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Humanizing the Victims: A Middle East Zone (MEZ) Free of Nuclear Weapons and the Historical Necessity of Including “Other Weapons of Mass Destruction”

Zhenkai Tong 

Department of History, SOAS University of London, London, UK

ABSTRACT

With five nuclear-weapon-free-zones (NWFZ) in place, the Middle East Zone (MEZ), still undergoing negotiations, is the first NWFZ to include “other weapons of mass destruction” in its deliberations. This article seeks to examine the historical necessity of including other weapons of mass destruction (WMDs) in the MEZ. It does so by first stressing the destructive and lingering consequences of nuclear, chemical, and biological weapons against human populations and the environment. It then provides an overview of the concepts of NWFZs and zones free from other WMDs while stressing the importance of understanding the historical context surrounding these concepts. After establishing these concepts, the article discusses the historical necessity of including other WMDs in addition to nuclear weapons in NWFZ treaties by exploring case studies of the use of these weapons and their consequences. By presenting these case studies, the article demonstrates the necessity of including other WMDs by adding a human face to the consequences of not including other WMDs within the MEZ.

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Introduction and Methodology: The Case for Zones Free of Nuclear Weapons and Other Weapons of Mass Destruction

The following statement, made by a victim of the 2013 Ghouta chemical attack, illustrates the destructiveness of chemical weapons:

Chemical weapons had been dropped on my town, and we had not realized because it was not that close to our house. We had heard whistling explosions, louder than usual, but thought they were ground-to-ground missiles. For two years we had been bombed with all sorts of weapons—how do you recognize the sound of a chemical attack? (Sawwan 2019)

These chemical weapons are part of a category of WMDs, and the purpose of this section is to illustrate their consequences. The nuclear bombings of Hiroshima and Nagasaki demonstrated the destructive and lingering consequences of using nuclear weapons against human populations. The subsequent testing and storage of nuclear weapons have not only displaced communities, scarred the environment, and damaged biodiversity, but they have also exposed those living in proximity to test sites to radiation (Bleek,

CONTACT Zhenkai Tong  628559@soas.ac.uk  SOAS, Thornhaugh Street, Russell Square, WC1H 0XG, London, United Kingdom

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Kane, and Pollack 2016, 18). The testing of nuclear bombs on territories outside a state's primary borders or within its borders on indigenous territory has made nuclear weapons a facet of nuclear colonialism, imperialism, and racism¹ Discourse on the justification for nuclear weapons and testing reveals the dehumanizing nature of such discussions, while psychological and bodily harm caused by radiation exposure has raised the issue of nuclear testing as a form of indirect gender-based violence²

Two nuclear weapons were directly used against human populations in 1945. Since then, over two thousand nuclear weapons have been detonated in tests (ACA 2020). Current examples of their consequences exist and are far-reaching. Testimonies from *hibakusha* are prominent³ Algerians still suffer from the consequences of nuclear testing while irradiated remnants have been found imbedded in environments far from test sites (Magdaleno 2015). Those who resided near nuclear test sites in the Pacific region find themselves at risk from radiation poisoning (Fiona and Frain 2020). This is by no means an exhaustive list, but it serves to illustrate the human and environmental cost of nuclear weapons and testing.

When the use and testing of chemical weapons intensified in the first half of the twentieth century, the implications of their consequences – both real and imagined – spurred both proponents of these weapons and those who sought to regulate and eliminate them. Their testing and use since, whether against civilians, prisoners, presumed enemies, or the environment, have highlighted the indiscriminatory nature of chemical weapons; in such instances they are similar to nuclear weapons. The use and testing of biological weapons was less in scale compared to chemical weapons, but their consequences were no less destructive. Victims of chemical and biological weapons use and testing have left troubled legacies for reconciliation (Powell 1980; Szarejko and Namieśnik 2009; Tamanoi 2000). The consequences of Agent Orange are still felt⁴ The Tokyo sarin gas attacks in 1995 illustrate the devastation caused when chemical weapons are used in densely populated areas (Powell 1980; Szarejko and Namieśnik 2009; Tamanoi 2000). Reports of chemical weapon use continues (Bleek, Kane, and Pollack 2016). This, too, is not an exhaustive list.

Discussion on restricting chemical weapons were intensified following the First World War. After the Second World War, nuclear weapons, alongside chemical and biological weapons, were discussed within the framework of WMDs. The nuclear arms control architecture and mechanisms provides a list of relevant treaties and initiatives (UNP 2020, 8–12, 51–68; UNSC 2004; Geneva Protocol 1925). These include, among others, the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), the Treaty on the Prohibition of Nuclear Weapons (TPNW), and the Comprehensive Nuclear-Test-Ban Treaty (CTBT). Complementing them are the Chemical Weapons Convention (CWC) and Biological Weapons Convention (BWC). These represent the cumulative efforts of states, organizations, and peoples to restrict and regulate these weapons despite difficulties and criticisms encountered.

¹Nuclear testing has been the subject of colonialism, imperialism, and racism due to the circumstances surrounding the choice of nuclear testing sites and the rationale used by those who authorized them (Allman 2008; Keown 2018)..

²Comprehensive studies on nuclear weapons testing as a form of gender-based violence exists, especially since radiation exposure disproportionately affects women more (Borrie et al. 2016; Dimmen 2014).

³*Hibakusha* refers to people affected by the Hiroshima and Nagasaki bombings (ICRC 2015)..

⁴Agent Orange was one of many herbicides used during the Vietnam War (1955–1975). People exposed to this chemical agent suffered illnesses including cancer. There were also higher incidences of stillbirths and birth defects present at birth (Ngo et al. 2013; Tuyet and Johansson 2001)..

Herein lies the context for NWFZs, and in the case of the Middle East, a NWFZ with the addition of chemical and biological weapons. The NWFZs represent efforts to restrict nuclear weapons regionally with the reasoning that multiple NWFZs would work in conjunction with each other. While each NWFZ treaty has its own peculiarities, especially concerning monitoring mechanisms, each successive NWFZ treaty provides lessons to the others. The key assumption here is that the NWFZ treaties are ongoing processes even after their ratification, as its “components are a series of instruments and measures . . . developed at different times and for different specific purposes, which have been joined and superimposed upon on another” (Adeniji 2002, 13). The addition of other WMDs serves to provide another layer of regional disarmament. It adds another layer of complexity as it involves a larger scope and, by extension, the involvement of more monitoring mechanisms.

But why introduce more complexity to a treaty that already faces issues during its negotiation process? Why not begin with just an NWFZ instead of including “other WMDs”? This article examines one potential answer to this question by arguing that the inclusion of other WMDs in the MEZ is a historical necessity. The article approaches this discussion by providing an overview of the conceptualizations of NWFZs and zones free from other WMDs. In providing this overview, the article first establishes the progress that has already been made in NWFZs and the existing frameworks surrounding WMDs. It also stresses the importance of understanding the historical context surrounding these concepts. The purpose here is to briefly explain the discussions surrounding these mechanisms to ensure the nonproliferation and destruction of WMD stockpiles.

Once these concepts are established, the article proceeds to discuss the historical necessity of including other WMDs by exploring case studies of the use of these weapons and their consequences, with a focus on chemical and biological weapons. The purpose here is to explain the “why”. Why is it necessary for states and peoples to persist in establishing a zone free from not only nuclear weapons but other WMDs? The article approaches this discussion by examining eyewitness accounts from regions in the Middle East with the intent of humanizing the consequences. Through these case studies, the article demonstrates why the inclusion of other WMDs is a historical necessity.

Defining “Historical Necessity”

What makes an action of historical necessity? The phrase itself implies a generalist approach to history, one that seeks to view history as a comprehensive and homogeneous whole. It also implies taking actionable stances based on such historical approaches. The process of examining history is highly contentious, with different schools of thought adopting different approaches with varying purposes. These approaches are not necessarily mutually exclusive and have tendencies to produce new perspectives from different historical angles. Though, there is no agreed or even recognized phrase of an action being of “historical necessity”.

That does not mean, however, there have been no discussions of what constitutes historical necessity. Historical necessity is often quoted by Marxists as the things that must occur before the next step of its own interpretations of history. It is part of an implication for a tangible end of history, or a goal that human society develops towards.

This article reinterprets the necessity segment as conditions that must occur to realize the goal of a world without WMDs.

Perhaps the most prominent is the discussion of nuclear nonproliferation and disarmament; a world free of nuclear weapons has been deemed necessary for the betterment of humanity. Other discussions include those focused on restricting weapon types, establishing fundamental human rights, and respecting human dignity. If one were to reword this phrase, “necessary based on history” would be a probable result. There are concrete examples of what would happen to peoples and societies if these issues are not confronted or mitigated – it is, to put it bluntly, not favorable to give younger and future generations more pages and chapters on human suffering than there are already (Bilgrami 2016, 17–34; Chambers 2020, 296–300).

For the purposes of this article, at the core of historical necessity is the concept of humanity. There are different interpretations of what constitutes humanity, but what makes this word prominent is its ubiquity in human societies. Different languages and cultures have their own rich discussions on this topic, but the key idea here is that this serves as a point of commonality despite the diversity of humanity and its peoples. In the context of this article, an action of historical necessity is one that is applicable to humanity and seeks to respect or uphold such humanity. In this context, “applicable” means that it applies to every individual regardless of background. “Respect or uphold” means that there is a historical incentive to ensure it. Underpinning this concept is the idea of historical precedence, according to which past events can be used to assess present or future situations. This concept alone is, again, highly contentious: it risks placing events outside of their contexts and circumstances, it risks overconfidence in decisions that demand caution, and it feeds self-fulfilling assumptions about actions and consequences. Yet, historical precedence is also what drives the creation of organizations that seek to address the many problems that plague human society.

The industrialized human societies of the twentieth century have made and used nuclear, chemical, and biological weapons that could indiscriminately injure and murder countless people in a single detonation and cause multigeneration suffering. Such levels of destructiveness have never been achieved prior to this, and consequentially there have only been roughly seven decades of discussion surrounding such weapons. But seven decades is ephemeral for weapons that have consequences beyond generations. As the next sections of this article will show, it introduces forms of suffering that demonstrate these new forms of destruction.

Conceptualizing NWFZs and Zones Free of “Other Weapons of Mass Destruction”

The MEZ was first conceptualized in 1974 with the passing of a UN General Assembly resolution that sought to create a NWFZ in the Middle East, though it was only in 1990 with the Mubarak Initiative that the zone was expanded to include other WMDs⁵ The 1990 report on the progress of the MEZ showed “a surprising measure of agreement on fundamental matters” among MEZ states, especially “Iran and Israel” (Jan and Leonard

⁵“Letter dated 16 April 1990 from the Permanent Representative of Egypt to the United Nations addressed to the Secretary-General,” A/45/219, 18 April 1990..

1999, 259). Part of the reason to expand the MEZ to include other WMDs involves Israel's undeclared nuclear weapons program, "a view neither encouraged nor denied by Israel itself" (Jan and Leonard 1999, 260). It was generally agreed among MEZ states in 1990 that nuclear weapons could be considered political "instruments", whereas chemical weapons "were considered operative instruments of war fighting [S]tocks were known to exist, and the weapons had been used in recent years in the Middle East" (Jan and Leonard 1999, 260). The circumstances that led to this decision are long and complicated, but in summary it followed the use of chemical weapons by certain Middle Eastern States (this will be explored further in this article), general mistrust on ascertaining the existence of WMD stockpiles, and concerns that states with probable WMD stockpiles may use them. Indeed, by 1990 there had been ample evidence of chemical weapon use by MEZ states that drove negotiations to include all categories of WMDs. This manifested with the 1995 NPT Review Conference, where states agreed to take steps towards the establishment of a WMDFZ in the Middle East. The 2010 NPT Review Conference progressed this process. By 2021, with the second session of the Conference on the Establishment of a Middle East Zone Free of Nuclear Weapons and Other Weapons of Mass Destruction, progress on the treaty was slow and plagued by ongoing conflicts in the Middle East and political tension with certain MEZ states. The political declaration produced from this conference, however, showed a consensus to continue negotiations towards actionable statements.

The MEZ was created under a set of contexts and circumstances that preceded it. The concept of nuclear-weapon-free zones is well documented. United Nations Document A/10027/Add.1 provides a comprehensive overview of the rationale behind creating such zones. Apart from the immediate and lingering consequences nuclear weapons can cause, the document highlights the potential for a nuclear arms race should no guarantees be made on regional restrictions (UN Conference of the Committee on Disarmament 1976, 29). Establishing a zone would ensure transparency on issues related to nuclear energy and in turn could facilitate regional and, by extension, international peace and security. At first, these zones may seem redundant considering treaties targeting nuclear weapons, such as the NPT, were already in discussion. One may ask why the world needs more treaties concerning nuclear weapons. The document answers this question by highlighting these zones as complementary to existing treaties rather than being redundant to them: the zones establish restrictions on nuclear weapon use and testing within explicitly demarcated regions. As the zones are regional, they offer flexibility for negotiations between member states that are encompassed by the zone and whose actions immediately affect each other; negotiating regionally offers member states the possibility to consider their regional circumstances. This, in turn, grants member states further agency in the negotiation process. Described as "quietly peeling back the nuclear orange", the expansion of these zones to multiple regions serves to encourage and facilitate disarmament dialogue with the goal of gradually delegitimizing and eventually eliminating nuclear weapons (Hamel-Green 2011, 1–2, 13). The implications of the expansion may include greater political will and unity between member states to realize a world without nuclear weapons.

For the purposes of this article, the difficulties with NWFZs are threefold. First, there is the idea that nuclear dialogue is framed in terms of states that possess nuclear weapons, states that have the capacity to produce nuclear weapons, and states that do not possess or

have the capacity to produce nuclear weapons. The implications of this framework are many, including perceptions of nuclear inequality and the concern that states may shift toward possessing or increasing capacity to produce nuclear weapons. This leads to the idea that if a certain state within a region possesses nuclear weapons, neighboring states may be compelled to seek their own nuclear arsenals or increase military spending. It may grant justification to other states to further arm themselves. The Cuban Missile Crisis and South Africa's nuclear program illustrates the problem of the "haves and the have-nots" and the importance of the international community – and the efforts of peoples – to implement confidence-building measures to avoid a potential regional WMD arms race⁶ The framework is a product of a state-centric approach to international relations and politics.

Second, and more directly related to the NWFZ treaties, is the fact that states have access to the peaceful use of nuclear power and their technologies. The Treaty of Pelindaba reiterated the inherent right of states to the peaceful use of nuclear energy and technology. The Treaty of Pelindaba, while establishing a NWFZ in Africa, also promotes nuclear power for peaceful and civil purposes. This consequently raises the issue of how nuclear power and technologies are monitored to ensure that they are not weaponized. The International Atomic Energy Agency (IAEA) was formed with the explicit purpose of monitoring "activities concerned with the peaceful uses of atomic energy" (IAEA 1959, 2). Despite this monitoring authority, the IAEA has encountered difficulties with implementing monitoring mechanisms. As will be shown, discussions on the exact details for the peaceful and civil use of nuclear power and technologies is a contentious topic for treaty participants.

Third, and directly tied to the previous issue, monitoring mechanisms are a point of contention. In addition to ensuring that states covered by the NWFZ treaties agree with the established mechanisms, the NWFZ treaties also need the cooperation of observer states that have significant geopolitical reach and vested interests within the regions involved. For instance, in the Treaty of Bangkok, while all Southeast Asian states have ratified the treaty, observer states have yet to sign the protocols to the treaty respecting those monitoring mechanisms. As Jozef Goldblat writes, part of the issue surrounding the establishment of these mechanisms is the fact that these states have a tendency to outline their own conditions with respect to the contextual circumstances of the region encompassed by the treaty despite general consensus from participating states (Goldblat 1997, 18–20). This, in turn, prolongs the negotiation process.

Conceptualizing a NWFZ with the inclusion of "other WMDs" is not as extensively researched as nuclear weapons, and no such zone currently exists. The MEZ may be the first to conceptualize and include other WMDs in addition to a NWFZ, which categorically concerns itself with biological and chemical weapons. That is not to say that no framework exists. The Biological Weapons Convention Implementation Support Unit (BWC-ISU) and the Organization for the Prohibition of Chemical Weapons (OPCW) have worked extensively to provide and implement frameworks to prohibit and destroy biological and chemical weapons. However, while the OPCW has formal verification

⁶Both events raised the issue of nuclear proliferation and the "haves and have-nots" of nuclear weapons. The Cuban Missile Crisis risked proliferating nuclear weapons in South America and the Caribbean while South Africa's nuclear program risked proliferating nuclear weapons in Africa (Adeniji 2002, 18–20, 41–45).

procedures, the BWC-ISU lacks a formal verification process. In a sense, both organizations have the same goal of mitigating the proliferation of WMDs in their respective categories but are very much different in the extent of their capabilities. Such difference is indeed a product of the OPCW and BWC-ISU's own historical context and circumstances and differing attitudes towards chemical and biological weapons.

The first conceptual issue for a zone free of other WMDs is defining what constitutes a WMD. A UN resolution passed in 1948 says that such a weapon is

defined to include atomic explosive weapons, radio-active material weapons, lethal chemical and biological weapons, and any weapons developed in the future which have characteristics comparable in destructive effect to those of the atomic bomb or other weapons mentioned above. (Commission for Conventional Armaments 1948, 2)

The latter half of this definition is key, as it does not restrict itself to specific weapon categories. The definition recognizes the possibility of weapons that may not fit the categories established by the former half of the definition but nonetheless may be of comparable lethality and have comparable destructive consequences. Elimination mechanisms for these weapons vary considerably, however, and so do their definitions. Current mechanisms define WMDs as nuclear, biological, and chemical weapons for implementation purposes, which in turn is further complicated by regional circumstances (Bleek, Kane, and Pollack 2016, 18). In addition, there is no institutionalized framework within WMD-possessing governments to oversee the elimination of these weapons outside of those established by intergovernmental organizations. The process of WMD elimination involves multiple agencies, organizations, and experts that makes institutionalization difficult. In addition, the efforts of the international community as a unified force against WMDs is critical to ensure that WMD elimination missions are "authorized, financed, legitimized, and accomplished" (Bleek, Kane, and Pollack 2016, 34–35).

The concept of restricting chemical weapons bears a similarity to nuclear weapons in that chemical agents that can be weaponized have widespread peaceful and civil uses in industries. In comparison with nuclear weapons, however, establishing mechanisms to monitor and track chemical agents invites further complexity. This does not mean that such a task is impossible, only that the CWC and research into mechanisms concerning chemical weapons have seen further obstacles by comparison. Despite this, the framework provided by the CWC is comprehensive. The CWC, which entered into force in 1997, contains monitoring mechanisms, verification provisions, and compliance protocols. As Alexander Kelle writes, the concern at the time of the treaty's entry into force was the uneven distribution of suspected state parties declaring their chemical weapon stockpiles (Kelle 1998, 34–35). The driving forces behind the implementation of the CWC were historic. In the years preceding the treaty's entry into force, the Tokyo sarin gas attacks had illustrated the deadly consequences of chemical weapons when used against a civilian population. Decades before this event, chemical weapon use in conflicts has repeatedly illustrated the impact these weapons have, even after the conclusion of such conflicts. Within the framework of the weapons of mass destruction nonproliferation architecture, both nuclear and chemical weapons drive public concern, fear, and relevance to this weapon category. Indeed, the importance of ensuring that all types of WMDs have categorically similar levels of destruction should not be understated.

Without this emphasis on the categorical there is a tendency to juxtapose other WMDs as more palatable alternatives to nuclear weapons and thus encourage the former's normalization of use in conflicts (Thakur 2006, 2).

Evidence for this can be seen since 1945, where chemical weapons that were used in conflicts since then were justified as, among others, more acceptable alternatives to nuclear weapons by states that have both chemical and nuclear weapon options available. This was also due to the perception that chemical weapons were highly localized and smaller in scale (Horowitz and Narang 2014, 510–512). Following this logic, states observing this may see this as justification to acquire their own chemical weapon stockpiles as alternatives to nuclear weapons and thus encouraging the proliferation of chemical weapons and normalizing their acquisition and potential use in conflicts. They have been rationalized as being less lethal, cheaper to produce and maintain, and more accessible compared to nuclear weapons. In short, it is essentially a positive feedback loop in which the more chemical weapons are used, the more they are seen as being acceptable to use and as an acceptable alternative to nuclear weapons. Stressing their similarity as a category of WMDs may help break this loop (Thakur 2006, 3–5). The OPCW has seen states declare and destroy their declared chemical weapon stockpiles. A major problem in facilitating the goals of the CWC and the work of the OPCW, however, is ensuring stockpiles are being properly monitored. The recent situation in the Middle East, for instance, has seen chemical weapon stockpiles being “lost” or evidence of chemical weapons being repeatedly used.

The concept of restricting biological weapons is that there are few peaceful uses in harboring biological agents that have the capacity to be weaponized, though like the issue with chemical weapons, many precursor ingredients used in biological weapons have legitimate industrial uses. Samples of these biological agents are still kept, though arguments over whether biological agents should be destroyed or small samples kept for research purposes are ongoing. Regardless of these arguments, the framework provided by the BWC treaty is straightforward: any biological agents that have the capacity to be weaponized should be prohibited, and, unlike the issues with nuclear and chemical weapons, the treaty does not discriminate between those who have the capacity to produce biological weapons and those who do not. There has been no recent event, however, where biological weapon use or discovered stockpiles could prompt further actions against them (Sims 2011, 8–10).

For this reason, among others, the BWC treaty has been described as the weakest among the nuclear, biological, and chemical arms control mechanisms. It has no monitoring mechanism and no verification provisions. Despite consensus on the need to prohibit biological weapons, the treaty faced multiple obstacles during its negotiation process. Nor can the BWC review conferences amend the provisions within the treaty; the conference can only record an understanding among state parties. This, in turn, has been described as “[putting] flesh on the skeleton, so to speak, of a rather emaciated treaty text” (Sims 2011, 8–10).

The current situation of BWC is a product of its historical circumstances. As Oliver Thränert writes, when the BWC was negotiated during the early 1970s, biological weapons were not considered to have the same lethality as nuclear or chemical weapons. The BWC, “essentially toothless . . . did not deter both the United States and the Soviet Union from keeping the option open to do work on [the negotiation process for]

biological warfare” (Thränert 1996, 351). This perspective was met with opposition from scientists at the time, and current trends have established the lethality of biological weapons and its consequences. Amanda Moodie writes that a major reason for this shift toward greater recognition of the lethality of biological weapons was the emergence of many diseases since the 1980s, among which was HIV/AIDS. The HIV/AIDS scare was “particularly influential in shifting perceptions of disease as a potential security threat” and “arguably marked the first time the United States and the international community prioritized global health as a security concern” (Moodie 2015, 73–74). While HIV/AIDS might have been seen as a biological weapon, there have been many cases in which HIV/AIDS was used as a form of gender and sexual violence and discrimination against marginalized groups (Aginam 2012). Subsequently, the Tokyo sarin gas attacks in 1995 and the 2001 anthrax attacks in the United States spotlighted the risks of using biological and chemical weapons in densely populated areas. The concern is that “if terrorists could potentially use chemical or biological weapons, this meant that the entire population – rather than solely the armed forces who might face a state adversary armed with such weapons on the battlefield – was at risk” (Moodie 2015, 74). In other words, biological weapons arms control is directly linked to health security.

The Historical Necessity of Including “Other Weapons of Mass Destruction”

Including “other WMDs” within the framework of NWFZs is a historical necessity. Nuclear weapons are not the only WMD available; the issue with existing NWFZs is that despite the progress made, their scope does not include other WMDs. While the fear of nuclear weapons has dominated public attention since the atomic bombings of Hiroshima and Nagasaki, the effects of other WMDs also deserves more global attention, especially with ongoing conflicts in the Middle East. For this reason, this section now focuses on the human consequences of these weapons and why their inclusion is a historical necessity. This article has already touched upon some of these events, but it will now look at them in closer detail.

Between 1960 to 1966, France tested 17 nuclear bombs in Algeria. Independent studies of the effects of these nuclear tests on the environment and the people living near test sites were not conducted until the 1990s, and it was only in 2010 that victims of these tests began to be recognized by the French government (Collin and Bouvert 2020, 5). Between 42,000 and 60,000 victims were affected by nuclear tests during this five-decade period (Chikhi 2010). Because of the lack of transparency on the handling of nuclear tests and radioactive waste disposal, contaminated equipment and waste were buried underneath sand, with “most of this waste [being] left in the open, without being secured in any way, and is accessible to the local population, creating a high risk for health and environmental damage” (Collin and Bouvert 2020, 5). Nor were their locations disclosed; much of the victims’ exposure occurred when people, particularly nomads, unwittingly ventured into contaminated regions.

The extent of the damage caused by the nuclear tests in Algeria is still unclear as the effects are long-term; this damage has been called “slow violence”. Reggane, a town close to the nuclear test sites, has recorded increased instances of cancers and birth defects from the beginning of the 1970s with “babies born with atrophied limbs, cancers of the liver, stomach and skin” and “cases of temporary blindness among those who saw the

brutal flash of light [during the nuclear tests]" (Magdaleno 2015). The difficulty in ascertaining exact statistical data on those affected and their symptoms is that the regions where nuclear tests occurred lacked infrastructural development: "[D]octors at the hospital in Reggane have no statistics, no epidemiological studies" (Magdaleno 2015). This is compounded by the failure of France to disclose the extent of nuclear contamination, resulting in "little record keeping by local medical institutions to track the quiet boom of radiation illnesses" (Magdaleno 2015).

A villager living close to the Ekker nuclear test site describes the "Beryl" test as having caused the emergence of "unknown disease and health problems" (Chikhi 2010). What exacerbates this issue is that many are unaware that they have been exposed to high doses of radiation or have had parents who were exposed. It is often the case that victims "as well as their parents" were not aware that they suffered from radiational poisoning, resulting in higher incidences of infertility, cataracts, and cancers. Because the tests occurred in areas with relatively low levels of infrastructure development, access to medical resources and monitoring "is for many a luxury they [the victims] simply can't afford" (Chikhi 2010). It is estimated that about 150,000 people may have at some point been exposed to nuclear contamination between 1960 and 1996 (Collin and Bouvert 2020, 12). Contaminated metals have been reused "in order to make fences, roofs for houses, and other buildings" while copper in particular "fetches high prices for resale". This trail of trading and using contaminated metals goes as far as Morocco with uncertain consequences for those exposed due to variances in dosage and exposure (Collin and Bouvert 2020, 27–28).

The Algerian example is one of many cases that demonstrates the longevity of the problems caused by nuclear weapons and testing. Apart from the generational injuries caused by these weapons, there is also the issue of legacy and memory. Within the contexts of nuclear legacy and memory, including nuclear colonialism and imperialism, the result is a conflict over how such tests will be remembered: "from disputes over archives, to demands for recognition and apology . . . a field of 'imperial debris' that has included lives lost and bodies injured, environments contaminated and degraded, truths suppressed and revealed" (Panchasi 2019, 105). The rejection of recognition of these nuclear tests and the damage they have caused risks emptying "deserts of lives damaged . . . [turning] bombs into harmless 'devices', abetting the representation of brutal military conflict as a set of 'operations'" (Panchasi 2019, 105).

The Egypt-Yemen War, fought from 1962 to 1970, has been described as the first recorded use of chemical weapons in the Middle East following the Second World War (Terrill 1991, 109). An estimated 1,500 people were killed and another 1,500 injured from chemical gas attacks during the course of the war (NTI 2015). Surviving witness accounts are scarce, though one describes victims in the village of Jebal Bini Awar "[complaining] of a choking feeling, burning in the stomach, spitting up black blood, partial blindness, black burns on the body, and skin that fell off leaving scars" (Orkaby 2013). The chemical attacks would have likely caused panic and terror to those who found themselves exposed to the gas, considering that this would have been the first instance of chemical weapons used "in the modern Middle East" (Terrill 1991, 109). Egypt's deployment of chemical weapons had far-reaching consequences beyond injury and violence. Following this war, other Middle Eastern states, particularly Syria and Iraq, expressed interest in chemical weapons and chemical warfare. Syria had "requested Egyptian aid to help develop their

own chemical warfare capability . . . the scope [included] both technical advice and the transfer of small amounts of chemical warfare agents for research” while Iraq had begun research on chemical weapons in the late 1960s (Terrill 1991, 116–117). What this shows is a proliferation of chemical weapons that bears similarities to that of nuclear proliferation: as one state uses chemical weapons, it may potentially encourage other states to research and develop their own programs as well. What this also shows is a proliferation of weapons of mass destruction in general, as the acquisition and use of chemical weapons during this period may have led “to the beginnings of an Israeli effort to acquire an offensive chemical warfare capability and an acceleration of their plans for the acquisition of nuclear weapons” (Terrill 1991, 117). In other words, there is a risk of a positive feedback loop if these weapons of mass destruction as an entire category of weapons are not kept in check, rather than only focusing on one specific type of weapon.

The Iran-Iraq War represents one of the most flagrant uses of chemical weapons since the end of the Second World War, with an estimated 10,000 killed and more than 100,000 injured from chemical weapons over the course of the conflict. In 1988 alone, an estimated 140,000 people fled these attacks (HRW 1991). Not only do these weapons kill and cause injury, but the very news that they were being used spreads fear among the populace and further aggravates refugee crises. This will be a repeated theme.

One of the earliest documented accounts of chemical weapon use during this conflict was the Balisan valley and Sheikh Wasan village bombings. The bombings occurred in April 1987. It began with plumes of “white, gray, and pinkish smoke” that drifted into the valley. The smell was described as a strange mixture: some smelled apples, roses, and flowers while others smelled garlic or described it as insecticide. The effects were nearly immediate. Those caught within the cloud first suffered blindness, with swelling quickly developing around their bodies. “Yellow watery discharge” would then emerge from the eyes and nose; some people lingered as they did not know what to do in such an attack, while others “ran into the mountains and died there”. The chemical weapon used was mustard gas, and while over 100 people were estimated to have died, as many as 400 would die as a result of exposure. The significance of these two bombings was that they were representative of the “intent . . . to disappear and murder large numbers of civilian non-combatants from areas of conflict in Iraqi Kurdistan” by those who used them (HRW 1993).

There are many victim accounts of the effects of chemical weapons during the course of the war. An eight-year-old child living in the Balisan valley describes hearing a “poof” sound near their village, before being engulfed in “yellowish-white smoke”. The child describes their experience as having their nose run and their eyesight blurring, with darkened skin blisters developing over their chest. The child explains that they “saw my parents fall down with my brother after the attack, and they told me they were dead And I was scared and crying and I did not know what to do . . . I wanted to touch them, but they stopped me and I started crying again” (PHR 1989, 3). Apart from the immediate trauma suffered by this child, their symptoms lasted for several weeks before they were able to talk after a month of remaining silent. The child’s account, and many like it, illustrates the indiscriminatory nature of chemical weapons.

Another account describes the effects of chemical attacks on people not directly exposed to chemical munitions. An elderly lady interviewed describes a “blackish white smoke” before having her eyes and skin burn. She also noticed her villages’ livestock

dying from the gas. When she received help, the chemical contamination from her skin and clothing spread onto her helpers and made them sick as well (PHR 1989, 5). Another individual, in attempting to help those affected by a chemical attack, drove victims to a hospital only to find out that their skin began to burn and develop blisters as well. They describe soldiers who are “moaning, vomiting, and coughing” and whose faces and hands had enlarged blisters. The individual describes one of the blisters bursting and splattering fluids onto their own hands, only to have them blister as well (Stone 2018). What this shows is that rescuers trying to assist victims often suffer from the same symptoms as those directly exposed to the chemical attacks.

As part of this war, the Anfal campaign was launched by Iraq in the late 1980s. According to Iraq, this was a counterinsurgency operation in Iraqi Kurdistan. What occurred has been described as a genocide; the Balisan valley and Sheikh Wasan village bombings were part of this campaign. This peaked with the chemical bombing of Halabja in March 1988. The chemical attack on Halabja was a direct attack on a major population center. Its scale cannot be understated: of a population of around 40,000, up to 5,000 would die as a result of direct exposure, with another 7,000 suffering from chemical injuries (Kelly 2008, 33). The attack on Halabja was also unprecedented; Halabja was a city that served as a focal point for refugees seeking shelter from the war. Consequently, the city was not prepared for a conventional attack, let alone a chemical one. Victim accounts begin with a sense of confusion and fear upon seeing clouds of smoke descend onto the city. The effects of chemical exposure are usually immediate, and the sense of confusion and fear turns into panic as people try to flee or seek shelter; not knowing what to do is a common response to a chemical attack. Witness accounts from the neighboring town of Biara describe having the gas waft into it as well. One account describes seeing a mass exodus of people from Halabja fleeing towards Biara, and saw “victims with burst eyes, swollen bodies, and burned skin. There were others who appeared healthy but all of the sudden would vomit and pass away” (Qurbany 2011, 33). One describes the panic within Halabja:

We hurried into our car and closed its windows. I think the car was rolling over the bodies of innocent people. I saw people lying on the ground, vomiting a green-colored liquid, while others became hysterical and began laughing loudly before falling motionless onto the ground. Later, I smelled an aroma that reminded me of apples and I lost consciousness. When I awoke, there were hundreds of bodies scattered around me. (Ekurd 2008)

The effect of the chemical attack on Halabja was exacerbated by the conventional bombardment that had immediately preceded it. The shelling had raised sirens for people to seek shelter underground in basements or cellars. When the chemical attack followed, many were still within these underground shelters or sought refuge in them when it was known that the following attack utilized chemical weapons. As vapors used in chemical weapons are heavier than air, they will seep into underground shelters that are not designed to counter chemical weapons. Instead, “those underground shelters became gas chambers Belowground, humans met their end, trapped” (Kelly 2008, 34). One witness describes hearing news from refugees that “there were large homes with a basement filled with many families with no single survivors. There were some families completely obliterated, not even small children remaining alive” (Qurbany 2011, 23–25).

The survivors of these chemical gas attacks now must contend not only with the trauma of surviving a gas attack but also with the with the long-term consequences. Medical surveys of survivors decades after the Halabja chemical attack noted increased instances of respiratory issues, congenital malformations in children born from survivors, skin and eye issues, and cancer. Psychological issues related to trauma remain the most persistent and are noted to be “the most difficult to quantify scientifically and diagnose”, but “many try to commit suicide and there are many examples of failed suicides” (Kelly 2008, 39). Women suffer from increased instances of infertility, miscarriages, and infant mortality, where occurrences of “genetic mutations and carcinogenesis” were concluded to be comparable with “those who were one to two kilometers from ground zero in Hiroshima and Nagasaki” (Kelly 2008, 39). The difficulty with treatment is that, apart from the lack of long-term medical information on the effects of chemical attacks on such a large scale, different people manifest different symptoms of chemical exposure due to variances in how large a dose they received, how quickly they were able to decontaminate following exposure, and how quickly they received treatment. A common theme with chemical weapon usage, and WMDs in general, is that it causes “multigeneration suffering”. For instance, those born to parents who were victims of chemical attacks may suffer medical conditions directly related to chemical exposure even if they were born decades after the attack. A report on the Halabja chemical attack explains that “many different genes may be affected; in the body, conferring risks of cancer or disease; and, in eggs or sperm, causing congenital abnormalities or lethality in offspring” (Kelly 2008, 39).

The Ghouta chemical attack in Syria in 2013 represents one of many recent uses of chemical weapons and one of the deadliest since the Iran-Iraq War. It demonstrates the relevance of chemical weapons and WMDs not as confined to history books or “the distant past”, but as real, present, and imminent dangers. Similarities can be found in Ghouta to the chemical attacks during the Iran-Iraq War. Deaths in the Ghouta chemical attack range from around 300 to upwards of 1,200, with an estimated 3,600 injured (HRW 2013).

The attack commenced with an initial sense of confusion by the people living in the Ghouta region; at this point conventional shelling was a frequent occurrence for people living in the area. According to their descriptions, the victims, upon hearing the explosions, believed them to be coming from regular munitions before the distinctive white, yellowish plumes of smoke descended upon residents with immediate effects. One victim in western Ghouta describes being attacked while in morning prayer. The rocket “fell in the first floor of a four-story apartment building. Everyone in the building died in their sleep After the person was screaming, people covered their faces, with shirts dunked in water” (HRW 2013). Another victim describes hearing “a very low sound . . . and not the sound of explosion” and could not tell where the rocket fell or notice any impact craters. Instead, the victim “saw injured people on the ground and people screaming and running in all directions . . . I remember I went into one house and saw a man with his wife on the ground . . . it was not where the rocket fell or had an impact but they were dead” (HRW 2013). They then proceeded to help others, before suffering the effects of chemical exposure and describing it as having their body feel weak and ache, with eyes burning. Another victim describes their experience as having their lips “shuddering and bloating” before being rendered temporarily blinded (VDC 2013, 7). They describe

people “on the ground and screaming . . . popeyed with yellow faces and opened mouths” (VDC 2013, 7). In trying to help others, they felt foam ooze from their mouth before noticing that their own family had fainted.

When a chemical weapon attack is mixed with conventional bombardment, the results can be devastating. One survivor describes initially taking shelter in a basement. When it became clear that they were under a chemical attack, they proceeded to run towards the roof of a building where they “thought [they] would be safer” (Sawwan 2019). Instead, mortar shells began hitting the area they were in. The account is described as follows:

We did not know what to do. Should we stay upstairs and risk being bombed, or should we stay in the basement and risk being gassed? There were no guarantees that we would be safe. We did not know if more missiles would come or even if it was possible to be affected and not realize. Everything was chaotic and no one knew what was happening. (Sawwan 2019)

As in many other survivor accounts of chemical attacks, the response is a sense of confusion and helplessness. In Ghouta, as was the case in Halabja, no underground shelter was properly equipped to handle a chemical attack, while civilian infrastructure was not designed with a chemical attack in mind. When rescuers attempt to aid victims of these attacks, they frequently find themselves exposed to such chemicals as well. The same survivor describes trying to help people in a hospital despite not knowing whether or not the hospital’s treatment was helping them. They were “losing a lot of people I saw a whole family die, one after the other” (Sawwan 2019). Rescue efforts from neighboring communities had arrived to assist, only to have the majority of rescuers fall ill due to chemical exposure as well; Ghouta and its neighboring communities did not have the necessary medical equipment or training to deal with a chemical attack on such a scale. One paramedic describes trying to help people caught within the initial plumes, only to smell “a gas with a strong sulfur-like smell, and a foggy white color” before “a shiver hit me and I lost consciousness. Before I fainted, I saw 17 cases; most of them suffered convulsions, neurological disorders, vomiting, hallucinations, shortness of breath, and pinpoint pupils” (Sawwan 2019).

As in the case of Halabja, the survivors had to deal with the long-term consequences of chemical exposure. Pregnant women who were exposed to chemicals during the Ghouta attacks were found to have increased instances of miscarriage, with infants having “multiple malformations” (Hakeem and Jabri 2015, 1). Lasting physical changes, such as scarring and skin lesions, were recorded alongside psychological trauma (Justice Initiative 2021, 4). In addition, of grave concern for Ghouta’s community is the effect the chemical attacks have on groundwater and how they “could affect generations to come” (Harding 2015).

While no definite use of biological weapons has been recorded among states encompassed by the NWFZ, the potential for states to manufacture and deploy them is a real concern. The consequences and human impact of biological weapons use and testing are well documented in other contexts, and the potential for its proliferation is well established. As with other WMDs, claims of states having the capacity to manufacture biological weapons serve to sow distrust among states and raises the risk of further human harm. While there are no current case studies that can match chemical weapons use among NWFZ States, it does not mean that biological weapons are a non-existential threat.

These case studies demonstrate how WMDs not only cause immediate widespread and indiscriminate destruction of human lives and biodiversity but also have lingering effects in what has been called “slow violence”. These include but are not limited to cancer and birth defects, ruined livelihoods, and destroyed ecosystems. These are terror weapons, whose stated strategic and tactical purposes only serve to encourage uncertainty and contempt between state actors. A lack of appreciation for these weapons is evident when the creation of these weapons is discussed, even encouraged, within the framework of deterrence and assuring the destruction of the enemy (imagined or real); mutually assured destruction is not a sustainable answer to peace when the consequence is indiscriminate annihilation. It may be inconceivable to some that an answer to a buildup of WMDs is to build more. But the many treaties signed and ratified since the UN first defined WMDs in 1948 attests otherwise, for it could be argued that what drives this buildup is fear of the military capacity and possessions of the other.

Conclusion: Toward a Middle East Zone Free of Nuclear Weapons and Other Weapons of Mass Destruction

Chemical weapons have already been used in the Middle East. It is therefore imperative that the MEZ has other WMDs included. It is a historical necessity that these other weapons are included; when discussing nuclear, chemical, and biological weapons in relation to security, there is a tendency to forget that the victims are primarily civilians: people who have little to do with whatever ongoing conflict exists and do not want to be involved in it. The other victim is the environment, for which biodiversity loss is an ongoing issue. There is no time scale to measure the potential suffering caused to people and the environment. It does not help the discussion when, for the use of WMDs to be justified, the other must undergo a transformation towards dehumanization. These consequences are not exaggerations or products of imagination. These consequences exist at present.

This article examined the historical necessity of including other WMDs within the MEZ. It stressed the destructive and lingering consequences of nuclear, chemical, and biological weapons against human populations and the environment before proceeding to provide an overview of the conceptualizations of NWFZs and zones free from “other WMDs”. It proceeded to discuss the historical necessity of including other WMDs by exploring case studies of these weapons being used and their consequences. By presenting these case studies, the article showed the historical necessity of including other WMDs by adding a human face to the potential consequences of not including “other WMDs” within the MEZ.

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Notes on Contributor

Zhenkai Tong is a doctoral student at the University of London's School of Oriental and African Studies (SOAS). He has previously worked for the United Nations Office for Disarmament Affairs

(UNODA), assisting the Second Session of the Conference on the Establishment of a Middle East Zone Free of Nuclear Weapons and Other Weapons of Mass Destruction. His research focuses on East Asian history since the early twentieth century, with particular emphasis on literature and political movements.

ORCID

Zhenkai Tong  <http://orcid.org/0000-0002-0272-7591>

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