia's war against Ukraine, as it highlights Russia's motivations and global influence. The delay in the publication of the US National Security Strategy and Nuclear Posture Review in 2022 suggests a need for a reassessment of the US outlook, given the ongoing war in Ukraine (The White House, 2022; United States Department of Defense, 2022). In sum, Cassar acknowledges that Russia's actions in Ukraine have ensured that it has retained parity as a disruptive actor that has revised the

international security agenda and challenged assumptions regarding the global nuclear order.

Tetiana Melnyk analyzes how the new NATO Strategic Concept differs from its previous one and how Russian aggression against Ukraine has influenced these changes (North Atlantic Treaty Organization, 2010, 2022). As a military-political organization, NATO has proven to be effective in defending its members from adversaries and has updated its Strategic Concept to reflect its vision of deterrence and defense in the twenty-first century. In this context, the author argues that NATO was established in 1949 with a set of values including human rights, democracy, and rule of law, which play a crucial role in determining the organization's decisions (Lindley-French, 2022). However, adversaries of NATO are trying to reject these values and challenge the global rules-based world order by force, including in the nuclear field. In addition, Melnyk observes that the West's support for Ukraine against Russian aggression is driven by both moral and practical reasons as the Russian Federation perceives NATO as already a party to the conflict. As a result, Russia's war on Ukraine has changed the nature of international security and transformed NATO's three core tasks: deterrence and defense, cooperative security, and resilience building in crisis management.

Valeriia Gergiieva scrutinizes how Russian–Iranian relations affect the Iranian nuclear program, with a focus on the impact of the Russian invasion of Ukraine on Iran's state behavior. The first finding exposes that Russia's war on Ukraine has created new international challenges and uncertainties, including the growing role of nuclear weapons and their impact on the nonproliferation regime. Second, the Russian invasion has deepened the nonproliferation crisis and complicated the negotiating process due to increased mistrust toward international agreements. Furthermore, it also demonstrated the importance of deterrence and could prompt some states to rethink their NNWS status. Fourth, Iran has been a subject of international concern for its nuclear and ballistic missile programs and the Russian invasion could have an impact on its approach to the nuclear threshold. At the same time, this chapter finds that the negotiations for the revival of the Joint Comprehensive Plan of Action (JCPOA) with Iran have failed (Vicente, 2022). Finally, Gergiieva argues that Tehran has been deepening its relations with Moscow, which includes the establishment of a \$40 billion energy deal and drone deal that could challenge the current global security order (Bozorgmehr, 2022; Hernández, 2022).

Adérito Vicente, Muhammed Ali Alkış, and Iryna Maksymenko explores the impact of Russia's war against Ukraine on the decision of Finland and Sweden to join NATO as well as the security implications for the global nuclear order. Both Scandinavian countries have abandoned their policies of nonalignment and have decided to seek protection under the Alliance's nuclear umbrella (Alberque & Schreer, 2022; Lundqvist, 2023). The decision to join NATO was influenced by three factors: the international security environment, threat perception, and public opinion. However, their membership may have negative effects on the global nuclear order, including the potential for an increase in nuclear-sharing programs, a regional nuclear arms race, to harm to the global nuclear disarmament agenda and the

nonproliferation regime. Their chapter also discusses the challenges and opposition to the membership process, including delays in the ratification process by Turkey and Hungary. The process highlights the need for better cooperation among government agencies to prevent foreign policy failures. As a result, the authors sustain that the effects of Finnish and Swedish membership in NATO on the nuclear order will take time to become clear.

7 Conclusion

In conclusion, this book raises significant issues about the future of the global nuclear order. The findings mentioned above underline the rise of the new nuclear age, very similar but quite different at the same time to the Cold War era. The level of trust, and predictability, fixed by the arms control treaties seem to be abandoned by Russia, which would increasingly deteriorate strategic stability and lead to something we can call the strategic instability paradigm.

One of the main features of this instability regime will be the fight between the nuclear superpowers (still the US and Russia) for shifting spheres of influence, which have changed drastically since the end of the Cold War. The war on Ukraine turned to be the showcase of the Russia's revisionist attempts to come back to the Cold War rules and borders. The nuclear card is presented by Moscow, in this respect, as an ultimate trump in power politics. This brings to two tendencies. One is the unexpected triumph of nuclear deterrence as a strong tool of power projection in a new age. The other one, having brought deterrence at the forefront of the world stage shows not only its capabilities, but also the limits, the state may face relying just on nuclear deterrence and its coercive functions.

However, as far as the "nuclear shadow" Russia managed to demonstrate during the war on Ukraine suggests tempting strategies for the revisionist states, cherishing nuclear ambitions, the nuclear deterrence potential preferences, associated with the power politics may completely overwhelm its limitations, demonstrated in the book (Tertrais, 2022). The latter will signify the evolution of the former nuclear order based on the balance of deterrence and nonproliferation (with some hope for nuclear disarmament) to the one, based ultimately on a deterrence framework, where nonproliferation will collapse under the pressure of the new aspirants to deterrence and the intolerance of those that support an immediate solution for global nuclear disarmament.

In this context, the absence of arms control, which seems to be a direct result of Russia's suspension of the New START Treaty, will play an enhanced destabilizing role, potentially making the new nuclear age much more dangerous and unpredictable than the one which characterized the twenty-first century.

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