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INTERNATIONAL NORMS IN THE FACE OF TECHNOLOGICAL CHANGE: CHALLENGES FOR CONSTRUCTIVIST THEORY OF ARMS CONTROL

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Abstract. The emergence, diffusion and internalization of international norms face underestimated challenges in the sphere of arms control, which attempts to regulate and restrict the development and use of weapons. We explore the concept of uncertainty and reveal how it sets arms control apart from some other spheres that have experienced a rapid development and consolidation of international norms. The dynamic nature of technological change creates expectations of revolutionary novelty and perceptions of radical uncertainty, which run against some of the main mechanisms supporting international norms including grafting, strategic bargaining and moral consciousness raising. An original qualitative case study on norms related to the prohibition of biological weapons confirms that overcoming uncertainty is particularly difficult in arms control and that norms regulating weapons remain fragile after their institutionalization, due to ever-evolving technological change.

Keywords: norms, constructivism, arms control, biological weapons, technological change, uncertainty.

INTRODUCTION

The increasing tempo in collapse of international regimes, imposing restrictions on certain weapon systems, after the US withdrawal from Anti-Ballistic Missile (ABM) Treaty incentivized speculations regarding the future of arms control [Rumer 2018; Arbatov 2019; Brooks 2020]. It also encouraged calls from policy circles to restrict military capabilities and to prevent a new arms race[1]. A range of armaments became the object of anxiety, with a special focus being put on emerging technologies. For example, autonomous weapon systems invited stigmatization by UN Secretary-General Antonio Guterres as "morally repugnant and politically unacceptable"[2].

[1] United Nations. Warning of new arms race, First Committee delegates call for galvanized efforts to overcome stalled disarmament machinery. *United Nations General Assembly*, October 14, 2019, https://www.un.org/press/en/2019/gadis3626.doc.htm (accessed 12.05.2023).

[2] United Nations. Autonomous weapons that kill must be banned, insists UN chief. *UN News*, March 25, 2019, https://news.un.org/en/story/2019/03/1035381 (accessed 12.05.2023).

The gap between the reality of the arms control retreat and the discursive strive for risk reduction across military sphere constitutes a puzzle. It is, especially challenging for an authoritative stride of Constructivist research, which throughout previous decades advanced a powerful argument regarding the strong effects of international norms [Katzenstein 1996; Finnemore, Sikkink 1998; Risse, Ropp, Sikkink 1999; Rosert 2019]. Much of the discussions on the dissolution of arms control regimes point to the strategic choices made by individual states in light of their security interests and strategic rivalries. However, these immediate causes do not fully explain the fragility of arms control regimes relative to other types of norms regulating organized violence among states (such as international humanitarian law, for example).

The recent literature on arms control considers both cases of success and failure in advancing normative restrictions on means of warfare. However, the challenges specific to regulating weapons in comparison to certain modes of conduct remain under-explored. As the current security landscape presents both cases of norm non-emergence and of degradation of well-established regimes, it is important to examine the challenges to the accumulation of arms control norms. In this regard, this article argues that dynamic nature of technological change creates expectations of revolutionary novelty and perceptions of radical uncertainty, which run against some of the main mechanisms enabling the diffusion, consolidation, and preservation of international norms.

Arms control, as it is understood in this article, is a form of international regulation that restricts means of organized violence. An analysis of case-study on norms related to the regime on prohibition of biological weapons, using primary data (including expert interviews) along with secondary literature reveals the specific challenges to the resilience of international norms in the sphere of arms control. The instance for analysis was selected by its probing value. Regime dealing with prohibition of biological weapons constitutes a hard case for the argument regarding the detrimental effects of technological change on norm emergence and diffusion given its long history and broad skepticism regarding applicability of microbes for military purposes. However, the following analysis will identify contestations emerging from uncertainty, which stall its strengthening and institutionalization.

Our analysis sheds a light on the reasons why Arms Control norms are fragile, challenging the established analysis of what makes norms impactful and resistant. Rather than examining the detrimental effects of power asymmetries or discrepancies in interests as impediments to norm emergence and diffusion, it problematizes Constructivist premises in their own backyard. It engages the instruments and processes traditionally viewed as drivers behind normative progress, revealing their subversion through technological change.

The article advances its critique in three steps. First, it presents the main premises of the Constructivist argument regarding norm emergence and diffusion. Second, it establishes relations between arms control, regulation of technology and uncertainty. It also explores the effects of uncertainty on the instruments and processes involved in norm emergence and diffusion. Third, it introduces a case of prohibition on biological weapons to examine empirical validity of the argument regarding the challenges caused by technological change.

NORM EMERGENCE AND DIFFUSION IN NORM THEORY

Norms have been defined as "standards of appropriate conduct for actors with a given identity" [Katzenstein 1996: 5]. The reference to identity in this definition

strongly prescribes cultural specificity of these constructs[3]. However, a both English School and Constructivist tradition clearly demonstrated that states as corporate units socialize into a community with shared terms of references [Bull 1977; Wendt 1999; Buzan 2004]. Thus, they acquire common cultural attributes which enable advancement of universalized norms.

The research on international norms underwent a phenomenal expansion starting from the 1990s, when the first models of norm emergence and evolution appeared (e.g. the evolutionary pattern by Nadelmann [1990], the norm life cycle by Sikkink and Finnemore [1998], the spiral model by Risse, Ropp and Sikkink [1999]), to the present day when a multitude of studies with a strong empirical grounding explore the different phases of norm evolution and the actors involved in promoting them. The distinction made by Elvira Rosert [2019] between Macro models, which consider the whole life span of a norm, Meso models, which deal with a phase of norm evolution (emergence, diffusion or implementation) and Micro models which focus on a specific phenomenon within a phase (the role of advocacy during norm adoption for example) reveals some of the different ways international norms have been studied.

The initial focus on showing the power of international norms in bringing about change and identifying the actors involved in their promotion [Keck, Sikkink 1998; Alekseeva 2022] was followed by reflections on contestation mechanisms [Wolff, Zimmermann 2016; Niemann, Schillinger 2017], norm reversibility, sabotage and death [McKeown 2009; Panke, Petersohn 2012; Kutz 2014; Stimmer 2019; Schneiker 2021]. This study focuses on norm emergence and norm diffusion in order to offer a Micro model on how uncertainty, brought about by technological change, affects a specific normative sphere, arms control.

Emergence

Norm emergence is the first phase in the evolution of an international norm during which a number of actors notice a practice which goes against their values [Winston 2018], attempt to get the issue put on the agenda and to mobilize a transnational network for its promotion. Norm emergence has been described as having four successive phases, problem adoption, issue creation, candidate norm creation and norm creation [Rosert 2019]. An analysis of these phases helps to determine which processes are the most affected by uncertainty, helping to authors to pin down the challenges specific to norm creation in arms control.

Phase I, problem adoption, focuses on agenda setting, the selective process during which advocacy networks in order to promote one issue naturally discard many others. Transnational networks have been shown to select issues, not based on their attributes *per se*, but on whether they believe a sufficient support network could be rallied and how the new cause will affect other norms on their agenda [Carpenter 2007]. It follows that norm emergence is directly dependent on the support of a network which will select it primarily because it believes in its chances of progressing to maturity, rather than because of its ethical worthiness. We argue that the uncertainty inherent in emerging technologies and the constant changes they undergo is key in explaining why norm entrepreneurs may leave arms control issues off the agenda in spite of their prominence and relevance. Problem adoption is considered complete when a campaign to promote the issue is agreed upon by a network of norm entrepreneurs.

[3] Thus, norms by definition cannot reflect condemnable patterns of conduct within a given culture. They contain only those that are appraised positively, as "good." However, they do not necessarily appear appropriate in a different cultural context. Similarly, certain patterns of conduct can lose their positive meaning under cultural shifts, experience reevaluation as "bad." As a result of this process, preceding standards of conduct lose their normative status.

Phase II of norm emergence, issue creation, is oriented towards engendering popular mobilization with advocacy networks and epistemic communities [Haas 1989] working on raising awareness through information politics, lobbying and framing techniques including emotionalizing issues and naming and shaming wrongdoers [Keck, Sikkink 1998]. Uncertainty has little impact on this phase and if anything plays into the hands of norm promoters as illustrated by the *Campaign to stop killer robots* and the success of the slaughterbots clip presenting dystopian scenarios of what could happen if the issue is neglected. Arms control issues that make it to issue creation can be expected to thrive during this phase.

Phase III candidate norm creation is concerned with institutional agenda setting and the formulation of a norm. The candidate norm is the solution suggested by norm promoters to address the issues, which the international community has been sensitized to. Defining the norm requires precisely identifying the problem and the changes required to turn the situation around [Charnysh et al. 2015] and bringing together a coalition around a precise working of a solution. Uncertainty appears as a serious stumbling block during this phase where a precise formulation of what is to be regulated is required. Technological change makes the object of regulation in arms control fleeting, seriously complicating the formulation of a norm.

Phase IV, norm creation, is the ultimate step of norm emergence, which culminates with the adoption of the norm. Negotiators ensure that all players abide by their commitments in previous phases and the content of the norm is further specified as a result of a funneling process. Seeking formal and final commitments on a precisely worded norm can be challenging, particularly when stakeholders are faced with uncertainty as in the case of arms control.

Diffusion and consolidation

The literature on norm diffusion is concerned with how norms travel and the actors involved in their promotion. The early idea that norms are static and change little during their diffusion [Finnemore, Sikkink 1998] was challenged by scholars who argued that norms change in function of their context and undergo a translation or national adaptation process [Acharya 2004; Zwingel 2012].

The diffusion of norms most often requires their institutionalization, described as the creation of an organizational platform to support them [Finnemore, Sikkink 1998]. While grafting is a mechanism more often associated with norm emergence [Rosert 2019], the institutionalization process requires similarly for new norms to fit in with existing ones to form a homogeneous institution devoid of internal contradictions. Grafting is used by norm entrepreneurs "to institutionalize a new norm by associating it with a preexisting norm in the same issue area" [Acharya 2004: 240].

Socialization has been identified as an instrument of norm diffusion by which advocacy networks promote common identities and shared understandings of norms [Sunstein 1996]. Defined as "the process of inducting actors into norms and rules of a given community", socialization involves strategic calculation, role-playing and suasion [Checkel 2017: 594]. While it has been criticized for being a one-way interaction by which the international tells the national how to behave [Epstein 2012]; the study of contestation mechanisms suggests that a two-way dialogue allows international norms to acquire new meanings and that their localization can affect in return the formulation of the norm on the international stage [Wiener 2018]. Localization refers to the process by which international norms, which contradict local values or practices are progressively adapted until they become congruent with the local legal system and/or local people's idea of what is acceptable [Acharya 2004].

ARMS CONTROL, TECHNOLOGY AND UNCERTAINTY

Defining arms control, technology, and uncertainty

Arms control can be defined as "all the forms of military cooperation between potential enemies in the interest of reducing the likelihood of war, its scope and violence if it occurs, and the political and economic costs of being prepared for it" [Schelling, Halperin 1961: 2]. Thomas Schelling and Morton Halperin emphasize that arms control is predefined by the "character of modern weapons" and it is driven primarily by the nature of "military technology" [ibid.: 3]. Therefore, arms control scholars focus on the restrictions on means of violence [Cooper, Mutimer 2011], setting arms control apart from other types of security regimes, which deal with the legitimate ends of the application of violence or eligibility of certain targets and modes of behavior.

Arms control norms differ from many other as they focus primarily on restricting effects. They cover the research and development of new weapons as well as their production, deployment, testing, use or transfer to the third parties [Arbatov 2019]. Regardless of their scope, such norms always emphasize limitations, if not a complete ban. Meanwhile, to restrict innovations may be harder than to channel them in a certain direction.

Technology can be defined as the practical use of knowledge. It is not just a combination of tools and crafts applied by societies to change their environment or to adapt to it, but also the way an organized body of knowledge is used in production [Dellapenna 1999: 822]. Scholars distinguish between technology-specific and technology-neutral regulations. The former type incorporates norms governing only certain, predefined tools and crafts, while the latter provides for norms which affect the products of technological change by regulating its consequences. Technology-neutral regulation is more resistant to potential innovations [Koops 2006; Reed 2007; Ali 2009].

Arms control is a classic case of technology-specific regulation, affecting selectively only certain tools rather than the development of military technology in general [Liivoja 2015: 1167]. Meanwhile, the introduction of qualitatively different armaments is often treated as a revolution in military affairs, which exacerbates the perceptions of novelty produced by technological change.

Uncertainty refers to a situation in which the main parameters are not known. Uncertainty has a negative effect on making and carrying out decisions in all spheres, spurring a large body of literature on uncertainty avoidance, particularly in the economic and financial sphere [Shane 1995; Watts et al. 2020]. In International Relations theory, uncertainty has a different significance and implications for the different schools of thought, with Constructivists viewing it as the "*indeterminacy* of a largely socially constructed world that lacks meaning without norms and identities" [Rathbun 2007: 533].

Meanwhile, technological change inherently increases uncertainty by destabilizing relations between material conditions and social practices [McCarthy 2017]. Apart from conscious concealment and deceptions involved in any strategic interaction, it envisages genuine openness to various effects and applications of an emerging tool. Thus, even its inventor often lacks awareness of its potential meaning, which reveals itself only through iterative adjustment of the physical objects and their uses. This aspect of technological change radically problematizes processes of norm emergence and diffusion.

Regulating technology

Regulating technology presents problems, which are actively debated by legal scholars but rarely appear in international relations scholarship. Legal discussions

acknowledge that the regulation of individual technology is not particularly problematic. The hurdles to the introduction, diffusion and consolidation of norms result from continuous technological change and its impact on perceptions of decision makers [Moses 2013].

As norms are ideational constructs, the effects of technological change are mediated by human cognition. It causes major disruptions in political calculations fostering expectations of revolutionary novelty and the perception of radical uncertainty. These characteristics challenge mechanisms of norm emergence and diffusion, including grafting, instrumental adaptation, moral contestation, institutionalization and socialization. The following discussion will elaborate on each of the challenges posed by the uncertainty resulting from technological change.

Grafting

Grafting is relevant both to the norm emergence phase (when an international norm relies on an association with another international norm) and to the norm diffusion phase (when an international norm is associated with a local norm as a congruence building attempt) [Rosert 2019].

Technological innovation creates uncertainty which has a negative impact on grafting as it produces *new material conditions, which redefine the domain of what is physically possible*. This in turn leads to new activities, which could not have been previously performed or even envisaged [Dellapenna 1999]. These transformations sometimes become dramatic, as technological change does not only create innovative tools, but also requires a reevaluation of previously created instruments and patterns of behavior.

For example, autonomous systems simply do not fit into established categories. Some experts suggest relying on lessons from nuclear arms control to regulate autonomous weapon systems (AWS) [Maas 2019]. However, they are not affected by the stigmatization associated with Weapons of Mass Destruction, reflecting anxiety about unusual ways of bringing harm, such as radiation, intoxication or contamination [Pastel 2004]. So far, military robots are provided primarily with conventional explosive munitions, which in themselves are not illegitimate. Nevertheless, they trigger expectations of fundamental shift in warfare primarily due to the change in speed in decision-making on the battlefield [Payne 2018].

The promises of revolutionary disruptions associated with innovations are not always fulfilled. However, the actual consequences are not as important for the prospects of arms control as expectations. The perceived novelty of material conditions makes it more difficult for norm entrepreneurs to graft new regulations onto existing ones by drawing analogies between new issue areas and already established regimes.

Strategic bargaining and moral consciousness raising

During the emergence of an international norm, strategic bargaining is essential in ensuring that the norm makes it past the candidate norm creation and norm creation phases. Norm negotiators may be reluctant to making formal discursive commitments to a norm project if they cannot predict the potential impacts of the successful emergence and diffusion of the norm on their interests. The uncertainty regarding the potential evolution of a weapon system means that actors may have an interest in its development at a later stage, even if they do not have one at the moment of norm negotiation.

In this regard, there is a great deal of uncertainty surrounding the future developments of AI and robotics and it complicated the negotiation process for the creation of norms to restrict the use of AWS. Substantial disagreements on the

military and political effects of even mature military innovations (like remotely controlled drones), reveal the degree of uncertainty in this sphere.

The doubts surrounding how commonplace AWS will become and their effect on military robotics make it impossible to determine the future gains of developing such technologies as well as to identify the most promising designs, thus discouraging states to restrict their development. Strategic bargaining cannot be effective for norm creation when the object of control constantly evolves, and the stakes remain undefined.

The very dynamism of technological change and the uncertainty regarding its practical and ethical consequences also contribute to making arms control problematic [Picker 2001; Moses 2007; 2013]. Taking a moral stance and condemning a type of weapon which is still evolving is problematic; as it is challenging to predict what the outcome of its development might be.

Internalization

Internalization is not an instrument of norm diffusion as it does not refer to the spread of norms to other actors, but refers to a stage of norm acceptance by a society. However, it is worth considering the impact of uncertainty as even if a norm successfully emerges and is diffused, the novelty associated with technological change may have a disruptive effect on the internalization of norms. The latter requires a substantial amount of time, which increases the discrepancy between emerging tools and crafts on the one hand and the regulatory framework on the other. The dynamic nature of technological change complicates the internalization process as the gap with the reality of the weapon system and the norm may become significant in a short timeframe, revealing the inadequacy of the norm. When considering arm control, the speed at which technology evolved leaves little time to establish and internalize any restrictions before the agenda shifts to new even more innovative weapons. An example would be how concerns about the armed drones that emerged in the 2000s subsided, giving way to anxiety over lethal AWS. When compared to 'killer robots', remotely controlled machines seemed less problematic to the arms control community [Wagner 2012]. If internalization has any effects, it works in favor of the growing habit to use armed drones. The flow of newly emerging weapons makes existing norms appear dated and the constant adjustments undermine the previously established standards of appropriateness. This affects negatively the consolidation of new regulations and makes mature norms more likely to regress.

CASE STUDY ON BIOLOGICAL WEAPONS

Research design

The regime on the prohibition of biological weapons comprises glaring deficiencies despite several factors that should facilitate their ban, including their limited utility in interstate conflicts, the major hazards that can result from the malign use of biotechnologies and biosafety concerns. Microorganisms constitute an unreliable capability, but a daunting danger, as a minor leakage threatens a large-scale infestation. Notwithstanding early attempts to address this concern, the international regime on the prohibition of biological weapons remains weakly institutionalized. The advancement in biotechnologies over the last decades had led to few new measures to contain their potential harmful usage and there has not been a significant mobilization of activists advocating such regulations.

First, we will define biological weapons and examine how technological progress has affected biotechnologies. Then, we will explore the evolution of international regime

aiming to ban such kind of arms. After that, we will trace how uncertainties associated with biotechnologies inhibit the institutionalization of norms against biological weapons. Finally, we will examine the broader implications of the case in the context of our theoretical argument. The study relies on primary documentation from international negotiations, secondary literature and research interviews conducted by the authors. The latter draw upon expertise of British, Chinese, French, German and Russian specialists working in governments, think tanks, academia, the United Nations and the media[4].

Promises and perils of biological warfare

International documents do not provide a uniform and precise definition of biological weapons. The BWC refers to "microbial or other biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes"[5]. The UN Office for Disarmament Affairs argues that "biological weapons disseminate disease-causing organisms or toxins to harm or kill humans, animals or plants"[6]. Such agents include mostly bacteria and viruses, but also toxins and bioregulators. Thus, uncertainty in this case manifests itself at the stage of defining what constitutes a weapon.

Biological warfare has a long history. In ancient times assailants threw bodies of diseased humans and animals at besieged settlements hoping to weaken their resistance. For example, Mongols used such tactics against Caffa in 1346, starting the Black Plague which devastated large portions of Europe. Scientific progress enabled a more systematic examination of the potential use of microorganisms on the battlefield. Throughout the 20th century, leading military powers promoted increasingly sophisticated biological warfare programs. The resultant capabilities were used in several interstate conflicts, including the First and Second World Wars, although on a limited scale.

The microorganisms possess several characteristics making them attractive as a weapon. Their ability to proliferate through self-reproduction enables significant harm and even limited volumes are sufficient to contaminate large areas. Biological weapons also only require small production facilities which makes their detection difficult[7]. Even when highly lethal, they do not cause destruction of property, enabling its capture by the assailant. Finally, the invisibility of the biological threat inflicts devastating psychological effects on a targeted population.

Nevertheless, the downsides of biological weapons outweigh their benefits for military purposes. As microorganisms are contagious, the originator of the attack exposes its own forces and population to potential risks. Biological weapons do not discriminate between hostile and friendly targets. Moreover, the ability of living species to mutate in the natural environment increases risks of unpredictable and uncontrollable consequences[8].

These practical challenges explain the relatively rare use of biological warfare throughout Modern times. Nevertheless, the existing stockpiles of infectious diseases

[4] Interviews were conducted following the ethical research guidelines of the University of Reading and MGIMO University.

[5] The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons and on their Destruction. Art. I. https://treaties.unoda.org/t/bwc (accessed 20.05.2023).

[6] Biological Weapons Convention. https://www.un.org/disarmament/ru/biological-weapons/ (accessed 20.05.2023).

[7] Interview with specialist in biotechnologies, June 7, 2022.

[8] Interview with arms control specialist. June 2, 2022.

constitute a persistent security threat, with unintentional leakages and the possibility of their use by terrorist organizations remaining a distinct possibility.

In a widely debated case, a series of letters containing the spores of *Bacillus anthracis* targeted politicians and media institutions across the United States in 2001. These attacks conducted by a lone perpetrator with access to a government laboratory infected 22 people and left five victims dead. Furthermore, it produced public anxiety with ordinary citizens becoming hesitant to collect post deliveries, given their association with the attacks[9]. This instance exemplified the threat of bioterrorism, which does not require a massive operation to produce disproportionate psychological harm on top of the limited physical casualties.

The following decades witnessed major breakthroughs in biological research, aggravating anxieties over its potential applications as a weapon. Some concerns are exaggerated as the prospects of creating radically new microorganisms with predesigned qualities or targeted biological weapons, harming narrowly specified groups of people (such as based on ethnicity) remain unlikely[10]. Nevertheless, the dual-use potential of synthetic biology along with the growth in commercial research increase risks for biosafety and biosecurity.

Henceforth, biological weapons represent a likely candidate for a strong arms control regime. Harmful pathogens have questionable military value but produce major safety and security concerns. They also provide fertile grounds for civil society mobilization, due to the psychological effects caused by the infectious diseases. In spite of these factors that should facilitate the construction of a strong prohibitive norm, the regulation against the production, storage and use of biological weapons remains weak and porous.

BWC and prohibition of biological weapons

The unreliability of biological weapons paved the way to the early attempts to design international norms to ban them. The Geneva Protocol of 1925 constituted the first major step in this direction, as its parties agreed to prohibit the "bacteriological methods of warfare."[11] The Biological Weapons Convention, which entered into force in 1975, became the first international treaty outlawing the whole category of weapons of mass destruction. It covered not only the use, but also the development, production, stockpiling, acquisition and retention of such arms.

However, the BWC lacked a detailed specification of the prohibited agents and did not provide for verification mechanisms to ensure compliance with its provisions. These deficiencies weakened the emerging regime, making it an exemplifying case of underdeveloped arms control [Beard 2007][12]. Although subsequent conventions dealing with other weapons learned from the deficiencies of the Biological Weapons Convention, the regime on the prohibition of biological weapons did not consolidate.

The BWC itself envisages the organization of review conferences, presenting a vehicle for modification and strengthening of the regime. Since 1980 such conferences

[9] Amerithrax Investigative Summary. *The United States Department of Justice*, February 19, 2010. https://www.justice.gov/archive/amerithrax/docs/amx-investigative-summary.pdf (accessed 20.05.2023).

[10] Interview with specialist in biotechnologies, June 7, 2022.

[11] Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare. Geneva, June 17, 1925. https://unoda-web.s3-accelerate.amazonaws.com/wp-content/uploads/assets/WMD/Bio/pdf/Status_Protocol.pdf (accessed 20.05.2023).

[12] However, Filippa Lentzos identified several instances when states resolved concerns over application of BWC through consultations under the Art. V [Lentzos 2019].

took place on a regular basis approximately every five years, but they achieved only partial results in addressing the initial deficiencies. The Second Review Conference in 1986 introduced Confidence Building Measures, requiring states to give notice on biological research centers, laboratories, past and current research programs, outbreaks of infectious diseases, national regulations and vaccine production facilities[13]. They fostered additional transparency in biological research, but submissions remained unverifiable through independent sources.

The Fifth Review Conference in 2002 launched an intersession mechanism, which includes annual Meetings of Experts and Meetings of States Parties[14]. The intensification of dialogue expands opportunities for compromises and enables better preparation of further steps to advance the regime. Nevertheless, the review conferences and intersession process under the BWC remained intergovernmental with limited access for non-state actors (which were instrumental to the establishment of other arms control regimes). The final documents mostly contain vague reassurances with little substance.

Unlike Nuclear Non-Proliferation Treaty or Chemical Weapon Convention, the BWC does not possess a specialized organization for the independent assessment of compliance by parties. Instead of a standing investigative body, it relies on the UN Secretary-General's Mechanism (UNSGM) to carry out investigations in response to allegations of the possible use of biological weapons and on a small Implementation Support Unit, established by the Sixth Review Conference in 2006[15]. These bodies do not comprise in-house expertise on biological weapons, nor do they conduct inspections to check states are meeting their commitments. Despite its long history, the regime on prohibition of biological weapons remains weakly institutionalized.

The parties to the BWC sought to resolve the verification gap, starting from the Third Review Conference in 1991. The latter established the Ad Hoc Group of Governmental Experts to Identify and Examine Potential Verification Measures from a Scientific and Technical Standpoint, which explored 21 potential measures to strengthen the regime. They covered a broad range of categories, including data exchange, remote sensing, exchange visits, off-site and on-site inspections and continuous monitoring. The group explicitly excluded discussions on political implications, assessing only their diagnostic value, financial and organizational feasibility as well as safety of the measures[16].

In 1994, BWC Special Conference approved the group's report, prescribing translation of its findings into a legally binding instrument[17]. For that purpose, it launched

[13] Second Review Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons and on Their Destruction. Final Report, 1986. BWC/CONF.11/3. https://docs-library.unoda.org/Biological_Weapons_Convention_-_Second_Review_Conference_(1986)/BWC_CONF.II_13.pdf (accessed 20.05.2023).

[14] See, Fifth Review Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons and on Their Destruction. Final Report, 2002. https://digitallibrary.un.org/record/480805?ln (accessed 20.05.2023).

[15] See, Sixth Review Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons and on Their Destruction. Final Report, 2007. https://digitallibrary.un.org/record/604178?ln (accessed 20.05.2023).

[16] Report by Ad hoc group of governmental experts to identify and examine potential verification measures from a scientific and technical standpoint. BWC/CONF.III/VEREX/9, Geneva, 1993. https://digitallibrary.un.org/record/190931?ln=ru

[17] Special Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons and on Their Destruction. Final Report, 1994. BWC/SPCONF/01. https://documents-dds-ny.un.org/doc/UNDOC/GEN/GL0/218/04/PDF/GL021804.pdf?OpenElement (accessed 20.05.2023).

a new Ad Hoc Group, open to all Parties to the Convention. The latter ended up producing a draft Protocol to the BWC[18]. The document designated the specific list of dangerous pathogens and mechanisms for its revision. It also advanced a detailed procedure for national declaration of biological programs, as well as for conducting visits and investigations, ensuring compliance by Parties. The draft Protocol envisaged further strengthening the regime through a specialized organization, similar to the one accompanying the Chemical Weapons Convention.

The Ad Hoc Group planned to present the draft Protocol for adoption by the Fifth Review Conference opening in 2001. However, the Parties to the BWC proved unable to agree on the document. The United States rejected the draft Protocol on several grounds. It claimed that the document relied on a traditional arm control approach inappropriate to address the threat of biological weapons. It suspected that the designated procedures would compromise sensitive national security and proprietary information and that the document would provide loopholes for proliferators to circumvent export control regimes[19].

Given the resistance from the United States, further negotiations on the draft Protocol collapsed. Moreover, this failure prevented later attempts to promote a legally binding instrument, allowing only modest incremental advances such as the intersession mechanism and Implementation Support Unit. As a result, the deficiencies of the regime on prohibition of biological weapons remain largely unaddressed. It appears increasingly ineffectual in the face of rising threats, fostered by the advancement and proliferation of biotechnologies.

Technological challenges to the ban on biological weapons

The advancement of biotechnologies creates a range of uncertainties, which undermine attempts to make progress in the prevention of biological warfare and complicates the further institutionalization of a prohibitionary norm. Technological progress ignites conflicts between commercial and security interests, reinforces the attribution problem and complicates the differentiation between offensive and defensive programs. These challenges inhibit the processes of grafting, strategic bargaining, moral consciousness raising and internalization, which play a crucial role in the creation and diffusion of norms.

Although the BWC prohibited biological weapons, it did not completely ban operations with pathogens. It sustained exceptions for prophylactic, protective or other peaceful purposes, given the risks of infestations from natural causes[20]. A significant portion of biological research concentrates on developing responses to infectious diseases residing in the environment. Debates over the roots of COVID-19 pandemic illustrates difficulties of differentiating between natural and human-instigated outbreaks. Although the dominant theory traces them to the wild animals sold at the Wuhan market, the version that the virus escaped from a laboratory retains

[18] Protocol to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons and on Their Destruction. BWC/AD HOC GROUP/CRP.8. https://documents-dds-ny.un.org/doc/UNDOC/GEN/GL0/218/25/PDF/GL021825.pdf?OpenElement (accessed 20.05.2023).

[19] See, Mahley, Donald (2001). Statement by the United States to the Ad Hoc Group of Biological Weapons Convention States Parties. US State Department. July 25, 2001. https://2001-2009.state.gov/t/ac/rls/rm/2001/5497.htm (accessed 10-05-2023).

[20] The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons and on their Destruction, 1975. Art. I. https://treaties.unoda.org/t/bwc (accessed 20.05.2023).
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some validity [Holmes et al. 2021]. This attribution problem fosters suspicions over potential militarization of biotechnologies.

Meanwhile, the resistance by the United States to the draft Protocol demonstrated that states are reluctant to disclose information on biological research as it creates risks to the proprietary interests of their businesses. Leading pharmaceutical companies commonly referred to as BigPharma remain staunch opponents to international oversight, associated with the potential verification measures under the BWC[21]. Given the difficulties of disentangling medical and military programs, the draft Protocol potentially covers all facilities located on the national territories of its Parties. Its safeguards regarding national security and proprietary interests do not adequately address existing concerns over intellectual property.

Moreover, the development of protective capacities against infectious diseases requires access to pathogens that cause such illnesses. This makes it difficult to tell apart defensive and offensive programs, as facilities involved in vaccine research can be secretly used for malign purposes and easily be militarized[22]. Henceforth, biological research easily triggers security concerns, which are hard to either prove or disprove[23]. The recent controversy between Russia and the United States over biological laboratories in Ukraine exemplify this issue. Moscow accuses Washington of using them to design hazardous agents with predetermined characteristics. The latter denies such claims while acknowledging the right of all Parties to the BWC, including Ukraine, for peaceful biological research[24].

DISCUSSION

This paper suggests that the mechanisms that support norms and ensure their durability are being challenged by characteristics inherent to the sphere of weapons, including uncertainty and rapid technological change. The case of biological weapons shows that although *strategic bargaining* can lead to a consensus to ban weapons at a point in time, that their technological evolution can change the stakes and that the norm struggles to be enduringly internalized. The perception that biological weapons were not effective combat tools could be overturned by the diffusion of the results of novel studies on the creative manipulation of biological agents. Countries with deep commitments and strong public support for banning bio-weapons are nonetheless exploring defensive and sometimes offensive biological programs in an attempt not to fall behind. Uncertainty regarding the warfare advantages that future biological weapons could provide have weakened the taboo surrounding their development. Norms become stronger when states perceive the benefits of compliance as greater than the risks of non-compliance, and the situation may be turning around in the case of bio-weapons. *Instrumental adaptation* is weakening as some states realize the potential benefits of pursuing research in this field.

[21] Interview with arms control specialist. June 2, 2022.

[22] Interview with Coordinator of Biological Arms Control Group. June 12, 2022.

[23] On the consequences of offense-defence indistinguishability, see [Jervis 1978].

[24] See, UN Security Council, 8991st meeting, Threats to international peace and security, transcript. March 11, 2022, S/PV.8991. https://documents-dds-ny.un.org/doc/UNDOC/PRO/N22/284/83/PDF/N2228483.pdf?OpenElement; 8999th meeting, Threats to international peace and security, transcript. March 18, 2022, S/PV.8999. https://documents-dds-ny.un.org/doc/UNDOC/PRO/N22/292/64/PDF/N2229264.pdf?OpenElement; 9033rd meeting, Threats to international peace and security, transcript. 13.05.2022, S/PV.9033/. https://documents-dds-ny.un.org/doc/UNDOC/PRO/N22/348/43/PDF/N2234843.pdf?OpenElement (accessed 20.05.2023).

Moral consciousness-raising as a norm diffusion mechanism is weakened when some countries are portrayed as furthering their own agenda rather than universal ethical values. The framing of biological weapons as unnecessarily cruel, indiscriminate in their target and primarily aimed at terrorizing civilians could evolve as these biological agents are refined to cause less suffering, induce paralysis rather than death and possibly target specific segments of the population or even individuals.

The grouping of biological arms with chemical ones in the category of Weapons of Mass Destruction have been criticized by academics for bringing together very different weapons and justifying the use of any weapon in this group as a response to another [Panofsky 1998]. The grafting of the norm banning biological weapons on existing human rights norms and international humanitarian law could be reversed by a political discourse focused on national security, in a similar scenario to the norm banning torture [McKeown 2009].

The norm banning biological weapons appears in the early stages of its regression, although it is national security concerns rather than norm antipreneurs, destructive contestation or sabotage processes [Schneiker 2021] that may lead to its demise. The uncertainty surrounding the very nature of future biological weapons due to rapid technological change may lead to radical changes in their utility to states, in the way they are perceived and *de facto* result in their normative reinvention. The study of the influence of states in norm emergence and progression has begun, with research on agenda setting revealing the direct and indirect interference of states on issue selection [Carpenter 2011].

Our paper suggests that uncertainty linked to technological progress does not affect a norm directly, in the sense that global public opinion may continue to rally around an issue, but that is does so through states. In the case of biological weapons, we witness parallel processes by which on one side global perceptions of the taboo are being reinforced by the media and on the other, governments are discreetly reversing their commitments. This situation can only be maintained so long as biological agents are being developed but not used. The temptation to employ them may grow and lead states to change the discourse, and resort to tools such as fear mongering to normalize the use of biological weapons.

CONCLUSION

This article demonstrated based on the case study of biological weapons that major mechanisms of supporting norms such as grafting, instrumental adaptation and internalization face an uphill battle in the arms control domain. This is due to the specific attributes of this issue area, which is characterized by uncertainty and rapid technological change. Therefore, a traditional Constructivist argument regarding the emergence and diffusion of norms requires adjustment when applied to arms control regime. Its expectations regarding the progressive accumulation of norms should be tempered in light of the uncertainty produced by technological changes.

Attempts to elaborate and maintain prohibitive, technology-specific norms tend to be problematic in comparison with more technology-neutral regimes. Our findings reveal the fragility of existing (and even mature) norms banning and regulating weapons and have important implications regarding the prospects of regulating newly emerging weapons, like lethal autonomous weapon systems, which have become a source of major anxiety in the arms control community.

Simply put, our analysis demonstrates that norms in the arms control field appear less robust relative to areas less affected by technological change. Illustratively, international humanitarian law, despite temporal setbacks experienced greater continuity than arms control regimes. This difference is especially illuminating as both came of age in approximately the same historical period (in the late 19th century).

However, it is easily explainable as one set of regimes deals with technology-specific regulations, while the other covers technology-neutral.

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МЕЖДУНАРОДНЫЕ НОРМЫ В СВЕТЕ ТЕХНОЛОГИЧЕСКИХ ИЗМЕНЕНИЙ: ВЫЗОВЫ КОНСТРУКТИВИСТСКОЙ ТЕОРИИ В СФЕРЕ КОНТРОЛЯ НАД ВООРУЖЕНИЯМИ

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Аннотация. Возникновение, распространение и интернационализация международных норм сталкиваются с недооцененными вызовами в сфере контроля над вооружениями, который ограничивает разработку и применение средств организованного насилия. Настоящая статья фокусируется на значении неопределенности, порождаемой технологическими изменениями, осложняющей становление и распространение норм в данной области. Динамичный характер технологических изменений порождает ожидания революционной новизны и выступает источником радикальной неопределенности, подрывающих действие ряда механизмов и процессов, которым конструктивистская теория приписывает центральную роль в укреплении международного регулирования (в том числе поиск нормативных кросс-аналогий, стратегический торг, эволюция морального сознания). Изучение показательного случая режима запрещения биологического оружия подтверждает, что становление и распространение международных норм сталкиваются со значительными трудностями в сфере контроля над вооружениями и что нормы, ограничивающие средства организованного насилия, остаются сильно уязвимыми даже после первичной институционализации ввиду неопределенности, порождаемой технологическими изменениями.

Ключевые слова: нормы, конструктивизм, контроль над вооружениями, биологическое оружие, технологические изменения, неопределенность.

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