

NOTE

CONSIDERING HUMANITY:

HOW THE MARTENS CLAUSE IMPLIES A LEGAL OBLIGATION TO CONDUCT RISK ANALYSIS IN DECISIONS REGARDING THE ACTUAL OR THREATENED USE OF NUCLEAR WEAPONS

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I. INTRODUCTION

The global proliferation and development of nuclear weapons has introduced an unprecedented level of risk and uncertainty into the global landscape, posing challenges to existing understandings and compliance with international humanitarian law (“IHL”). The creation of modern IHL arose out of an effort to establish a framework for international arms control at a time of rapid industrialization.¹ However, since the early Hague Peace Conferences of 1899 and 1907, little has changed in the language or structure of the laws of war, particularly those having to do with weapons, leading to conflicting interpretations across various historical eras.² And while customary principles of IHL, such as

1. Detlev F. Vagts, *The Hague Conventions and Arms Control*, 94 AM. J. INT’L L. 31, 31 (2000).

2. See Amanda Alexander, *A Short History of International Humanitarian Law*, 26 EUR. J. INT’L L. 109, 109 (2015) (describing the historical development of what is called international humanitarian law today).

proportionality, necessity, and distinction, have become widely accepted and well-integrated into the manuals of militaries across the globe,³ adherence to these principles has come under strain in nearly every armed conflict that has taken place since the first Hague Convention was drafted, with explicit violations often being under-investigated and thus unreported.⁴

With the first successful test of the atomic bomb in 1945, the gap between the progressive development of IHL and the realities of the battlefield appeared to widen more than ever before. Nuclear weapons can cause exponentially higher levels of death and destruction than conventional weapons.⁵ However, what separates the nuclear from the conventional is that a large proportion of the ensuing destruction is not a result of the blast which immediately occurs upon the bomb's detonation.⁶ Instead, the truly catastrophic and far-reaching consequences of nuclear weapons are those which military commanders and policymakers often consider "byproducts" of the radioactive nature of the reactions that the detonation itself sets off.⁷

The complexity and novelty of nuclear weapons has tested the longevity of customary IHL in various new and concerning ways. However, the signatories to the original Hague Conventions foresaw the consequential impossibility of predicting and providing for every possible military scenario or technological change. One manner in which they acted on this understanding was the inclusion of the Martens Clause in the preamble to the original Hague Convention of 1899.⁸ The Martens Clause provides that, in situations not covered by the convention or its regulations, military decision makers must nevertheless adhere to the laws and

3. David Luban, *Military Necessity and the Cultures of Military Law*, 26 LEIDEN J. INT'L L. 315, 324 (2013).

4. See JULIA BARRETO REIS ET AL., GENEVA ACAD. OF INT'L HUMANITARIAN L. & HUM. RTS., WAR WATCH: IHL IN FOCUS REPORT 2025 (Stuart Casey-Maslen & Marnie Lloyd eds., 2025), <https://geneva-academy.ch/new-ihl-in-focus-report-a-global-legal-assessment-of-serious-ihl-violations/> [<https://perma.cc/KS5N-HLT8>].

5. See, e.g., U.S. CONG., OFF. OF TECH. ASSESSMENT, THE EFFECTS OF NUCLEAR WAR 15-47 (1979), <https://www.princeton.edu/~ota/disk3/1979/7906/790604.PDF> [<https://perma.cc/57AE-MERM>].

6. See *id.* at 15.

7. See *id.*

8. See Antonio Cassese, *The Martens Clause: Half a Loaf or Simply Pie in the Sky?*, 11 EUR. J. INT'L L. 187, 187 (2000). This clause was named after publicist Fyodor Fyodorovich Martens, who suggested its insertion in the preamble. *Id.*

principles of international law and maintain respect for the principle of humanity and the “requirements of the public conscience.”⁹

This principle of humanity is one of the four foundational principles of IHL, the other three being distinction, proportionality, and military necessity.¹⁰ Each of these principles confers implicit obligations on all members of the armed forces but puts a heightened duty on military decision makers to consider both relevant international law and a general respect for humanity *before* taking any military action. In practice, the latter three principles appear more frequently in both civilian and military literature as they appear to impose more positive obligations.¹¹ For example, the principle of proportionality requires military decision makers to weigh “concrete and direct military advantage of an operation against the anticipated ‘incidental’ damage to civilians and civilian objects.”¹² The principle of humanity, on the other hand, is less-precisely defined, often serving more as an aid in the interpretation of the other three values than a prescriptive legal concept in itself.¹³

As will be demonstrated further in this Note, proportionality assessments in isolation are effectively a form of risk analysis as the process involves identifying an unfavorable outcome and estimating the probability that a proposed action will bring about that outcome. In other fields, from corporate governance to insurance to cybersecurity, risk analysis has become a cornerstone of responsible decision-making in the twenty-first century, enabling leaders to mitigate potential harms in contexts ranging from environmental protection to corporate governance.¹⁴ Still,

9. Marco Sassòli et al., *Martens Clause*, ICRC: ONLINE CASEBOOK, https://casebook.icrc.org/a_to_z/glossary/martens-clause [<https://perma.cc/L2BW-VFCD>] (last visited Mar. 11, 2026).

10. See INTER-PARLIAMENTARY UNION & INT’L COMM. OF THE RED CROSS, INTERNATIONAL HUMANITARIAN LAW: HANDBOOK FOR PARLIAMENTARIANS No. 25, at 10 (2016), https://www.icrc.org/sites/default/files/document/file_list/en_handbook_humanitarian_law_web.pdf [<https://perma.cc/W9LK-X4S4>].

11. See Luban, *supra* note 3, at 326.

12. See *id.*

13. Larissa Fast, *Unpacking the Principle of Humanity: Tensions and Implications*, 97 INT’L REV. RED CROSS 111, 113 (2015).

14. See, e.g., Dan R. Anderson, *Environmental Risk Management: A Critical Part of Corporate Strategy*, 27 GENEVA PAPERS ON RISK & INS. 152, 152 (2002); Henri Servaes et al., *The Theory and Practice of Corporate Risk Management*, 21 J. APPLIED CORP. FIN. 60 (2009).

the use of risk analysis in military strategy, specifically in decisions involving nuclear weapons, remains inconsistent and, in the United States' case, virtually nonexistent.¹⁵ Although the United States military has a comprehensive manual that identifies their risk analysis methodology,¹⁶ the manual is ill-suited for decision-making scenarios that involve nuclear weapons. Beyond this general manual, the United States has never publicized or confirmed that it conducts risk analysis with respect to its own potential or threatened use of nuclear weapons.

The absence of a national framework for assessing the risks of possessing or using nuclear weapons is not only concerning but is also a violation of the United States' obligations under customary international law. In Part II, this Note will begin by outlining the historical development of the international laws which give rise to such an obligation. In the following Part III, this Note will address the unique qualities of nuclear weapons and the challenges that their mere existence poses to foundational principles of IHL. Finally, in Part IV, this Note will develop a potential way forward: identifying a model of standardized nuclear risk analysis for implementation by nuclear-armed states and proposing measures to monitor adherence to such standards.

Ultimately, this Note aims to serve as a thought exercise. By demonstrating an adequate analysis of the risks associated with the actual or threatened use of nuclear weapons, considering all applicable laws and norms regulating international and non-international armed conflict, this Note will show why following the proper steps will effectively never result in a positive authorization for the deployment of the weapon. In doing so, it seeks to show that, absent a conclusive ruling on the *per se* illegality of nuclear weapons, no scenario exists in which nuclear weapons can be used legally under international humanitarian law as it exists and is customarily understood today.

15. See *infra* Part III.

16. See CHAIRMAN OF THE JOINT CHIEFS OF STAFF, CJCSM 3105.01B, JOINT RISK ANALYSIS METHODOLOGY (Dec. 22, 2023), <https://www.jcs.mil/Portals/36/Documents/Library/Manuals/CJCSM%203105.01B.pdf> [<https://perma.cc/7NVX-5RRH>] [hereinafter JOINT RISK ANALYSIS METHODOLOGY].

II. RISK ANALYSIS IN INTERNATIONAL LAW

A. *The Hague Conventions of 1899 and 1907*

The current understanding of international arms control largely stems from the major Peace Conferences which took place in The Hague at the turn of the twentieth century. The large-scale industrialization of the nineteenth century brought rapid transformation in military technology and, consequently, a major increase in military spending by the major European powers.¹⁷ In the midst of this period, Tsar Nicholas II of Russia called for a conference to address this sudden accumulation of international armaments and “to seek the means of warding off the calamities which are threatening the whole world.”¹⁸ Representatives of twenty-six states traveled to The Hague to attend the resultant Peace Conference in 1899.¹⁹ The Conference produced three Hague conventions: the Convention for the Pacific Settlement of International Disputes (“Convention I”); the Convention with Respect to the Laws and Customs of War on Land (“Convention II”); and the Convention for the Adaptation to Maritime Warfare of the Principles of the Geneva Convention (“Convention III”).²⁰

Convention II begins with a preamble stating the contracting parties’ intention to “revise the laws and general customs of war” for the purpose of “preserv[ing] peace and prevent[ing] armed conflicts among nations” in order to serve “the interests of humanity and the ever increasing requirements of civilization.”²¹ Acknowledging that a single convention could not cover all

17. See Vagts, *supra* note 1, at 32.

18. Rescript of the Russian Emperor (Aug. 24, 1898), https://avalon.law.yale.edu/19th_century/hag99-01.asp [<https://perma.cc/D8PN-PWMN>].

19. See Betsy Baker, *Hague Peace Conferences (1899 and 1907)*, in MAX PLANCK ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW (2009), <https://opil.ouplaw.com/display/10.1093/law:epil/9780199231690/law-9780199231690-e305> [<https://perma.cc/HNH5-GB8B>].

20. See *id.*; see also Convention (II) with Respect to the Laws and Customs of War on Land, July 29, 1899, 32 Stat. 1803 [hereinafter Convention II]; *Convention (II) with Respect to the Laws and Customs of War on Land and Its Annex: Regulations Concerning the Laws and Customs of War on Land, The Hague, 29 July 1899*, IHL DATABASES, <https://ihl-databases.icrc.org/en/ihl-treaties/hague-conv-ii-1899/state-parties?activeTab=> [<https://perma.cc/UZ9X-R7XE>] (last visited Feb. 22, 2025) (listing signatories, ratifications, and accessions).

21. See Convention II, pmbl.

possible circumstances and situations of armed conflict, the preamble also contains a catch-all clause, stating that:

Until a more complete code of the laws of war is issued, the High Contracting Parties think it right to declare that in cases not included in the Regulations adopted by them, populations and belligerents remain under the protection and empire of the principles of international law, as they result from the usages established between civilized nations, from the laws of humanity, and the requirements of the public conscience.²²

This clause, which has since become known as the Martens Clause, seeks to prevent the creation of a *non liquet* within the laws of armed conflict.²³ In particular, it is included in the Convention to ensure that situations or “cases not provided [are not], for want of a written provision, . . . left to the arbitrary judgment of the military commanders.”²⁴

In addition to the Martens Clause, the Parties also agreed that they would meet a second time to address items that were left open during the first conference.²⁵ In 1907, the Parties followed through on their commitment and reconvened in The Hague for the Second International Peace Conference. This Conference produced a new Convention (IV) regarding the laws and customs of war on land with annexed Regulations, revised the 1899 Convention, and produced ten additional conventions, adding to the original three.²⁶ The 1899 Convention remained largely the same, and the foundational principles of IHL laid forth at the first Hague Peace Conference continued to bind signatories of both the 1899 and 1907 conventions.²⁷ The 1907 Conference significantly amended the 1899 Convention through its addition of Article 3, making “a belligerent party which violates the provisions of the said

22. Sassòli et al., *supra* note 9.

23. See Theodor Meron, *The Martens Clause, Principles of Humanity, and Dictates of Public Conscience*, 94 AM. J. INT'L L. 78, 88 (2000).

24. See *id.*

25. Baker, *supra* note 19, ¶ 4.

26. Convention (IV) Respecting the Laws and Customs of War on Land, Oct. 18, 1907, 36 Stat. 2277 [hereinafter Convention IV]; *Hague Convention (IV) on War on Land and Its Annex: Regulations Concerning the Laws and Customs of War on Land*, IHL DATABASES, <https://ihl-databases.icrc.org/en/ihl-treaties/hague-conv-iv-1907> [https://perma.cc/UCQ8-4JUY] (last visited Aug. 20, 2025). Seventeen states ratified the 1899 Convention but not the 1907 Convention; these states and their successors remain bound by the 1899 Convention. *Id.*

27. See Baker, *supra* note 19, ¶ __.

Regulations . . . liable to pay compensation [and] responsible for all acts committed by persons forming part of its armed forces.”²⁸ At the conclusion of the 1907 Peace Conference, the parties formally expressed their intention to convene for a third meeting to resolve outstanding issues, however, the onset of World War I in 1914 prevented this from happening, and the parties would not reconvene again until the end of World War II for the drafting of the Geneva Conventions.²⁹

B. The Geneva Conventions of 1949 and Their Additional Protocols

Today, the Hague Conventions remain the source of many foundational principles of IHL. Throughout two World Wars, the world witnessed major powers commit an extreme level and volume of atrocities, including those resulting from the invention and the United States’ use of the atomic bomb. As a result, diplomatic representatives reconvened in Geneva to build on earlier treaties seeking to regulate war, this time with a particular focus on the protection of civilians.³⁰ This meeting produced four new conventions signed on August 12, 1949, now collectively known as the Geneva Conventions of 1949: (1) the Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field; (2) the Convention for the Amelioration of the Condition of Wounded, Sick, and Shipwrecked Members of Armed Forces at Sea; (3) the Convention Relative to the Treatment of Prisoners of War; and (4) the Convention Relative to the Protection of Civilian Persons in Time of War.³¹

Today, scholars and jurists commonly recognize four primary principles as the foundational tenets of IHL: the principles of

28. See Convention IV, *supra* note 26, art. 3. The Hague Conventions do not explicitly define “belligerent parties.” See *id.*

29. See Baker, *supra* note 19, ¶ __; see also Thomas Graditzky, *The Law of Military Occupation from the 1907 Hague Peace Conference to the Outbreak of World War II: Was Further Codification Unnecessary or Impossible?*, 29 EUR. J. INT’L L. 1305, 1307–14 (2018).

30. AM. RED CROSS, SUMMARY OF THE GENEVA CONVENTIONS OF 1949 AND THEIR ADDITIONAL PROTOCOLS 2 (2011), https://www.redcross.org/content/dam/redcross/atg/PDF_s/International_Services/International_Humanitarian_Law/IHL_SummaryGenevaConv.pdf [<https://perma.cc/73YS-TUBD>].

31. See *id.*

humanity, distinction, proportionality, and military necessity.³² Derived from various articles of the Hague Conventions of 1899 and 1907 and the Geneva Conventions of 1949, these principles now frequently appear in the military codes and training manuals of states across every region. Having garnered sufficient *opinio juris*, the international consensus on their legally binding nature, and corresponding state practice, these principles now constitute part of the customary international law (“CIL”) on armed conflict.³³ As a result, these principles are binding on all states, regardless of whether they individually were signatories of the various conventions or their later amendments and protocols.

As customary international law, it is important to unpack how these principles have been interpreted both in subsequent legal documents and in practice. First and foremost, as codified and interpreted across the conventions and their commentaries, the principle of humanity acts as a guiding value with respect to which all other principles must be interpreted. Initially derived from principles of natural law and later explicitly included in modern IHL through the Martens Clause, the principle of humanity has transformed in both its scope and interpretation throughout history.³⁴ Some have even argued that the principle should go without a strict definition, as its value is so fundamental to the fabric of human society that any attempt to reduce it to a fixed textual formulation could never fully capture its importance.³⁵ The casebook of the International Committee of the Red Cross glosses the “principle of humanity” as “the ‘elementary considerations of humanity being reflected and expressed in the Martens clause.’”³⁶ Some interpretations have read the clause broadly to imply that “something which is not explicitly prohibited by a treaty is not *ipso*

32. *Fundamental Principles of IHL*, ICRC: ONLINE CASEBOOK, https://casebook.icrc.org/a_to_z/glossary/fundamental-principles-ihl [<https://perma.cc/P3Z8-EQNN>] (last visited Dec. 15, 2024).

33. Jean-Marie Henckaerts & Louise Doswald-Beck, *Customary IHL: Introduction*, IHL DATABASES, <https://ihl-databases.icrc.org/en/customary-ihl/v1/in> [<https://perma.cc/GN7E-83KV>] (last visited Mar. 11, 2026) (curating database of state practice as demonstrated through various legislation and military handbooks organized by specific provision of international law being cited).

34. See Fast, *supra* note 13.

35. See Robin Coupland, *Humanity: What Is It and How Does It Influence International Law?*, 83 INT’L REV. RED CROSS 969, 972 (2001) (citing JEAN PICTET, RED CROSS PRINCIPLES 14–31 (1956)).

36. *Fundamental Principles of IHL*, *supra* note 32.

facto permitted,” whereas others, such as that of the United Kingdom, have interpreted the clause narrowly to serve only as “a reminder of the existence of positive customary norms of international law not included in specific treaties.”³⁷ This Note adopts, and applies throughout, the broader interpretation of the Martens Clause, understanding its statement of respect for the “principle of humanity” as a reference to a body of normative and moral law that extends beyond codified and customary international humanitarian law.

Turning to the three more specific and well-defined principles of IHL, distinction limits what and whom a state may target in its attacks while proportionality and necessity limit the magnitude and modality of attacks, with specific regard to protecting noncombatants.³⁸ The International Committee of the Red Cross (“ICRC”) defines the principle of proportionality as prohibiting acts which “may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.”³⁹ The ICRC defines the principle of military necessity as allowing only “measures which are necessary to accomplish a legitimate military purpose and are not otherwise prohibited by international humanitarian law,” with the added clarification that “the only legitimate military purpose is to weaken the military capacity of other parties to the conflict.”⁴⁰

To comply with the principle of proportionality, a state must estimate the degree of “incidental loss of civilian life” that could occur as a result of a given attack.⁴¹ Thus, to understand and be able to fulfill this obligation, the state must determine the probability and magnitude of the potential harm to civilians that could result from an attack. Compliance with the principle of

37. Rupert Ticehurst, *The Martens Clause and the Laws of Armed Conflict*, 37 INT’L REV. RED CROSS 125, 126–27 (1997), <https://www.onlinelibrary.iihl.org/wp-content/uploads/2021/07/Martens-Clause-LOAC.pdf> [<https://perma.cc/BMR2-8AZW>].

38. See CHARLES J. MOXLEY, JR., NUCLEAR WEAPONS AND INTERNATIONAL LAW: EXISTENTIAL RISKS OF NUCLEAR WAR AND DETERRENCE THROUGH A LEGAL LENS 487, 545 (2024) (citing U.S. Oral Statement, *infra* note 94).

39. *Customary IHL Rules: Rule 14*, IHL DATABASES, <https://ihl-databases.icrc.org/en/customary-ihl/v1/rule14> [<https://perma.cc/B8Q8-YKFJ>] (last visited Mar. 11, 2026) [hereinafter *IHL Rule 14*].

40. See *Military Necessity*, ICRC: ONLINE CASEBOOK, https://casebook.icrc.org/a_to_z/glossary/military-necessity [<https://perma.cc/L373-ZFTR>] (last visited Mar. 11, 2026).

41. See *IHL Rule 14*, *supra* note 39.

necessity also requires a state to consider alternative methods of attack in order to ensure it ultimately only decides on measures that are absolutely necessary and will not inflict “unnecessary suffering.”⁴²

Additional Protocol I (“AP I”) and Additional Protocol II (“AP II”) to the Geneva Conventions of 1949 expand on and clarify the obligations on states to protect civilians in armed conflicts.⁴³ Article 57 of AP I contains direct obligations to take precautions “to spare the civilian population, civilians, and civilian objects” in attacks.⁴⁴ Specifically, it requires “those who plan or decide upon an attack” to:

- (i) Do everything feasible to verify that the objectives to be attacked are neither civilians nor civilian objects . . . ;
- (ii) Take all feasible precautions in the choice of means and method of attack with a view to avoiding, and in any event to minimizing, incidental loss of civilian life, injury to civilians and damage to civilian objects; [and]
- (iii) Refrain from deciding to launch any attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.⁴⁵

Article 57 also requires a comparison of alternatives, stating that “when a choice is possible between several military objects for obtaining a similar military advantage, the objective selected shall be [the one] expected to cause the least danger to civilian lives and

42. See OFF. OF GEN. COUNSEL, U.S. DEP’T OF DEF., DEPARTMENT OF DEFENSE LAW OF WAR MANUAL 370–71 (2015) [hereinafter LAW OF WAR MANUAL]; see also Viola Vincze, *Taming the Untameable: The Role of Military Necessity in Constraining Violence*, 2016 ELTE L.J. 93, 102 (discussing how military necessity was interpreted during the Nuremberg trials in which the judgment for one case specifically “allow[ed] military forces ‘to apply any amount and kind of force’ but only with the least possible destruction”).

43. See Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), June 8, 1977, 1125 U.N.T.S. 3 [hereinafter Protocol I] (protecting noncombatants in international armed conflicts); Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II), June 8, 1977, 1125 U.N.T.S. 609 [hereinafter Protocol II] (protecting noncombatants in non-international armed conflicts).

44. See Protocol I, *supra* note 43, art. 57(1).

45. See *id.* art. 57(2)(a).

civilian objects.”⁴⁶ Article 57 effectively requires military decision-makers to consider the likelihood that harm to civilians would occur as well as the magnitude of that harm. If such harm is probable enough to merit the classification of “expected,” and if that harm would be of an amount that “would be excessive in relation to the concrete and direct military advantage anticipated,” the decision-maker would have to cancel or suspend the attack until either the probability or magnitude of the harm to civilians could be reduced.⁴⁷

C. Risk Analysis as an Obligation of International Humanitarian Law

Each of these principles requires states to make various calculations of risk. With regard to proportionality: how much potential harm could a certain type of attack cause to a civilian population? Or, in other words, how much “incidental loss of civilian life” should be anticipated to result from any given attack? When considering whether a military action complies with the principle of necessity: how likely is it that any such action will actually achieve its intended result? And as to distinction, what are the odds that an attack will strike anyone other than its intended target?

These calculations are also known as risk assessments, one of the two key components of risk analysis (the second typically being risk management).⁴⁸ In general, risk assessments typically involve three components: (1) identifying the potential outcome, (2) determining the probability that the identified outcome will occur, and (3) understanding the effects or consequences of the outcome should it occur.⁴⁹ Outcome identification, in the military context, typically refers to the identification of a “harmful event.”⁵⁰ In the US Department of Defense’s (“DoD”) own manual on Risk Analysis, the Chairman of the Joint Chiefs of Staff classifies harmful events

46. *See id.* art. 57(3). This could represent an aspect of fulfilling the obligations implied by the principle of necessity. *Id.*

47. *See id.* art. 57(2)(b).

48. Filipe Silva, *The Law of Military Necessity*, 2 J. AMERICAS 225, 231 (2020). Risk assessments involve the actual identification of risks, and risk management involves the development of a response to those risks. *See id.*

49. *See* JOINT RISK ANALYSIS METHODOLOGY, *supra* note 16, at B-3.

50. *Id.*

within one of two categories: threats and hazards.⁵¹ A threat relates to “a state or non-state entity with the capability and intent to cause harm” while a hazard involves “security, environmental, demographic, political, technical, or social conditions with the potential to cause harm” and can concern “either internal or external entities.”⁵² The second component of a military risk assessment is the calculation of probability, or the *likelihood* of any given outcome.⁵³ Finally, the assessor of a risk associated with any given military action must identify the effects or consequences of any such potential outcome.

All three of these steps are crucial to ensuring military actions comply with the four key principles of international humanitarian law. Furthermore, the principles of distinction, proportionality, and necessity all require these assessments to take place *before* military action is taken. For example, there is no logical circumstance in which a state could retroactively argue, after having committed an attack, that their actions complied with the principle of distinction, as distinction relates to the moment of target identification.

However, herein lies a key problem. The obligation to respect distinction, proportionality, and necessity is itself mandatory: it binds all States as a matter of CIL, and Article 3 of Hague Convention IV (1907) makes a belligerent party liable for violations of the Regulations’ provisions. What is not apparently mandatory, or rather, what no treaty explicitly requires, is that a state conduct or document the risk analysis through which compliance with those principles is actually demonstrated. However, in practice: if international law were truly lacking a requirement to perform or record risk analysis in relation to the use or threatened use of nuclear weapons, how could a party be held accountable for the failure to adequately consider the principles of distinction, proportionality, necessity, and humanity with regard to a nuclear deployment?

51. *Id.*

52. *Id.*

53. *Id.* at B-5.

III. CURRENT CONTROVERSY

A. US Nuclear Policy: A Historical Overview

Nuclear weapons were introduced into the US military arsenal following the research and testing completed during the now infamous Manhattan Project.⁵⁴ After the discovery of nuclear fission in 1938, Germany, the United Kingdom, and the United States each began exploring whether this scientific advancement could be channeled into military innovation.⁵⁵ After years of design changes, model trials, and testing, the conversation within the United States eventually shifted from *how* to make nuclear weapons to *whether* and *where* to use them.⁵⁶ To spearhead this discussion, two committees were created: the Interim Committee, a policy-focused committee tasked with managing a post-nuclear world, and the Target Committee, which involved more scientists and military officials focused on planning the actual or hypothetical deployment of a nuclear bomb.⁵⁷ Notably, for the purposes of this Note, scientists on the Target Committee, including J. Robert Oppenheimer, “agreed that the weapon could not be effectively used against a small or purely military target” because of its unpredictability and wide-ranging effects.⁵⁸ Even with this warning, the US government decided to move forward in its deployment, identifying the Japanese cities of Hiroshima and Nagasaki as targets and authorizing a strike that was planned and executed in August 1945.⁵⁹

In the years following the bombing of Hiroshima and Nagasaki, the US policy on the management and planning surrounding the country’s nuclear arsenal evolved based on a changing geopolitical landscape.⁶⁰ In response to what was termed a “growing Soviet nuclear threat,” the United States rapidly

54. See Alex Wellerstein, *Manhattan Project*, in *ENCYCLOPEDIA OF THE HISTORY OF SCIENCE* (Oct. 2019), [https://ethos.lps.library.cmu.edu/article/id/35/\[https://perma.cc/6K5B-A9JE\]](https://ethos.lps.library.cmu.edu/article/id/35/[https://perma.cc/6K5B-A9JE]).

55. *Id.*

56. *Id.*

57. *Id.*

58. *Id.*

59. *Id.* The strike was authorized by President Harry S. Truman and his Secretary of War, Henry Stimson. *Id.*

60. See David Alan Rosenberg, *The Origins of Overkill: Nuclear Weapons and American Strategy, 1945–1960*, 7 INT’L SEC. 3, 34 (1983).

increased its nuclear capacity while simultaneously developing plans that supported nuclear use, such as the Single Integrated Operational Plan (“SIOP”), which “invariably mandat[ed] that larger forces than necessary be applied to those targeting categories identified for attack... never including fewer than ‘thousands’ of weapons.”⁶¹

Throughout the Cold War, these factors, volume and threat size, were central to US military policy as one of its central objectives was deterrence, a concept generally understood to be where “one or both parties seek to persuade the other to refrain from harmful or dangerous actions by threatening or promising the other nation that the costs of acting will far outweigh the benefits.”⁶² However, even under the umbrella of “deterrence,” the United States’ objectives and plans changed drastically over time, both during and across administrations.⁶³ For instance, Secretary of Defense Robert McNamara’s proposed doctrine shifted from one of “damage limitation” which excluded attacks on civilian infrastructure at the beginning of the 1950s to one of “assured destruction” aimed at eliminating the “Soviet society” by the middle of the decade.⁶⁴ To this end, the United States sought to develop its “second strike capacity” by accumulating a sufficient stockpile of nuclear warheads to retain its capability to destroy thousands of Soviet targets even after incurring damages from a hypothetical Soviet first strike.⁶⁵

After the Cold War, the United States continued to develop contingency plans involving the deployment of nuclear weapons against a broad range of targets including both military and civilian leadership with the “Clinton Administration argu[ing] that the flexibility offered by this range of options would enhance deterrence by providing the United States with more credible responses to a range of crises and attack scenarios.”⁶⁶ Under the Bush Administration, the SIOP was replaced with an operations plan known as OPLAN 8044, which further broadened the

61. *Id.* at 69.

62. AMY F. WOOLF, CONG. RSCH. SERV., RL34238, NUCLEAR WEAPONS IN U.S. NATIONAL SECURITY POLICY: PAST, PRESENT, AND PROSPECTS 4 (2008).

63. *See id.*

64. *See id.* at 6.

65. *Id.* at 7.

66. *Id.* at 8.

scenarios in which the United States would consider deploying a nuclear weapon.⁶⁷

More recently, US nuclear policy has been streamlined and formalized through annually publicized “Nuclear Posture Reviews” (“NPRs”).⁶⁸ In 2018, the first Trump administration’s NPR demonstrated a more limited and defensive posture wherein “the US ‘would only consider the employment of nuclear weapons in extreme circumstances to defend the vital interests of the United States, its allies, and partners,’” though notably not ruling out the possibility of the nation taking the first strike.⁶⁹ In 2022, the Biden administration took an even more defensive approach, with a focus on retaining an “effective nuclear deterrent” and a “renewed emphasis on arms control, non-proliferation, and risk reduction.”⁷⁰ On March 3, 2026, the second Trump administration announced that it was not planning on releasing an updated NPR, stating that it considered its 2018 review sufficient.⁷¹ However, the administration’s 2026 National Defense Strategy that covers military goals and policy more broadly, contained promises of “moderniz[ing] and adapt[ing] [US] nuclear forces.”⁷²

1. The Current Nuclear Arsenal of the United States

The policy and management of nuclear weapons in the United States cannot be adequately analyzed without a full understanding of the composition of the nuclear arsenal possessed by the nation and the effects of these weapons. As of June 2026, external estimates reflect that the United States has a total inventory of over 5,000 nuclear warheads.⁷³ Of these warheads, the majority merit

67. *Id.* at 11.

68. Seyom Brown, *The Trump Administration’s Nuclear Posture Review (NPR): In Historical Perspective*, 1 J. PEACE & NUCLEAR DISARMAMENT 268, 268 (2018).

69. Greg Hadley, *US Won’t Update Nuclear Posture Review: Pentagon Policy Chief*, AIR & SPACE FORCES MAG. (Feb. 13, 2026), <https://www.airandspaceforces.com/no-2026-nuclear-posture-review-pentagon-policy-czar/> [<https://perma.cc/V2CV-D5US>]. Further, the 2018 NPR did not define nuclear weapons’ “sole purpose” as deterring nuclear conflict.” *Id.*

70. US DEP’T OF DEF., 2022 NUCLEAR POSTURE REVIEW 1 (2022).

71. See Hadley, *supra* note 69.

72. See *id.*

73. Hans Kristensen et al., *Status of World Nuclear Forces*, FED’N AM. SCIENTISTS, <https://fas.org/initiative/status-world-nuclear-forces/> [<https://perma.cc/5H29-YUZX>] (last visited June 18, 2026) (estimating a total of 5,042 warheads, including retired warheads, of which 3,700 are not retired).

the classification of “strategic nuclear weapons” which are longer-range weapons “deployed on intercontinental missiles and at heavy bomber bases.”⁷⁴ In this case, high-yield weapons generally refer to nuclear weapons that have the capacity of over 100 kilotons of explosive energy.⁷⁵

B. Short- and Long-Term Effects of Nuclear Weapons

One of the main characteristics that differentiates nuclear weapons from conventional weapons is the radiation that they emit when detonated. While high-yield nuclear weapons emit more radiation than their low-yield counterparts, and the magnitude of the effect of the radiation is dependent on variables such as blast height and weather conditions, every nuclear weapon in existence emits some amount of radiation.⁷⁶ Radiation is typically measured based on its level of radioactivity, the amount of exposure received, the absorbed dose of radiation from an exposure, and a “dose-equivalent” measurement which “combines the amount of radiation absorbed and the medical effects of that type of radiation.”⁷⁷ The following section will focus particularly on the dose-equivalent measurement, which is measured in a unit called “roentgen equivalent man,” or “rems,” which are roughly equivalent to “radiation absorbed doses,” or “rads.”⁷⁸ Other measurements involve calculations of nuclear yield, which is the amount of energy overall released during detonation, including both the initial blast and radiation together, and is measured in kilotons.⁷⁹

With a high enough level of exposure, radiation alone can be fatal. The Nuclear Regulatory Commission (“NRC”) has stated that radiation injury, which can cause symptoms ranging from nausea to loss of hair to inflammation of the mouth and throat, can occur

74. *See id.* (under “How to read this table”).

75. *See Moxley, supra* note 38, at 507.

76. *See Moxley, supra* note 38, at 497.

77. *Measuring Radiation*, U.S. Nuclear Regul. Comm’n, <https://www.nrc.gov/about-nrc/radiation/health-effects/measuring-radiation> [<https://perma.cc/3F85-EJG4>] (last visited June 18, 2026).

78. *See id.*

79. *Bomb Testing and Weapons Effects: Yield/Efficiency*, US Dep’t of Energy: Manhattan Project, <https://www.osti.gov/opennet/manhattan-project-history/Processes/BombTesting/yield.html> [<https://perma.cc/9NU6-C4HA>] (last visited June 18, 2026).

from exposure to a dose of 100 rem.⁸⁰ When exposure is greater than or equal to 500 rem, it becomes lethal if the exposure occurs in a single instance.⁸¹ Studies have also shown that exposure to low or moderate doses of radiation may increase an individual's long-term risk of cancer.⁸² By way of illustration, the US military has stated that even a low-yield, ten-kiloton warhead results in "8,000 rads as far as 690 meters and 650 rads as far as 1,100 meters" from the detonation spot.⁸³ Several of the weapons currently in the US arsenal, including land-based intercontinental ballistic missiles ("ICBMs"), have yields with the potential range of 100 to 500 kilotons.⁸⁴

Aside from injury radiation exposure, nuclear weapons also cause immediate casualties through direct impact and blast effects, alongside thermal radiation, in addition to the previously discussed impact of ionizing radiation.⁸⁵ Even in the case of a low-yield nuclear weapon (under fifteen kilotons), ionizing radiation could cause immediate death to "all individuals within a 0.9km radius of the blast" and would lead to the deaths of "95 percent of people within 1.2km of the blast" within weeks of the detonation. Anyone within a 1.7km radius of the detonation would suffer third-degree burns and anyone within a 2.8km radius would suffer first-degree burns.⁸⁶

Beyond local fallout, studies have shown that even low-yield nuclear detonations can have long-term impacts on global health,

80. See *High Radiation Doses*, U.S. NUCLEAR REGUL. COMM'N, <https://www.nrc.gov/about-nrc/radiation/health-effects/high-rad-doses.html> [https://perma.cc/BS7R-A42B] (last updated Mar. 20, 2020), cited in Moxley, *supra* note 38, at 493.

81. See *High Radiation Doses*, *supra* note 80.

82. See, e.g., Kossi D. Abalo et al., *Early Life Ionizing Radiation Exposure and Cancer Risks: Systematic Review and Meta-Analysis*, 51 *PEDIATRIC RADIOLOGY* 45 (2021); see also Elisabeth Cardis et al., *Cancer Consequences of the Chernobyl Accident: 20 Years On*, 26 *J. RADIOLOGICAL PROT.* 127, 128 (2006). Both of these studies also highlighted a particular risk of cancer development for children exposed to radiation at a young age. See *id.*; Abalo et al., *supra*, at 46.

83. See Moxley, *supra* note 38, at 495 (citing THOMAS B. COCHRAN ET AL., *NUCLEAR WEAPONS DATABOOK: VOLUME I, U.S. NUCLEAR FORCES AND CAPABILITIES* 30 (1984), <https://archive.org/details/nuclearweaponsda0001unse/page/n5/mode/2up>).

84. See DENNIS EVANS & JONATHAN SCHWABLE, *JOHNS HOPKINS UNIV. APPLIED PHYSICS LAB., INTERCONTINENTAL BALLISTIC MISSILES AND THEIR ROLE IN FUTURE NUCLEAR FORCES* 8 (2017).

85. See Moxley, *supra* note 38, at 487.

86. See *id.*

the environment, and food supply chains globally.⁸⁷ Studies focused on the effects of nuclear testing in the past century have revealed that “430,000 additional cancer deaths worldwide could be attributable to exposures” resulting from atmospheric nuclear weapons testing.⁸⁸ Modeling of future low-yield nuclear detonations have also predicted that they could result in over “5 million metric tons of black carbon smoke particles into the stratosphere” which would decrease “atmospheric surface temperature,” global rainfall amount, and “a dramatic decrease in global agricultural production” with the potential for “agricultural growing seasons [to] be reduced by 10 to 40 days per year for at least 5 years.”⁸⁹ This sequence of events and its potential to cause famine and mass starvation has often been referred to as a scenario of nuclear winter.⁹⁰

C. *Nuclear Weapons Under International Law*

Given the potentially catastrophic and wide-ranging effects of nuclear weapons, it is crucial to examine what legal frameworks exist regulating or comprehensively outlawing their use. In 1994, the UN General Assembly referred to the International Court of Justice (“ICJ”) a question regarding the legality of the weapon type itself: “Is the threat or use of nuclear weapons in any circumstance permitted under international law?”⁹¹

In its answer, the ICJ made specific reference to several of the effects of nuclear weapons identified above, noting their massive destructive power, radiation effects, “capacity to cause untold human suffering, and [] ability to cause damage to generations to come.”⁹² In its decision, the court acknowledged the applicability

87. Jonas Jägermeyr et al., *A Regional Nuclear Conflict Would Compromise Global Food Security*, 117 PROC. NAT’L ACAD. SCI. U.S.A. 7071, 7076 (2020).

88. See Tilman A. Ruff, *The Humanitarian Impact and Implications of Nuclear Test Explosions in the Pacific Region*, 97 INT’L REV. RED CROSS 775, 807 (2015) (citing ANTHONY ROBBINS ET AL., RADIOACTIVE HEAVEN AND EARTH: THE HEALTH AND ENVIRONMENTAL EFFECTS OF NUCLEAR WEAPONS TESTING IN, ON AND ABOVE THE EARTH (1991)).

89. See Adam J. Liska et al., *Nuclear Weapons in a Changing Climate: Probability, Increasing Risks, and Perception*, 59 ENV’T: SCI. & POL’Y FOR SUSTAINABLE DEV. 22, 24 (2017).

90. See Moxley, *supra* note 38, at 516.

91. See G.A. Res. 49/75 K, Request for an Advisory Opinion from the International Court of Justice on the Legality of the Threat or Use of Nuclear Weapons (Dec. 15, 1994). The UN General Assembly referred this question to the ICJ for an advisory opinion. *Id.*

92. Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226, 244 (July 8) [hereinafter *Legality of Nuclear Weapons*].

of several treaties and principles of customary international law to the issue of the legality of nuclear weapons. These include reference to the Hague Regulations' assertion that "the right of belligerents to adopt means of injuring the enemy is not unlimited"; the St. Petersburg Declaration, which prohibits weapons "which uselessly aggravate the suffering of disabled men or make their death inevitable"; and the Martens Clause, which stipulates that in cases not covered by a specific agreement, "civilians and combatants remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity, and from the dictates of public conscience."⁹³

In its own arguments on the matter before the ICJ, as well as in other US military documents, the United States, as a participating state in the advisory opinions on the legality of nuclear weapons, asserted repeatedly that though the laws of armed conflict apply to the use of nuclear weapons, those laws did not imply any *per se* prohibition on the use of nuclear weapons.⁹⁴ The United States also appeared to reject a broad reading of the Martens Clause, characterizing it as one that "simply clarif[ies] that customary international law may independently govern cases not explicitly addressed by the Conventions," not as one imposing prohibitions on certain acts or methods of war where such a prohibition would not exist otherwise.⁹⁵

Though it is no small matter that the ICJ recognized the applicability of these principles to the use and threat of use of nuclear weapons, the Court was limited in its ability to make any conclusions regarding the legality of nuclear weapons due to the broad scope of the question at hand.⁹⁶ Ultimately, the primary conclusion from the ICJ's advisory opinion was that most uses of nuclear weapons would be in violation of the fundamental principles of international humanitarian law due to their wide-

93. *See id.* at 256–57.

94. *See* Verbatim Record, Legality of the Use by a State of Nuclear Weapons in Armed Conflict (Request for Advisory Opinion by the World Health Organization) and Legality of the Threat or Use of Nuclear Weapons (Request for Advisory Opinion by the General Assembly), CR 95/34, at 71 (Nov. 15, 1995) (oral statement of the United States) [hereinafter U.S. Oral Statement].

95. *Id.*, cited in Moxley, *supra* note 38, at 190.

96. *See id.*

ranging and indiscriminate effects.⁹⁷ However, given the broad scope of the question as referred to the ICJ by the General Assembly, the court could not conclusively prohibit *all* potential uses of nuclear weapons, particularly in situations of extreme self-defense.⁹⁸

The ICJ also did not rule on the *per se* illegality of deterrence, referring to the policy of the United States and other nuclear-armed states that is premised on an actual and credible “intention to use nuclear weapons.”⁹⁹ Thus, the United States can technically continue building its nuclear arsenal and crafting contingency plans for potential uses of nuclear weapons for hypothetical instances where deterrence may fail without violating customary international law. Yet, even a merely threatened use of these weapons carries risks. After all, for deterrence to be effective in preventing attacks, other states must actually believe that the United States is willing to employ its nuclear weapons, and therefore, the US military must plan for, and train for, scenarios of potential use to make its deterrent threat credible to adversaries.

D. Risk Analysis in the US Military

The US military approaches risk-analysis as the three-part process of (1) harmful event identification, (2) probability calculation, and (3) understanding of the consequence(s) of the event should it occur.¹⁰⁰ The Joint Chiefs of Staff Manual on Joint Risk Analysis further grounds this process in a four-pillar approach for “comprehensively address[ing] risk.”¹⁰¹ The following sections will break down the US military’s risk analysis methodology through a discussion and critique of these four pillars—problem framing, risk assessment, risk judgment, and risk management—and their implications for risk analysis in the specific instance of deciding whether to use or threaten the use of nuclear weapons.

97. See *Legality of Nuclear Weapons*, 1996 I.C.J. ¶ 92.

98. See *id.* ¶ 41.

99. See *id.* ¶¶ 47–48, 67.

100. See JOINT RISK ANALYSIS METHODOLOGY, *supra* note 16, at B-3.

101. *Id.* at B-1.

1. Problem Framing

Problem framing asks the question: risk *to* what?¹⁰² The object of this question is typically one of strategic importance or one that is “valued and hav[ing] the potential to be harmed.”¹⁰³ Examples of such objectives include “protecting national interests, successfully executing a strategy or plan, or maintaining a viable, ready force.”¹⁰⁴ The Joint Chiefs of Staff identify that this step should be done by “‘the assessor’ who is typically a lower-level actor situated closer to the risk itself, such as a junior officer.”¹⁰⁵ The assessor must then report to the “risk owner,” who the Joint Chiefs define as “the individual ultimately responsible for appropriately managing a given risk,” to “define the standards to use . . . and stakeholders to involve during the assessment.”¹⁰⁶ Potential risk owners include Service Chiefs, Combatant Commanders, and the Secretary of Defense.¹⁰⁷ The Joint Chiefs note that this pillar “should also consider a globally integrated perspective; for example, determining the possible ramifications of actions in one area of responsibility on other regions or domains” and that “when appropriate, assessors may link multiple separate risks together to analyze how their aggregation can change the overall risk picture.”¹⁰⁸ In practice, this could function through the process of “risk-layering,” wherein multiple indirect effects are included in military risk analyses.¹⁰⁹

Risk-layering carries interesting implications in the application of this risk analysis framework for the use or threat of use of nuclear weapons. Consider a scenario regarding the use of a nuclear weapon where a risk assessor frames the “item . . . that is valued and has the potential to be harmed” as a civilian population

102. *Id.* at B-2.

103. *Id.*

104. *Id.*

105. *Id.*

106. *See id.* Though the DoD provides examples of titles which may be considered risk owners, such as Combatant Commanders (CCDRs) and the Secretary of Defense (SecDef), the manual does not indicate any specific examples of who may take the role of the assessor.

107. *Id.* at B-2.

108. *Id.* at B-3.

109. *See* Stefan Hochrainer-Stigler & Karina Reiter, *Risk-Layering for Indirect Effects*, 12 INT’L J. DISASTER RISK SCI. 770 (2021) (providing an expansive overview of the concept of “risk-layering” and its potential inclusion of indirect effects).

in a given area. Following the Joint Chiefs' framework, the assessor would then work with the risk owner to define the "criteria, scale, [and] terms" of the subsequent assessment and to decide what stakeholders to consult.¹¹⁰ One such criterion is based on the scope of the "time horizon" for a given risk to manifest.¹¹¹ The decision on which time horizon to consider in the risk assessment of using a particular nuclear weapon would have a dramatic impact on the resulting decisions. For example, if one considers only the near-term impact of the immediate blast on a civilian population, one could argue for its justifiability or, at minimum, its legal permissibility as if it were a conventional weapon. Yet, if the analysis is instead framed with a long-term time scale, the assessor and risk owner would have to consider the effects of radiation resulting from the use of a nuclear weapon, from impediments on a regional or global food supply to the long-term health of a population.

Yet, despite the fact that the Joint Chiefs acknowledge a need to consider multiple risks and ramifications with a "globally integrated perspective," the manual does not seem to place any limits or minimums on the scope of a risk assessment. With no legally or even officially-mandated scope of risk to assess, can this framework really be considered a standardization of the US military's approach to assessing risks?

2. Risk Assessment

The second pillar supporting the US military's risk analysis methodology is the three-pronged approach that this Note has already discussed at length. The central question this pillar seeks to answer is: risk *from* what? In describing this pillar, the Joint Chiefs' Risk Analysis Manual relays the manner in which they divide harmful events into threats and hazards, communicates their definition of probability as "the determination of the likelihood, supported by confidence levels, of a harmful event occurring," and provides a definition of consequences as "the

110. JOINT RISK ANALYSIS METHODOLOGY, *supra* note 16, at B-2.

111. *See id.* at B-3. The Joint Chiefs identify three separate time horizons: near term (0–3 years), mid-term (2–7 years) and long-term (5–15). *Id.*

impact or resulting harm if the event occurs and negatively impacts US interests.”¹¹²

In detailing their approach to assessing risks, the Joint Chiefs also stipulate factors to consider as “drivers of risk” or those which “act to change the risk probability or consequence arising from various sources.” These factors are to be considered within specific time periods, either short-term or long-term as they are viewed as circumstances or events which “shape the environment that enables or minimizes the harmful event.”¹¹³ But here again, there is no requirement to consider drivers arising from any or all time horizons. This has significant implications for the application of this framework to the policy of nuclear deterrence. For example, if a nuclear exchange is identified as the “harmful event,” there is no requirement that risk assessors consider long-term drivers of global instability as an element increasing the risk of the event’s occurrence.

3. Risk Judgment

The third pillar of the US military’s approach to risk analysis is risk judgment, which asks two key questions: how much risk is *involved* in relation to the given action? And how much risk is *acceptable* in the given circumstances? This pillar is “aimed at determining a decision maker’s degree of acceptable risk.”¹¹⁴ This part of the assessment is carried out in two parts: (1) risk characterization and (2) risk evaluation. Risk characterization assigns a particular risk level (low, moderate, significant, or high) to every potential threat or hazard that has been identified.¹¹⁵ The assessor should ground this risk in the calculation of probability and the understanding of consequence as established through completion of the steps in the prior pillar (the risk assessment stage).¹¹⁶ Given the language used by the Chairman of the Joint Chiefs in the Risk Analysis Manual, it is likely that the risk assessor is conducting this step of the risk judgment. On the other hand, risk evaluation is a step which the decision maker, or risk owner, completes. Risk evaluation involves the judgment of the

112. *Id.* at B-5.

113. *Id.* at B-4.

114. *Id.* at B-6.

115. *Id.*

116. *Id.*

“acceptability of a risk” in order to “inform decisions on how to manage the risk.”¹¹⁷ Within this framework, an “acceptable” level of risk would be one that is considered “low enough that additional risk reduction efforts are not required” and “unacceptable” where “the risk posed by a certain event is too high to pursue a desired activity without risk mitigation efforts.”¹¹⁸

The key issue with an application of this pillar to a risk assessment regarding the potential use or threat of use of nuclear weapons is a lack of any requirement to consider the perspectives of multiple stakeholders or potentially affected parties. Unlike in a negligence case, where determining whether a decision maker took the “appropriate” amount of risk is based on legal standards and a jury’s socially informed opinion, risk judgment, under the DoD’s framework, appears to be a determination undertaken by an individual decision-maker, the risk owner. Unless risk assessors are given particular socially or legally informed criteria or thresholds for assigning respective risk levels, this pillar does not appear to introduce any tangible improvement or standardization in the conduct of military risk assessments.

4. Risk Management

The fourth and final pillar of the US military’s risk analysis methodology is risk management, which seeks to answer the question: What should be done—or not done—with regard to this risk?¹¹⁹ The Joint Chiefs’ manual provides four general options for risk management: (1) acceptance, (2) avoidance, (3) mitigation, and (4) transfer.¹²⁰ Acceptance involves instances where the risk is considered minimal or “acceptable” enough to permit the decision-maker “to act without conducting risk mitigation efforts.”¹²¹ Avoidance, mitigation, and transfer involve various mechanisms of risk management for risks that have been classified as “unacceptable,” ranging from avoiding or entirely “forgo[ing] the activity that would produce unacceptable risk” to “implement[ing] measures that [would] decrease the probability or consequence of

117. *Id.* at B-7.

118. *Id.* at B-8.

119. *Id.*

120. *Id.*

121. *Id.*

harm across time horizons.”¹²² Yet again, there is no established threshold or criteria for determining which option to take. Rather, the manual only requires “careful consideration of the various drivers of risk” and a decision based on the judgment of “acceptability” of a risk as previously determined.¹²³

E. US Military Risk Analysis in Practice

1. Automating Risk Assessment

Given the catastrophic and inherently indiscriminate nature of nuclear weapons detonation, and the rarity of their use, it may be difficult to imagine applying this methodology within hypothetical nuclear scenarios. Still, the implementation of this risk analysis methodology in other situations of military decision-making could provide insights to inform a nuclear-specific adaptation of the model. One version of risk analysis which military decision-makers commonly implement, especially in assessing the risks of conventional blast weapons, is Collateral Damage Estimation (“CDE”).¹²⁴ One of the first iterations of a tool that the US military specifically designed to conduct CDE was also, rather indelicately, known as “bugsplat.”¹²⁵ Bugsplat emerged in the context of the 2003 Iraq War, and functioned as an algorithm that “estimated the probable number of civilians that would be killed in a given kinetic strike” in order to inform military decision-makers.¹²⁶ The United States has also used similar algorithms for the identification of targets in conducting air strikes.¹²⁷ For example, consider the National Security Agency’s (“NSA”) SKYNET program, which the NSA primarily designed as a surveillance tool in order to inform counterterrorism operations in Pakistan.¹²⁸ The tool worked by “gather[ing] and interpret[ing] SIM card metadata

122. *Id.*

123. *Id.*

124. See John R. Emery, *Probabilities towards Death: Bugsplat, Algorithmic Assassinations, and Ethical Due Care*, 8 *CRITICAL MIL. STUD.* 179, 185 (2020).

125. See *id.* at 179.

126. See *id.*

127. See *id.* at 180.

128. See Christian Grothoff & Jens Porup, *The NSA’s SKYNET Program May Be Killing Thousands of Innocent People*, *ARS TECHNICA* (Feb. 16, 2016), <https://arstechnica.com/information-technology/2016/02/the-nsas-skynet-program-may-be-killing-thousands-of-innocent-people/> [https://perma.cc/X33V-MNWA].

in order to construct 'legitimate targets' based on a risk assessment score of one's 'probability of terroristness.'"¹²⁹

The US military has historically touted these tools and other algorithms as part of efforts to "rein in" civilian casualties, reduce the "uncertainty of warfare," and ultimately to "assis[t] a commander in adhering to the Law of War."¹³⁰ However, the tools have little more than a recommendatory effect on the decisions that get made.¹³¹ For example, "bugsplat" will flag a strike for "further review" if it leads to an estimation of "30 or more civilian casualties."¹³² Yet, that "does not mean that the strike would not occur, only that" the decision will require approval from a higher authority.¹³³

F. Risk Analysis with Regard to Nuclear Weapons

Notably, the training material that the US military has used to inform members of the military on using and understanding their methodology for CDE indicates that it is not intended to relate or apply to the use or threatened use of nuclear weapons.¹³⁴ Specifically, in a presentation on Collateral Damage Methodology ("CDM") given at the Center for Law and Military Operations ("CLAMO"), the course materials note that the existing CDM process "accounts for all conventional munitions currently in the US inventory (No nukes!)." ¹³⁵ In part, this may be due to the fact that modeling the immediate effects of a nuclear blast would always surpass the threshold of thirty civilian deaths, thus always recommending against a strike. However, the larger force driving the exclusion of nuclear weapons from any framework for risk analysis or CDE is the fact that US government and military officials do not believe the laws of war to require risk analysis regarding

129. Emery, *supra* note 124, at 180.

130. See CTR. FOR L. & MIL. OPERATIONS, U.S. ARMY JUDGE ADVOCATE GEN.'S LEGAL CTR. & SCH., AN INTRODUCTION TO THE COLLATERAL DAMAGE METHODOLOGY (CDM) AND THE COLLATERAL DAMAGE ESTIMATE (CDE) (2009) (course slides released Aug. 30, 2011, in response to a Freedom of Information Act request), https://www.governmentattic.org/5docs/ArmyJAG-CLAMO-Slides_2009.pdf [<https://perma.cc/NN28-MJNY>] [hereinafter CLAMO SLIDES].

131. See Emery, *supra* note 124, at 187–88.

132. See *id.*

133. See *id.*

134. See CLAMO SLIDES, *supra* note 130, at 7.

135. *Id.* at 9.

the use or threatened use of nuclear weapons, a belief which will be examined in the following sections.

Though the United States was involved in the development of AP I to the Geneva Conventions, which stipulates the principle of precaution as discussed above, it has yet to ratify it and is thus not a party.¹³⁶ Though many of the provisions of AP I may still have a binding effect on the United States as principles of customary international law, and though there are many statements and policies of the United States itself within military manuals and strategic guidelines that reflect an understanding that the United States has a legal obligation to follow many of the rules articulated in AP I, the United States has conclusively stated that the provisions of AP I should not be understood “to regulate or prohibit the use of nuclear weapons.”¹³⁷

The DoD’s Law of War Manual is intended to serve as the country’s “authoritative statement on the law of war” in an effort to enhance cohesion between the statements on law and policy contained in manuals for the individual branches of the US military.¹³⁸ Chapter 5 of the Manual contains multiple statements of limitations on permissible conduct of hostilities within international armed conflicts.¹³⁹ The Chapter makes several references to precaution, and echoes AP I in its articulation that “parties to a conflict” owe “affirmative duties to take feasible precautions for the protection of civilians and other protected persons and objects,” including in the planning and conducting of attacks, stating such requirement “as part of the principle of proportionality in conducting attacks.”¹⁴⁰ The manual also offers some examples of such “feasible precautions” which may be considered partial fulfillment of the requirements implicitly contained under the principle of proportionality including “assessing the risks to civilians” through, for example: “(1) general

136. See George Cadwalader Jr., *The Rules Governing the Conduct of Hostilities in Additional Protocol I to the Geneva Conventions of 1949: A Review of Relevant United States References*, 14 Y.B. INT’L HUMANITARIAN L. 133, 133 (2011).

137. See *id.* at 137 n.17. The DoD’s Law of War Manual makes several references to precaution, and echoes AP I in its articulation that “parties to a conflict” owe “affirmative duties to take feasible precautions for the protection of civilians and other protected persons and objects.” LAW OF WAR MANUAL, *supra* note 42, at 427–28.

138. See Cadwalader Jr., *supra* note 136, at 155.

139. See LAW OF WAR MANUAL, *supra* note 42, at 185.

140. See *id.* at 191, 259.

assessments of the risks to civilians and the effectiveness of efforts to reduce the risk to civilians; (2) pre-strike assessments of expected civilian casualties; and (3) after-action assessments and investigations.”¹⁴¹

Both the doctrine and practice discussed above demonstrate that the United States accepts, or is willing to be bound by, customary international law requiring risk assessments in the context of armed conflicts to satisfy the principles of precaution and proportionality.¹⁴² The United States has also stated repeatedly that it considers the general principles of international humanitarian law applicable to the planned or actual use of nuclear weapons.¹⁴³ That acceptance is what makes the DoD’s assertion that AP I does not regulate or prohibit the use of nuclear weapons so peculiar.

The United States has expressed a willingness to be bound by the requirements for “feasible precautions” under AP I with respect to its planned or actual use of conventional weapons in armed attacks. AP I is generally in line with pre-existing requirements implicitly contained within the principle of proportionality, which the United States has explicitly stated as applicable to the use or threat of use of nuclear weapons.¹⁴⁴ Both proportionality and the feasible precaution provisions of AP I imply a requirement on states to assess the risks that attacks pose to civilian lives before deciding to launch them, with AP I imposing the slightly more specific requirements of taking “all feasible precautions.”¹⁴⁵ This overlap is what makes the United States’ position so hard to reconcile: how can the United States justify its assertion that the heightened standards of AP I should apply to the use of conventional weapons, yet not the potentially more catastrophic use of nuclear weapons? And does this position reflect that the United States does not understand itself as being obligated

141. *See id.* at 260. The manual defines “general assessments” as those which are “not necessarily done in relation to a particular attack” but could involve “identify[ing] places or objects posing significant risks of incidental harm if struck and . . . compil[ing] them into a list . . . [to then be used] in planning efforts and when conducting specific attacks to reduce the risk of incidental harm.” *Id.*

142. *See supra* Parts II and III.

143. *See* LAW OF WAR MANUAL, *supra* note 42, at 426.

144. *See id.*

145. *See* Protocol I, *supra* note 43.

to conduct risk analysis before its threatened or actual use of nuclear weapons?

In the DoD's Law of War Manual, the 2022 Nuclear Posture Review, and the United States' arguments in front of the ICJ, the US government has repeatedly stated that "the law of war governs the use of nuclear weapons, just as it governs the use of conventional weapons."¹⁴⁶ In terms of what specific laws of war the US government recognizes in the subsequent pages, the Manual references the requirements of necessity and distinction, as well as the principle of proportionality, stating that "attacks using nuclear weapons must not be conducted when the expected incidental harm to civilians is excessive compared to the military advantage expected to be gained."¹⁴⁷

Section 5.12.1.3 of the DoD's Law of War Manual ("Manual") defines "expected loss of civilian life, injury to civilians, and damage to civilian objects" in this instance as "such immediate or direct harms *foreseeably* resulting from the attack."¹⁴⁸ The Manual adds that "remote harms that could result from the attack do not need to be considered in applying this prohibition" because of "the difficulty in accurately predicting the myriad of remote harms from the attack" and "the primary responsibility of the party controlling the civilian population to take measures to ensure that population's protection."¹⁴⁹ To illustrate this stance, the Manual provides the example of a potential attack on a power plant.¹⁵⁰ In this case, the attacker, or "assessor" to use the language of the Joint Risk Analysis methodology, would only need to assess the risk to civilians that may occur "very soon after the attack" due to immediate effects such as "loss of power at a connected hospital" as the loss of power emanating from the plant would be considered a foreseeable and intended effect of the attack.¹⁵¹ The assessor does not, however, need to consider any economic consequences of attacking such a plant, such as job losses, unless the intent of the strike was to harm the local or national economy.¹⁵²

146. See LAW OF WAR MANUAL, *supra* note 42, at 426.

147. See *id.*

148. See *id.* at 270.

149. See *id.*

150. See *id.*

151. See *id.*

152. See *id.*

Essentially, this standard, if applied to an actual or threatened use of nuclear weapons, would imply that a risk analysis need only consider immediate blast effects, not the long-term risks of radiation on local and global health, the environment, the global economy, or on increasing vulnerability to reciprocal attacks and escalation. The US rationale for not including these effects within their risk analyses on the employment of nuclear weapons would center the fact that their intention in using the weapon was not to inflict any of the above “indirect effects,” but was intended for some specific military objective not related to global health, the environment, or the economy.

1. Returning to the Martens Clause

The United States’ current approach to risk analysis as applied to a potential or threatened use of nuclear weapons is fundamentally at odds with customary international humanitarian law. Though the basic principles of IHL were not developed with particular thought to the full effects and consequences of nuclear weapons, there are principles which were designed to address situations that the law does not directly speak to. One such provision is the Martens Clause which asserted that:

Until a more complete code of the laws of war has been issued, the High Contracting Parties deem it expedient to declare that, in cases not included in the Regulations adopted by them, the inhabitants and the belligerents remain under the protection and the rule of the law of nations, as they result from the usages established among civilized peoples, from the laws of humanity and the dictates of public conscience.¹⁵³

In its arguments before the ICJ, the United States offered its interpretation of the Martens Clause as “simply clarif[ying] that customary international law may independently govern cases not explicitly addressed by the Conventions.”¹⁵⁴ Based on this statement, it appears that the official US stance on the interpretation of the Martens Clause is that it is purely interpretive, not legally operative.¹⁵⁵ This is supported further in the US DoD’s

153. See *Fundamental Principles of IHL*, *supra* note 32.

154. See US Oral Statement, *supra* note 94, at 71, cited in Moxley, *supra* note 38, at 190.

155. See *id.*

Law of War Manual, which states that “the principle of *humanity* may help interpret or apply these other law of war rules.”¹⁵⁶

However, even following the US interpretation of the Martens Clause (as an interpretive aid—not a legally operative clause), it should still be permissible for states including the United States to invoke the Martens Clause in order to elucidate the requirements imposed on states seeking to fulfill their obligations under the principles of proportionality, distinction, and necessity. This is exceptionally true given the novelty of the development of nuclear weapons and the unprecedented risks which they pose, none of which were identified or discussed in the original conventions.

As applied to the principle of proportionality, the Martens Clause could, and should, broaden the scope of “expected” and “foreseeable” harms to include those which may have lower probabilities but potentially catastrophic impacts. It should also require more expansive risk assessments, not fewer, when the analysis is regarding the use of nuclear rather than conventional weapons. Limiting the scope of the “expected” and “foreseeable” harms of a nuclear weapons detonation to only its intended effects would also dilute the value of the principle of distinction. The United States contends that the principle of distinction should be understood to prohibit the targeting of civilians “as such,” but interpreting “distinction” to require only an “intent” to target solely military objectives would yield far too permissive a targeting standard and far too wide a range of defenses to allegations that a state failed to distinguish.¹⁵⁷ As an aid to interpreting the principle of necessity in the context of the actual or threatened use of nuclear weapons, the Martens Clause should also require the United States to take significant measures to ensure that no conventional weapon could achieve the same military objective. A failure to engage in a thorough assessment of alternative options would violate the principal humanitarian purpose, contained in both IHL and US military doctrine, of “[p]rotecting combatants, noncombatants, and civilians from unnecessary suffering.”¹⁵⁸

156. See LAW OF WAR MANUAL, *supra* note 42, at 60.

157. See Moxley, *supra* note 38, at 202.

158. US DEP’T OF THE ARMY, FIELD MANUAL NO. 27-10, THE LAW OF LAND WARFARE ¶ 1-7 (1956).

2. The Self-Defense Objection

The United States has argued in front of the ICJ that, even if most uses of nuclear weapons were incompatible with the principles of IHL, they should not be *per se* outlawed on the basis of a potential use in a case of self-defense.¹⁵⁹ Yet, even in such an extreme case of self-defense, which the ICJ would consider one in which “the very survival of a State is at stake,” a state’s right to defend itself is never unlimited.¹⁶⁰ Though the court did not conclusively rule on the legality of any use of nuclear weapons in a situation of such extreme self-defense, the court did state that “the submission of the exercise of the right of self-defense to the conditions of necessity and proportionality is a rule of customary international law.”¹⁶¹

IV. MANAGING A FUTURE OF NUCLEAR RISKS

If nuclear-armed states begin to accept an interpretation of IHL that implies a legal obligation to conduct risk analysis regarding any possession or threatened use of those weapons, it is important to understand what that would entail in terms of positive action and how the obligation would be enforced. Taking into account the unique technical risks posed by the deployment of nuclear weapons, this Part will proceed by first positing a risk analysis methodology optimized for nuclear weapons followed by a proposed framework for holding states accountable for failing to fulfill their obligations with regard to the possession of nuclear weapons under customary international law.

A. *Effectively Assessing the Risks of Nuclear Weapons*

In order to monitor and evaluate what constitutes “effective” risk analysis with regard to nuclear weapons, there should be a level of standardization between nuclear-armed states in the form of required process and elements of that analysis. Beginning with the first element: what risks should states be identifying?

159. See U.S. Oral Statement, *supra* note 94, at 71.

160. See *Legality of Nuclear Weapons*, 1996 I.C.J. at 226.

161. See *id.* ¶ 41 (citing *Military and Paramilitary Activities in and Against Nicaragua* (Nicar. v. U.S.), Judgment, 1986 I.C.J. 14, ¶ 176 (June 27)).

The concept of risk itself is difficult to define, though scholars exploring fields such as classical probability theory have attempted to develop an operative understanding. The Oxford English Dictionary defines it as “[exposure to] the possibility of loss, injury, or other adverse or unwelcome circumstance” or “a chance or situation involving such a possibility.”¹⁶² Black’s Law Dictionary offers several definitions tailored to specific use cases in insurance, corporate, and health law, alongside a more general definition of risk as “the uncertainty of a result, happening, or loss; the chance of injury, damage, or loss; esp. the existence and extent of the possibility of harm.”¹⁶³

These definitions are based heavily on classical probability theory, wherein risk is a “quantif[ier of] the likelihood that a known outcome will not occur.”¹⁶⁴ On this view, risk is merely a measure of “outcome variance,” meaning that a risk-averse actor choosing between “two options with the same expected value” would choose the option with lower variance in the potential outcome.¹⁶⁵ This remains one of the dominant views in fields such as economics and biology.¹⁶⁶ However, most of its critiques have come from social scientists who argue that this classical view does not accurately capture how humans make decisions involving risk.¹⁶⁷ The center of this critique is based on the classical view’s assumption that the risk-averse actor in the above scenario “should have access to perfect knowledge,” such that they can “fully appreciate all the possible alternatives” to the risky action and make a “*perfect* decision.”¹⁶⁸

For the reasons explored above, this is not a scenario which translates to the potential use of nuclear weapons. The nature of deterrence as a policy requires that neither actor has access to perfect knowledge, and thus, although a military commander may

162. *Risk*, OXFORD ENGLISH DICTIONARY (3d ed. 2010).

163. *Risk*, BLACK’S LAW DICTIONARY (8th ed. 2004).

164. R.J. Knighton, *The Psychology of Risk and Its Role in Military Decision-Making*, 4 DEF. STUD. 309, 311 (2004).

165. Sandeep Mishra, *Decision-Making Under Risk: Integrating Perspectives from Biology, Economics, and Psychology*, 18 PERSONALITY & SOC. PSYCH. REV. 280, 281 (2014).

166. *See id.*

167. *See id.*

168. Chris Tallant & Bradford Strachan, *The Importance of Framing: A Pragmatic Approach to Risk Assessment*, 42 PROB. J. 202, 202 (1995).

be able to “fully appreciate all possible alternatives,” the commander will never be able to make a “*perfect* decision.”

Therefore, to provide guidance on risk analysis under these circumstances, nuclear risk owners and assessors should look to literature on other “high impact, low probability” events, such as natural disasters, famines, pandemics, and terrorist attacks.¹⁶⁹ In many civilian fields like these, risk assessors establish mechanisms for continuous outcome identification through frequent monitoring such as for early signs of outbreaks, pollution levels, or dangerous rhetoric. Where outcomes are especially severe and may onset rapidly, such monitoring often takes the form of early warning systems (“EWS”) models.¹⁷⁰ EWS models are often used to “anticipate extreme events” in situations where “crises . . . take place so quickly that it is virtually impossible for policymakers to wait until the first manifestation of the crisis to react [, meaning] policy action must *anticipate* the event in order to have a chance to prevent it.”¹⁷¹ In such cases, the mechanisms that policymakers use to predict and anticipate certain events becomes an incredibly important step in effective risk analysis.

B. Critical Checkpoints: Outcome Identification and Probability

The proliferation of EWS models in situations of uncertainty suggests that outcome identification may be the most crucial component of risk assessments for high impact, low probability events. However, once an outcome or risk is identified, the way risk owners calculate its probability can itself produce variation in how that risk is managed. To avoid this variation, the process for calculating the probability of nuclear risks must be standardized to an extent. Calculating probability becomes increasingly challenging in contexts where circumstances are constantly changing. In the case of the potential use of a nuclear weapon, or any other high impact, low probability event, it is nearly impossible to accurately predict all of the circumstances which would surround its hypothetical detonation. Anything from wind direction, detonation level, cloud configuration, or ground

169. See, e.g., Matthieu Bussière & Marcel Fratzscher, *Low Probability, High Impact: Policy Making and Extreme Events*, 30 J. POL’Y MODELING 111, 112 (2008).

170. See *id.* at 111.

171. *Id.* at 112.

composition can affect the type of blast any given bomb creates and its short and long-term consequences.¹⁷²

To illustrate this problem, consider the work of Jan Emblemstvang, a professor at the Norwegian University of Science and Technology, who sought to calculate the risk of a rockslide occurring at a bend in a fjord which has seen around seventy major rockslides in the post-ice age era, with three significant rockslides occurring in the past century.¹⁷³ Though Emblemstvang used historical data to inform his calculations, the physical site of the rockslides is incredibly unstable, with constantly changing conditions subject to the effects of multiple complex external factors. Thus, even in instances where the primary variable in flux is a matter of geological change, typically an extremely slow process, calculating probability based on past frequency becomes poorly suited to developing well-informed prediction of future probability.¹⁷⁴

To solve this problem, Emblemstvang proposes that if an individual in the position of a risk owner wants to continue relying on the frequency interpretation of probability, they must consider the factor of exponentially increasing vulnerability as described by catastrophe theory.¹⁷⁵ Catastrophe theory centers on the study of the occurrence of “unlikely events” and seeks to “address the matter of when one straw can break the camel’s back.”¹⁷⁶ The notion of increasing vulnerability means that “the probability of failure [may] increase exponentially from year to year as we approach the time of failure.”¹⁷⁷ Catastrophe theory and increasing vulnerability can be included in risk assessments through a deliberate “model[ing which includes] the fact that deteriorating conditions lea[d] to an accelerating frequency.”¹⁷⁸ In the context of nuclear weapons, “deteriorating conditions” need not always be physical or technical, but can also take into account geopolitical

172. MICHAEL J. FRANKEL ET AL., JOHNS HOPKINS UNIV. APPLIED PHYSICS LAB., NSAD-R-15-020, *THE UNCERTAIN CONSEQUENCES OF NUCLEAR WEAPONS USE* 27 (2015).

173. See Jan Emblemstvang, *On Probability in Risk Analysis of Natural Disasters*, 17 *DISASTER PREVENTION & MGMT.* 508, 510 (2008).

174. See *id.*

175. See Moxley, *supra* note 38, at 544.

176. *Id.*

177. *Id.* at 310.

178. *Id.*

tensions and other threats to global stability such as democratic backsliding.

C. Monitoring Compliance with an Obligation of Nuclear Risk Assessment

It is unlikely that state parties will amend existing IHL treaties to add an explicit legal obligation to conduct risk analysis with regard to the possession, deployment, or use of nuclear weapons. Still, as discussed above, the obligation itself arises out of customary international law, those principles which are binding on all states regardless of which international conventions they have ratified. However, this source raises particular challenges for monitoring state compliance with the obligation. This Section proposes two developments in state practice which could improve compliance through enhanced monitoring: the development of a concrete baseline of what constitutes “adequate” nuclear risk assessment, and the imposition of a reporting requirement on nuclear-armed states.

The issue of developing a standard of behavior against which observers can monitor compliance has already surfaced in discussions regarding the principle of proportionality as applied generally in times of armed conflict.¹⁷⁹ On the question of baselines, some scholars have proposed the establishment of a “standard of measurement,” specifically “one that [is] practicable to use in advance, and also . . . later to determine whether the proportionality requirement is being met.”¹⁸⁰ Such a standard offers a way to measure compliance as observers can track the way that states integrate it into their military manuals. A key issue in applying this notion to the use of nuclear weapons is that the focus of proportionality reviews must take place before a weapon is deployed. Reviewing the proportionality of a nuclear strike after the weapon has already been discharged would be unlikely to hamper any subsequent escalation or mitigate any of the long-

179. See, e.g., William J. Fenrick, *Applying IHL Targeting Rules to Practical Situations: Proportionality and Military Objectives*, 27 WINDSOR Y.B. ACCESS JUST. 271, 280 (2009); see also Ian Henderson & Kate Reece, *Proportionality under International Humanitarian Law: The Reasonable Military Commander Standard and Reverberating Effects*, 51 VAND. J. TRANSNAT'L L. 835, 836 (2018).

180. Fenrick, *supra* note 179, at 280.

term, serious consequences described above and would effectively defeat the purpose of obligating effective risk analysis before use.

Other scholars have proposed the development of a proportionality standard based on the “reasonable military commander,” a term used in multiple international humanitarian law cases in courts and tribunals worldwide including *Prosecutor v. Galić* and *Beit Sourik Village Council v. Government of Israel*.¹⁸¹ Under this approach, a decision is examined roughly against the standard of action which “a person with all the experience, training, and understanding of military operations that is vested in a ‘reasonable military commander’” would take.¹⁸² However, a key critique is that this standard removes “nonmilitary considerations, such as political or diplomatic consequences [as well as the] certain amount of collateral damage . . . caused” from the assessment of “whether [or not] the attack would be proportional.”¹⁸³ Herein lies the key issue with nuclear weapons, as an analysis of proportionality which removes an accounting of collateral damage, long-term effects, and uncertainty is more likely to yield a positive result, permitting the risk owner or manager to then authorize the deployment of the weapon.

As discussed, nuclear weapons possess unique qualities which limit the extent to which existing IHL rules have been able to govern them. However, there are ways for high-level military officials fulfilling the role of risk owners to implement a standardized approach to risk analysis that is specific to nuclear weapons. This Note proposes that this standardization should exist most prevalently at the outcome identification and risk characterization steps of the analysis. First, at the outcome identification stage, the analysis must account for the long-term and collateral effects of nuclear blasts including the immediate blast, radioactive fallout, increased cancer risks, and environmental impact, among other well-proven effects of nuclear explosions.¹⁸⁴ These effects, though indirect, are undeniably

181. Henderson & Reece, *supra* note 179, at 836 (citing *Prosecutor v. Galić*, Case No. IT-98-29-T, Judgment, ¶¶ 57–58 (Int’l Crim. Trib. for the Former Yugoslavia Dec. 5, 2003), and HCJ 2056/04 Beit Sourik Vill. Council v. Gov’t of Israel 58(5) PD 807, ¶ 46 (2004) (Isr.)).

182. *Id.* at 845.

183. *Id.* at 846.

184. See, e.g., INT’L CAMPAIGN TO ABOLISH NUCLEAR WEAPONS, CATASTROPHIC HUMANITARIAN HARM 7 (2015), <https://d3n8a8pro7vhmx.cloudfront.net/ican/pages/749/>

foreseeable. No nuclear weapon exists without radioactive effects, these effects are the very quality that distinguishes nuclear weapons from conventional weapons.¹⁸⁵

Second, at the risk characterization stage, the risk owner tasked with calculating the probability of these effects must factor in uncertainty, specifically in terms of the potential for increasing vulnerability over time based on catastrophe theory. Operating with this in mind, it should become clear that the authorization of one single deployment raises the probability of a second deployment. Or, to use deterrence terms, the existence of a “first strike” will undeniably increase the probability of a “second strike.” The risk owner need not account for every indirect effect of a second blast but should at least include the blast itself as an additional potential outcome. Ultimately, the nature of nuclear weapons, and the potentially catastrophic—yet uncertain—levels of damage which they are capable of incurring mean that these two factors must be standardized across the risk assessment protocols of all nuclear-armed states. Otherwise, those states risk falling short of their obligations under IHL, particularly the principle of proportionality as read with regard to the Martens Clause.

Returning to the issue of how third-party observers or courts can monitor state compliance with these obligations and standards: there are, of course, reasons why a military risk owner would not want the technicalities of a risk analysis regarding a specific strike to be publicly available. However, publishing a general framework detailing the criteria for risk analysis as generally applied to nuclear weapons would not pose the same type of national security threat. There are currently no periodic reporting procedures associated with the Hague Conventions, and attempts to implement such have been unsuccessful.¹⁸⁶ However, there are multiple arms control treaties governing *conventional* weapons which include such requirements as an integral part of their frameworks, both in the form of strict periodic reports and

attachments/original/1575657291/CHH-Booklet-WEB-2015.pdf
[<https://perma.cc/A2J8-4DB9>].

185. Candice DeNardi, *Fact Sheet: The Basics of Nuclear Weapons*, CTR. FOR ARMS CONTROL & NON-PROLIFERATION, <https://armscontrolcenter.org/fact-sheet-the-basics-of-nuclear-weapons/> [https://perma.cc/QK5R-MDCR] (last visited Mar. 13, 2026).

186. See Giulio Bartolini & Sofia Pouloupoulou, *Reporting Activities Under International Humanitarian Law*, 107 INT’L REV. RED CROSS 961, 982 (2025).

also requirements to publicize relevant implementation of international guidelines within national law.¹⁸⁷ For the reasons explored above, this latter type may be more well-suited to regulating the possession of nuclear weapons. For example, the United Nations Programme of Action on the Illicit Trade in Small Arms and Light Weapons in all its Aspects, adopted by UN Member States in 2001, does not require States to submit reports, but instead “encourages States to ‘make public national laws, regulations, and procedures that impact’ the aims which the Programme aspires to achieve.”¹⁸⁸ This type of reporting requirement is not only feasible with regard to nuclear weapons, it is also critically important. Otherwise, states can evade responsibility for outright illegal policies regarding both their possession and guidelines for potential use of nuclear weapons.

V. CONCLUSIONS

The possession and threatened use of nuclear weapons pose an unprecedented risk of man-made catastrophe, on a scale far beyond that of conventional weapons. The known potential effects of nuclear weapons are wide-ranging, with both immediate and long-term impact on human populations far beyond a localized blast area. Because nuclear weapons have only been used in single strike instances and in testing, the sheer magnitude of a potential nuclear exchange could inflict devastation far beyond what any model may be able to predict.

Still, there is no statement of international law to which the United States is a party that considers possessing or using nuclear weapons *per se* unlawful.¹⁸⁹ For this reason, any planning regarding the potential use or threatened use of a nuclear weapon demands a level of precaution that far surpasses traditional military considerations, including those that informed the existing US methodology for military risk analysis.¹⁹⁰ Despite the United States’ acceptance of the application of the general international

187. See U.N. INST. FOR DISARMAMENT RSCH., REPORTING ON CONVENTIONAL ARMS TRADE: SYNTHESIS HANDBOOK 7 (2018), <https://unidir.org/files/publication/pdfs/reporting-on-conventional-arms-trade-synthesis-handbook-en-699.pdf> [<https://perma.cc/6C3R-E69X>].

188. *Id.* at 12–13.

189. See *supra* Part III.

190. See *supra* Part III.

humanitarian law principle of proportionality, necessity, and distinction to potential or actual uses of nuclear weapons, the statements contained in US military doctrine have placed significant and prohibitive constraints on the extent to which these rules require precaution in the form of risk analysis in the employment or planning surrounding nuclear weapons.

To remain compliant with its existing international obligations, and to address the significant moral imperatives borne by nuclear-armed states, the United States must adopt a more standardized and robust approach to military risk analysis. Failure to do so would be a failure to fully comply with the principles of proportionality, necessity, and distinction, as read with respect to the principle of humanity. These principles require states to (a) weigh the expected incidental harm to civilians against the anticipated military advantage of an attack, and (b) consider all feasible alternatives to a use of a nuclear weapon to minimize unnecessary suffering.¹⁹¹ Both obligations imply a duty for states to conduct comprehensive risk analysis to appropriately assess the potential outcomes of their actions. The DoD's reluctance to fully apply these principles to decisions regarding nuclear weapons, as exemplified by its decision to exclude "remote harms" from proportionality assessments, fundamentally undermines the principle of humanity and runs contrary to the obligations of the United States to comply with customary international law.¹⁹²

If the framework proposed by this Note makes it appear nearly impossible for a risk owner to authorize the deployment of a nuclear weapon following these steps, that is precisely the point. Even without the ICJ ruling conclusively on the *per se* illegality of nuclear weapons, any realistic engagement into what a "lawful nuclear strike" could look like makes clear that the concept itself is an oxymoron. Though the drafters of the Hague Conventions did not foresee the development of nuclear weapons, they did account for the realities of technological advancement. This is precisely why clauses such as the Martens Clause exist. In fact, some have argued that in proposing this clause at the Hague Conference, Martens "intended to introduce through it a novel and radical means of international lawmaking, by elevating humanity and the

191. See *supra* Section II.B.

192. See *supra* Section III.F.

dictates of conscience to the rank of new sources of international law.”¹⁹³ Interpreting the clause in this way, the dictates of humanity and public conscience that the drafters asserted as law leave little room for the deployment of weapons whose effects cannot be predictably contained within the bounds of the law.

193. See Cassese, *supra* note 8, at 198.