

THE FOUNDATIONS OF NUCLEAR ORDER
Norms, Attitudes, and International Institutions

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HABILITATION THESIS

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Introduction and author's commentary

The invention of nuclear weapons and their use against Japan in the final weeks of the Second World War fundamentally changed the course of international politics (cf. Brodie 1946; Paul, Harknett, and Wirtz 1998). However, only a handful of nuclear-capable states have acquired these weapons (see Fuhrmann and Tkach 2015) and they have never been used in warfare since August 1945 (Tannenwald 2007). Arguably, one of the key factors explaining this unusual pattern of restraint is the emergence and gradual establishment of the *nuclear order*: a complex structure of international institutions, norms, rules, and practices that regulate the global governance of nuclear technology (Walker 2000; Müller and Wunderlich 2013; Tannenwald 2018b; Smetana 2020b).

For the past six years, I have been exploring the foundations of the global nuclear order in my academic research. In particular, I have studied how the main pillars of the nuclear order – non-proliferation, arms control, disarmament, deterrence, and non-use – shape and are shaped by norms, rules, practices, and ideas about appropriate conduct in nuclear affairs. This habilitation thesis represents a collection of fifteen of my papers on this subject, divided into two thematic sections. The first section draws mainly on large-N data and statistical methods, with a focus on the study of individuals' attitudes towards nuclear weapons. The second section approaches the problem from a more macro perspective, exploring the dynamics of international institutions in global nuclear politics using qualitative methods such as in-depth interviews or historical case studies. In this introductory commentary, I identify my selection criteria for the inclusion of individual papers, present a detailed outline of the thesis and its individual chapters, discuss some summary conclusions from this body of scholarly work, and sketch promising avenues for further research.

Selection criteria

After numerous consultations with senior colleagues and much consideration, I have decided to apply several criteria for the inclusion of individual papers into this habilitation corpus. First, I strive for *thematic homogeneity*; that is, I have only included the papers that explicitly deal with some aspects of the global nuclear order and nuclear weapons politics. This led me to remove from consideration my academic work in other areas – for example, my research on frozen conflicts (Smetana and Ludvík 2019a; Ganguly et al. 2019; Klosek et al. 2021), strategic coercion (Smetana and Ludvík 2019b), or the Chemical Weapons Convention (Martínková and Smetana 2020). It is, nevertheless, worth mentioning that there are important linkages between these topics and issues in global nuclear politics, which are certainly worth further academic inquiry in the future.

Second, I seek *epistemological and methodological heterogeneity*; that is, my aim was to put together a selection of papers that demonstrate a diversity of methodological approaches under different epistemological traditions. The first section of this dissertation thesis primarily builds on survey (chapters 5–8) and experimental survey (chapters 2–4) methodology, and the use of statistical methods to analyze large-N data. In contrast to these quantitative approaches, the second section of the thesis uses diverse qualitative approaches and data collection methods. For

example, chapter 10 introduces a novel conceptual framework and applies it to two historical cases of nuclear proliferation, chapter 11 examines the institutional bargaining dynamics drawing on in-depth interviews with diplomatic representatives, chapter 12 employs counterfactuals and scenarios, and chapter 15 analyzes archival as well as contemporary policy documents on U.S. nuclear weapons doctrine.

Third, I include both single-authored and collaborative articles, as I believe that scholars at this stage of their career should be able to demonstrate the ability to work on both solo endeavors and to collaborate with other academics on joint research projects. As such, one-third of the papers in the habilitation corpus are written solely by me. For the remainder, I am always the first author with a majority contribution to all aspects of the writing process (except for chapter 5, which is based on a collaborative article where I am listed as a second author with a 50% contribution).

Fourth, I have excluded two papers that are essentially re-worked versions of chapters from my Ph.D. dissertation (Smetana 2020a; Smetana and Onderco 2018). Although they are both relevant to my postdoctoral research concerning the global nuclear order, they have been significantly revised since their original dissertation version, and they have been published in high-impacted scientific journals. I believe that it would be inappropriate to include papers that mostly use the same data and conceptual framework as the thesis that led to the completion of my doctoral studies.

Fifth, while bibliometric indicators are certainly not the (only) guarantees of quality of academic research, I have only included articles in academic journals with an impact factor that is indexed in Clarivate Analytics' Web of Science database (J_{imp}). Many of these journals are also highly-ranked (Q1–Q2) in the Journal Citation Reports, with *International Affairs* (chapter 11) currently ranked no. 1 in International Relations with a 2020 impact factor of 7.91. Out of twelve journal articles, seven have been published (chapters 1, 2, 5, 8, 11, 13, and 15), two accepted for publication (7 and 10), and three are currently being reviewed by the journal (3, 4, and 6). The remaining three papers (9, 12, and 14) have been published as chapters in edited volumes by respectable international publishing houses: Oxford University Press, Routledge, and Springer.¹

By applying these criteria, I have selected fifteen papers written between 2015 and 2021. In Table 1, I provide the full list together with detailed information concerning the authorship, respective academic journals or publishing houses, and the publication status as of August 2021.

¹ To allow the possibility of the thesis review by scholars from abroad, I have also excluded my scholarly publications written in the Czech language (e.g., Smetana 2013; 2014).

Table 1. List of academic papers included in the habilitation corpus.

Chapter	Title	Author(s)	Journal / publisher	Status
1	Nuclear Taboo 3.0: Research Gaps and New Avenues in the Study of Nuclear Weapons Nonuse	Smetana, Wunderlich	International Studies Review	Published
2	How Moral Foundations Shape Public Approval of Nuclear, Chemical, and Conventional Strikes: New Evidence from Experimental Surveys	Smetana, Vranka	International Interactions	Published
3	The Lesser Evil? Experimental Evidence on Nuclear and Chemical Weapon “Taboos”	Smetana, Vranka, Rosendorf	World Politics	Under Review
4	From Moscow with a Mushroom Cloud? Russian Attitudes towards the Use of Nuclear Weapons in a Conflict with NATO	Smetana, Onderco	Journal of Conflict Resolution	Under Review
5	German Views on U.S. Nuclear Weapons in Europe: Public and Elite Perspectives	Onderco, Smetana	European Security	Published
6	Elite-Public Gaps in Attitudes to Nuclear Weapons: New Evidence from a Survey of German Citizens and Parliamentarians	Smetana, Onderco	International Studies Quarterly	Under Review
7	Disarming Arguments: How to Get the Public to Support Nuclear Abolition	Smetana, Vranka, Rosendorf	Survival	Accepted
8	Do Germany and the Netherlands Want to Say Goodbye to US Nuclear Weapons?	Smetana, Onderco, Etienne	Bulletin of the Atomic Scientists	Published
9	Nuclear Weapons and Peaceful Change	Smetana	Oxford University Press	Published
10	NPT as an Antifragile System: How Contestation Improves the Nonproliferation Regime	Smetana, O’Mahoney	Contemporary Security Policy	Accepted
11	Stuck on Disarmament: The European Union and the 2015 NPT Review Conference	Smetana	International Affairs	Published
12	Nuclear Infrastructure, Strategic Hedging, and the Implications for Disarmament	Smetana	Routledge	Published
13	The More the Merrier: Time for a Multilateral Turn in Nuclear Disarmament	Smetana, Ditych	Bulletin of the Atomic Scientists	Published
14	Weapons of Mass Protection? Rogue Asteroids, Nuclear Explosions in Space, and the Norms of Global Nuclear Order	Smetana	Springer	Published
15	A Nuclear Posture Review for the Third Nuclear Age	Smetana	The Washington Quarterly	Published

Outline of the thesis

The first part of this habilitation thesis is composed of eight papers that examine attitudes of individuals towards the core institutions, norms, and practices of the global nuclear order. To a large extent, I have followed up on the groundbreaking work of my Stanford University mentor, professor Scott Sagan and his colleagues, who were the first in our field to use experimental survey methods to study contemporary public attitudes towards the use of nuclear weapons (Press, Sagan, and Valentino 2013; Sagan and Valentino 2017; Haworth, Sagan, and Valentino 2019; Sagan and Valentino 2021). Over the last few years, their studies have inspired a number of scholars in our field who have subsequently used survey methodology to examine public views on different aspects of nuclear weapons (e.g., Rathbun and Stein 2020; Montgomery and Carpenter 2020; Koch and Wells 2020; Sukin 2020a; Egel and Hines 2021; Horschig 2021; Baron and Herzog 2020; Herzog, Baron, and Gibbons 2020; Bowen, Goldfien, and Graham 2021).

Chapter 1 contains my contribution to the special forum on nuclear nonuse published by the *International Studies Review*. In the forum, along with my co-author Carmen Wunderlich, I had the opportunity to join several respected scholars from our field (Scott Sagan, Benjamin Valentino, Nina Tannenwald, Maria R. Rublee, Charli Carpenter, and Alexander Montgomery) and debate the achievements of and future prospects for scholarly literature on the military nonuse of nuclear weapons. Our paper provides a critical review of the first and second waves of nonuse scholarship, and lays down seven promising avenues for the “third wave”. These recommendations for further research include: (1) employing a cross-national and cross-cultural perspective; (2) sharpening the public-elite distinction; (3) examining the role of gender and race; (4) investigating the generational aspect; (5) considering (neuro-)psychological factors; (6) studying interactive linkages; and (7) applying a comparative approach with respect to other weapons of mass destruction (WMD). Within this habilitation thesis, this paper serves well as an introductory piece to the papers included in the first part; in all of them, I have attempted to follow up on our own recommendations and address several gaps that we had identified in existing research on nuclear attitudes.

In chapter 2, I include a paper co-authored with a behavioral psychologist, Marek Vranka, which we published in a quantitatively oriented scholarly journal *International Interactions*. In this paper, we present the findings of our two survey experiments on public support for nuclear, chemical, and conventional strikes in the United States. In particular, we draw on the Moral Foundations Theory (MFT) from moral psychology (Graham et al. 2013; Haidt 2007) to examine how moral values of individuals interact with the approval of different kinds of strikes and with the effects of information about the in-group and out-group fatalities in our hypothetical scenarios. The results of our experiments show that while the American public is relatively more averse to the employment of chemical weapons than to the use of nuclear or conventional strikes against a foreign terrorist base, the overall relationship between strike approval and the individuals’ moral values does not differ significantly with respect to the weapon type. In addition, we found that individuals’ scores in so-called “binding” moral values affect the public sensitivity for in-group fatalities. Altogether, this paper follows up on two research recommendations discussed in chapter 1, namely the consideration of psychological

factors in nuclear nonuse research, and the application of the comparative perspective vis-à-vis other WMDs.

In chapter 3, I include our latest paper co-authored with Marek Vranka and Ondrej Rosendorf, which builds on the experimental work discussed in chapter 2 and is currently under review in *World Politics*. In this new paper, we once again examine the strength and nature of nuclear and chemical weapons “taboos” with respect to public attitudes – this time in the context of a large-scale armed conflict. To this end, we conducted an original survey experiment on a sample of 2,350 American and British citizens to examine their views on nuclear and chemical strikes in a hypothetical scenario of a war with North Korea. Our findings suggest that even though the public in both the United States and the United Kingdom accurately judges nuclear weapons as inherently more destructive and indiscriminate towards civilians, it is still more averse to the use of chemical than nuclear weapons. Moreover, we show that individuals share many similar concerns when they consider the use of nuclear and chemical strikes, above all the enemy victims’ suffering, number of civilian fatalities, and the setting of a dangerous precedent, although they are relatively more concerned about both the moral and the legal dimensions of the military employment of chemical weapons. A follow up study that we conducted on a sample of adult citizens in the United States and the United Kingdom demonstrated that it is primarily the issue of identity where the attitudes to nuclear and chemical weapons clash: individuals in both countries are significantly more likely to associate chemical weapons with “rogue states” and terrorists, whereas nuclear weapons are associated with modern powers. The findings of this paper contribute to our understanding of transnational norms against the use of nuclear and chemical weapons, in line with our earlier recommendation in chapter 1 to employ a comparative WMD perspective in the new wave of nuclear nonuse scholarship.

In chapter 4, I include a paper co-authored with Michal Onderco, which is currently being reviewed by the *Journal of Conflict Resolution*. For this research article, we fielded a survey experiment on a large ($N = 1,500$) representative sample of Russian citizens. In the survey, we presented the participants with a hypothetical scenario of a military conflict between Russia and NATO in the Baltics, in which Moscow considered a limited use of nuclear weapons as an “escalate-to-deescalate” strategy. Our findings show a strong aversion of the Russian public towards the use of nuclear weapons, with an overwhelming majority of our participants preferring to risk a military defeat than to agree with a demonstrative nuclear explosion or a “de-escalatory” strike against a NATO base in Poland. An escalation of the conflict involving NATO missile strikes on Russian territory had only a small and statistically insignificant effect on the approval of nuclear weapon use. Further statistical analyses showed that participants’ gender, moral values, and the in-group/out-group attitudes are among the key factors explaining the relative (un-)willingness of Russian citizens to support nuclear strikes. With respect to nuclear (non-)use scholarship, which has been so far mostly U.S./Western-centric, our contribution is unique in the sense that we are the first in our field to experimentally examine contemporary public attitudes towards nuclear weapon use in the Russian Federation and one of the first to do so in a non-Western nuclear weapon state – in line with our earlier recommendations in chapter 1 to employ a cross-national and cross-cultural perspective in the study of nuclear nonuse norms.

In chapter 5, I include a study of public and elite attitudes towards U.S. nuclear weapons stationed on German territory, which I co-authored with Michal Onderco and published in the academic journal *European Security*. The so-called “nuclear sharing” practice has been a pillar of NATO extended deterrence in Europe since early in the Cold War. Yet, despite the growing contestation of this practice in several host countries, there has been little scholarly research on contemporary attitudes of the local citizens and political elites to the continued stationing of nuclear weapons in Europe. To address this gap, we conducted original surveys of over 2,000 adult German citizens and 101 members of the *Bundestag*, the lower house of the German parliament. Our results show skepticism about both the military and political purpose of U.S. nuclear weapons in Germany and strong aversion towards their use under any currently conceivable scenario. At the same time, we found a majority support among both politicians and citizens for the removal of U.S. nuclear weapons from German territory as part of bilateral nuclear arms control initiatives between the United States and Russia. With this study, we once again extended the reach of research on nuclear attitudes beyond the American context, examining them in a European and, importantly, a non-nuclear-weapon state.

In chapter 6, I include another paper co-written together with Michal Onderco, which is currently under review in the journal *International Studies Quarterly*. For this study, we used our earlier dataset from the survey of German citizens and parliamentarians (chapter 5), yet focused on a different aspect: the gaps between attitudes of the public and political elites. The key motivation for this project was the current lack of elite surveys in nuclear weapons scholarship; while the recent surge in survey-based studies has certainly shed new light on public attitudes toward nuclear weapons, we still know little about how these attitudes differ from those of political elites. In our study, we found empirical support for several of our hypotheses about the differences between elite and public attitudes concerning nuclear weapon use. Views differed regarding extended deterrence, prospective withdrawal of forward-deployed weapons, and the feasibility of global nuclear disarmament. Perhaps most importantly, we demonstrated empirically, in line with our theoretical expectations, that political elites are more averse to the hypothetical use of nuclear weapons than ordinary citizens – at least in the German context. Our findings underscore the argument that scholars should survey both elite decision-makers and the general public to obtain a comprehensive picture of attitudes towards pertinent questions in our field.

In chapter 7, I include a paper written together with Marek Vranka and Ondrej Rosendorf, which has been accepted for publication in the journal *Survival*. In this paper, we have moved beyond nuclear nonuse attitudes and examined the public’s views on nuclear disarmament. Among scholars interested in nuclear disarmament, there have been some previous attempts to disaggregate individual pro-disarmament arguments and discuss their pros and cons (Harrington, Gheorghe, and Fink 2017; Nebel 2012; Mian 2009). However, we still lack rigorous empirical studies that examine how the general public perceives these arguments and which of them are viewed as persuasive. To fill this gap, we conducted a survey on a representative sample of 1,000 American adult citizens and examined the persuasiveness of the six main arguments that are commonly used in disarmament advocacy as reasons for nuclear abolition: nuclear terrorism, “rogue states” with nuclear weapons, nuclear war, humanitarian impact of nuclear use, inadvertent nuclear accidents, and economic costs of maintaining nuclear arsenals. We found that arguments about nuclear-armed “rogue states” and nuclear accidents

are relatively the most persuasive and resonate strongly with American citizens irrespective of their political orientation. As expected, the arguments about the humanitarian impact of nuclear weapon use, which have been at the forefront of the “humanitarian initiative” to abolish nuclear weapons, do resonate with more liberal Democratic voters yet do not seem particularly convincing to more conservative Republicans. Finally, the costs of maintaining a nuclear arsenal, which some earlier scholarship thought to be a promising way to frame disarmament (e.g., Harrington, Gheorghe, and Fink 2017), actually appear to be relatively ineffective in reaching out towards the general public. Given the need to invigorate public support for nuclear disarmament in order to make the “global zero” more politically salient, our findings are not merely intriguing from a scholarly perspective, but also provide research-based policy advice for NGOs and other disarmament advocates.

As chapter 8, the last in the first part of my thesis, I include a paper co-authored with Michal Onderco and Tom Etienne, which we published in the *Bulletin of the Atomic Scientists*, a prominent U.S. journal with a strong focus on nuclear weapons. Once again, we re-visited the issue of U.S. nuclear weapons in Europe and public attitudes towards NATO’s nuclear-sharing practice. In this paper we focus on two prominent European host states, Germany and the Netherlands, which are currently debating the possibility of the prospective withdrawal of these weapons from their territory. Given the changing political landscape in these two countries, public support for these policies is a pertinent aspect of the political decisions over the future of U.S. nuclear weapons in Europe. To contribute to the debate with some novel empirical data, we fielded an original survey, where German and the Dutch citizens expressed their views on the prospective U.S. withdrawal. We found that while German citizens are, overall, more enthusiastic about the removal of U.S. nuclear weapons from their territory, a majority of citizens in both countries would support this step if it is taken as a part of arms control negotiations between the United States and Russia. Given the crumbling of Cold War arms control architecture in the past few years, findings of popular support for one of the core institutions of the nuclear order are an encouraging sign for both the order itself and the future bilateral negotiations between Washington and Moscow alike.

Chapter 9 opens the second part of my habilitation thesis, which contains seven papers that focus on the interplay between norms, practices, and institutions of the global nuclear order from a broader, “macro” perspective. Chapter 9 itself is a paper that I recently published in the *Handbook of Peaceful Change in International Relations* from Oxford University Press. In this chapter, I identify key aspects of the “nuclear revolution” (Mandelbaum 1981; Jervis 1989) that are pertinent to the problem of power transition and peaceful change in international affairs. To this end, I elaborate on five primary institutions of nuclear order: nuclear deterrence, nuclear arms control, nuclear nonproliferation, nuclear nonuse, and nuclear disarmament. Here and elsewhere, I do not use the term “institutions” in the sense of formalized international organizations or regimes, but rather institutions as understood by the English school of International Relations: a recognized set of fundamental practices that constitute actors’ identities and underpin the legitimacy of their interactions in a given social order (Buzan 2004; Bull 1977). The chapter unpacks the conceptual logic behind these five institutions of nuclear order and explores their operations, mutual linkages and conflicts. To a large extent, the chapter itself serves as an introductory text to this second part of my habilitation thesis, as these five

institutions of nuclear order and their mutual linkages represent a theme that appears throughout all the remaining chapters.

In chapter 10, I include my paper co-written with British scholar Joseph O'Mahoney, which has been accepted for publication in the journal *Contemporary Security Policy* as a contribution to the forthcoming special issue on the 50th anniversary of the Nuclear Non-Proliferation Treaty "NPT after 50". Among the five institutions of nuclear order identified in the previous chapter, this paper is primarily concerned with nuclear non-proliferation in general and the NPT regime in particular. As a conceptual innovation, we introduce the concept of "antifragility" (Taleb 2012) as a framework to understand the impact of occasional violations of regime norms on the health of respective international regimes. Contrary to the prevailing understanding of norm violations as a strictly negative phenomenon that always leaves the regime damaged, we show that normative deviance is, under certain conditions, a potentially useful "stressor" that helps antifragile systems (including social orders such as international regimes) learn from their environment, improve, and adapt. We apply this conceptual framework to the case of the NPT regime and the past violations of its nonproliferation norms by India (a non-member) in the 1970s and Iraq in the 1990s (a member). The findings of our paper challenge the prevailing catastrophizing narrative about the strictly negative impact of norm violations on regime stability and further contribute to scholarly debates about international norm dynamics within the global nuclear order.

In chapter 11, I include my paper that was previously published in the scholarly journal *International Affairs*. The focus of this paper is also on the NPT regime and its dynamics, particularly the interplay between nuclear non-proliferation and nuclear disarmament that is currently at the forefront of conflicts within the regime. From the relevant actors, I focus on the European Union (EU) and its member states. Though not a party to the treaty itself, the EU has made a consistent effort since the 1990s to coordinate the positions of its member states and gain a more prominent role in the area of nuclear non-proliferation in general and the NPT review process in particular. In this paper, I examine the performance of the EU within the 2015 NPT Review Conference deliberations. Drawing on on-site observation, working papers, statements, and a number of in-depth research interviews, I argue that various institutional changes notwithstanding, the influence of the EU as a distinct actor in the NPT context continues to be very limited, and the EU's common position on non-proliferation is in bigger disarray than ever before. The 2015 event has demonstrated the widening rift between the member states on the future steps in nuclear disarmament and its related issues. I discuss how the inability to maintain a coherent common position limits the EU "actorness" and impedes its striving for relevance in the NPT forums. In more general terms, the dynamics outlined in this paper further highlight the limits of the EU's common policy in foreign and security matters, in which the national positions of individual member states are as divergent as in the case of nuclear disarmament. Given the recent adoption and entry into force of the Treaty on the Prohibition of Nuclear Weapons (TPNW), it is reasonable to expect that conflicts over nuclear disarmament will also continue to have a negative impact on the common position of the EU at the 2022 NPT review conference.

In chapter 12, I include a paper that was originally published as a chapter in an edited volume *Global Nuclear Disarmament: Strategic, Political, and Regional Perspectives* by Routledge. From the perspective of the global nuclear order, the paper explores the interplay between "virtual

nuclear arsenals” and nuclear disarmament, deterrence, nonproliferation, and nonuse, using a counterfactual thought-experiment to portray the dynamics of a hypothetical post-nuclear world. More specifically, I explore conceptually the problem of nuclear infrastructure and the resulting nuclear reconstitution capability in the context of aims to achieve a nuclear-weapon-free world. This paper primarily highlights the paradoxical double-edged nature of nuclear infrastructure in relation to the attempts to achieve the “global zero”. On the one hand, advanced nuclear infrastructure does give current nuclear weapon owners confidence in the sensitive final stages of nuclear abolition, allows for an effective dismantlement of the remaining stockpiles, and facilitates the political decision to engage in deep cuts. On the other hand, the maintenance of a robust infrastructure beyond the “zero point” as a latent virtual nuclear arsenal poses a serious challenge to the stability of the disarmament regime, both from the perspective of military-strategic interaction and the conflicts over justice and fairness in the global nuclear order.

In chapter 13, I include a paper that I wrote with Ondrej Ditrych, previously published in the *Bulletin of the Atomic Scientists*. From the institutions of the global nuclear order identified in chapter 9, this paper deals with nuclear arms control, building on the argument that the multilateralization of arms control practice beyond the U.S.-Russian relationship is a challenging yet necessary step on the road to nuclear disarmament. To a large extent, the paper draws on our expert workshop organized on this subject at one of the annual Prague Agenda conferences, where we had the opportunity to debate the issue with prominent experts on the subject, including Rose Gottemoeller, the U.S. Under Secretary of State and the chief negotiator of the New START Treaty. After explaining the context of and existing obstacles to a “multilateral turn”, we propose the key steps on the road to a comprehensive multilateral arms control regime. First, the key stakeholders should initiate a debate on a reduction-*cum*-freeze deal that would lead to deep arsenal cuts by the United States and Russia on the one hand, and unilaterally declared moratoria on new nuclear-weapons production by smaller nuclear-armed states on the other. Second, there should be new efforts to advance the institutional ground for multilateral arrangement by moving forward with debates over arms control terminology, trust-building, and development of verification measures, not only by the nuclear weapon states but also non-nuclear weapon states and NGOs. I believe that even though the paper was written more than six years ago, its conceptual logic and the core policy recommendations continue to be highly relevant in the current state of global nuclear politics. The need to multilateralize the Cold War practice of bilateral nuclear arms control today represents one of the major challenges for the global nuclear order, particularly given the current expansion of Chinese nuclear forces and its contentious relationship with the United States (Korda and Kristensen 2021).

In chapter 14, I include my paper that was originally published in an academic volume *Planetary Defense: Global Collaboration for Defending Earth from Asteroids and Comets* by Springer. The paper draws on the proposals to develop nuclear explosive devices (NED) as suitable tools for deflection of life-threatening near-Earth objects, and situates them into the context of the normative dynamics of global nuclear order. I argue that despite the convenient physical characteristics of nuclear explosions, there are potentially negative implications of developing any options in this direction for the nuclear non-proliferation regime and the nuclear order as such. Moreover, I critically discuss the seemingly “objective” scientific rationality of these proposals and show how support for the NED development de-stigmatizes the use of

technology that, similarly to the impact of large asteroids, also carries a non-zero probability risk of destroying human civilization. I conclude the paper with a pragmatic attempt to reconcile and find the middle ground between the NED advocates and critics. While this subject that has not yet received much attention in nuclear scholarship, it will likely become highly pertinent in the years to come.

In the last chapter,¹⁵ I include my paper that was originally published in the journal *The Washington Quarterly*. In this paper, I systematically analyze the 2018 Nuclear Posture Review (NPR) report and discuss its individual provisions in the broader context of the development of these strategic documents under previous U.S. administrations. In particular, I provide a comparative analysis of the main strategic narratives, goals, and principles, as well as the (re-)formulation of U.S. declaratory policy, the guidance for maintenance and development of U.S. strategic capabilities, and the strategy for arms control, disarmament, and nuclear nonproliferation initiatives. In contrast to initial reactions in media, I highlight the strong patterns of bureaucratic policy continuity in the document, in line with the general development of U.S. post-Cold War nuclear posture. In the concluding part of the paper, I discuss the potential implications of the document with respect to the key institutions of the global nuclear order, including nuclear deterrence, arms control, and disarmament.

Summary conclusions and avenues for further research

In the paper in chapter 1 of this habilitation thesis, my colleague Carmen Wunderlich and I have proposed seven promising avenues for research that previous nuclear weapons scholarship has not yet satisfactorily engaged with: (1) employing a cross-national and cross-cultural perspective; (2) sharpening the public-elite distinction; (3) examining the role of gender and race; (4) investigating the generational aspect; (5) considering (neuro-)psychological factors; (6) applying a comparative approach with respect to other WMDs; and (7) studying interactive linkages between the core norms and institutions of global nuclear order. While we originally formulated them in order to inspire a new wave of scholarly research on nuclear weapons nonuse, they are also relevant to the study of other foundations of nuclear order, including nuclear nonproliferation, arms control, disarmament, and deterrence. In addition to these seven areas, I add another that, at least implicitly, informs all my research on the role of nuclear weapons in world politics: (8) studying the inherent contestedness of the nuclear order and the real-world implications of this contestedness. In this section, I synthesize relevant findings across the papers in this habilitation thesis and lay out some tentative conclusions concerning all of these eight research aims.

Cross-national aspects

The calls to employ a cross-national and cross-cultural perspective are primarily meant to correct for the persistent U.S.-centric focus of the existing nuclear weapons scholarship (on American bias in IR in general, see Colgan 2019). This problem has been particularly visible in the scholarship on nuclear weapons nonuse, where the seminal historical accounts have primarily studied the attitudes of U.S. decision-makers (e.g., Tannenwald 2007; Sauer 2015), whereas the newer wave of experimental surveys have, so far, mostly examined attitudes of the

U.S. public (e.g., Press, Sagan, and Valentino 2013; Sagan and Valentino 2017; Haworth, Sagan, and Valentino 2019; Rathbun and Stein 2020; Koch and Wells 2020; Montgomery and Carpenter 2020; for notable exceptions, see Sukin 2020b; Egel and Hines 2021).

In chapters 3, 4, 5, 6, and 8, my co-authors and I have contributed findings on attitudes towards nuclear weapons from surveys and survey experiments conducted in other Western (the United Kingdom, Germany, and the Netherlands) and non-Western (Russia) countries. The joint U.S.–U.K. study (chapter 3) offered a direct one-to-one comparability, demonstrating that British citizens are, across all experimental conditions, more averse to the use of nuclear weapons than American citizens. This finding is in line with the latest working paper by Dill, Sagan, and Valentino (2021), who observed similar dynamics in the scenario of nuclear use against a terrorist facility.

The “Russia study” (chapter 4) is, to the best of my knowledge, the first academic paper in our field to use experimental methods to examine Russian attitudes towards the military use of nuclear weapons. While there are serious limits to a direct comparison with similar U.S. studies (e.g., Sagan and Valentino 2017; Haworth, Sagan, and Valentino 2019), the paper still demonstrates that the “atomic aversion” will likely be, on average, somewhat stronger in Russia than in the United States – most likely closer to the public attitudes that we have observed for Germany in chapter 5.

Another unique contribution of our work is the study of public attitudes towards nuclear weapons in Germany (chapters 5, 6, and 8) and the Netherlands (chapter 8), two non-nuclear-weapon states that nevertheless host scores of U.S. nuclear weapons on their territory under NATO’s nuclear sharing arrangement. So far, studies of attitudes towards nuclear use in non-nuclear countries have been rare (a rare exception in nonuse research being Avey 2015), although they arguably provide important insights into the localized strength of transnational nonuse norms. Our findings show a remarkably strong aversion of Germans to any use of U.S. nuclear weapons in a military conflict with Russia, even when we described a demonstrative explosion in response to the preceding Russian demonstrative “escalate-to-deescalate” strike. All these findings strongly point to the possibility that the much-publicized willingness of a large number of Americans to approve the use of nuclear weapons might not be replicated in other national contexts. This would underscore our argument about the need to engage in further cross-national and cross-cultural nuclear nonuse studies, particularly using experimental designs that will allow the researchers to do one-to-one comparisons between samples across different national contexts.

In addition to nuclear nonuse experiments, chapter 8 provides a comparison of the German and Dutch publics’ views on the prospective withdrawal of U.S. nuclear weapons from their territory. In this paper, we highlight some common patterns (e.g., high support in both countries for the removal of weapons as a part of the U.S.–Russian arms control process), as well as important divergences (e.g., significantly higher support in Germany for unilateral, unconditional withdrawal). In our future work, we expect to further expand these cross-national studies by surveying the public in other European host countries, i.e., Belgium, Italy, and Turkey.

Public-elite gaps

While the recent wave of survey-based studies on attitudes towards nuclear weapons has indisputably shed new light on the contemporary views of ordinary citizens, there are voices that question their real-world relevance. This is particularly due to the fact that actual decisions concerning nuclear weapons are normally reserved to the highest echelons of elite decision-makers. Whereas some scholars in the field make assumptions about corresponding elite attitudes through proxy indicators such as education or income (Press, Sagan, and Valentino 2013, 200), there is reason to believe that the gaps in public-elite attitudes cut deeper than that. As such, we and other scholars have been calling for corresponding studies of *elite* attitudes towards nuclear weapons to be conducted (see, for example, the debate in Smetana and Wunderlich 2021).

Chapters 5 and 6 of my habilitation thesis draw on large-N data from our parallel surveys of politicians and ordinary citizens in Germany, which we fielded in order to contribute new empirical evidence on these public-elite gaps. The main takeaway from our surveys is that there are indeed some important differences between public and elite attitudes towards nuclear weapons. From the perspective of the “second wave” of nuclear nonuse scholarship, the key finding is the empirical support for our hypothesis that political elites are, on average, more averse to the potential use of nuclear weapons than the general public. We also found important public-elite differences in beliefs in the effectiveness of extended nuclear deterrence, views on the withdrawal of U.S. nuclear weapons from Europe, and opinions on the feasibility of global nuclear disarmament.

Whereas Press, Sagan, and Valentino (2013, 200) theorized that “elites may not differ dramatically from the general public in their views toward nuclear weapons,” we show that there are noticeable differences between these groups that justify the costs and logistics of elite surveys (cf. Dietrich, Hardt, and Swedlund 2020; Hafner-Burton, Hughes, and Victor 2013). Admittedly, however, our surveys do not provide a clear answer to the question of *why* these gaps exist. We hypothesized that they arise because political elites are more exposed to transnational norms governing nuclear weapons, as well as diplomatic and NGO discourses that promote these norms vis-à-vis political representations. Moreover, we believe that the level of domain-specific knowledge is, on average, much higher among elite decision-makers than ordinary citizens, which would also notably influence their attitudes towards different aspects of the global nuclear order and its institutions. However, given our limited individual-level data in the elite part of our survey, we cannot rule out the possibility that these gaps actually correspond to basic socio-demographic differences between the samples – including age, gender, income, and the level of education (see Kertzer 2020 for an elaboration of this argument). Our further research should, therefore, explicitly control for these socio-demographic variations to find out more about the actual sources of public-elite gaps in attitudes towards nuclear weapons.

Gender and Age

Admittedly, none of the papers in this habilitation corpus has gender-based or age-based differences in attitudes towards nuclear weapons as the main research aim. Nevertheless, some

of our secondary findings from chapters 2, 3, 4, 5, 6, and 7 can contribute at least some modest empirical evidence in this regard.

Notably, existing scholarship has, so far, provided mixed results concerning the influence of these factors on attitudes towards nuclear weapons. Although earlier studies have shown that women are, on average, more averse to the use of military force (e.g., Eichenberg 2003; 2016), this gender gap does not always appear significant in studies of attitudes towards the use of nuclear weapons. For example, in Press, Sagan, and Valentino (2013, p. 200), the preference for nuclear strikes was not associated with the participants' gender. Similarly, Sagan and Valentino (2017, p. 63) did not find statistically significant differences in attitudes between men and women (in fact, in percentage counts, women were slightly *less* averse to nuclear weapon use than men). Rathbun and Stein (2020, p. 15) even found that being male was *negatively* associated with preference for and approval of nuclear strikes.

Our studies of American and British attitudes towards nuclear and chemical weapon use also provided us with mixed findings. In chapter 2, we did not find a statistically significant relationship between the participants' gender and their view on the use of nuclear or chemical weapons against a terrorist WMD facility. In chapter 3, we did find a significant association between gender and strike approval in the expected direction: women were less likely to approve the strikes than men. However, importantly, gender was associated with a general attitude towards *any* military strikes, irrespective of the weapon type. When we tested the interaction between gender and a specific type of weapon proposed in the experimental scenario, we did not find any significant relationship, suggesting that these gender-based differences are related to the use of military force as such, rather than anything intrinsic to nuclear weapons.

In chapter 4, the findings on gender gaps in Russian attitudes were even more intriguing: while Russian women generally saw the use of a military strike less approvingly than Russian men, the gap was particularly sizeable in the conventional domain. An analysis of interaction terms has shown that in the nuclear domain, the attitudes become much more similar, indicating that men differentiate more between the two types of strikes, whereas women are simply more averse to the use of military force as such. Further research is needed to investigate to what extent these gaps are culturally-specific and what the sources of this variation are in the Russian context.

It is also worth mentioning that in our survey on American views on nuclear abolition, women supported nuclear disarmament significantly more than men. This would be in line with other contemporary studies that still identify the hypothesized gender gap in attitudes towards possession of nuclear weapons (Clements and Thomson 2021), although this gap is not necessarily always visible in nuclear use scenarios where other factors (e.g., care for compatriot soldiers) could also play an important role in swaying these attitudes in different directions.

When it comes to age as a factor in attitudes towards nuclear weapons, existing scholarship also fails to present us with clear-cut answers. Press, Sagan, and Valentino (2013, p. 200) found that participants' age was not associated with their preference for conventional over nuclear weapons. Nevertheless, a follow up study by Sagan and Valentino (2017, p. 63) demonstrated that a higher age of participants *was* associated with higher preference for conventional airstrikes over nuclear strikes. Rathbun and Stein (2020, p. 15) similarly found that age was negatively associated with preference for nuclear strikes.

In chapter 2, our models did not show that age would be statistically significant for approval of or preference for nuclear strikes. However, in chapter 3, we discovered an interesting interaction between participants' age and the type of strike proposed in the experimental scenario: older participants were more likely to approve air bombing but less likely to approve nuclear strikes. We found a similar aversion of older respondents to nuclear weapon use in our surveys of German citizens (chapters 5 and 6), yet failed to see a similar relationship in the case of the Russian public (chapter 4). In our survey on views on nuclear disarmament in the United States (chapter 7), age played little role. Further studies are needed to investigate these age-based differences and their sources; it is conceivable that in different national contexts, different historical experiences with arms races, conflicts, and wars may have contributed to the variation in attitudes towards nuclear weapons between older and younger citizens.

Moral psychology

The (neuro-)psychological foundations of attitudes towards nuclear weapons represent an intriguing area of scholarly research, in line with the recent “behavioral turn” in political science and IR (Hafner-Burton et al. 2017; Davis and McDermott 2020). A particular sub-set of this scholarship has been directly influenced by advances in moral psychology research, particularly the moral foundations theory (Haidt 2007; Graham et al. 2013) and other approaches based on the adaptive logic of the emergence of morality in human society (see Price and Sikkink 2021; Rathbun and Pomeroy 2021 for a comprehensive review of the IR application of these theories).

Chapters 2 and 4 of this habilitation corpus have used the aforementioned moral foundations theory (MFT) to explain the differences in attitudes of American and Russian citizens towards nuclear weapon use. Our work in this direction coincided with a very similar research aim of Brian Rathbun, who I met on a joint presentation at Sciences Po Paris, where we also had an opportunity to discuss our findings. Rathbun eventually published his paper with Janice Gross Stein in the *Journal of Conflict Resolution* (Rathbun and Stein 2020) and we followed up with our own publication in *International Interactions* (Smetana and Vranka 2021; here, chapter 2) and the follow-up study of Russian attitudes (chapter 4). Importantly, our studies replicated some of each other's key findings, which gives us additional confidence in the robustness of our results and the possibility of replicating them across different experimental scenarios – and, in fact, even across different national and cultural settings.

The key empirical test dealt with our hypotheses about the relationship between “individualizing” and “binding” moral foundations and attitudes towards the use of nuclear weapons. Whereas the individualizing foundations (care/harm and fairness/cheating) concern the well-being of individual persons, the binding foundations concern the interests of larger groups and communities (Haidt and Joseph 2004). We hypothesized that individuals who score high on individualizing foundations will be more averse to the use of nuclear strikes because of their indiscriminate impact and the resulting civilian casualties. Conversely, we expected that individuals who score high on binding foundations will be less averse to the use of nuclear strikes because of their desire to protect one's in-group against the enemy and the stronger retributive tendencies that go well with the use of nuclear weapons as the ultimate punishment. In both of our studies, we found that individual and binding foundations are statistically significant

predictors of nuclear (non-)use attitudes, and their inclusion in the regression models improved these models significantly.

Our research also shows that these associations can hold cross-nationally. To the best of our knowledge, we are the first to apply the MFT to examine public attitudes towards the use of military force in both the United States and the Russian Federation. This is particularly important given the theoretical reasoning behind MFT, which suggests that while moral foundations are universal and present in all cultures in the world, their relative importance varies both within and *across* different cultural domains (Graham, Haidt, and Nosek 2009; Graham et al. 2011). Generally, individualizing foundations correspond to the liberal understanding of morality in the West, whereas non-Western cultures tend to rely more strongly on the binding foundations (Graham, Haidt, and Nosek 2009). This is exactly what we have found in chapters 2 and 4: while U.S. and Russian citizens do differ in average scores of their individualizing and binding foundations,¹ the overall relationship between the participants' non-use attitudes and their moral foundations holds in both samples.

Another, possibly very important, finding that appeared in both of our studies concerns the specific relationship between moral foundations and particular weapon type described in our experiments. We originally expected that there would be an interaction between the weapon system and moral foundations: given the intuitive perception of nuclear weapons as a distinctively indiscriminate method of warfare with a particularly horrifying impact on individuals, we hypothesized that participants with highly developed individualizing foundations would be particularly averse to their employment, at least when compared to conventional weapons, which do not carry such a moral stigma. Conversely, compared to conventional weapons, nuclear weapons can be seen as a particularly ultimate and retributive form of combat, which could appeal to those individuals with highly developed binding foundations. Our models in both studies nevertheless show that there were no interactions between the weapon type used in the scenario and the moral foundations of an individual. As such, it appears that moral foundations do play a significant role in these decisions but the association is primarily tied to the willingness to approve the use of military force in world politics in general (cf. Kertzer et al. 2014), rather than to any specific moral opprobrium tied to nuclear weapons.

One important area for further research would also be the unpacking of the relationship between moral foundations and individuals' political ideology. Previous studies (including Press, Sagan, and Valentino 2013; Sagan and Valentino 2017; or Koch and Wells 2020) have discovered a significant effect of partisanship on nuclear attitudes, with Republican voters being much more likely to approve or prefer the use of nuclear weapons than self-identified Democrats. The very same association was found in the statistical models in chapter 2 of this thesis. Our study of American and British attitudes similarly found that identifying as conservative is associated with higher support for military strikes (chapter 3), as is being a supporter of the current Russian leadership in our study of Russian public attitudes (chapter 4).

¹ On a 1 to 6 scale of importance of individual items in the Moral Foundations Questionnaire (MFQ), the average score of individualizing foundations in the U.S. study was 4.47, of binding foundations 3.45, and in the Russia study 4.5 and 3.99, respectively.

While studies demonstrate a strong relationship between political orientation and moral foundations (Graham, Haidt, and Nosek 2009), the direction of the causal arrow between individuals' partisanship and their moral values is still unclear (Smith et al. 2017; Hatemi, Crabtree, and Smith 2019; Ciuk 2018). Further investigation of this relationship in nuclear nonuse attitudes is needed, possibly also with respect to the measure of retribution, which does seem to play a significant role (see chapters 2 and 3), but is also likely to be closely related to both the morality and political ideology of our respondents.

Comparison with chemical weapons

In the history of military innovation, nuclear weapons are unique in terms of the effects of their use, as well as their impact on world politics (cf. Brodie 1946; Jervis 1989; Paul, Harknett, and Wirtz 1998). Their unique features notwithstanding, they have been discursively clustered together with chemical and biological weapons as illegitimate and particularly abhorrent "weapons of mass destruction" (WMD) that deserve special moral opprobrium (Shamai 2015; Hashmi and Lee 2004; Bentley 2013). The discursive association between these classes of weapons has been an important feature of world politics (Price and Tannenwald 1996; Price 2018) ; however, many scholars and experts have criticized the WMD label as inaccurate, politicized, and potentially even counterproductive in terms of global non-proliferation strategies (Enemark 2011; Panofsky 1998; Archer 2004; Bentley 2012).

Given the discursive linkages between these types of weapons, as well as important differences in terms of their actual real-world effects, we have been interested in examining attitudes towards their use from a comparative perspective. Sadly, we believe that the study of chemical-weapon attitudes has only increased in relevance in the last couple of years, given their repeated use in the Syrian war (Koblentz 2019; Price 2019; Tezcür and Horschig 2020). In chapters 2 and 3, we provide a comprehensive discussion of reasons why some people could be more averse to the use of nuclear and chemical weapons, and report findings from our three survey experiments on this subject.

The findings of our three experimental studies have been, for both us and many of our colleagues, surprising. Although nuclear weapons are indisputably more destructive than chemical weapons, we have found systematic evidence that individuals, at least in the United States and the United Kingdom, have even stronger aversion to the use of chemical weapons than nuclear weapons. These findings hold in both counter-terrorism scenarios where these weapons are used against an Al Qaeda base (chapter 2) and in a large military campaign against North Korea (chapter 3).

After conducting our first experiment on this subject, we engaged in long discussion as to *why* the public is more averse to chemical than to nuclear weapons. I have brainstormed the possible explanations during different academic conference panels and presentations of my research at universities abroad. The common suggestions were: the fact that there is a stronger legal prohibition on chemical use than nuclear use; the fact that the use of nuclear weapons is a thing of the past, but people have been seeing the (terrible) consequences of chemical use on their TV news quite recently; or that the death by asphyxiation that results from the use of chemical nerve agents feels more terrifying, painful, and degrading than a potentially quick

death from nuclear explosions (indeed, many people tend to discount the horrific effects of nuclear weapons that would result from radiation poisoning).

Our findings, nevertheless, provide intriguing evidence that there may be another factor at the forefront of these attitudes. A follow-up study, reported in chapter 3, found that individuals are predominantly associate nuclear weapons with modern, developed countries, and chemical weapons with “rogue states” and terrorists. As such, our research suggests that it may be primarily an issue of identity that influences views of individuals on the military use of these weapons. Put simply, we feel that “countries like us” do not use chemical weapons as this belongs to the domain of “inferior others”. While individuals in the United States and United Kingdom may be comparatively more averse to the use of nuclear than conventional weapons, they still feel that the military employment of nuclear strikes is more fitting to their country’s identity than using chemical agents against their enemies.

In our future studies, we should delve more into these issues of identity, and see whether we can replicate our results on nuclear and chemical weapon use differences in other national contexts. This would apply particularly to non-Western countries, where we can reasonably expect that the respondents have different ideas about the “appropriate” behavior of their country in international affairs. Moreover, notwithstanding the difficulties in designing credible real-world scenarios, scholars should add the hypothetical use of biological weapons as another experimental condition. In the aftermath of the global COVID-19 pandemic, it appears timely to examine the sensitivity of individuals to biological threats and see whether they can distinguish between the use of chemical and biological weapons in their attitudes.

Interactive linkages

In chapter 9, I devote an ample amount of attention to the linkages between five primary institutions of global nuclear order: nuclear deterrence, nuclear arms control, nuclear nonproliferation, nuclear nonuse, and nuclear disarmament. By “linkages”, I mean that attitudes, behaviors, practices, or rules that apply to one of these institutions do not exist in a vacuum but often influence (and are influenced by) other pillars of the global nuclear order. How have these interactions and tensions manifested throughout my research?

One such linkage, which I discuss in more detail in chapter 9, is that between nuclear deterrence and nuclear nonproliferation. Scholarly literature sees this relationship as a double-edged sword. On the one hand, extended deterrence via the “nuclear umbrella” provided by the United States can restrain allies from acquiring their own nuclear weapon arsenals (see, for example, Freedman 2013, 97). On the other hand, as Sagan (1996, 86) persuasively argues in his classic account, nonproliferation strategies based on decreasing the value of nuclear weapons in world politics are weakened when major powers continue to stress the importance of extended nuclear deterrence as one of the main pillars of allied security. Similar incompatibilities are visible in the logics of deterrence and disarmament: whereas deterrence strategies rely on the perception of nuclear weapons as a *valuable* tool of security management, contemporary disarmament strategies are built on the attempt to *de-value* nuclear weapons in world politics (Ritchie 2014).

These tensions are clearly visible across all my papers that unpack the logic of nuclear deterrence in relation to other institutions of the global nuclear order, perhaps most prominently

in our studies of German public and elite attitudes towards the practice of nuclear sharing (chapters 5 and 6). During the Cold War, it was particularly the concern about potential German nuclear breakout that led to the establishment of this NATO practice (Freedman and Michaels 2019, pp. 361–377). Nevertheless, while this extended deterrence–*cum*–nonproliferation strategy has been advocated by practically all U.S. administrations to date (cf. U.S. Department of Defense 2010; 2018), our research shows that the German public is relatively skeptical about its effectiveness and largely supports the withdrawal of U.S. weapons from German territory. Even more importantly, the strong aversion of both German elites and citizens towards any conceivable military use of these weapons necessarily decreases the credibility of deterrence threats and thereby undermines the effectiveness of extended deterrence as such (cf. Powell 1990; Danilovic 2001).

I discuss similarly shaped tensions in the study of U.S. nuclear doctrine in chapter 15. Among other things, I highlight the dilemmas that are inherent in the development of all post-Cold-War Nuclear Posture Review (NPR) reports: the need to maintain (or, possibly, strengthen) U.S. nuclear deterrence capability, while simultaneously advancing U.S. goals with respect to nuclear non-proliferation. I show how many ambitious ideas for advancing the latter goal were undermined by the focus on the former. In the most recent 2018 NPR, this relationship has become even more complicated as a result of a significantly muted arms control agenda and a generally dismissive attitude towards nuclear disarmament.

From a more theoretical perspective, I discuss the tensions between the logic of (virtual) nuclear deterrence and nuclear disarmament in chapter 12. I highlight one of the pertinent paradoxes that advocates for nuclear abolition will eventually need to grapple with. On the one hand, maintaining sufficient reconstitution capability to hedge against the collapse of the hypothetical disarmament regime could be a crucial element to convince nuclear-armed states to engage in deep reductions of their arsenals, possibly leading towards “zero”. On the other hand, I show that the very existence of reconstitution capabilities as “virtual arsenals” would contribute to the instability of the disarmament regime, as well as the creation of a new form of principally unjust nuclear governance. While the paper is based on a conceptual debate and counterfactual thinking rather than an actual historical case study, similar challenges based on the partial incompatibility of different institutions of the global nuclear order can already be observed in nuclear politics today, as demonstrated by the work of Tannenwald (2013), Müller and Wunderlich (2013), and others.

Future research of linkages between the core institutions of nuclear order should arguably place the institution of nuclear nonuse at the forefront of scholarly inquiry. As I briefly mention in chapter 1, the embeddedness of the nuclear nonuse norm in the global nuclear order makes it susceptible to change as a result of normative developments in other relevant institutions. For example, Tannenwald (2018a) argues persuasively that the current developments in the area of nuclear arms control and disarmament have significantly weakened the “nuclear taboo” in the United States and elsewhere. The perception and impact of these linkages on public and elite attitudes towards nuclear use can possibly be subjected to empirical testing through the use of elaborate experimental designs and scenarios combining the developments across different institutions of the global nuclear order.

Contestedness of nuclear order

The final discussion of the findings across individual chapters of my habilitation thesis concerns the claim that has already appeared in my recent monograph that the global nuclear order is built on inherently contestable and perpetually contested normative structures (Smetana 2020b, 111–13). The norms, rules, and institutions that make up this order are contested in terms of their validity and mutual hierarchy, as well as their meaning in practice (Smetana and Onderco 2018). The latter is particularly important as the core pillars of nuclear order are (to some extent purposefully) largely vague and open to different interpretations, which makes the study of their “meaning-in-use” (Wiener 2004) ever more important (see also O’Mahoney 2013; Wiener 2009; Lantis 2011).

The dynamic contestation of institutions of nuclear order plays a distinct role in a number of chapters of this habilitation corpus, particularly those in the second part. In chapter 10, we examine how India’s 1974 “peaceful nuclear explosion” (PNE) led to a new understanding of what constitutes an “appropriate” peaceful use of nuclear technology. As a result of the test and a re-definition of the meaning of the peaceful-use norm in the global nuclear order, the NPT Article V. on the conduct of PNEs has become obsolete and the rules of nuclear trade significantly more restrictive than before the explosion. In the same chapter, we observe a similar dynamic in the case of Iraq, where the discovery of Baghdad’s clandestine nuclear program in the 1990s led to the adoption of new IAEA monitoring rules, particularly the (significantly more intrusive) Additional Protocol.

I return to the problem of peaceful nuclear use in chapter 14, where I study a phenomenon that has so far received only scant attention in nuclear weapons scholarship: the idea of using nuclear explosions to deflect asteroids and other near-earth objects. In comparison with Cold War debates on PNEs, the problem of nuclear deflection is normatively more complex: unlike building canals or dams, the capability to address the threat of near-earth objects may one day be critical for the survival of the human race. Yet, at the same time, such legitimization of nuclear explosions would represent a serious contestation to the current normative structure of nuclear order – particularly the idea that all nuclear explosions should be prohibited and nuclear weapons progressively stigmatized and eventually abolished altogether to prevent nuclear catastrophe. While I propose some ideas for temporary reconciliation, it is likely that experts and policy makers will face the daunting task of addressing these incompatibilities and the contestation that nuclear deflection presents to the stability of the global nuclear order.

Finally, the recurring contestation of the meaning of the nuclear disarmament norm is at the forefront of contemporary debates within the NPT and, therefore, also in my chapter 11, which unpacks the debates at the 2015 NPT Review Conference. The NPT Article VI. has been subject to intense contestation since the very inception of the nuclear nonproliferation regime. However, the slow pace of post-Cold War disarmament by the nuclear weapon states and the resulting success of the Humanitarian Initiative (that has eventually led to the adoption of the 2017 Treaty on the Prohibition of Nuclear Weapons) has made the diverging positions on disarmament ever more difficult to reconcile. My paper, which drew on in-depth interviews with diplomats and statements of various countries, shows how even the EU states, which have

long strived for a common voice in global nuclear politics, struggle to find a basic consensus about what the disarmament norm currently requires from the relevant stakeholders.

My analysis of these irreconcilable stances would hardly result in a more positive assessment today, with the 2022 NPT Review Conference slowly approaching. Still, as I have demonstrated throughout the papers in this habilitation thesis, contestation of norms and rules has been an integral – and, to some extent, necessary – part of the development of the global nuclear order. Despite occasional setbacks, the contestation has also helped to adapt the institutions of nuclear order to new developments, both external and internal. While the return of nuclear saber-rattling and the deconstruction of several important arms control initiatives in recent years do not provide much ground for optimism, it is always important to remind oneself that the system of nuclear restraint that has emerged since the end of the Second World War is, in fact, an incredible success story. That, however, should not lead to complacency but rather to the realization of the importance of the institutions, norms, rules, and practices that have helped us to prevent unrestricted nuclear arms races and, possibly, nuclear war. In the era of dramatic power shifts in world politics, the need to care for the global nuclear order and its foundations arguably remains one of the most important tasks in the area of international security.

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