
English Summary

Preventing the spread of chemical, biological, and nuclear weapons among states has been one of the most visible national and international policy priorities since the end of World War II. Nevertheless, scholars and policymakers have spent little effort to understand how and why the spread of chemical and biological weapons (CBWs) occurs, especially in comparison to the amount of attention given by them to nuclear weapons. The prevailing view about CBWs is that they are cheap and easy to acquire alternatives to nuclear weapons; in other words, a ‘poor man’s atomic bomb’. According to this view, CBWs have spread widely among states because the knowhow and technology are easily available and the application is cheap. These weapons are, therefore, thought to exert particular attraction on developing countries in conflict-ridden regions of the ‘Third World’ that are precluded from having nuclear weapons due to financial and technological barriers. This dissertation, however, shows that this ‘poor man’s atomic bomb’ thesis misrepresents the role and appeal of CBWs.

To address the gaps in our extant knowledge about the spread of CBWs, this dissertation addresses the following question: *To what extent have chemical and biological weapons spread among states and what has driven the spread and rollback of chemical and biological weapons programs after World War II?* The study’s central findings can be summed up in five claims.

First, assessments of CBW spread often suffer from methodological flaws and present and perpetuate inflated threat assessments. In Chapter 2 of this dissertation I present an in-depth study of past assessments of CBW spread in order to understand how the idea that CBWs have spread widely, especially in the ‘Third World’, have come to be accepted by experts and policymakers. I find that many assessments of CBW spread suffer from serious methodological flaws. Core concepts are often improperly or insufficiently defined and the analyses upon which assessments of CBW spread are based are usually poorly documented. Moreover, the evidentiary basis of these assessments is frequently thin because a significant share of the publicly available information on weapons programs is comprised of vague, inconsistent, and unverifiable proliferation allegations originating from U.S. government sources that are eagerly (and often uncritically) consumed by experts and journalists. Furthermore, a persistent tendency to resort to circular referencing—with successive publications citing each other—leads faulty allegations, inflated estimates, and inaccurate pronouncements about the rapid spread of the ‘poor man’s atomic bomb’ to eventually be seen as established facts. This interplay between governmental and nongovernmental analyses creates, feeds, and entrenches the dominant paradigm that chemical, biological, and nuclear weapons are desirable, that they will inevitably ‘proliferate’, especially among ‘Third World’ states, and that concerted action is required to turn back the tide.

Second, the spread of CBWs has been less prevalent than is commonly thought. In Chapter 3, I introduce a unique data collection effort on 42 alleged chemical weapons (CW) programs and 21 alleged biological weapons (BW) programs in the period 1946-

2010. This data shows that the number of states that have pursued or possessed CBWs is significantly smaller than is often assumed. Around half of the states that have been thought to have pursued or possessed CBWs have actually not done so. The countries that have pursued or possessed CBWs have often done so for a shorter period of time than is commonly assumed. More importantly, the vast majority of states that have pursued or possessed CBWs have eventually reversed course and ended their programs. In other words, **restraint and rollback are the trend, not proliferation.**

Third, ‘poor’ or ‘Third World’ states have no particular disposition towards CBWs.

The new dataset on CBW programs in Chapter 3 reveals that so-called ‘poor’ or ‘Third World’ states have no particular disposition towards chemical and biological weapons. In fact, a considerable number of ‘Third World’ countries have incorrectly been accused of pursuing or possessing CBWs. There are actually a wide variety of states that have pursued or possessed CBWs—among them plenty industrialized states of the Global North. This finding is confirmed by a large-scale statistical study in Chapter 4, which reports no relationship between states’ economic development and their propensity to embark on either chemical, biological, or nuclear weapons development programs.

Fourth, states generally do not view or treat CBWs as replacements for nuclear weapons. The new CBW dataset, and the accompanying case descriptions in Chapters 6 and 7, show that the military objectives of state-run CBW programs have varied considerably. Most CBW programs in the post-World War II era have been small (employing between a few dozen and a few hundred staff), have had limited (often tactical) military objectives, and have frequently made use of improvised dissemination methods. These programs have, for instance, set out to develop weapons for assassinations or sabotage, counterinsurgency operations, terrorizing civilian populations, and for use as force multipliers against numerically superior opponents on the battlefield. While chemical weapons and biological weapons are often lumped together under the ‘poor man’s atomic bomb’ moniker, only the biological kind has the potential of producing mass casualties like nuclear weapons. However, creating an effective and dependable biological warfare capability with an eye to producing mass casualties is exceedingly difficult and costly. In fact, among all historical BW programs, only those of the United States and Soviet Union had the express objective of creating weapons that could match the casualty potential of nuclear weapons. In other words, there is little evidence to support the idea that CBWs are a stand-in for nuclear weapons. This conclusion is reinforced by a large statistical study in Chapter 4 that investigates the relationship between the demand for chemical, biological, and nuclear weapons. I find that states that pursue or possess chemical weapons and states that possess biological weapons are more likely to also begin pursuing nuclear weapons. On the other hand, the pursuit or possession of nuclear weapons has no effect on the likelihood that a state will begin pursuing chemical weapons or biological weapons. In other words, there is evidence of a complementary relationship between the different weapons systems (since CBW programs

increase the likelihood of nuclear weapons programs), but there is no indication that there is a replacement effect at play (since nuclear weapons programs do not lower the likelihood of CBW programs).

Fifth, the spread and rollback of CBW programs is a complex social and political phenomenon that cannot be reduced merely to national security-seeking behavior. Despite the dominance of the ‘poor man’s atomic bomb’ narrative, the academic literature contains a few studies that have theorized the drivers of CBW spread (focusing on three strands of thought: national security considerations, domestic politics and regime security, and international law and norms) and some empirical case studies of historical CBW programs. Chapter 5 attempts to synthesize theory and empirics through a systematic inquiry into the drivers of all CBW programs after World War II with the help of Qualitative Comparative Analysis (QCA). This chapter not only examines why states embark on CBW programs but also why they terminate them. This is an important contribution since the reversal of weapons programs is understudied in the literature on chemical, biological, and nuclear weapons. QCA is a method that is especially suited for unravelling such complex processes because it explicitly accounts for the possibility that causes can occur jointly (*conjunctural causation*), that different pathways can lead to an outcome (*equifinality*), and that the occurrence and non-occurrence of an outcome may require different explanations (*causal asymmetry*).

Four significant findings arise from Chapter 5. For one, states follow different pathways, which often consist of differing combinations of conditions rather than a single explainer, towards a decision to start or end the pursuit or possession of CBWs. This is noteworthy as proliferation scholarship often focuses on finding a silver bullet explanation rather than seeking synthesis and considering complexity. Second, external security conditions play a much more nuanced role in shaping demand for CBWs than is often thought. External security factors are usually insufficient by themselves for explaining CBW decisions. Instead, they almost always exert an effect in combination with other conditions, contradicting predictions from the realist security model that foreign threats (especially from nuclear-armed adversaries) are the reason that states want unconventional weapons. In fact, facing a nuclear-armed adversary has played a limited role in states’ decisions to pursue or acquire CBWs. In cases where adversaries were salient in CBW decisions, it usually concerned the presence or absence of CBW-armed or conventionally stronger rivals rather than nuclear weapons possessors, indicating that states consider these weapons as in-kind deterrents or force multipliers rather than general strategic deterrents or deterrents against nuclear-armed adversaries. Third, some regimes have turned to CBWs when they experienced domestic challenges to their rule (for instance, Chile’s Pinochet regime, Rhodesia’s white minority regime, Apartheid-era South Africa, and Yugoslavia under Communist rule). The combination of high domestic unrest and external security threats provides a particularly fertile ground for states to embark on CBW programs, while low domestic unrest or the occurrence of regime transition has led to the end of CBW programs when combined with

the absence of external security threats. Notably, the occurrence of regime transition—both in cases of a move towards democratic majority rule (like in South Africa at the latter stages of Apartheid) as well as regime breakdown (like in Yugoslavia)—was even sufficient by itself to produce paths towards the end of BW pursuit and CW possession. Fourth, treaties act as important constraints on the demand for unconventional weapons. The majority of paths towards the start of CW pursuit and CW possession occurred prior to the existence of the Chemical Weapons Convention (CWC), while membership of the CWC was sufficient by itself to produce paths towards the end of CW pursuit and the end of CW possession. Taken together, these findings suggest that the extant literature tends to overstate the importance of realist security model explanations of CBW spread and restraint and that more attention should be extended to understand how the preferences of actors are shaped by domestic politics and regime security considerations, as well as international law and behavioral norms.

Fundamentally, this dissertation mounts a critique against the structural realist and technological determinist assumptions that dominate thinking about unconventional weapons and depict the history and future of chemical, biological, and nuclear weapons as a story about *proliferation*. This proliferation paradigm requires the constant scrutiny of other states as potential sites where weapons programs can—and are expected—to establish themselves. These ideas are expressed in a powerful manner through the metaphor of the ‘the poor man’s atomic bomb’. Not only does this metaphor effectively voice the notion that unconventional weapons are inherently desirable and will spread rapidly and uncontrollably, but it is also a prime example of the way that racialized hierarchies and civilizational discourses are utilized to construct the proliferation threat as well as the policies to combat it.¹ By highlighting foreign threats that are yet to occur, the concrete threats posed by existing weapons on the territory of the analyst or the policymaker herself—or those of allied states that provide a security guarantee—can be ignored. At the same time, the supposed threat of chemical, biological, and nuclear weapons in the hands of the radical, untrustworthy, and uncivilized ‘Other’ is a key argument for possessors to indefinitely retain their own weapons arsenals in order to ‘maintain deterrence’. Thus, the discursive construction of the proliferation threat is an effective way to enforce a state of exception for the longstanding ‘haves’ versus the ‘have nots’.

Tragically, the proliferation paradigm primes analysts and policymakers to overlook positive or even transformational outcomes (for instance, that intentions of actors may have been misunderstood or that their preferences may have changed) and consequently leads to the notion that coercive measures—like sanctions, sabotage, military strikes, and preventive wars—are needed to halt proliferation ambitions. These nonproliferation and counterproliferation policies have frequently had disturbing humanitarian consequences and negative spillover effects as has, for instance, been the case with the 2003 invasion of

1 Other notable examples are the notions of the ‘WMD-armed rogue state’ and the ‘Islamic bomb’.

Iraq after it was falsely accused of having acquired weapons of mass destruction. This study is, therefore, a call to experts and policymakers to reassess the traditional view that casts the history of chemical, biological, and nuclear weapons as a story about proliferation, to challenge damaging and ineffectual nonproliferation, counterproliferation and deterrence policies, and to promote security policies that prioritize human wellbeing.