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Averting a New Nuclear Arms Race

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AVERTING A NEW NUCLEAR ARMS RACE

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ABSTRACT: The first goal of this thesis is to defend the claim that working towards nuclear disarmament is a rational, ethically pressing, and urgent goal. I will parse, condense, and array the arguments of statesmen, military leaders, philosophers, peace advocates, scientists, and religious leaders against the continued production, modernization, and maintaining of nuclear arsenals. After this, I will examine the current challenges to nuclear disarmament and promising and pragmatic options on the way to a world without nuclear weapons, with a focus on United States' policy.

OUTLINE:

1. Arguing for Nuclear Disarmament

    A. Pragmatic Arguments for Nuclear Disarmament

    B. Ethical Arguments for Nuclear Disarmament

    C. Religious Arguments for Nuclear Disarmament

2. Moving Towards Nuclear Disarmament

    A. Current Issues Posed by Nuclear Weapons

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1. ARGUING FOR NUCLEAR DISARMAMENT

A. PRAGMATIC ARGUMENTS FOR NUCLEAR DISARMAMENT

Before diving directly into the moral quandaries concerning the maintaining of nuclear arsenals and using nuclear weapons, it is important to address the practicality of nuclear weapons, that is, how well they accomplish the goals for which they are created. Many times proponents of disarmament are treated as lofty idealists at best or as naïve threats to security at worst, but if a successful pragmatic case is put forth for nuclear disarmament then they will avoid these charges. Plus, there are schools of thought in which morality ultimately collapses into practicality for achieving a good end and approaches to international relations which emphasize that achievable moral goods are constrained by what is deemed realistic. If the disarmament proponent wants to sway the views of these people, and citizens rightly concerned about their security, then a pragmatic argument for disarmament is quite helpful. This pragmatic argument hinges on the facts that nuclear deterrence has deep flaws as a military strategy and nuclear weapons are susceptible to miscalculated use, accidental use, or malicious use.

In constructing such an argument, a starting point is to examine the aims of US nuclear weapons policy. It is actually the US Department of Energy, specifically the National Nuclear Security Agency within the US Department of Energy, rather than a branch of the military that is in charge of maintaining the US nuclear stockpile. According to the NNSA, a large part of its mission is to sustain "a safe, secure, and effective nuclear deterrent."[1] According to the US government, it is fair to say the main goal of the US nuclear stockpile is nuclear deterrence, which is at least somewhat laudable. If there is any reason to stockpile nuclear weapons, it is

1. "Maintaining the Stockpile | National Nuclear Security Administration | (NNSA)," accessed December 19, 2016, https://nnsa.energy.gov/ourmission/maintainingthestockpile.

probably the prevention of the use of nuclear weapons. Now with an understanding of the goal of US nuclear weapon policy, a pragmatic argument for US nuclear disarmament can be made. I will argue that, historically, US nuclear policy has had trouble measuring up to its goal of sustaining "a safe, secure, and effective nuclear deterrent," and, in light of this, disarmament is a better option.

Attempting to determine whether the US nuclear stockpile provides a safe, secure, or effective nuclear deterrent first requires an evaluation of nuclear deterrence as a viable military strategy. One alternative strategy is to maintain the traditional attitude toward war with regard to a nuclear arsenal: Maintain a larger force than rivals in order to defeat them should war break out. In other words, a nuclear war is able to be won, albeit likely with much higher losses than any other previous war. According to the National Museum of American History's web page on nuclear deterrence during the Cold War, the Soviet Union actually adopted a policy more geared toward winning a nuclear war early on, as described above, than practicing nuclear deterrence.[2] Gradually both the US and the Soviet Union moved towards a triad system using weapons that could be deployed from ICBMs, submarines, and long-range bombers. However, if the strategy the Soviet Union adopted early on is viable, it calls into question the effectiveness of nuclear deterrence. Under this view, costs of winning a nuclear war would indeed still be high, but not higher than the risk of suffering a devastating nuclear first strike attack.

One notable figure who argued that a nuclear war was winnable was Herman Kahn. Kahn's magnum opus, *On Thermonuclear War*, was written in the context of President Eisenhower's "New Look" policy, which stipulated a massive, even nuclear, retaliation to any

2. "Nuclear Deterrence," accessed December 19, 2016, http://americanhistory.si.edu/subs/history/timeline/different/nuclear_deterrence.html.

Soviet conventional military aggression around the world.[3] Reviewers and critics of Kahn's work point out that his book made a notable step forward by arguing that the massive retaliation doctrine increased the risk of nuclear war by encouraging the Soviet Union to precede any conventional strike on the United States' forces or its allies with a preemptive attack to disable the US nuclear arsenal.[4] He was not afraid to postulate that, in the escalation leading up to a nuclear exchange, one of the superpowers would choose to pay the cost of using nuclear weapons. Admitting the unprecedented devastation of nuclear war, he did not admit it was unwinnable and could never be worth the drastic cost, and as such demonstrated an ominous option: either of the superpowers could calculate that nuclear war was rational.[5]

There is, however, another more troubling problem with traditional nuclear deterrence views: These views presume that states are rational actors. Unlike a game played by two opponents (which is often used as an analogy or simulation for determining outcomes for nuclear deterrence policies), this "game" played by states is a match played not by two actors, but two hulking collections of actors vying for control of their respective side, occasionally manifesting as a common goal or interest on a national level. So rather than this "rational actor" theory, an organizational theory which views states as a synthesis of competing factions, trying to take control seems more accurate.[6]

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3. Samuel Huntington, *The Common Defense*, (New York: Columbia University Press, 1961) 79–80.

4. Louis Menand, "Fat Man," *The New Yorker*, June, 2005. http://www.newyorker.com/magazine/2005/06/27/fat-man.

5. Ibid.

6. Scott Sagan and Kenneth Waltz, *The Spread of Nuclear Weapons: An Enduring Debate* (New York: W.W. Norton & Company, 2013), 46-47.

Worse yet, some potential nuclear entities are even more decidedly lacking a rational interest in self-preservation. Terrorists groups like Al-Qaida have attempted to acquire nuclear weapons in the past, and ISIS would almost certainly use a nuclear weapon if it acquired one. Rather than a deterrent, nuclear weapons in the hands of a terrorist organization become an immensely powerful bargaining chip, an umbrella under which to conduct violence, or, worst of all, a weapon used to commit mass murder.

If the issues of competing factions in government and nuclear terrorism are examined with the prevailing theory in nuclear deterrence in view, then problems are quickly apparent. Terrorists will not be deterred by nuclear weapons. A stark issue is the frequent conflict between military and civilian leaders over the use of military force, reactions to international affairs, and their respective roles in government. Political scientist Scott Sagan develops this line of thought, writing, "professional military organizations – because of common biases, inflexible routines, and parochial interests – display organizational behaviors that are likely to lead to deterrence failures and deliberate or accidental war."[7]

Another issue that mitigates the effectiveness of nuclear deterrence is the changing nuclear landscape. The traditional view of deterrence and the context it arose in is vital to consider here. In the initial escalation from a world with one nuclear power, only one more nuclear power arose next rather than multiple other nations at the same time. This ended any potential for a United States nuclear hegemony and jarred the post-war balance of power. Two superpowers were emerging and they countered each other by building up conventional and

7. Ibid., 42.

nuclear forces to deter the other from attacking. Two superpowers squaring off with ample reliable second-strike capable forces could create the ideal nuclear deterrence scenario.[8]

However, this scenario did not take long to begin unraveling. States that would likely be protected under either the United States or Soviet Union's nuclear umbrella developed their own arsenals (United Kingdom, France, and China). The deterrence paradigm held up well despite this change due to their willingness to generally align with a superpower. In the time since these three additions, the "nuclear club" has nearly doubled and now includes the original five nuclear powers as well as three states that are not recognized by the Nuclear Non-Proliferation Treaty (India, Pakistan, and North Korea), and one state that likely possesses nuclear weapons and is also not recognized under the treaty (Israel).

The nuclear powers have outgrown the deterrence paradigm. Under the early Cold War deterrence scenario, nuclear weapons generally countered a rival's similar production. The deterrence situation has changed, with nations now trying to gain an advantage on the world stage by using nuclear status to lend weight to their diplomatic moves.[9] It encourages more nations to join the standoff to gain political clout, defend themselves against nuclear powers, and be seen as a regional leader.

Israeli nuclear weapons serve as an impetus for other states in the Middle East to develop nuclear weapons. And since the United States is the only nation that has actually ever used nuclear weapons in a military conflict, its nuclear weapons stationed around the world encourage other nations to develop nuclear weapons to deter a possible US nuclear or conventional attack.

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8. Ibid., 57-58.

9. Ibid., 216.

This point is easy for us as United States citizens to forget. It is sometimes hard to understand how much of a destabilizing effect the large and technologically advanced US nuclear arsenal exerts, especially when moved into position for tactical or theatre level deployments.[10] Throughout history, arms races have led to wars. Nuclear arms races have been no different, only so far wars between nuclear powers have been limited or proxy wars, but a non-nuclear conflict could quickly escalate.

In additions to concerns regarding nuclear deterrence as an effective military strategy, nuclear weapons are highly susceptible to the dangers of miscalculation and malfunction shared with conventional weapons. Malfunctions of nuclear command and control systems have been astonishingly frequent in the United States, which is typically thought of as handling its nuclear arsenal securely. These have not been minor problems either, the United States has almost accidentally bombed itself. In 1962, a B-52 bomber, in the air and armed with two hydrogen bombs as part of a program demanding constant readiness to attack the Soviet Union, broke apart over North Carolina.[11] As the aircraft was breaking apart, the centrifugal force was enough to simulate the lanyard that released the hydrogen bomb being pulled by a human and caused the bombs to be released.[12] One of the bombs went through all of the proper arming stages except for one as it fell to the ground, and when the bomb hit the ground in North Carolina the firing signal

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10. Ibid.

11. Eric Schlosser, "Nuclear 'Command And Control': A History Of False Alarms And Near Catastrophes," *NPR*, August, 2014. http://www.npr.org/2014/08/11/339131421/nuclear-command-and-control-a-history-of-false-alarms-and-near-catastrophes.

12. Ibid.

was sent.[13] If the bombs malfunctioning arming stage had worked as intended, there would have been a massive nuclear explosion in the North Carolina countryside.[14]

In addition to aircraft crashes, there have also been false alarms due to mistakes and malfunctions in NORAD's systems. In November, 1979 at the NORAD headquarters inside Cheyenne Mountain at Colorado Springs, there was an alarm on the monitoring screens warning that there had been an all-out Soviet attack against the United States, and the President would have ten to fifteen minutes to respond if the attack was confirmed.[15] A quick investigation revealed that no other radar stations were showing an attack, and the warning was attributed to a false alarm.[16] As the investigation progressed, the cause of the false alarm was discovered: a training tape simulating a massive Soviet attack was accidentally inserted into the computer and it was presented by the computer as an actual attack.[17] Another serious incident occurred not too long after. Zbigniew Brzezinski, President Carter's National Security Advisor, was awakened by a call at 2:30 in the morning and told that the United States was most likely under attack by 220 missiles.[18] Brzezinski replied to his aide that he needed confirmation of the attack and was given even worse news when the next call came: It was actually 2200 Soviet missiles.[19] Brzezinski was about to call the president to alert him when his aide called again letting Brzezinski know the

13. Ibid.

14. Ibid.

15. Ibid.

16. Ibid.

17. Ibid.

18. Ibid.

19. Ibid.

attack was a false alarm.[20] The culprit? An investigation later revealed that a 46 cent computer chip had malfunctioned, producing the signal that 2000 missiles were inbound to attack the United States.[21]

In the process of researching for his book on nuclear weapons safety, Eric Schlosser obtained thousands of pages of information through the Freedom of Information Act, interviewed those who designed nuclear weapons, as well as those who handled the weapons, and discovered that a lot of the information about nuclear weapons incidents had been suppressed. According to Schlosser:

> If you look at the Pentagon's official list of how many nuclear weapons accidents, serious accidents, we have — what they call "broken arrows" — the list contains 32 accidents. But I was able to obtain a document through the Freedom of Information Act that said just between the years 1950 and 1968, there were more than 1,000 accidents involving nuclear weapons. And many of the serious accidents I found don't even appear on the Pentagon's list. So I'm sure there were many more that I was unable to uncover that occurred.[22]

The secrecy and frequency of accidents concerning nuclear weapons is a startling combination, but in addition to concerns about faulty weapons, delivery systems, and warning systems, human error and rashness are another unsettling factor undermining deterrence by incorrect or ignored cost/benefit analysis and thus increasing the likelihood of a deterrence

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20. Ibid.

21. Ibid.

22. Ibid.

failure. The Cold War standoffs between the US and USSR are rife with evidence supporting the argument that military leaders often act too boldly or make mistakes in the deployment, transport, and posturing of nuclear forces. Recently, new information has come out regarding dangerous military operations taking place during the Cuban missile crisis. At the beginning of the Cuban missile crisis the USAF Strategic Air Command secretly deployed nuclear warheads on nine test ICBMs at Vandenberg Air Force Base in California, and then launched a prescheduled ICBM on a test flight over the Pacific.[23] No one within Strategic Air Command raised concerns that Soviet intelligence might be aware of the secret weapons deployment and might have misinterpreted the ICBM launch from the base as a nuclear attack in the heat of the crisis.[24] Another serious incident occurred during the crisis at Malmstrom Air Force Base in Montana. At the peak of tensions during the crisis, officers in charge of the nuclear weapons at the base rigged their Minuteman missiles in order to have the independent ability to launch the missiles immediately.[25] Not only is this an extremely serious violation of Minuteman safety rules, but during an investigation that occurred after the crisis, evidence was altered in an attempt to prevent higher authorities from realizing that officers had given themselves the ability to launch the missiles independently.[26] Worse yet, political scientist Scott Sagan notes that very little was learned from these incidents: "relevant military procedures and routines were *not* altered after each of these incidents."[27]

23. Sagan & Waltz, 70

24. Ibid.

25. Ibid.

26. Ibid.

27. Ibid., 71.

Due to the lack of lessons learned, these sort of incidents with the potential for accidental nuclear war have unfortunately continued to happen after the close of the Cold War. In 1991 during the Gulf War, the United States bombed a large ammunition bunker outside of Basra, Iraq, and the explosion was so large that both the Soviets and Israelis, observing via satellite, contacted Washington to ask if the United States had used a nuclear weapon against Iraq.[28] Another incident occurred during the war when two weeks later US forces used a Daisy Cutter, an extremely large conventional bomb dropped out of the back of a cargo aircraft, and a British commando behind Iraqi lines saw the massive explosion and announced on an open (unprotected) communications channel, "Sir, the blokes have just nuked Kuwait."[29] If Iraqi officers, who had been predelegated authority to launch chemical and biological weapons from Saddam Hussein, had heard the radio broadcast there is a good chance Israel would have been attacked with these weapons of mass destructions and Israel would have leveled Baghdad with a nuclear weapon in response.[30]

Before I step into the moral quandaries of nuclear weapons, let me note that there have been many practical problems with nuclear deterrence examined in this section. Chief among these issues are the questionable viability of nuclear deterrence as an effective military strategy, the concern that nuclear deterrence drives nuclear weapons development and nuclear proliferation, the risk of accidental detonation or mishandling of nuclear weapons, and malicious,

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28. Ibid., 75.

29. Ibid.

30. Ibid.

reckless, or unwise handling of nuclear weapons by the military or political authorities. While nuclear arms can indeed have a deterrent effect, the existential risk of large nuclear stockpiles is just not sustainable. With these practical concerns lending weight to disarmament, an ethical case for nuclear disarmament will help to further demonstrate nuclear disarmament as superior to nuclear deterrence.

B. ETHICAL ARGUMENTS FOR NUCLEAR DISARMAMENT

In addition to the pragmatic arguments for nuclear disarmament, there are strong ethical arguments for nuclear disarmament. A lot of the ethical concerns about nuclear weapons stem from the fact that even the smallest nuclear weapons created thus far have the capacity for significant destruction and long term consequences in the form of radioactive fallout. For example, the tiniest nuclear bomb the US produced, the Davy Crockett, had a .01-kiloton payload and was designed to be launched from a tripod by a soldier on the battlefield.[31] To put the impact of such a weapon in perspective, this is a screenshot taken from nuclear weapons historian Dr. Alex Wellerstein's website "NUKEMAP" simulating a weapon the size of a Davy Crockett bomb exploding at surface level in downtown Washington, DC:

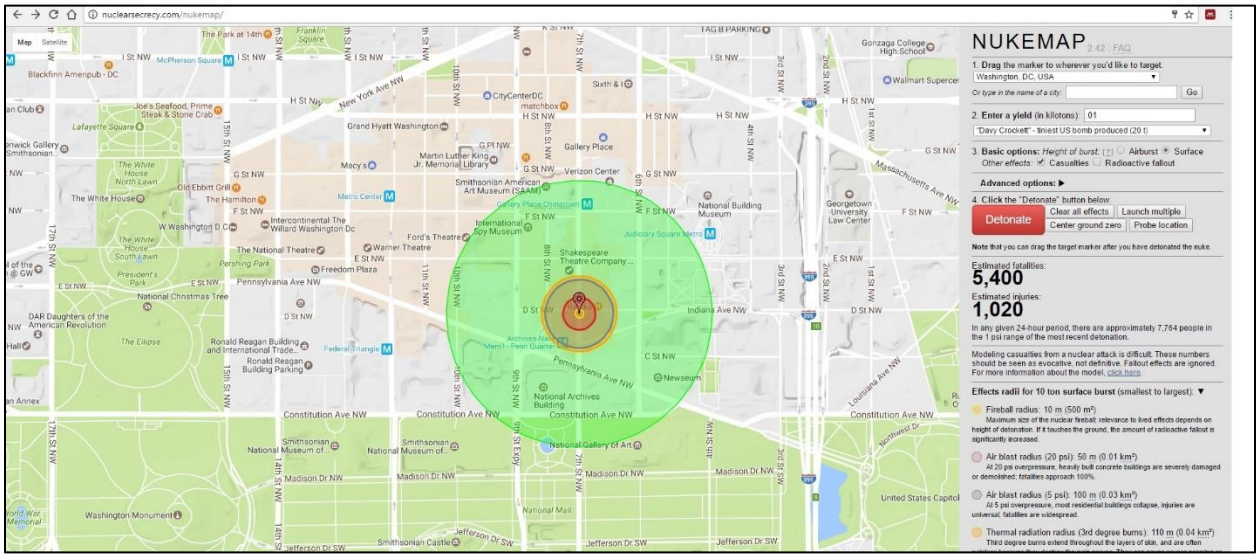

Figure 1. NUKEMAP simulation of a Davy Crockett explosion in Washington, DC. (NUKEMAP by Alex Wellerstein). Hosted on nuclearsecrecy.com/nukemap/.

32. Adam Weinstein and Dave Gilson, "8 of the Wackiest (or Worst) Ideas for Nuclear Weapons," *Mother Jones*, November, 2011. http://www.motherjones.com/politics/2011/11/wacky-worst-nuclear-weapons.

Some harrowing observations from the graphic are the death toll (roughly 5,400 people), and the nearly .5 kilometer area contaminated by radiation (shown as a green circle on the map) that would probably be lethal to those immediately exposed to it.[32] For these reasons, even the smallest nuclear weapons are rightly classified as weapons of mass destruction, and as such very careful ethical consideration should be given to the production and use of such weapons. This portion of the paper will argue that is difficult for nuclear weapons to withstand such ethical scrutiny, and in light of this, disarmament is a better option.

For the purpose of determining the ethical status of nuclear weapons, a suitable ethical framework is necessary. The Just War theory tradition provides a solid framework due to its long history, continued contemporary relevance, and its overlapping with the Geneva Conventions' protections of civilians.[33] Just War theory ethical principles are typically divided into two categories: *jus ad bellum* (concerning resorting to war) and *jus in bello* (concerning conduct in war).[34] Upon examination, three criteria of *jus in bello* are especially relevant to the use of nuclear weapons: discrimination, proportionality, and necessity.[35] I will now examine hypothetical and historical scenarios to determine whether using nuclear weapons can justify these criteria.

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33. "NUKEMAP by Alex Wellerstein," accessed December 23, 2016, http://nuclearsecrecy.com/nukemap/.

33. Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977, Article 51, *available at* https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/Article.xsp?action=openDocument&documentId=4BEBD9920AE0AEAEC12563CD0051DC9E**.**

34. Seth Lazar, "War" *Stanford Encyclopedia of Philosophy*, 2016. https://plato.stanford.edu/entries/war/.

35. Ibid.

The discrimination criterion requires that noncombatants are not targeted, that is that combatants discriminate between combatants and noncombatants when fighting.[36] It does not require that an attack must completely lack civilian casualties or be intended to completely lack civilian casualties, only that the attacker does not intentionally target civilians.[37] If this appears to be a mere semantic distinction, then it must be admitted that this is because it is close to one, and Just War scholars debate the significance of intention. Setting aside this debate and pressing forward, it seems there is nothing inherent to nuclear weapons that makes their use incompatible with the discrimination requirement set forth above. A simple hypothetical scenario can demonstrate this: An invading army with no accompanying noncombatants is marching across a barren desert and the defending army attacks this army with a nuclear weapon. In this hypothetical scenario, it seems like the army that uses the nuclear weapon has fulfilled the discrimination criterion: they targeted no civilians.

One can think of various similar hypothetical scenarios, but most nuclear weapons were not designed or planned to be used in scenarios with no civilians around. This scenario would be called a "tactical" use of a nuclear weapon. A tactical nuclear weapon is one meant to be deployed to a battlefield, usually has a shorter range and lower yield, and is intended to accomplish a short-term immediate objective.[38] However, tactical use of nuclear weapons, even with no civilians targeted, proves to be an exceedingly poor choice strategically. Launching a nuclear attack, even a small one, has vast significance. It is a clear sign to the enemy that

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36. Ibid.

37. Ibid.

38. "Nuclear Weapons: Who Has What at a Glance | Arms Control Association," accessed December 25, 2016, https://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat.

weapons of mass destruction will be used in a conflict, and it could easily provoke a tactical or strategic nuclear, radiological, biological, or chemical counterattack. Though tactical nuclear may satisfy the discrimination requirement, they are extremely dangerous due to how they escalate a conflict.[39]

Strategic use of nuclear weapons is much more commonly contemplated.[40] These weapons are meant to destroy the enemy's capacity to continue fighting in a war, and these weapons usually have an extended or even global range. The United States and Russia together deploy 3163 strategic nuclear warheads.[41] Strategic nuclear weapons, because of their goal of destroying warfighting capacity (usually a euphemism for destroying enemy cities), clearly flout the discrimination requirement. The bombings of Hiroshima and Nagasaki were example of a strategic use of nuclear weapons. While Hiroshima was chosen because it had a large military factory district, the psychological significance of being able to destroy a larger portion of the city due to the surrounding hills funneling the blast was a factor for the targeting committee.[42] It is hard to argue that this attack fulfilled the requirements of discrimination. The target the committee sought was not an actual military base or military unit, but rather military factories and the workers' homes.[43] Since factory workers are not combatants, and the atomic bomb dropped on Hiroshima was intended to target these noncombatants, the atomic bombing of Hiroshima failed to satisfy the discrimination requirement of Just War theory. Likewise, the

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39. Ibid.

40. Ibid.

41. Ibid.

43. "Decision to Drop the Bomb | Atomic Heritage Foundation," accessed December 25, 2016, http://www.atomicheritage.org/history/decision-drop-bomb.

43. Ibid.

present form of the rules of the Geneva Convention unambiguously rule out an indiscriminate attack: "The civilian population as such, as well as individual civilians, shall not be the object of attack. Acts or threats of violence the primary purpose of which is to spread terror among the civilian population are prohibited."[44]

Unfortunately, instead of repudiating planning and designing nuclear weapons intended to be used in a manner classified as a war crime, the nuclear powers doubled down on producing, stockpiling, and deploying strategic nuclear weapons as part of the strategy of nuclear deterrence.[45] Using a nuclear weapon tactically would be unethically reckless and using a nuclear weapon strategically would likely be a war crime, due to violating the discrimination criterion, but the application of this judgment on stockpiling nuclear weapons as a deterrent, never intended to be used is less clear. I will return to this issue after covering how the other two relevant Just War criteria relate to the use of nuclear weapons.

The proportionality criterion is a counterpart to the discrimination criterion. Since discrimination only prohibits the targeted, intentional killing of civilians, resolving the issue of unintended killing of civilians requires an additional criterion. The criterion of proportionality demands that unintended civilian casualties of a military action be proportional to the intended military objective.[46]

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45. Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977, Article 51, *available at* https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/Article.xsp?action=openDocument&documentId=4BEBD9920AE0AEAEC12563CD0051DC9E**.**

45. "Nuclear Weapons: Who Has What at a Glance | Arms Control Association," accessed December 25, 2016, https://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat.

46. Seth Lazar, "War" *Stanford Encyclopedia of Philosophy*, 2016. https://plato.stanford.edu/entries/war/.

Nuclear weapons are compatible with the proportionality requirement in certain situations. If for example an invading army of 6,000 soldiers is marching across a desert with relatively few enemy civilians nearby, perhaps 100, and the defending military uses a nuclear weapon against the invading army and unintentionally kills or injures these civilians, then it seems a nuclear weapon has been used in a military action that satisfies the proportionality criterion. The success of this scenario as an example does depend on the evaluator's view of how many civilian casualties are proportional for the destruction of an enemy army, but this scenario seems to offer significantly better proportionality than many real world military operations, so it should serve as a good example.

Hypothetically then, the use of a nuclear weapon can be proportional, but once again, most nuclear weapons have not been designed or planned to be proportional. This is largely because most nuclear weapons, strategic nuclear weapons, are designed to intentionally kill and injure civilians, since this is already irreconcilable with the discrimination criterion, a proportionality calculation is moot. Troublingly, to avoid the problem of the indiscriminate nature of nuclear weapons, nuclear states have attempted instead to justify nuclear weapons on the grounds of proportionality. The United States did this during the planning of the bombing of Hiroshima.[47] A common sentiment was the loss of Japanese civilian life was thought to be proportional to the immense good of ending the war.[48] However, the discrimination criterion must be satisfied before proportionality calculations are even relevant. Granting then, for the sake of argument, that a nuclear attack on an enemy city is somehow not indiscriminate or that the discrimination criterion is not a legitimate part of Just War theory, it is a colossal task to

47. "Decision to Drop the Bomb | Atomic Heritage Foundation," accessed December 25, 2016, http://www.atomicheritage.org/history/decision-drop-bomb.

48. Ibid.

justify such an attack as proportional. If the "war plant and the worker's homes" were the primary targets and even if these targets were somehow legitimate, at least 129,000 Japanese civilians died as a result of the atomic bombings.[49] Most proportionality calculations involve fewer civilians killed than enemy combatants and those are still difficult calculations, but this one involves the intentional killing of a smaller special class of civilians (war factory workers, for the sake of argument perhaps more legitimate targets than the average civilian), and the unintentional but anticipated killing of tens of thousands of civilians not part of this targeted group. If such an attack is proportional, Just War theorists should just abandon the proportionality criterion since it virtually completely lacks teeth at this point.

There is one more Just War criterion by which the use of nuclear weapons should be evaluated: the necessity criterion. The necessity criterion dictates that "collaterally harming noncombatants is permissible only if, in the pursuit of one's military objectives, the least harmful means feasible are chosen."[50] The necessity criterion essentially helps an evaluator determine how tight the discrimination and proportionality criterion should be applied. All other things being equal, the necessity criterion demands the most discriminate and proportional weapon, strategy, or tactic should be used to accomplish a military objective. The necessity criterion's strength hinges on a strict definition of feasibility. As feasibility's meaning is loosened, so too is the necessity criterion. Just War scholar Seth Lazar and other prominent Just War theorist hold a strict view of feasibility, giving heavy priority to enemy noncombatants' lives at the expense of potentially grievous cost to one's own combatants.[51]

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49. Ibid.

50. Seth Lazar, "War" *Stanford Encyclopedia of Philosophy*, 2016. https://plato.stanford.edu/entries/war/.

Building on the previous hypothetical scenarios, let us craft a scenario evaluating nuclear weapons under the necessity criterion. Again, an invading army of 6,000 soldiers is marching across a desert with relatively few civilians nearby, perhaps 100, but the defending military has two weapons left in its arsenal: a small nuclear weapon that will likely kill the invading army and a few of the hundred civilians or a massive conventional bomb that will also kill the invading army but will cause a larger explosion which will kill more civilians. Since this attack is discriminate (the defenders are not intentionally targeting civilians) and proportional (6,000 enemy combatants killed and relatively few enemy noncombatants killed), the necessity criterion comes into play and demands that the nuclear weapon be used instead of the larger conventional weapon. Not only is the necessity criterion satisfied, but all of the relevant Just War criteria for using a nuclear weapon have been satisfied, so long as lingering effects and environmental damage are taken into account appropriately as well.

By gaming all the parameters perfectly, there are situations we can think of that justify the use of nuclear weapons in a war (and perhaps this is true of virtually any weapon), but the real world often lacks the parameters tuned in favor of using nuclear weapons. Returning to the actual world, we see the necessity criterion provides the platform for another ethical critique of using nuclear weapons. If the objective of the atomic bombing of Hiroshima was indeed to destroy a "war plant and the worker's homes," then it was a massive failure under the necessity criterion since the United States possessed a vast amount of conventional weapons and delivery systems capable of accomplishing this with less bloodshed.[52] To be frank though, that was not the primary objective of the atomic bombing of Hiroshima. The primary objective bombing was

51. Ibid.

52. "Decision to Drop the Bomb | Atomic Heritage Foundation," accessed December 25, 2016, http://www.atomicheritage.org/history/decision-drop-bomb.

something intangible, terrorizing the Japanese civilian population and attempting to break the refusal of Japan's leaders to accept unconditional surrender.[53]

This use of nuclear weapons, as weapons of terror, must be heartily condemned; not only are the relevant Just War criteria bucked, they are savagely torn asunder and trampled to demonstrate the ruthlessness that awaits enemies who do not bend their knee with the goal of cowing them into submission. Unfortunately, this frightful warping of ethics that was accepted in the decision to use the atomic bombs on Hiroshima and Nagasaki has had concrete consequences that have back fired on the United States. By tacitly accepting the ethics of using a weapon of mass destruction in a terrorist attack, the United States has bolstered the case of terrorists (including Osama bin Laden in 1998) who attempt to grasp moral parity for themselves in their indiscriminate attacks on the United States, and this is tragic.[54]

With Just War theory thoroughly excoriating the historical use of nuclear weapons and the planned use of nuclear weapons to attack civilian populations, there still remains the issue of stockpiling nuclear weapons as a deterrent. It first must be observed that the criteria of Just War theory admit of no exception to their provisions if an enemy chooses to violate the criteria. This seems to end any case for an ethical nuclear retaliation against the civilian population of an enemy, which is what deterrence is predicated on. However, a state could maintain a nuclear arsenal to threaten to use in a retaliatory strike without ever intending to use it. This requires that, even if an enemy launched a nuclear attack, there would not be a retaliatory nuclear attack

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54. Ibid.

54. Sagan, 118.

against an enemy's civilians. This is hypothetically possible and is paid lip service to, but is not likely in the actual world.

The governments in control of the largest nuclear arsenals, the United States and Russia, both refuse to adopt a No First Use policy for nuclear weapons.[55] If the weapons are purely deterrent, why do both nations refuse to agree to a No First Use policy to de-escalate tension regarding their nuclear arsenals? An important part of deterrence is at least appearing to have an adequate second strike capability were a preemptive attack launched against one's nuclear arsenal. The United States and Soviet Union both developed electronically semi-automated retaliation systems in case military and political leaders were somehow killed in a preemptive strike or unable to contact the military personnel in control of the nuclear arsenal. In fact, the Soviet Union's system was designed to work completely automatically, using sensors to determine if a nuclear attack had taken place.[56] Such a system is arguably necessary for even the appearance of deterrence in this age, but it places the world on the brink of an accidental doomsday, and disarmament is a much better option than a deterrent like this. Finally, there is the grave possibility that a deterrent arsenal will be used as a vengeance weapon. Ethically, if nuclear weapons are going to annihilate one's nation there is no need to launch a retaliatory salvo and kill millions of enemy noncombatant civilians. This intuition is incorporated into Just War theory, since part of the theory of Just War is that a just war must have reasonable prospects of success. However, it would be tremendously tempting to launch that volley as retribution for the unspeakable atrocity of suffering a nuclear first strike. Given these real world considerations of

55. James Conca, "Should America Be The First To Use Nuclear Weapons, Again?" Forbes, August, 2016. http://www.forbes.com/sites/jamesconca/2016/08/26/should-america-be-the-first-to-use-nuclear-weapons-again/#3f7db4241231.

56. Nicholas Thompson, "Inside the Apocalyptic Soviet Doomsday Machine," Wired, September, 2009. https://www.wired.com/2009/09/mf-deadhand/.

ambiguous intentions, mistake, malfunction, and malice, even a claimed “mere deterrent” nuclear force is an exceedingly dangerous, to the point of being unethical, risk.

To recap, after an example explaining the destructive power of nuclear weapons, the use of nuclear weapons has been examined through the lens of Just War theory. Due to the design of strategic nuclear weapons and their incredibly large payloads, they are difficult to use discriminately, a requirement of Just War theory, and in fact, these weapons are often designed and intended to be used indiscriminately to destroy cities filled with noncombatants. If a nuclear weapon were to be used discriminately, it would still likely face difficulty under the proportionality requirement of Just War theory, especially if there were any significant population of civilians near the target who would be at risk of death or injury in the initial blast, immediate radiation exposure, or fallout carried by the wind. If a nuclear weapon were indeed intended to be used in a discriminate and proportional way, then the necessity criteria would demand that the most discriminate and proportionate feasible means be used, which almost certainly would require a conventional weapon or multiple conventional weapons to be used instead (especially in the case of the United States which boasts a massive conventional arsenal in addition to its nuclear arsenal). This leaves very little ethical room for the use of nuclear weapons.

Stockpiling nuclear weapons as merely a deterrent has been shown to be dangerous and it is questionable if there are any cases of a merely deterrent arsenal in the actual world. Given the ethical considerations weighing heavily against using nuclear weapons in most circumstances, nuclear disarmament will be argued for as the best option from an ethical point of view.

C. RELIGIOUS ARGUMENTS FOR NUCLEAR DISARMAMENT

The ethical arguments presented in the previous section make a case for disarmament that is compatible with a secular or religious world view. There are also numerous religiously grounded reasons and arguments for supporting nuclear disarmament. Of course, not all religious people or religious groups support nuclear disarmament, and even within a religion there is often disagreement among the lay people and between the lay people and the clergy about various issues, including this one. In fact, it is worrisome that radical religious groups will attempt to acquire nuclear weapons and will be less deterred in using them than secular governments or groups.[57] This is not an unfounded concern. The Aum Shinrikyo millenarian religious group attempted but failed to acquire nuclear weapons before their 1995 Tokyo subway chemical attack.[58] This is all the more reason why it is important to prevent radicalization that leads to a cavalier attitude about nuclear weapons, as well as violence more generally, and having religious arguments against the use of nuclear weapons available for that purpose is part of the equation.

Given how many religious people there are in the world, it will be beneficial to examine religious reasons people oppose nuclear weapons. People can be quite zealous about their religious convictions, and this passion can be used constructively in pursuit of a world without nuclear weapons. Some religious people would prefer an argument from a religious point of view rather than one based on a secular ethical system, and discussing and understanding how and why differing religions can agree on their opposition to nuclear weapons, along with working together on disarmament, offers an incredible ecumenical opportunity. For the purposes of this

57. Sagan, 116-117.

58. Ibid.

paper, I will examine Protestant, Catholic, Islamic, and Hindu views on nuclear weapons and nuclear disarmament.

Understanding Protestant views on nuclear weapons is a difficult task due to how many different denominations are considered a part of the Protestant movement, but some general trends may be seen. The United States' largest Protestant denomination, the Southern Baptist Convention, spoke in favor of multilateral nuclear disarmament in 1983:

> Be it finally RESOLVED, That we go on record as prayerfully desiring an eventual nuclear disarmament, provided it would in no way compromise the security of our nation by being less than fully mutually verifiable; and that we assure our nation's leaders of our earnest prayers that they may be encouraged and strengthened to work for peace with justice.[59]

This is interesting, especially since the SBC and Evangelical Christianity in the United States are thought of as traditionally more hawkish on international policy. For example, in 2002 the president of the SBC's Ethics and Religious Liberty Commission at the time, Dr. Richard Land, and other Evangelical leaders, sent a letter to President Bush putting forth arguments in support of military action against Saddam Hussein's regime in Iraq.[60] However, given the denomination's stated position on nuclear disarmament as well as SBC members' involvement in organizations like the Baptist Peace Fellowship of North America, there are voices in the denomination that do desire nuclear disarmament and diplomatic solutions.

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59. "Southern Baptist Convention | Resolution On Peace With Justice (1983)," accessed December 29, 2016, http://www.sbc.net/resolutions/834/resolution-on-peace-with-justice.

60. "The so-called 'Land Letter'," accessed December 29, 2016, http://www.drrichardland.com/press/entry/the-so-called-land-letter.

In addition to the SBC, other Evangelical and Mainline Protestant denominations have made statements regarding the reduction of nuclear weapons or complete nuclear disarmament:

From the American Baptists General Board: "We call on all nations to abolish their nuclear weapons and to dispose of such weapons in a manner that is not harmful to either the physical or political environment."[61]

From the Episcopal Church General Convention: "The 76th General Convention [of the Episcopal Church] calls upon US policy makers to determine a timely process for the dismantling of existing US nuclear weapons while urging other countries to do likewise; and be it further resolved, that this Church urge the President and Congress to explore a moratorium on production of new nuclear arms."[62]

From the United Methodist Church Council of Bishops: "We support the earliest possible negotiation of phased but rapid reduction of nuclear arsenals, while calling upon all other nuclear-weapon states to agree to parallel arms reductions, to the eventual goal of a mutual and verifiable dismantling of all nuclear armaments."[63]

From even this brief summary, it is fairly clear that Protestant Christian denominations largely agree that nuclear weapons are an evil that should be eventually be eliminated. Disagreement emerges in how disarmament should proceed, but at least the common goal of nuclear disarmament is shared.

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61. "Faith Statements on Nuclear Disarmament | Friends Committee on National Legislation," accessed December 29, 2016, https://www.fcnl.org/updates/faith-statements-on-nuclear-disarmament-155.

62. Ibid.

63. Ibid.

As far as the religious reasons for disarmament among Protestants, the Protestant understanding of nuclear weapons is chiefly found in interpreting the Bible, tradition, and reason. Jesus' command to love one's enemies recorded in the Gospels is argued by some Protestants to preclude war and as such nuclear arms are just the most devastating piece of an immoral ungodly system of condoned violence. Jesus taught his followers that peacemakers will be called children of God. This encourages Christians to seek peaceful resolution to conflicts rather than resorting to war or violence out of expediency or self-interest. In his "Letter to the Romans", the Apostle Paul encouraged the Roman Christians to overcome evil by doing good. This ethic has inspired Christian activists throughout history to overcome challenges and conflict using peaceful means. Also, the Christian vision of the eschaton is one in which war and death have passed away. The prophet Isaiah writes of a resolution to history in which men beat their swords into ploughshares. The tools created for destroying God's creation are turned into tools for fashioning a renewed world out of the former one.

For these reasons, Protestant Christian denominations by and large affirm the need to eliminate nuclear weapons.[64] Immolating innocent people in a nuclear conflagration is utterly incompatible with the teachings of Jesus. Even for the deterrence of nuclear war, nuclear weapons are fraught with problems from a biblical perspective. A peace by nuclear deterrence is no true peace at all, just a tense, unresolved armistice at best. It is a peace predicated on the ethic of retribution rather than a peace under the ethic of love for neighbor and a state of just and amicable relations between nations. It relies on the logic of coercion and eye for an eye to threaten any aggressor without fixing the underlying causes of why humans choose to go to war and slaughter each other. Reducing arms and challenging the callousness of humanity that drives

64. Ibid.

the impulse to war are not competing, mutually exclusive goals, but rather are both important and synergistic aims.

Like many Protestant denominations, Roman Catholic Christianity also endorses nuclear disarmament.[65] While giving limited acceptance (predicated on future disarmament) to nuclear deterrence during the Cold War, every pope since 1963 has called for a worldwide ban on nuclear weapons.[66] The Catholic Church reiterated this position recently at a 2013 UN General Assembly meeting on nuclear disarmament:

> "The chief obstacle [to the elimination of nuclear arms] is continued adherence to the doctrine of nuclear deterrence. With the end of the Cold War, the time for the acceptance of this doctrine is long passed. The Holy See does not countenance the continuation of nuclear deterrence, since it is evident it is driving the development of ever newer nuclear arms…."[67]

The United States Conference of Catholic Bishops has repeatedly called upon the United States government to take various steps towards disarmament as well as to promote diplomatic nuclear non-proliferation efforts, including the recent 2015 P5+1/Iran Nuclear Agreement.[68]

The reasons for Catholic opposition to nuclear weapons are largely the same as the Protestant reasons, but there are some reasons more specific to the Catholic faith. Papal authority establishing and maintaining opposition to the use of nuclear weapons and promoting

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65. "The Pope and the Bomb: New Nuclear Dangers and Moral Dilemmas," accessed December 29, 2016, http://www.usccb.org/issues-and-action/human-life-and-dignity/war-and-peace/nuclear-weapons/presentation-the-pope-and-the-bomb-2015-09-17.cfm.

66. Ibid.

67. Ibid.

68. Ibid.

disarmament carries force in Catholicism. Also, the Just War theory tradition discussed in the ethical arguments section of the paper is largely derived from traditional Catholic teaching about war, and Just War theory is still used by Catholic scholars and clergy to evaluate the ethics of war. The United States Conference of Catholic Bishops condemns the use of nuclear weapons and their production on the grounds that nuclear weapons violate the discrimination, proportionality, and reasonable chance of success criteria of Catholic Just War theory.[69] The Catholic Church has also recently arrayed newer arguments against nuclear weapons use and production, arguing that for deterrence to be effective nations must intend to resort to the slaughter of civilians and that even this intention, though unrealized, cannot be countenanced.[70] Also relevant for both Protestants and Catholics is the tragedy of exorbitant amounts of resources going to maintain and produce nuclear weapons instead of addressing the needs of the poor and rectifying injustices.

Protestant and Catholic Christianity are two of the largest religious groups in the United States, so it is comforting that leaders from both of these groups can agree on nuclear disarmament.[71] It is unknown whether or not the average Protestant or Catholic lay person is in favor of nuclear disarmament, but a statement from leaders in support of disarmament is a good start. The SBC and Catholic Church have both acknowledged the importance of educating the

69. Ibid.

70. Ibid.

71. "America's Changing Religious Landscape | Pew Research Center," accessed December 29, 2016, http://www.pewforum.org/2015/05/12/americas-changing-religious-landscape/.

laity on issues of war and peace, and nuclear disarmament specifically, in hopes of more Christians working toward a world free of war and nuclear weapons.[72]

An Islamic understanding of nuclear weapons will be examined next. With international concern over Iraq's and then Iran's nuclear program, the interaction of Islam and nuclear weapons has been much discussed. In the tradition of Islamic jurisprudence, Muslim scholars and jurists have debated the issue and have come to varying conclusions.[73] Judging by this passage from Mahmood's article, Islamic jurisprudence actually shares a lot in common with traditional Just War theory on the ethical conduct of war, possibly extending to understanding of nuclear weapons:

> Even when force is used justifiably, classic Islamic principles call for Muslims to adhere to limitations on the use of force, i.e., force is only allowed to be used to the extent necessary to achieve military objectives. Muslims must make a distinction between the enemies, fighting only the combatants, and the force used must be proportionate to the harm suffered. Finally, all fighters and prisoners must be dealt with humanely.[74]

At least superficially in line with these ideas, the majority of jurists hold that nuclear weapons are permissible for deterrence, but the first use of a nuclear weapon can never be justified.[75] According to scholar Faiqa Mahmood, the military concept of deterrence is implied in

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72. "The Pope and the Bomb: New Nuclear Dangers and Moral Dilemmas," accessed December 29, 2016, http://www.usccb.org/issues-and-action/human-life-and-dignity/war-and-peace/nuclear-weapons/presentation-the-pope-and-the-bomb-2015-09-17.cfm. & "Southern Baptist Convention | Resolution On Peace With Justice (1983)," accessed December 29, 2016, http://www.sbc.net/resolutions/834/resolution-on-peace-with-justice.

73. "Islam and the Bomb," accessed December 29, 2016, http://www.armscontrolwonk.com/archive/1200516/islam-and-the-bomb/.

74. Ibid.

75. Ibid.

the Quran in a verse, 8:60, admonishing Muslims to, "Prepare against them whatever forces you [believers] can muster, including warhorses, to frighten the enemies of God and of yours."[76]

There is still tension over the issue of nuclear weapons, stemming from Quranic commands to protect noncombatants and commands sanctioning the retaliatory use of force, but drawing upon the constraints of protecting noncombatants there is an argument to be made against production and use of nuclear weapons.[77] For example, this verse, 2:190, justifies the use of force, "Fight in God's cause against those who fight you, but do not overstep the limits: God does not love those who overstep the limits." On the other hand, the majority of commentators agree the Arabic command "do not overstep the limits" is so general it precludes any war of aggression or indiscriminate attack, with one of the only possible allowances of offensive use of force being a preemptive strike against an act of imminent betrayal by an ally.[78]

There is much debate concerning the issues of offensive use of force, nuclear weapons, and nuclear deterrence, but the largely consensus position of no first use is an important starting point, which is ahead of US and Russian policy. It is troubling that in the past Islamic terrorists like Osama bin Laden have attempted to acquire nuclear weapons, but it is comforting that only a very small minority of Islamic jurists hold that the offensive and indiscriminate use of nuclear weapons can be justified.[79]

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76. Ibid.

77. Ibid.

78. Ibid.

79. "Islam and the Bomb," accessed December 29, 2016, http://www.armscontrolwonk.com/archive/1200516/islam-and-the-bomb/. & Sagan, 118.

The final religion to be examined in this brief survey is Hinduism. Like the other religions surveyed so far, there are divisions within the Hindu community as to whether war or violence can be justified that extend to the issue of nuclear weapons. One strain of thought that is heavily emphasized in the Bhagavad Gita is the importance of following "dharma" which might impose the duty to fight in certain wars.[80] However, the Bhagavad Gita emphasizes that most justified wars are wars of defense or wars to protect the innocent rather than wars to gain lands, gain riches, gain power, or exact retribution.[81] "Ahisma", a principle of "total non-violence: in thought, word, or actions" is important to many Hindus and Buddhists and this also factors into Hindu thought about war, violence, and nuclear weapons.[82]

Traditionally dharma requires the Kshatriya varna, the soldier caste of society, to protect the people of their kingdom, including going to war if it is necessary to fulfill this duty.[83] A prime example of this is when Krishna advises Prince Arjun to go to war for his people, because as a prince this is his dharma, and in Bhagavad Gita 2:33 Krishna warns Price Arjun, "If you do not engage in this righteous battle then both your personal dharma and your honour will be destroyed, and you will accumulate sin."[84] Killing and the use of violence occur in other Hindu scriptures as well. The gods and goddesses kill to overcome evil and do good.[85] The mother

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80. "BBC Bitesize - GCSE Religious Studies - War and peace - Revision 4," accessed January 2, 2017, http://www.bbc.co.uk/education/guides/zvfbwmn/revision/4.

81. Ibid.

82. Ibid.

83. Ibid.

84. Ibid.

85. Ibid.

figure Durga Mata exemplifies this, portrayed as riding a tiger and holding weapons, willing to fight as fiercely as a tigress if required.[86]

On the other hand, Ahimsa prohibits violence from fighting in a war to harming the smallest creatures.[87] Gandhi is an important figure in this tradition: "I see neither bravery nor sacrifice in destroying life or property for offence or defence."[88] While a pacifistic understanding of the Bhagavad Gita is not the dominant one, it is still influential thanks to Gandhi's leadership in the cause of Indian Independence. Ahisma helps to temper the more violent passages of the Bhagavad Gita.

Since war can be justified on the dominant interpretation of the Bhagavad Gita, there are rules for how war should be conducted as in the Protestant, Catholic, and Islamic traditions. According to the Rig Veda, the oldest Hindu scripture, a warrior must not poison his arrow tips, must not attack the sick or old, must not attack a child or woman, and must not attack from behind on pain of horrific punishment.[89] The Laws of Manu attempt to outline the proper way to fight during wartime as well: only fight other soldiers, do not hurt women or children, never attack people while they are asleep, and never attack surrendering enemies.[90]

The rules outlined in the Rig Veda and the Laws of Manu are problematic for nuclear weapons use. Given that most nuclear weapons are created to destroy cities, which would violate

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86. Ibid.

87. Ibid.

88. Ibid.

89. "BBC Bitesize - GCSE Religious Studies - War and peace - Revision 5," accessed January 2, 2017, http://www.bbc.co.uk/education/guides/zvfbwmn/revision/5.

90. Ibid.

the rules of conduct in the Rig Veda and Laws of Manu, nuclear weapons, except for perhaps limited tactical use, appear to violate Hindu rules of war.[91] However, given the emphasis on defense and being able to retaliate powerfully against an enemy, not unlike the Islamic tradition, much of Hindu tradition could justify producing nuclear weapons as a nuclear deterrent as long as they are not used as a weapon of aggression or retribution.

To sum up the religious case for nuclear disarmament, the dominant views of the religions that have been examined do justify war in some cases, but in each religion examined war is restrained by certain rules to limit the occurrence and cruelty of war. In line with these religious concerns to minimize the occurrence and cruelty of war, the rules of each religion examined bar attacking noncombatants; however, nuclear weapons are often planned to be used to attack noncombatants, and devastatingly so. One of the few remaining justifications for possessing such weapons then would be to deter a similarly armed adversary; however, this is not an ideal scenario given the failure of human character and faculties that occasioned these religious constraints on war in the first place. Therefore, the best option is a safe process of nuclear disarmament as supported by just war or pacifist ideals in the religions examined.

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91. Ibid.

2. MOVING TOWARDS NUCLEAR DISARMAMENT

A. CURRENT ISSUES POSED BY NUCLEAR WEAPONS

The first shot of the Cold War was fired on August 6th, 1945 – the day the United States dropped an atomic bomb on Hiroshima, Japan. The atomic bombings the United States conducted against Japan revealed to the world that the United States possessed nuclear weapons and was willing to use them against a civilian population if deemed necessary. This, combined with growing tensions with the Soviet Union, resulted in a nuclear arms race that brought the world to the brink of nuclear war until the dissolution of the Soviet Union in 1991. With the Cold War over, for many the thought of a nuclear war has faded to a frightful memory, but nothing could be further from the truth. With rapidly chilling relations between the United States and Russia, tensions between nuclear neighbors India and Pakistan that will be exacerbated by climate change, fears of extremists getting nuclear weapons, concerns involving Iranian and North Korean nuclear weapons development, a new look must be given to nuclear disarmament as the current deterrence paradigm is lurching dangerously from the Cold War into a new nuclear landscape.

Nuclear weapons are on the brink of modernizing with unparalleled creativity and madness. A Russian state TV news program “accidentally” showed a shot of a diagram of the “Status-6” nuclear torpedo, and according to leaked documents, “The ‘oceanic multi-purpose Status-6 system’ is designed to destroy important economic installations of the enemy in coastal areas and cause guaranteed devastating damage to the country's territory by creating wide areas of radioactive contamination, rendering them unusable for military, economic or other activity

for a long time".[92] It is estimated the weapon could travel approximately 6,200 miles at a speed of 115 miles per hour carrying a warhead with a payload up to 100 megatons after being launched from a nuclear submarine.[93] Such a weapon armed with a 100 megaton warhead could produce a 1,650 foot high radioactive tsunami that would devastate a large coastal area.[94] This is a screenshot of a NUKEMAP simulation demonstrating the effects of such a weapon (not including the tsunami or effects of fallout) being deployed against New York City:

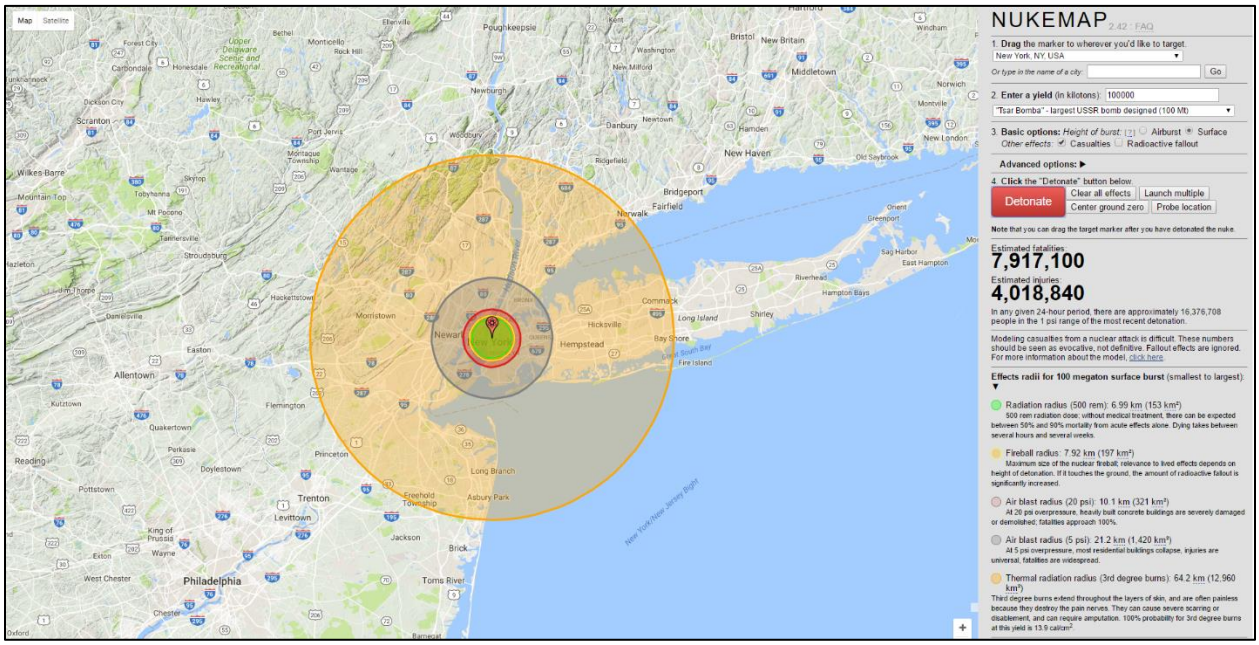

Figure 2. NUKEMAP simulation of a 100 megaton nuclear explosion in New York City. (NUKEMAP by Alex Wellerstein). Hosted on nuclearsecrecy.com/nukemap/.

This weapon would kill approximately 8 million people, and people in at least four states would be injured.[95] New York City would be an immolated ruin, with most of the buildings in

92. "Russia reveals giant nuclear torpedo in state TV 'leak' - BBC News," accessed January 3, 2017, http://www.bbc.com/news/world-europe-34797252.

93. Ibid.

94. Ibid.

95. "NUKEMAP by Alex Wellerstein," accessed January 5, 2017, http://nuclearsecrecy.com/nukemap/.

the city toppled and whatever remained consumed by fire.[96] With weapons like this being developed, nuclear disarmament is more of a priority than ever before.

The United States also has plans to upgrade its nuclear arsenal. Current plans call for around 1 trillion dollars on nuclear weapons maintenance and modernization over the next 30 years.[97] Like Russia, the US "modernization" plan includes unnecessary and dangerous weapon systems. One such weapon system is the proposed Long-Range Standoff weapon (LRSO).[98] The LRSO would be a cruise missile to be launched from a bomber aircraft hundreds of miles away from its target.[99] One cause for worry concerning the proposed LRSO is the ineffectiveness of air defense systems to counter it, and by making opposing nuclear deterrent arsenals more vulnerable, the LRSO encourages other nations to develop similar weapons and alternate elements of the nuclear triad.[100] Even more troubling, in their essay Senator Feinstein and Representative Smith allude to the fact that this weapon is planned for more than mere deterrence:

> However, maintaining nuclear deterrence may not be the primary motivation for developing the LRSO. In a letter sent two years ago, Under Secretary of Defense Frank Kendall wrote the following ominous sentence: 'Beyond deterrence, an LRSO-armed

96. Ibid.

97. "The New Arms Race | Ploughshares Fund," accessed January 5, 2017, http://www.ploughshares.org/new-arms-race.

98. "Cancel the New Nuclear Cruise Missile | Ploughshares Fund," accessed January 5, 2017, http://www.ploughshares.org/issues-analysis/article/cancel-new-nuclear-cruise-missile.

99. Ibid.

100. Ibid.

bomber force provides the president with uniquely flexible options in an extreme crisis.' Such an approach is risky and not advisable.[101]

To make matters worse, presumably for economic reasons, Congress has mandated that the LRSO be able to be armed with a conventional or nuclear warhead.[102] For a mistake to occur in accounting for weapons using a dual purpose weapon system like this is not unprecedented. In 2007, six nuclear armed cruise missiles were accidentally loaded onto a bomber taking off from Minot Air Force Base and were unaccounted for until several hours after the bomber landed at Barksdale Air Force Base, and during this time the plane on the tarmac was left without a special guard required for aircraft carrying nuclear weapons.[103]

Another concern about the planned dual purpose functionality of the LRSO is that this would make it easy for an enemy in a conflict to mistake the launch of a conventionally armed LRSO launched from a great distance as a nuclear attack, which would likely prompt an accidental nuclear exchange.[104] In contrast to the LRSO, the Air Force already has the Joint Air-to-Surface Standoff Missile in its arsenal and the Navy has the Tomahawk cruise missile.[105] Both weapons can be used as a precision attack weapon against targets hundreds of miles away like the LRSO, but without the escalation to nuclear war, hundreds of thousands of civilian casualties, and radioactive fallout a nuclear armed LRSO would have, or the risk of escalation to

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101. Ibid.

102. Ibid.

103. "AN UNAUTHORIZED TRANSFER OF NUCLEAR WARHEADS BETWEEN MINOT AFB, NORTH DAKOTA AND BARKSDALE AFB, LOUSIANA," United States Air Force, August, 2007.

104. "Cancel the New Nuclear Cruise Missile | Ploughshares Fund," accessed January 5, 2017, http://www.ploughshares.org/issues-analysis/article/cancel-new-nuclear-cruise-missile.

105. Ibid.

nuclear war a conventional LRSO would have. To conclude their essay, Senator Feinstein and Representative Smith argue that investment in conventional military capabilities would likely be a better alternative.[106]

In addition to worries about the United States and Russia ratcheting up the lethality of their nuclear arsenals, there are grave concerns about tensions between nuclear neighbors India and Pakistan. One, if not the main, bone of contention between India and Pakistan is the disputed territory of Kashmir, which has been fought over sporadically since 1947.[107] Against the background of this conflict, in 1998, both India and Pakistan tested multiple nuclear weapons, demonstrating to each other and the world that each nation had nuclear weapons to use in response to being attacked.[108] Have nuclear weapons made the conflict between the two nations cool down or made South Asia more dangerous?

Contrary to the thinking of deterrence proponents, nuclear weapons have had the overall effect of destabilizing South Asia and making it more dangerous. The themes of preventative war and times of loose civilian control over the military discussed earlier in this paper have brought India and Pakistan dangerously close to war throughout the history of their conflict over Kashmir.[109] The "Brasstacks" crisis of 1986-1987 exemplifies this problem. The crisis began with a massive Indian military exercise ("Brasstacks") involving simulated forays into Pakistan using hundreds of thousands of troops with live ammunition, and Pakistan alerted its military and

106. Ibid.

107. Ibid.

108. Sagan & Waltz, 135.

109. Ibid.

massed troops near its border with India in response.[110] This led to the Indian and Pakistani units conducting counter maneuvers and getting dangerously close until a series of rapid diplomatic communications between the highest political authorities in both nations defused the situation.[111]

While the Brasstacks crisis has been traditionally understood as an accidental one, there is a much more dangerous explanation for the events that unfolded. The Indian Army Chief of Staff at the time, General Sundarji, wanted to provoke a preventative war with Pakistan to eliminate the chance of Pakistan's developing a usable nuclear arsenal, and as such he designed Brasstacks to goad the Pakistani military into attacking a massive Indian military force ready and training for a counterattack into Pakistan.[112] According to Lieutenant General P.N. Hoon's memoirs, the commander of the Western Army during the Brasstacks crisis: "Brasstacks was no military exercise. It was a plan to build up a situation for a fourth war with Pakistan. And what is even more shocking is that the Prime Minister, Mr. Rajiv Gandhi, was not aware of these plans for war."[113] This dangerous lack of civilian control of the military narrowly missed causing a disastrous war and encouraged Pakistani and Indian nuclear weapons development.

Both India and Pakistan now possess nuclear weapons. Deterrence optimists cite the effectiveness of nuclear weapons preventing nuclear armed nations from going to war against each other, but in 1999, just a year after India and Pakistan both tested several nuclear weapons, the Kargil conflict, a limited war conducted high in the Himalayan peaks over contested territory

110. Sagan, 140.

111. Sagan, 140.

112. Ibid.

113 Ibid.

which cost over 1,000 lives, broke out.[114] Despite the limited nature of the conflict, US satellite intelligence showed India was preparing tanks and heavy artillery for an invasion of Pakistan until the US pledged to take an interest in resolving the conflict and both nations backed down.[115]

In addition to nuclear weapons failing to deter war, the second strike capability required for deterrence is difficult for Pakistan or India to maintain due to their small and relatively less developed arsenals. India and Pakistan have both intercepted intelligence from each other before, which could easily lead to one side discovering nuclear sites and launching a preemptive war, and Pakistani road building crews inadvertently revealed the location of "secret" nuclear weapon sites due to wide turn radius roads and roundabouts being built outside newly constructed garages at a military base.[116]

Another set of concerns specific to Pakistan are the danger of nuclear weapons being seized in a coup or stolen by terrorists as well as Pakistan's nuclear weapons or technology being sold on the black market. In 1995, the Pakistani Army arrested forty officers implicated in a coup plot which was led by General Zahirul Abbasi, and Abbasi allegedly had ties with Islamic fundamentalists.[117] A similar situation unfolded in June 201l when General Ali Khan was arrested for suspected links to Islamic fundamentalists.[118] In January 2011, a Pakistani governor was assassinated by his own bodyguards, who later told police that their motive for the killing

114. Sagan, 143.

115. Ibid.

116. Sagan, 148.

117. Sagan, 152.

118. Ibid.

was the governor's opposition to Pakistan's blasphemy law.[119] These instances demonstrate the instability of Pakistan's civilian control of the military as well as highlight disturbing ties to Islamic fundamentalists.

Finally, the danger of an accident looms in the background, and it is a great risk, given the proximity and history of conflict between India and Pakistan. One particularly dramatic pericope demonstrates this risk:

> On January 4, 2001, Indian defense secretary Yogendra Narain led a special inspection of the Milan missile production facility in Hyderabad. The Milan missile – a short-range (two kilometer) missile normally armed with a large conventional warhead – had failed in test launches and during the Kargil war, and Narain was to discuss the matter with the plant's managers and technical personnel. For reasons that remain unclear, the electrical circuitry was not disconnected and the live conventional warhead was not capped on the missile displayed for the visiting dignitary from New Delhi. When the plant manager accidentally touched the start button, the missile launched, flew through the body of one official, killing him instantly, and the nose-dived into the ground, catching on fire and injuring five other workers.[120]

This could have easily happened with a nuclear armed missile and the warhead could have detonated. It's not a matter of if but when states developing nuclear weapons without the expertise and personnel of more experienced nuclear states run into the same mistakes with deadly consequences. Given the failures of deterrence, desires for preemptive war, the small and

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119. Ibid.

120. Ibid., 151.

rudimentary arsenals of each nation, and risk of accident, nuclear weapons have further destabilized South Asia rather than made it safer, and nuclear disarmament is preferable.

One more current issue in nuclear weapons proliferation and development is the state of Iranian and North Korean nuclear weapons programs. These nations are two of the three countries infamously labelled as an "Axis of Evil" by President George W. Bush in 2002.[121] The third nation, Iraq, was occupied by the United States in 2003. North Korea developed and then tested nuclear weapons in 2006 and 2009 while Iran produced enriched uranium, was accused of violating the NPT, and was sanctioned by the United Nations Security Council.[122]

In the case of North Korea, a decisive point in their nuclear program occurred when in 2002 Bush administration officials confronted North Korea with evidence that Pakistan helped North Korea develop a hidden uranium enrichment program, and after this happened North Korea withdrew from the NPT and reactivated its nuclear weapons program with renewed vigor.[123] It is estimated that North Korea was able to extract enough plutonium from its now disabled reactor to produce approximately eight plutonium nuclear weapons.[124] In 2010, it was revealed that North Korea is working on a new nuclear facility, using Pakistani centrifuge designs, which will allow North Korea to produce highly enriched uranium so it can expand its arsenal significantly.[125]

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121. Ibid., 175.

122. Ibid., 176.

123. Ibid., 205.

124. Ibid.

125. Ibid.

It is highly doubtful North Korea's possessing nuclear weapons has made the Korean peninsula safer and more stable. While nuclear weapons may help keep Kim Jung Un in power, North Korea's developing nuclear umbrella has increased dangerous sabre rattling. In 2010 North Korea attacked and sank the South Korean warship *Cheonon*, killing forty-six South Korean sailors, and North Korean artillery units shelled an island controlled by South Korea, killing two marines and two civilians.[126] Instead of using nuclear weapons as a peaceful deterrent, North Korea has used them as an umbrella under which to become even more bellicose and daring. Another cause for worry is, as mentioned above, North Korea is keen on expanding its capacity for producing weapons grade uranium, as well as shrinking warheads to fit on missiles and developing missiles capable of reaching the United States.[127] There is one final concern about North Korean nuclear weapons that is perhaps the most grave of all: North Korean nuclear weapons and technology are ripe for proliferation, given how dire North Korea's economic situation is. It is known that North Korea shipped missiles to Pakistan and Iran and sold nuclear materials or technology to Syria and Libya.[128] This deadly cocktail of factors makes it vital that the rest of the world works together to find a diplomatic solution to disarm North Korea of its nuclear weapons.

Iran is the other rogue state that has been recently attempting to acquire nuclear weapons. Like North Korea, there are important worries that nuclear weapons acquired by Iran, if not used in a first strike, would be an umbrella under which conventional war would be conducted with a

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126. Ibid., 206.

127. Ibid., 207.

128. Ibid., 208.

higher degree of impunity. Sagan argues that a nuclear Iran would be emboldened to attack American troops in the region, support terrorist attacks against Israel, and attempt to destabilize neighboring Arab regimes.[129]

Another vital concern is who would be the authority over the nuclear command and control in Iran: mullahs, the Iranian Revolutionary Guard Corps, elected officials, or the military? So far the evidence is pointing to the IRGC, as the IRGC has been the faction purchasing nuclear technology, securing Iranian nuclear facilities, testing potential delivery systems, as well as managing nuclear weapons sites.[130] Unfortunately, the IRGC is also in charge of overseeing Iran's relations with terrorist organizations at work in the Middle East.[131] The same branch of the government that will likely have the nuclear launch codes will also be the one working alongside terrorists, an intersection of responsibilities with unprecedented potential lethality. These twin concerns of increased aggression as well as nuclear proliferation to terrorist organizations make an Iranian nuclear weapon program a nightmarish threat to peace in the Middle East and preventing Iran from acquiring nuclear weapons is a high priority.

The world has not become less prone to nuclear threats since the end of the Cold War; they have multiplied. With the US and Russia modernizing their arsenals, Pakistan and India possessing nuclear weapons and breaking out into conflict periodically, and Iranian and North Korean desiring nuclear deterrence parity with other nuclear powers, this new nuclear landscape is one of unprecedented risks. All nations must works towards a world free of nuclear weapons or continue running the risk of annihilation by nuclear weapons.

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129. Ibid., 211.

130. Ibid.

131. Ibid.

B. PRACTICAL STEPS GOING INTO THE FUTURE FOR A WORLD FREE OF NUCLEAR WEAPONS

After arguing for nuclear disarmament and demonstrating the urgency of the current nuclear issues the United States and the world face, the time has come to examine the options available for achieving disarmament. Some would argue that the United States and other nuclear powers should simply unilaterally disassemble their nuclear weapons. Others would argue that disarmament is unnecessary and that nuclear proliferation would make the world safer. Both of these paths are reckless and naïve. What is needed is a balanced approach that respects the importance and urgency of disarmament while also acknowledging that it would be unwise to jar the fragile deterrence paradigm too forcefully. Some steps that are compatible with this approach are examining nuclear arsenal modernization and missile defense systems with caution, upholding the Iran Nuclear Agreement and pursuing similar diplomatic resolutions to nuclear weapons issues, relaxing outdated Cold War nuclear posturing, testing unilateral options, and increasing international cooperation.

One step is reexamining the trillion dollar US nuclear weapon modernization plan. Some aspects of the plan are important and should not be cut. One part of the plan is upgrading ICBM's and their guidance systems. If such missiles are going to continue to be in service, then it would be ideal to upgrade the delivery systems and guidance systems so the weapons are safer. However, a better solution would probably be to reduce or eliminate ICBMs as part of US nuclear deterrence strategy. James Mattis, a retired general who has been tapped to be the next

Secretary of Defense, questioned the need for ICBMs before Congress due to the United States possessing advanced submarine launched missiles and aircraft launched cruise missiles.[132]

As discussed earlier, the proposed LRSO cruise missile is another good target to cut from the US nuclear modernization plan. With the weapon's unnecessary risk of escalation to nuclear war due to its dual conventional/nuclear functionality, the weapon's being designed for outdated delivery systems, and the cost of such a weapon despite viable current alternatives, it would not be a sorely missed asset.[133] Conventional weapons or using the decision not to develop the LRSO as diplomatic leverage would both likely be better in the long term.

Another issue that requires care and clarity in the evolving nuclear landscape is missile defense. Ballistic missile defenses at this stage are almost certainly a bad idea as they would be a destabilizing factor instead of improving the chances of successful disarmament. This at first may seem counterintuitive, but if nuclear weapons are defensive tools in a nuclear deterrence situation, then developing ballistic missile defenses is a powerful offensive move which moves a nation closer to being able to use nuclear weapons offensively with impunity.[134] Despite the danger of ballistic missile defenses, theatre level deployments of missile defense systems should remain an option to counter deployments of theatre level or tactical nuclear weapons by an adversary. This seems to be the best role for missile defense systems currently; however, large cooperative networks of missile defense systems should be considered going into the future

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132. "James Mattis warned that land-based nuclear missiles pose false alarm danger," accessed January 19, 2017, https://www.theguardian.com/us-news/2016/dec/04/james-mattis-defense-secretary-nuclear-missiles-trump.

133. "Cancel the New Nuclear Cruise Missile | Ploughshares Fund," accessed January 5, 2017, http://www.ploughshares.org/issues-analysis/article/cancel-new-nuclear-cruise-missile.

134. Sagan & Waltz, 218.

when nuclear arsenals are much smaller and the last stockpiles are progressing towards being dismantled.[135]

Moving on to diplomacy and nuclear weapons, the most pressing concern at the moment is to preserve and enforce the Iran Nuclear Agreement. Some have questioned how desirable the Iran Nuclear Agreement is for the United States and if it is too lenient on Iran, but there is good reason to think the United States, the rest of United Security Council permanent members, and Germany will benefit from the agreement, and Iran will benefit as well if they indeed want to use nuclear energy for peaceful means. The agreement places strict limits upon Iran's nuclear ventures with the goal of preventing Iran from producing a nuclear weapon, including reducing Iran's uranium enrichment capacity, fully eliminating the path of using plutonium for nuclear weapon production, and an extremely thorough monitoring and inspection system for the other signatories of the agreement to monitor Iran.[136] In exchange Iran gets much needed sanction relief, which will likely help the Iranian citizens more than any potential covert nuclear program, which would be given priority even if sanctions were still in place.[137]

Most of the progress on the issue of Iran's nuclear program has taken place under President Obama's leadership. He partially broke from the tradition of sanctions, international denouncement, and waiting for an opportunity for regime change. While President Obama still utilized these tools and methods, he also was open to diplomacy and set up backdoor diplomatic meetings to attempt to create a connection with Iranian leadership.[138] Using pressure from

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135. Ibid.

136. "Learn from Iran, Engage North Korea | Ploughshares Fund," accessed January 19, 2017, http://www.ploughshares.org/issues-analysis/article/learn-iran-engage-north-korea.

137. Ibid.

138. Ibid.

sanctions and a willingness to budge on issues like allowing Iran to develop peaceful nuclear power and allowing regime change to fade as a goal gave the Iranian officials room to negotiate and take a deal that would be seen as a positive by Tehran as well as Washington.[139] This would likely be an effective strategy going into the future, even with broader possible applications than nuclear disarmament.

Turning to North Korea, a deal like the Iran deal should be a priority for future US administrations. There are critical differences between Iran and North Korea, however: North Korea has already developed and possesses nuclear weapons, North Korea is not a party to the NPT, and North Korea has a stronger, more authoritarian government with strict civilian control of the military.[140] North Korea has also been much less receptive lately, with Kim Jong-un, who took over in 2011, being less willing to negotiate than his father.[141] In contrast to limited steps to curtail its nuclear program in the past, North Korea has accelerated its nuclear weapons program under Kim Jong-un.[142]Most recently, North Korea tested a nuclear weapon in September 2016 and has continued its missile tests, in flagrant violation of United Nations Security Council resolutions.[143] North Korea has tested missiles that have the ability to target military bases in South Korea, Japan, and Guam. Thanks to new facilities being constructed to produce weapons grade nuclear material, some experts are projecting that North Korea's nuclear arsenal could grow from a couple dozen weapons to approximately 100 by 2020.[144] These developments

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139. Ibid.

140. Ibid.

141. Ibid.

142. Ibid.

143. Ibid.

demand that the US and its allies focus on finding a diplomatic solution, similar to Obama's approach with Iran, which might include making concessions to North Korea to achieve disarmament, as opposed to the current waiting game which is just allowing North Korea to increase the size, range, and lethality of its nuclear arsenal.

Another important step to make the world safer from a nuclear doomsday and to ease tensions regarding nuclear disarmament is decreasing the alert level of US nuclear weapons. The nuclear accidents during the Cold War and beyond discussed earlier in the paper demonstrate how simple it is for these weapons to fail, whether due to malfunction or problems with the operators of the weapons. Because of this, and the ending of the Cold War's vastly reducing the need for a quick all out nuclear response, the world would be much safer if more safeguards were added to the US nuclear arsenal at the expense of a more rapid response. Safeguards like involving Congress in the decision to use nuclear weapons, removing warheads from delivery vehicles (putting the weapons in a de-alerted state), disabling automatic and semi-automatic retaliation systems, and strict controls regarding the transport and disposal of nuclear weapons cost little in strategic flexibility for deterrence, but will produce a manifold increase in security and safety.[145] Such a good faith gesture might be reciprocated by other nuclear powers, but, if not, the benefits are still arguably worth the cost.

Lowering alert levels relates to another tactic for nuclear disarmament: other nations do not have control over the size of the US nuclear arsenal. Just because other nations develop more nuclear weapons does not mean the United States has to as well. In fact, due to its peerless

144. Ibid.

145. "The New Arms Race | Ploughshares Fund," accessed January 5, 2017. http://www.ploughshares.org/new-arms-race.

conventional military power, the United States likely has many more nuclear weapons than it needs. If some of these weapons were disposed of it would save the United States money, reduce the risk of a nuclear accident, and give other nations less of a need for a deterrent nuclear arsenal.[146] All of these are great goods that could be achieved at the minor cost of dismantling some outdated weapons which would likely be risky or ineffective to use anyway if ever deployed.

Moving towards nuclear disarmament will require increased international cooperation. The United States, due to its superpower status, has had a tendency to eschew international consensus and attempt to accomplish its goals unilaterally, often with negative consequences and tarnished international reputation. When nuclear weapons or advanced technology are lauded as a means to security, a vision of the bigger picture is being lost. There will almost certainly come a day when the US no longer has the most powerful military in the world, and it could have serious concerns about its security. It is better now to negotiate from this position of advantage and taper down its expensive military power in exchange for diplomatic reputation and stronger alliances which will be a more durable and ultimately better investment in the future. Soldiers and nuclear missiles offer an illusion of peace, a peace of coercion, a peace because enemies are afraid to strike. On the other hand, accruing allies and strengthening bonds between nations paves the way for a future without war or at least less of it. This path leads towards a truer and more just peace, which should be the ultimate goal.

One organization that is working for global nuclear disarmament is Global Zero. This organization includes many of the suggestions discussed thus far among its own suggestions and

146. Ibid.

goals. A key first step in Global Zero's action plan which I have not discussed yet is the US and Russia ratifying the New START Treaty. This bilateral accord is extremely important because the US and Russia possess 90% of the world's nuclear weapons.[147] Once this bilateral accord is in place, Global Zero's action plan calls for multilateral cuts to nuclear arsenals around the world, with the US and Russia continuing to play a key role.[148] According to Global Zero, if the steps of their plan are put into action, then global nuclear disarmament can be achieved by 2030.[149] I think this timeline is perhaps too optimistic, but if public interest concerning nuclear weapons can be increased and pressure can be applied to world leaders, then their timeline could be feasible.

In the course of this paper, I have argued that nuclear disarmament is a practical and rational goal; it simply does not make sense to keep doubling down on the shoddy foundation of deterrence when disarmament is a safer option. It has been shown that if war should be constrained by rules of conduct and if nuclear weapons are often designed and intended to be used in inhuman ways to cause unprecedented devastation, then these weapons must not be used, and that there is an ethical obligation to continue disarmament as opposed to relying more heavily on deterrence. Various religions and religious leaders, for all of their wide ranging disagreements, surprisingly agree for the most part that the world would be better without nuclear weapons and that there is a religious obligation to dismantle them or at the very least treat their production and use with the utmost caution and responsibility. Current events and recent history reveal nuclear weapons are a threat even after the Cold War and are poised to

147. "The Global Zero Action Plan | Global Zero," accessed March 14, 2017. http://www.globalzero.org/get-the-facts/GZAP.

148. Ibid.

149. Ibid.

expand into a new and unnerving nuclear future. Thus, I proposed steps that could begin moving the world towards nuclear zero.

These weapons give human beings a godlike power to transmute the material that makes up the fabric of the universe into a cataclysm of unbridled energy capable of wiping out human life. It is imperative that these weapons be carefully and cautiously secured, maintained, and postured as they are reduced until they are dismantled, lest they one day end up dismantling us.

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