



ANALYSIS

YPRES AND THE COLLAPSE OF CHEMICAL DETERRENCE

John Mark Mattox

Introduction

Since the dawn of the nuclear age, the default conception of deterrence has typically been expressed in terms of nuclear weapons. While this is understandable, it also obscures the reality that the concept applies, to a greater or lesser degree, to every kind of weapon. Indeed, the idea behind weapon possession in the first instance is to force an adversary to consider that aggressive action could result in the use of that weapon in ways, and at a cost, which the adversary would consider unacceptable. Prior to 1945—before the concept of nuclear Armageddon existed, nations considered as “unacceptable,” or at least unseemly, things that would likely seem quaint today, such as breaches of diplomatic undertakings, ungentlemanly battlefield conduct or precipitation of prohibitively expensive arms races. In the days of European empires united by bonds of blood or marriage, such things cast a pall upon national honor and, as a result, exerted a deterrent effect. It is in this milieu that chemical weapon deterrence both took shape and experienced a spectacular collapse during World War I at Ypres, Belgium. Both the shaping and the collapse of chemical weapon deterrence afford timely lessons for students of deterrence in the 21st century. In particular, the use of chemical weapons at Ypres serves as an important case study on the limits of international law, ethics, and humanitarian motivations as contributors to the general reliability and staying power of deterrence, regardless of the type of weapon to which it is applied.

Early Modern Chemical Deterrence

While chemicals have been weaponized since antiquity, formal efforts to deter chemical weapon use in the modern understanding begins, for all practical purposes, in 1868. By the mid-19th century, Napoleonic-style warfare, with its tight columns and ranks of marching formations designed for bayonet charges and short-range volley fire (50–100 meters) was giving way to somewhat looser formations of troops able to deliver rifled musket fire with ranges of up to 300 meters or more. At the same time, advances in rifle ammunition made possible the delivery of increasingly devastating effects on human targets. Of special concern was the hollow rifle bullet, an early version of which was developed by the Imperial Russian Army. The first such bullets were designed to ignite on contact with solid targets, but subsequent developments enabled them to ignite on contact with soft targets, such as human tissue. In an historically uncharacteristic display of humanitarianism, the Imperial Russian War Minister forbade their use against all but solid targets: “Apart from the blast itself, which inevitably caused serious injury in human tissue, the expanding gases and the scattering of the casing fragments, significantly aggravated the victims’ condition, making an agonising



death inevitable.”¹ Moreover, without some kind of intervention, proliferation of the new, devastating technology was likewise inevitable.

Acting on the theory that there are certain things that “civilized” nations simply should not do to other civilized nations, Czar Alexander II invited 17 states² to consider proscription of this emergent technology. After only three days of deliberation, all 17 invitees signed a declaration in which they agreed “mutually to renounce, in case of war among themselves, the employment by their military or naval troops of any projectile of a weight below 400 grammes, which is either explosive or charged with fulminating or inflammable substances.”³ This modest step forward achieved several things: First, it served as a foundation stone, in company with the 1863 Lieber Code and the 1864 Geneva Convention, for international humanitarian law. Second, because of its reference to “fulminating or inflammable substances,” it marked the first step toward what would become a series of ever-more specific and far-reaching prohibitions on the use of chemicals in warfare. However, it also achieved a third effect which, although no less important, is easily overlooked: It aimed to deter the use of chemicals in warfare on pain of being considered an international pariah. Deterrence was the primary aim; for, even if a party to the treaty lacked humanitarian sensibilities, if that party were deterred from the actual use of chemicals in warfare, the treaty’s purpose would be accomplished.

In 1874, the Brussels Declaration, also initiated by Russia, memorialized among 15 European states the prohibition of 1868 and banned “The employment of arms, projectiles or material calculated to cause unnecessary suffering.”⁴ While it was not ratified as an instrument of international law, its moral effect clearly underwrote a foundational concept of what was shaping up to be chemical weapons deterrence: the fact that such weapons would produce excessive human harm outside the scope of permissible battlefield action. Even without ratification, the aim was to reinforce such deterrent effect as the 1868 declaration generated.

This deterrent effect received additional impetus in 1880 when the Institute of International Law at Oxford proscribed “arms, projectiles, or materials of any kind calculated to cause superfluous suffering, or to aggravate wounds—not only projectiles of less weight than four hundred grams which are explosive or are charged with fulminating or

¹ “St Petersburg, 1868: First International Agreement Prohibiting the Use of Certain Weapons,” *Online Atlas on the History of Humanitarianism and Human Rights*, https://hhr-atlas.ieg-mainz.de/articles/jevglevskaja-st_petersburg.

² Austria-Hungary, Bavaria, Belgium, Denmark, France, Great Britain, Greece, Italy, The Netherlands, Persia, Portugal, Prussia and the North German Confederation, Russia, Sweden and Norway, Switzerland, The Ottoman Empire (Turkey), and Württemberg. The United States, which was not yet considered to be a major player in international military affairs, was not invited. See “A Look at the Declaration of St. Petersburg of 1868,” *International Review of the Red Cross*, <https://international-review.icrc.org/sites/default/files/S0020860400082188a.pdf#:~:text=At%20the%20invitation%20of%20Tsar%20Alexander%20n%2C,General%20Milutin%2C%20the%20Tsar%27s%20Minister%20of%20War>.

³ “Declaration Renouncing the Use, in Time of War, of Explosive Projectiles under 400 Grammes Weight. Saint Petersburg, 29 November / 11 December 1868,” <https://ihl-databases.icrc.org/assets/treaties/130-IHL-6-EN.pdf>.

⁴ “Project of an International Declaration concerning the Laws and Customs of War. Brussels, 27 August 1874,” *International Humanitarian Law Databases*, <https://ihl-databases.icrc.org/en/ihl-treaties/brussels-decl-1874>.

inflammable substances” but also the “use of poison, in any form whatever.”⁵ These proscriptions were as much anticipatory as they were historically informed; for although poison had been used in warfare from time immemorial, the technology that would make wartime use of poison synonymous with “chemical warfare” was still decades in the future.

The 1899 and 1907 Hague Conventions (the first such conventions to which the United States was a party) took fuller cognizance of the shape that emerging chemical technology might assume. Up to this point, it seemed as though the force of moral revulsion and insistence on gentlemanly warfare (coupled with the somewhat more mundane, but no less pressing mutual desire to avoid spiraling national defense budgets), would be sufficient to deter chemical weapon use. However, some were starting to question this conventional wisdom concerning what could actually be counted upon to deter the use of a specific kind of weapon; and on this point, the United States led the way. U.S. Navy Captain Alfred Thayer Mahan, deputy plenipotentiary of the U.S. delegation, is on record as having expressed that:

The objection that a war-like device is barbarous has always been made against all new weapons, which were nevertheless eventually adopted.

In the Middle Ages firearms were criticized as being cruel, and later on mortars and still more recently torpedoes received the same accusation. In his opinion it does not seem demonstrated that projectiles containing asphyxiating gases would be an inhuman or cruel device without being decisive.⁶

While he is the representative of a country which cherishes a keen desire to render warfare more humane, he also represents a nation which may be compelled to wage war, and it is therefore a question of not depriving oneself, by means of resolutions hastily reached, of means which later on might be usefully employed.⁷

Mahan’s point is clear: Gentlemanliness, even that clothed in robes of humanitarian sensibilities, simply could not be counted upon for deterrent effect if a certain kind of weapon—any weapon—were viewed as conferring special advantage in actual conflict.

⁵ “Manual Adopted by the Institute of International Law at Oxford, 9 September 1880,” <https://ihl-databases.icrc.org/en/ihl-treaties/oxford-manual-1880>.

⁶ Puleston renders the phrase “without being decisive” as “and that they cannot produce decisive results.” See W. D. Puleston, *The Life and Work of Captain Alfred Thayer Mahan, U.S.N.* (London: Jonathan Cape, 1939), 204. This seems correct despite the disclaimer, contained in the official record of the conference proceedings, that “Mr. Mahan asks permission to change, both in the minutes approved May 31 and in the report of Count Soltyk, the expression “or uselessly cruel” into “cruel without being decisive,” which change was adopted by the commission. *The Proceedings of the Hague Peace Conferences: Translation of the Official Texts: The Conference of 1899* (New York: Oxford University Press, 1920), p. 375.

⁷ *The Proceedings of the Hague Peace Conferences: Translation of the Official Texts: The Conference of 1899* (New York: Oxford University Press, 1920), p. 296. Note that the official record is a third-person account of Captain Mahan’s remarks.

World War I

Indeed, it is precisely the reality of what Mahan predicted that made chemical weapon use an appealing alternative for Imperial Germany in 1915. The war began in August of 1914 and was to end, in words widely attributed to Kaiser Wilhelm II, “before the leaves fall from the trees.”⁸ The leaves had fallen, the German advance had bogged down into trench warfare, winter had come and gone, and still there was no prospect of war’s end in sight. Moreover, there was no expectation—or even any idea—from the vantage point of August 1914 that Germany would turn to chemical warfare (certainly, the Schlieffen Plan did not require it). In principle, chemical weapon deterrence was supposed to hold for all of the traditionally accepted reasons; in practice, it did not.

In late afternoon of 22 April 1915, at the beginning of what became known as the Second Battle of Ypres, the German army released over 400 tons of chlorine gas from 6000 cylinders secreted along a salient in the Western front near Ypres, Belgium. That release sent a dense, 50-foot-high yellow-green cloud drifting toward Allied positions along a roughly four-mile sector of the line. While casualty figures vary significantly and—especially early on—were almost certainly inflated for propaganda purposes, some of the best retrospective estimates include roughly 6000–7000 immediate gas casualties and over 1100 deaths.⁹ The chemical deterrence regime built up over the preceding half-century—and with it, assumptions about the deterrent effect of existing notions of honor—had failed. In the words of one British Company Sergeant Major (whose sentiment is repeated in scores of existing accounts): “Had we lost as heavily while actually fighting we would not have cared as much, but our dear boys died like rats in a trap, instead of heroes as they all were.”¹⁰ As if to leave no doubt that, certainly in the minds of the rank and file at least, chemical deterrence was now a thing of the past, the Sergeant Major continues: “The Dorset Regiment’s motto now is, ‘No prisoners’. No quarter will be given when we again get to fighting.”¹¹

So much for gentlemanliness.

That the Western Alliance swiftly decried Germany’s destruction of the chemical deterrence regime is unremarkable. What *is* remarkable is Germany’s response:

- Germany, not the Western Alliance, was the victim here. Germany didn’t introduce chemical warfare; France did, through its use (albeit limited and unsuccessful) of lachrymatory grenades in autumn of 1914. In a translated excerpt of what *The [London] Times* described as “a jubilant leading article,” the *Frankfurter Zeitung* reported:

⁸ Barbara W. Tuchman, *The Guns of August* (New York, NY: Ballantine Books, 2004), p. 141.

⁹ See, for example, “History of United States’ Involvement in Chemical Warfare,” DoD Recovered Chemical Warfare Material (RCWM) Program, <https://www.denix.osd.mil/rcwmprogram/history/>; James Patton, “Medicine in the First World War,” University of Kansas School of Medicine, <https://www.kumc.edu/school-of-medicine/academics/departments/history-and-philosophy-of-medicine/archives/wwi/essays/medicine/gas-in-the-great-war.html>.

¹⁰ John Lee, *The Gas Attacks at Ypres 1915* (South Yorkshire, England: Pen & Sword Books Ltd., 2009), p. 78.

¹¹ Ibid.

It is quite possible that our bombs and shells made it impossible for the enemy to remain in his trenches and artillery positions, and it is even probable that missiles which emit poisonous gases have actually been used by us, since German leaders have made it plain that, as an answer to the treacherous missiles which have been used by the English and the French for many weeks past, we too shall employ gas bombs or whatever they are called.¹²

- Germany did not actually violate any international law, since the prohibition was against “the use of projectiles the sole object of which is the diffusion of asphyxiating or deleterious gases”¹³, and the gas used at Ypres was released from pressurized cylinders.
- Nothing about Germany’s use of gas should have surprised anyone, as it was simply one of the ordinary usages of war which a recognized belligerent should have anticipated and against which it should have taken prudent defensive measures:

What The Hague Convention desired to prevent was the destruction without chance to escape of [sic] human lives *en masse*, which would have been the case if shells with poisonous gas were rained down on a defenceless enemy who did not see them coming and was exposed to them irremediably.¹⁴

Moreover, all an enemy really had to do was “to withdraw to escape their effects.”¹⁵

- Germany’s decision to use gas was, in any case preemptive: Reports “published in American newspapers” stated “that the Lusitania carried 250,000 pounds of tetrachloride of tin consigned to the French Government and intended for the production of asphyxiating gases”¹⁶.
- The idea that gas warfare was less humane than the commonly accepted modes of warfare was ludicrous:

The basic idea of the Hague agreements was to prevent unnecessary cruelty and unnecessary killing when milder methods of putting the enemy out of action suffice and are possible. From this standpoint the letting loose of smoke clouds, which, in a gentle wind, move quite slowly towards the enemy, is not

¹² “Through German Eyes. Poisonous Gases. A Quick and Painless Death,” *The Times* (London), April 29, 1915, p. 6.

¹³ *The Proceedings of the Hague Peace Conferences: Translation of the Official Texts: The Conference of 1899*, Vol. 1 (New York: Oxford University Press, 1920), p. 266.

¹⁴ “German Defence of Gas,” *The Times* (London), June 28, 1915, p. 10.

¹⁵ “Says Allies Used Gas before Germans Did,” *New York Times*, June 26, 1915, p. 2, <https://timesmachine.nytimes.com/timesmachine/1915/06/26/issue.html>.

¹⁶ *Ibid.*

only permissible by international law, but it is an extraordinarily mild method of war.¹⁷

- The onward movement of military technology is inexorable: “The changing forms of warfare make new methods of war continually necessary.”¹⁸ Ergo, “The science of war must draw its conclusions from the conditions of trench warfare.”¹⁹

However aghast gentlemen may have been at Germany’s reply, the strategic message was plain: Chemical weapon deterrence was over, without any expectation of its restoration as long as the current state of affairs obtained.

Prominent voices in the Imperial Army had expressed misgivings on moral as well as prudential grounds. On 1 March 1915, German 6th Army commander Crown Prince Rupprecht of Bavaria recorded in his diary that:

I made no secret of the fact that this new means of warfare—gas—struck me as not only repugnant but also ill-advised for, I argued, it was safe to assume that if it proved effective, the enemy would resort to the very same measure, and . . . would be able to unleash gas against us ten times more frequently than we could against them.²⁰

In short, neither personal morality nor national honor would prove sufficient to deter the use of chemical weapons after Ypres. That view is echoed by German Imperial Army officer and author Rudolf Binding, who wrote in his diary two days after the attack: “The effects of the successful gas attack were horrible. I am not pleased with the idea of poisoning men. Of course, the entire world will rage about it at first and then imitate us.”²¹

After Ypres

And imitate them they did. By war’s end, some 125,000 tons of toxic gas had been used in battle by Germany, France, Great Britain, the United States, Russia, Austria, and Italy—about 54% of the whole by Germany’s enemies.²² However, the “war to end all wars”²³ not only did not end war, it also did not end the use of chemical weapons.

In an effort to restore chemical deterrence, the Treaty of Versailles forbade the manufacture in, and importation into, Germany of “asphyxiating, poisonous or other gases

¹⁷ “German Defence of Gas,” *The Times* (London), June 28, 1915, p. 10.

¹⁸ *Ibid.*

¹⁹ *Ibid.*

²⁰ Kronprinz Rupprecht von Bayern, *Mein Kriegstagebuch*, ed. Eugen von Frauenholz, 3 Vols. (Berlin, 1929), 1:305, <https://babel.hathitrust.org/cgi/pt?id=wu.89032264574&seq=351>. Translation by the author and confirmed by AI.

²¹ Rudolf Binding, *A Fatalist at War*, trans. Ian F. D. Morrow (Boston: Houghton Mifflin, 1929), p. 64, <https://archive.org/details/fatalistatwar00bind/page/64/mode/2up?q=imitate>.

²² Augustin M. Prentiss, *Chemicals in War: A Treatise on Chemical Warfare* (New York: McGraw-Hill, 1937), p. 654.

²³ The phrase “the war to end war” was coined by H.G. Wells in 1914, and President Woodrow Wilson is typically credited with having popularized the related phrase “the war to end all wars.”

and all analogous liquids” as well as “materials specially intended for the manufacture, storage and use of the said products or devices.”²⁴ The 1925 Geneva Protocol asserted that “the use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials or devices, has been justly condemned by the general opinion of the civilised world”; and its signatories agreed “that this prohibition shall be universally accepted as a part of International Law, binding alike the conscience and the practice of nations.”²⁵

However, such deterrent effect as these declarations may have produced was far from complete. After the First World War, Spanish forces used chemical weapons on a large scale in the Rif War in Morocco (1921–1926), and German companies covertly supplied Spain with chemical agents, plant construction assistance, and technical expertise, allowing elements of the German chemical-warfare establishment to bypass Versailles-era restrictions by working through Spain.²⁶ German Army figures, including “General Max Bauer, who had used all his influence in support of gas warfare, especially with Generals Erich von Falkenhyn (chief of general staff during the war) and Erich Ludendorff”²⁷ operated quietly but deliberately in the background; and Germany gained “[c]onsiderable experience . . . not only in developing and manufacturing the chemicals but also in deploying them.”²⁸ Still other German Army leaders actively planned for the construction of clandestine chemical weapon plants “in a district [of Germany] that would not be exposed to enemy air attacks to the same extent as the current industrial plants in western Germany.”²⁹ German industrialists also invested in building chemical weapons plants in the Soviet Union. Although these investments proved to be financially ruinous, it is nevertheless the case that they were built—demonstrating not only that key German figures involved in World War I chemical weapon development and provision felt no need to repent of anything; that chemical deterrence had failed, but that was all right.

In June 1936, Emperor Haile Salasie of Ethiopia, the first Head of State to address the Assembly of the League of Nations, denounced before the world Italian use of chemical weapons against his country:

Special sprayers were installed on board aircraft so that they could vaporize, over vast areas of territory, a fine, death-dealing rain. Groups of nine, fifteen, eighteen aircraft followed one another so that the fog issuing from them formed a continuous sheet. It was thus that, as from the end of January, 1936, soldiers, women, children, cattle, rivers, lakes and pastures were drenched continually with this deadly rain. In order to kill off systematically all living creatures, in order to more surely to

²⁴ Treaty of Versailles, June 28, 1919, art. 171, p. 119.

²⁵ League of Nations, *Conference for the Supervision of the International Trade in Arms and Ammunition and in Implements of War: Convention; Declaration Regarding the Territory of Ifni; Protocol on Chemical and Bacteriological Warfare; Protocol of Signature; Final Act*, Signed at Geneva, June 17, 1925, p. 37.

²⁶ Dietrich Stoltzenberg, *Fritz Haber: Chemist, Nobel Laureate, German, Jew* (Philadelphia: Chemical Heritage Press, 2004), p. 163.

²⁷ *Ibid.*, p. 164.

²⁸ *Ibid.*

²⁹ *Ibid.*, p. 167.

poison waters and pastures, the Italian command made its aircraft pass over and over again. That was its chief method of warfare.³⁰

It was, Selassie said, “[t]he very refinement of barbarism” which “consisted in carrying ravage and terror into the most densely populated parts of the territory, the points farthest removed from the scene of hostilities.”³¹ What had been the disputed—or at most, collateral—effect on noncombatants in The Great War was now on full, remorseless, and *undeterred* display. Selassie continues:

The object was to scatter fear and death over a great part of the Ethiopian territory. These fearful tactics succeeded. Men and animals succumbed. The deadly rain that fell from the aircraft made all those whom it touched fly shrieking with pain. All those who drank the poisoned water or ate the infected food also succumbed in dreadful suffering. In tens of thousands, the victims of the Italian mustard gas fell.³²

Chemical weapon use was averted in World War II, but only because, this time, credible deterrent threats against chemical weapon use actually did point to outcomes that would-be users deemed unacceptable. As the United States considered Japan rather than Germany to be the greater threat vis-à-vis chemical warfare, Roosevelt solemnly stated in 1942,

I desire to make it unmistakably clear that, if Japan persists in this inhuman form of warfare against China or against any other of the United Nations, such action will be regarded by this Government as though taken against the United States, and retaliation in kind and in full measure will be meted out. We shall be prepared to enforce complete retribution. Upon Japan will rest the responsibility.³³

In the same year, Churchill, for whom Germany was naturally the principal chemical threat, similarly warned that if Germany “used poison gas against Russia, the same weapon would be adopted by the R.A.F. against Germany”—“that Britain was firmly resolved not to use that odious weapon unless it was first used by Germany” but “that it was for Hitler to choose whether or not he wished to add this additional horror.”³⁴

By 1963, the argument was being made that “the use of gas and other chemicals, once branded as inhuman, may soon find employment as an alternative to devastating nuclear weapons” for two reasons: first, “the West’s need for modernizing non-nuclear war forces” and second, “the difficulties of countering guerrilla war operations by an enemy that has

³⁰ Haile Selassie, Appeal to the League of Nations, June 1936, <https://www.mtholyoke.edu/acad/intrel/selassie.htm#:~:text=%22I%2C%20Haile%20Selassie%20I%2C,in%20violatio%20of%20international%20treaties.>

³¹ Ibid.

³² Ibid.

³³ Franklin D. Roosevelt, “Statement on Japanese Use of Poison Gas,” June 5, 1942, *The American Presidency Project*, <https://www.presidency.ucsb.edu/documents/statement-japanese-use-poison-gas>.

³⁴ “Churchill’s Grave Warning to Germany: Britain Will Retaliate Immediately if Gas Used,” *Canberra Times*, May 12, 1942, p. 1.

unlimited manpower to expend in the field.”³⁵ While chemical weapons had not lost their stigma, efforts during the past decade to rehabilitate their image had been significant, raising the specter that chemical weapons should be not be objects of deterrence any more than any conventional weapon. Besides, Cold War tensions over nuclear weapons—which were the objects of deterrence *par excellence*—arguably called for consideration of whether war that included chemical weapons were not, in fact, an appropriate substitute for nuclear war. Calls for “tactical” nuclear weapon use in Vietnam immediately brought a chorus of concerns over what was regarded as almost certain nuclear escalation. Hence, as one commentator argued “The grave peril in which free world countries find themselves, especially in South-East Asia, points out the imperative need for the West’s re-examination of an outmoded and illogical position on chemical warfare.”³⁶

Whether as the result of “re-examination” or not, the war in Vietnam in fact “saw the largest scale use of chemicals in combat of any modern conflict”³⁷—this time in the form of riot control agents and defoliants. Riot control agents were argued to be an unquestionably more humane response to crowd control than shooting into the crowd,³⁸ and defoliants were viewed as a reasonable way to expose the enigmatic trails of the Vietcong—even though both tools produced significant collateral damage. Deterrence arguments vis-à-vis chemical weapons seemed altogether to lose their force, as there was arguably no enemy use to deter and only advantage to gain.

Even so, in 1966, the United States sponsored a UN General Assembly resolution calling for “strict observance by all States of the principles and objectives” of the 1926 Geneva Protocol and condemned “all actions contrary to those objectives.”³⁹ The vote effectively established “that the prohibition of chemical warfare as layed [sic] down in the Geneva Protocol constitutes ‘*ius cogens*’ for all States,” i.e., “a rule of customary international law, binding all nations alike.”⁴⁰ At the same time, however, it served as a convenient fig leaf for the United States, which continued to use both. As a result, vocal opponents of U.S. chemical use in Vietnam may have been partially placated, but no genuine deterrence against that use was meaningfully achieved.

³⁵ Anthony Harrigan, “The Case for Gas Warfare,” *Royal United Services Institution Journal* 108, no. 632 (1963): 356, doi:10.1080/03071846309429740.

³⁶ *Ibid.*, p. 357.

³⁷ Valerie Adams, *Chemical Warfare, Chemical Disarmament* (Bloomington: Indiana University Press, 1990), p. 73.

³⁸ United States, *Rules of Engagement for the Employment of Firepower in the Republic of Viet-Nam*, US Military Assistance Command Viet-Nam, Directive 525-13, May 1971, in Eleanor C. McDowell, *Digest of United States Practice in International Law*, 1975, US Department of State Publication 8865 (Washington, DC, 1976), pp. 814–815, § d(2), quoted in “Rule 75. Riot Control Agents as a Method of Warfare,” <https://ihl-databases.icrc.org/en/customary-ihl/v2/rule75>.

³⁹ United Nations General Assembly, Resolution 2162 (XXI) B, *Question of General and Complete Disarmament*, [https://docs.un.org/en/A/RES/2162\(XXI\)](https://docs.un.org/en/A/RES/2162(XXI)).

⁴⁰ Wil D. Verwey, “Chemical Warfare in Vietnam: Legal or Illegal?,” *Nederlands Tijdschrift voor Internationaal Recht* 18, no. 2 (1971), p. 217, doi:10.1017/S0165070X00027510.

In 1988, Iranian Speaker of Parliament Hashemi Rafsanjani, identified chemical weapons as “the poor man’s atomic bombs.”⁴¹ This identification seemed to be justified in light of their appearance in, *inter alia*, the Yemen Civil War (1963–1967), in which Egypt deployed poison gas, possibly including nerve-agent-like substances;⁴² the Rhodesian Bush War (1976–1978), in which the Rhodesian regime deployed organophosphate pesticides such as parathion repurposed as a battlefield chemical weapon and thallium to poison guerrilla food and water;⁴³ the Iran-Iraq War (1980–1988), in which (primarily) Iraq repeatedly employed sulphur mustard and the nerve agents tabun and sarin in large-scale battlefield attacks, beginning with tear-gas-type riot-control agents and later escalating to lethal agents, resulting in over one million Iranian chemical-related casualties;⁴⁴ and the 1987 alleged deployment by Libya of chemical weapons (reported to include mustard-type agents) against Chad.⁴⁵ It also provided cover for use by the superpower Soviet Union which, during the Soviet-Afghan War (1979–1989), allegedly killed over 3,000 in 47 separate incidents between 1979 and 1981.⁴⁶ While some of these events generated concern on the international stage and diplomatic protest, none of them seriously influenced the trajectory of international discourse sufficient to truly deter chemical weapons use either by “poor man” or by superpower.

In contrast to the other mid-to-late 20th century state-sponsored chemical weapon events, the Iran-Iraq War stands out for several reasons: the fact that it was fought between two states with credible military capability, the length of the conflict, the scale of chemical weapon use (by far the largest combat use since World War I), and the number of chemical weapon casualties. Most infamously, on 16 March 1988, Iraqi dictator Saddam Hussein’s air forces bombarded the town of Halabja, in the Kurdish region of northwestern Iraq, for several hours with a mix of conventional and then chemical munitions (including mustard gas and nerve agents such as sarin and tabun) after Iranian and Kurdish forces had briefly taken the town. Common estimates place casualties at approximately 5,000 killed and 7,000–10,000 injured, the overwhelming number of which were Kurdish civilians including large numbers of women and children.⁴⁷ The helpless Kurdish civilians had no punishing retaliatory capability with which to threaten the Iraqis and, hence, no deterrence occurred.

⁴¹ “The World,” *Los Angeles Times*, October 20, 1988, <https://www.latimes.com/archives/la-xpm-1988-10-20-mn-5242-story.html>. This phrasing differs slightly from source to source, but the essence is the same.

⁴² W. Seth Carus, “Chemical Weapons in the Middle East,” *Policy Focus*, Research Memorandum no. 9 (Washington, DC: Washington Institute for Near East Policy, December 1988), p. 2, <https://www.washingtoninstitute.org/media/3670>.

⁴³ Matthew Turner, “Chemical and Biological Warfare during the Rhodesian Bush War,” *Small Wars Journal*, December 29, 2025, <https://smallwarsjournal.com/2025/12/29/rhodesian-bush-war/>.

⁴⁴ Nuclear Threat Initiative, “Fact Sheet: Iraq Chemical Overview,” July 27, 2015, <https://www.nti.org/analysis/articles/iraq-chemical/>.

⁴⁵ Joshua Sinai, “Libya’s Pursuit of Weapons of Mass Destruction,” *Nonproliferation Review* (Spring–Summer 1997), p. 92, <https://www.nonproliferation.org/wp-content/uploads/npr/sinai43.pdf>.

⁴⁶ Richard Halloran, “U.S. Accuses Soviet of Poisoning 3,000,” *New York Times*, March 9, 1982, p. A1, <https://www.nytimes.com/1982/03/09/world/us-accuses-soviet-of-poisoning-3000.html>.

⁴⁷ Nicole Hassenstab, “The Real Impact of Chemical Warfare,” November 21, 2024, *American University School of International Service News*, <https://www.american.edu/sis/news/20241121-the-real-impact-of-chemical-warfare.cfm>.

Moreover, neither the U.N. Security Council nor the major powers imposed serious costs (i.e., sufficient to restore deterrence) on Iraq. Iran tried to seize the initiative by waging an information campaign against Iraq, circulating in Western Europe color pamphlets depicting chemical casualties in Teheran hospitals. Iran even dispatched at least 50 chemical weapon casualties to nations throughout Europe to vividly portray the effects of chemical poisoning. Nevertheless, Iran's public relations campaign received little attention among Western nations. Most notably, Britain, France and the United States remained effectively silent, even as Iran charged Britain, France, and the Soviet Union with having supplied Iraq's chemical weapon program.⁴⁸ Certainly, the United States' private admonishment of Iraq⁴⁹ did not deter Iraqi chemical use; and that failure of deterrence was accentuated by Iraq's response through diplomatic channels to the United States: "The [Iranian] invaders should know that for every harmful insect there is an insecticide capable of annihilating it whatever their number and Iraq possesses this annihilation insecticide."⁵⁰

Each of these post-World War I uses of chemical weapons were against an enemy the user considered "uncivilized" or otherwise unworthy of life. The only case of major chemical use since World War I in which this was not the case was the Syrian Civil War, in which the Ba'athist regime of Bashar al-Assad Assad's military and affiliated militias were found to have "launched more than 300 chemical attacks."⁵¹ Moreover, "the Assad regime did not merely 'get away' with its use of these banned weapons, but succeeded in using them for strategic ends."⁵² While the attack was not dismissed as being against uncivilized or sub-human targets, the Syrian government achieved equivocation in another way: It "vowed never to use such weapons against a domestic enemy" while consistently depicting "the rebellion against Assad as a foreign-based 'conspiracy' hatched by Syria's enemies abroad, and not as an internal revolt."⁵³ Although the response of the world to the Assad regime was one of outrage, accommodation came without serious penalty (i.e., one that would have been sufficient to deter from action). Once again, chemical weapon deterrence failed.

The Chemical Weapons Convention—one of the most widely subscribed treaties in history—was intended to secure deterrence against chemical weapons once and for all. However, it proposed to do so on the same "gentlemanly" basis as chemical deterrence operated between 1868 and 1915, by naming and shaming, etc. However, even signatory

⁴⁸ Javed Ali, "Chemical Weapons and the Iran-Iraq War: A Case Study in Noncompliance," *Nonproliferation Review* (Spring 2001), p. 48, <https://www.nonproliferation.org/wp-content/uploads/npr/81ali.pdf>.

⁴⁹ Department of State to Baghdad Interests Section, "Deterring Iraqi Use of Chemical Weapons," November 10, 1983, in "Iraqi Use of Chemical Weapons," November 21, 1983, doc. 25, National Security Archive, George Washington University, <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB82/iraq25.pdf>. Text in the original is in all capital letters.

⁵⁰ U.S. Interests Section Baghdad to Secretary of State, "Iraqi Warning of Iranian Offensive," February 22, 1984, doc. 41, National Security Archive, George Washington University, <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB82/iraq41.pdf>.

⁵¹ Louisa Loveluck, "Syrian Army Responsible for Douma Chemical Weapons Attack, Watchdog Confirms," *The Washington Post*, January 27, 2023.

⁵² Tobias Schneider and Theresa Lütkefend, "Nowhere to Hide: The Logic of Chemical Weapons Use in Syria," Global Public Policy Institute Study, February 2019, GPPi_Schneider_Luetkefend_2019_Nowhere_to_Hide_Web.pdf.

⁵³ Patrick J. McDonnell, "U.N.'s Carla Del Ponte Says Syrian Rebels May Have Used Sarin," *Los Angeles Times*, May 6, 2013.

states that wish to skirt their treaty obligations can stretch out requests for compliance inspections for years, without meaningful consequence, if they wish to do so.

In short, the tools that both the pre- and post-Ypres world actually relied on to maintain chemical deterrence were (except for the World War II declarations of Roosevelt and Churchill) ineffective. Once lost at Ypres, chemical weapon deterrence was never truly restored. Hence, the fact that chemical weapons have not been used more than they have must be because nations have generally not seen any special advantage to be gained from their use—which, of course, is not the same thing as being *deterred* from their use.

Deterrence Lessons for the 21st Century

As the century since Ypres has demonstrated, nations—smaller powers, middle powers, and even superpowers—that felt they could use chemical weapons with impunity did so at will. That chemical weapons have not appeared in every conflict or gray zone action is hardly evidence that no nation who deemed it in its interest to do so and thought it could get away with it would be deterred from using chemical weapons. Certainly, the threat of a demand for an inspection of its alleged chemical sites by the Organisation for the Prohibition of Chemical Weapons (OPCW) would no more deter the use of chemical weapons than it did in Syria or Iraq.

By comparison, deterrence against nuclear weapons is reinforced by such propositions as “a nuclear war cannot be won and must never be fought;” “Iran must never be allowed to get a nuclear weapon,” etc., coupled with the implicit or explicit threat of unacceptably painful retaliation. However, deterrence against chemical weapons has operated under a somewhat different paradigm: The lengths to which a state is allowed to go are demonstrably farther, and the tolerance level for their activity on the part of other states is demonstrably higher. One may seek to dismiss the problem by arguing that chemical deterrence has been more-or-less successful since World War I (even though that argument would ring utterly hollow for those who have found themselves on the receiving end of chemical weapons). However, doing so risks missing what might well be *the* deterrence lesson of the 21st century: Many breaches of peace by any means other than nuclear weapons are, to one degree or another, deemed tolerable; and to the extent this is the case, deterrence of the use of that warfighting mechanism fails. Chemical weapons were, for all practical purposes, a “new” technology at Ypres, just as drones are, for all practical purposes, the “new” technology of today. Moreover, given unprecedentedly rapid advancements in technology, the ramifications of barely imagined but as yet unseen technologies may leave the world of today, with respect to those new technologies, in the place that the world was with respect to chemical weapons in 1868. If so, the coming decades might yield difficult problems for deterrence theory that have nothing whatsoever to do with nuclear weapons, but which fall somewhere below the threshold of tolerance.

This is particularly true in the case of yet unrealized weapons of mass destruction. In 1948, the United Nations defined “weapons of mass destruction” as

Atomic explosive weapons, radioactive material weapons, lethal chemical and biological weapons, *and any weapons developed in the future which might have characteristics comparable in destructive effect to those of the atomic bomb or other weapons mentioned above.*⁵⁴

In so doing, the United Nations explicitly acknowledged that it did not know what future war fighting technologies might appear. More importantly, this dimly lit vision into the future should alert the attentive observer to the reality that the strictures applied to deter existing technologies do not automatically transfer over to new ones. They certainly did not transfer in the case of chemical weapon use at Ypres and have not since—all treaties and proclamations of international norms notwithstanding. Both nuclear and chemical weapon use has supposedly been constrained by treaties. In the case of nuclear weapons, the treaties have largely disappeared, but deterrence has held; in the case of chemical weapons, the treaties have remained, but deterrence has ultimately failed. Why? Because in both cases, when deterrence succeeded, it is not the force of treaties; it was the credible threat of unacceptably painful retaliation.

Looking ahead, it is altogether reasonable to expect that nations will take, with respect to yet unrealized warmaking technologies, the same skeptical approach as Captain Mahan articulated in 1899 with respect to chemical weapons. It is likewise reasonable to expect that nations which avail themselves of these technologies will provide justifications eerily reminiscent of those given by Germany after Ypres. Unfortunately, as the case with chemical weapons demonstrates, the problems unleashed by use of these new technologies will not be dispensed with by merely signing treaties. Something far more potent will be required—something which looks awfully like deterrence as it has heretofore been successfully applied to nuclear weapons.

John Mark Mattox is a Professor of Strategy and Policy at the National War College, National Defense University, and the College's inaugural Chair in Leadership, Character, and Ethics.

⁵⁴ United Nations Commission for Conventional Armaments, *Report*, UN Doc. S/C.3/32, August 1948. Italics added.