Autonomous Weapon Systems, Human Dignity and International Law

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‘God himself … gave a mind to the human soul. … [H]as not human ingenuity discovered and exploited all our numerous and important techniques ….? And is it not this mental, this rational drive, even when it seeks satisfaction in things superfluous, nay more, in things dangerous and suicidal, a witness to the excellence of its natural endowment, …? What marvellous, stupendous results has human industry achieved …! Against even human beings all the many kinds of poison, weapons, engines of war!’[1]

[1] Saint Augustine, *The City of God Against the Pagans*, William M. Green (trans.) (Cambridge, Massachusetts, Harvard University Press, 1972), vol. VII: Book XXII, pp. 327 – 329.

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Preface

I first turned my mind to the impact of international law on technology (and vice versa) during the 2010-2011 academic year when I was a Leverhulme Visiting Professor in the Faculty of Law at the University of Cambridge. An article by Professor Beard[2] inspired me to commence work on an edited volume that explores the challenges posed by new technologies to compliance with international humanitarian law.[3]

One part of that volume addressed the nascent field of autonomous weapon systems and the legality of their design and use. As the technology advances, so does the debate about the lawfulness of these weapon systems.[4] Nevertheless, to the best of my knowledge, no monograph exists that addresses these issues. Thus, this dissertation tries to fill this gap in the academic literature and deeply explore the opportunities, tensions and contradictions that arise when human beings can delegate their responsibilities for war-fighting decisions to computer software.

This work comprises an Introduction, a typology of autonomous weapon systems, six chapters addressing the relationship between autonomous weapon systems, human dignity and international humanitarian law, international human rights law, international criminal law and the law of state responsibility, and Conclusions. It will be possible, in certain circumstances, to use autonomous weapon systems consistently with international law. Nevertheless, the following chapters demonstrate that the delegation of human responsibility for complex, value-based decisions to autonomous weapons violates human dignity and, consequently, international law.

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[2] J Beard, 'Law and War in the Virtual Era,' 103 *American Journal of International Law* (*AJIL*) no. 3 (July 2009), 409.

[3] *International Humanitarian Law and the Changing Technology of War*, Dan Saxon (ed.), (Leiden, Martinus Nijhoff, 2013).

[4] See, for example, the record of the 2016 Expert Meeting on Lethal Autonomous Weapons, convened in Geneva by the state parties to the Convention on Certain Conventional Weapons, 11 – 15 April, 2016, <http://www.unog.ch/80256EE600585943/(httpPages)/37D51189AC4FB6E1C1257F4D004CAFB2?OpenDocument>.

Chapter One

Introduction

I. Problem Statement and Propositions

This dissertation attempts to contribute to the growing legal and philosophical debate concerning the design, development and employment of lethal autonomous weapon systems. Much of this debate speaks to two fundamental and related problems: 1) How, if at all, can states and non-state actors use lethal autonomous weapons in accordance with international law? and 2) When a autonomous weapon system takes a human life, is that killing a violation of human dignity?

For the purpose of this dissertation, I define 'autonomous weapon system' as a 'weapon system that, once activated, can select and engage targets without further intervention by a human operator.'[1] In addition, this dissertation will focus (most of) its attention on autonomous weapon systems that have the capacity to inflict lethal force because such autonomous weapons present the most complex and contentious legal and moral issues.

This dissertation contributes to the scholarly debate by describing a new framework to consider the relationship between human dignity, responsibility,[2] autonomy and international

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[1] A Carter, 'Autonomy in Weapons Systems,' *Department of Defence Directive*, United States of America, Number 3000.09 (21 November 2012). This definition 'includes human-supervised autonomous weapon systems that are designed to allow human operators to override operation of the weapon system, but can select and engage targets without further human input after activation.' *Ibid*, 13 – 14. The U.K. armed forces employ a more cognitive-based definition of 'autonomy.' According to U.K. military doctrine, an 'autonomous system is capable of understanding higher level intent and direction. … As such they must be capable of achieving the same level of situational awareness as a human.' An 'automated' or 'automatic' weapon system, however, is one that, in response to inputs from one or more sensors, is programmed to logically follow a pre-defined set of rules in order to provide a predictable outcome.

[2] The whole of our common morality, observed Isaiah Berlin, presupposes the notion of responsibility. 'My Intellectual Path,' in *The Power of Ideas*, H. Hardy (ed.) (Princeton University Press, 2000), p. 20.

law. It uses technology to illuminate some of the strengths and weakness of international law in modern times.[3] I make the following four propositions:

1. As the speed of operations of autonomous weapon system increases, the use of these weapon systems will undermine the opportunities for, and the value of, human reason and thinking;

2. When the use of autonomous weapon systems undermines the value of human reason and thinking (i.e. personal autonomy), the killing of human beings by autonomous weapon systems will constitute a violation of human dignity and, therefore, international law;

3. The use of autonomous weapon systems will undermine the function of law and the application of law;

4. The design of autonomous weapon systems must have an interdependent, 'co-active' design in order to reduce the speed of autonomous weapon systems to a velocity where individuals can i) comply with law (in particular international humanitarian law and international human rights law) and (ii) ensure that human reasoning and judgment is available for cognitive functions better suited for humans than machines.

In order to support these propositions, this dissertation examines a common assumption and three related omissions evident in the academic literature concerning lethal autonomous weapon systems. The (incorrect) assumption is that important questions about the lawfulness

[3] 'To be master of any branch of knowledge, you must master those which lie next to it ….' O Holmes, 'The Profession of the Law,' in *Speeches by Oliver Wendell Holmes* (Boston: Little, Brown, and Company, 1896), p. 23.

and morality of autonomous weapon systems depend on definitions of semantic standards about their design and use. Furthermore, the legal literature does not contain clear explanations of the technical characteristics and capacities of these weapons.[4] In addition, the literature fails to incorporate a more foundational review of the concepts of human dignity and the function of law, and their relevance to autonomous weapon systems. Much of the literature also omits an important discussion about the pressures of speed and time on the development and use of autonomous weapons, as well as suggestions for the kind of design that might address these issues.

As autonomous weapon systems communicate with each other and engage targets within microseconds, the delegation of power and responsibility for war-fighting from humans to machines inevitably must increase. Therefore, I conclude that it is the speed of autonomous weapon systems, and not their autonomy *per se*, which presents the greatest challenge for the protection of human dignity, the function of law, and the duties imposed by international law. I argue that the crucial question about the design, development and employment of these systems is not whether a human or a machine should make the decision to use lethal force. The essential question is whether there are certain responsibilities of human reasoning that we should not delegate to machines.[5] The central thesis of this dissertation is that the delegation of human responsibility for complex, value-based judgments to autonomous weapon systems erodes human dignity and, consequently, international law.

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[4] To date, one of the strongest efforts to fill this gap is P Margulies, 'Making Autonomous Weapons Accountable: Command Responsibility for Computer-Guided Lethal Force in Armed Conflicts,' in J Ohlin (ed.) *Research Handbook on Remote Warfare* (Northampton: Edward Elgar Press, Forthcoming 2016).

[5] In this sense, 'responsibility' refers not only to processes of accountability, but also to obligations 'to act formatively toward society, when we have the responsibility for establishing, changing or taking steps to preserve particular forms of social order,' including laws, agreements institutions and social arrangements that shape human relations. L Fuller, 'Freedom – A Suggested Analysis,' 68 *Harvard Law Review* (June 1955), 1305, 1308.

II. Historical Background

Weapon systems 'are as old as warfare.'[6] The Chinese, for example, presumably invented the simple but innovative foot stirrup in the fifth century A.D. and it was carried to Western Europe by the eighth. Prior to the introduction of the stirrup, warriors sat precariously on their horses and risked a fall from their mount each time they slashed or lunged at their enemy.[7] The stirrup permitted a powerful new system of horse, rider and the sword, spear or lance that he carried.[8] The new technology provided additional lateral support to the person in the saddle and bonded horse and rider into a fighting unit capable of unprecedented violence: '[t]he fighter's hand no longer delivered the blow; it merely guided it. The stirrup thus replaced human energy with animal power, and immensely increased the warrior's ability to damage his enemy. Immediately, without preparatory steps, it made possible mounted shock combat, a revolutionary way of doing battle.'[9] The introduction of this 'alien military technology' in Europe also led to dramatic social changes such as the development of feudalism and 'the seeds of chivalry.'[10]

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[6] A Roland, 'Technology and War: A Bibliographic Essay,' in Meritt Roe Smith (ed.), *Military Enterprise and Technological Change: Perspectives on the American Experience* (Cambridge Massachusetts: The MIT Press, 1985), pp. 375. Historians of technology define 'systems' as 'interacting components coordinated by a common purpose – intellectual, economic, political or other.' T Hughes, 'Convergent Themes in the History of Science, Medicine and Technology', 22 *Technology and Culture*, 3 (July 1981), 550, 554.

[7] Without the assistance of stirrups, riders needed extensive training in how to grip the sides of the animal with their thighs. V Hanson, *A War Like No Other: How the Athenians and Spartans Fought the Peloponnesian War* (New York: Random House, 2005), p. 223.

[8] L White, Jr., *Medieval Technology and Social Change* (Oxford: The Clarendon Press, 1962), p. 2.

[9] *Ibid.*

[10] *Ibid*, pp. 28 – 38. Similarly, the introduction of firearms and artillery transformed inter-state warfare, economic relations 'and the capitalist organisation of arms production.' F Braudel, *Capitalism and Modern Life: 1400 – 1800*, M Kochan (trans.) (New York: Harper & Row, 1973), p. 291. For a discussion of the 'underlying connections between military developments and social change,' see M Howard, *War in European History* (Oxford: Oxford University Press, 2009), pp. 94-115.

Like a mounted warrior from pre-medieval times, a modern foot soldier is also a 'weapon system.'[11] 'Rifles,' for example, 'are as good as the men who pull the triggers. Each soldier must consider his weapon in the same light as he considers his right arm; together they are a team.'[12] As rifle technology advances, soldiers change their tactics so that the system functions more effectively.[13]

Historically, 'battle' for the common soldier and the system that he represented was often a series of myopic, small-scale scenarios that were fought by their own rules.[14] Infantry actions, for example, were 'the sum of many combats of individuals - one against one, one against two, three against five.'[15] Thus, it is not surprising that, as part of a vivid description of the efforts by United States Marines to occupy the island of Iwo Jima during the Second World War, military historian Max Hastings observed that ' … all battles break down into a host of intensely personal contests…'[16]

During the nineteenth and twentieth centuries, however, that truism already had begun to change.[17] The development of the machine-gun 'put into the hands of one man the fire-

[11] G Corn, remarks at 'Autonomous Weapon Systems – Law, Ethics and Policy,' Conference at European University Institute, Academy of European Law, 24 April 2014.
[12] J Weller, *Fire and Movement: Bargain-Basement Warfare in the Far East* (New York: Crowell, 1967), p. 133.
[13] Howard, War in European History, p. 102.
[14] J Keegan, *The Face of Battle* (New York: Penguin Books, 1976), p. 47. B Mitchell (ed.), *The Battle of Maldon and Other Old English Poems* (London: MacMillan, 1974), pp. 28 – 38.
[15] *Ibid*, p. 100.
[16] M Hastings, *Nemesis: The Battle for Japan, 1944-45* (Harper Perennial, 2007), p. 277. Similarly, writing in the nineteenth century, Prussian Field-Marshal General Count Helmuth von Moltke observed that in war, 'everything must be individual.' 'Letter, 11 December 1880' in T Holland (ed.), *Letters to 'The Times:' Upon War and Neutrality with Some Commentary* (New York: Longmans, Green and Co., 1914).
[17] In 1862, a military theorist opined that the 'means of destruction are approaching perfection with frightful rapidity. The Congreve rockets, the effect and direction of which it is said the Austrians can now regulate,—the shrapnel howitzers, which throw a stream of canister as far as the range of a bullet,—the Perkins steam-guns, which vomit forth as many balls as a battalion,—will multiply the chances of destruction, as though the hecatombs of Eylau, Borodino, Leipsic, and Waterloo were not sufficient to decimate the European races.' Baron de Jomini, *The Art of War*, G.H. Mendell and W.P. Craighill (trans.) (West Point: U.S. Military Academy, 1862), pp. 48, <http://www.gutenberg.org/files/13549/13549-h/13549-h.htm#ARTICLE_XII>.

power formerly wielded by forty.'[18] New kinds of heavy artillery, 'perhaps the decisive weapon on the battlefield'[19] in World War I, made long-range shelling a crucial part of combat strategy. Prior to the start of the battle of the Somme on 1 July 1916, for example, U.K. and French forces stockpiled nearly three million artillery shells that fed a seven-day (and night) bombardment of the German lines, before the first infantry soldiers climbed over their trench-tops and into no-man's land.[20] As time progressed, with the development of increasingly mechanised armoured forces during World War II and the Cold War, the common soldier experienced a steep 'reduction of his status to that of a mere adjunct to machinery, the software'[21] in the system.

Today, in the twenty-first century, this trend continues and at a faster pace. The United States Department of Defence, for example, treats the virtual and anonymous environment of cyberspace as a new domain of warfare, subject to offensive and defensive military operations.[22] Furthermore, one third of essential US military aircraft and ground vehicles presently deployed should be unmanned[23] and 'military robots' – controlled by computer software code that we call 'artificial intelligence' – may outnumber manned

[18] Keegan, The Face of Battle, p. 232.
[19] Howard, War in European History, p. 104.
[20] *Ibid*, p. 216. During this bombardment, the allies fired 1,500,000 shells. *Ibid*, p. 235. This extended artillery attack occurred despite the fact that the British and French enjoyed a 7 – 1 superiority in infantry numbers. M Middlebrook, *The First Day on the Somme: 1 July 1916* (London: Penguin Books, 1984), pp. 75 and 78
[21] Keegan, The Face of Battle, p. 340.
[22] W J Lynn, III and N Thompson, 'The Pentagon's New Cyberstrategy,' Foreign Affairs, 1 October 2010, <http://www.foreignaffairs.com/discussions/news-and-events/foreign-affairs-live-the-pentagons-new-cyberstrategy> accessed 15 August 2012. Dr. Heather Harrison Dinniss describes the cyberspace domain as 'a medium where anonymity is the norm and distance and proximity are largely irrelevant.' 'Participants in Conflict – Cyber Warriors, Patriotic Hackers and the Laws of War,' in D Saxon (ed.), *International Humanitarian Law and the Changing Technology of War* (Leiden: Martinus Nijhoff/Brill, 2013), p. 252.
[23] J Beard, 'Law and War in the Virtual Era', 103 *American Journal of International Law*, 3 (2009), 409, 413. The United States military presently operates over 8,000 remotely-controlled unmanned aircraft systems and over 12,000 unmanned ground systems. B Hoagland, 'Manning the Next Unmanned Air Force: Developing RPA Pilots of the Future', Policy Paper, Centre for 21st Century Security and Intelligence (August 2013), 1.

weapons systems by 2030.[24] The F-35, the next generation jet fighter plane, 'almost certainly will be the last manned strike fighter aircraft the [U.S.] Department of the Navy will ever buy or fly.'[25] The technology for fully autonomous offensive weapons systems is available and in use today.[26] The increasing computerisation and impersonalisation of the modern battlespace relegates many soldiers and commanders to mere *adjuncts to the software*.[27]

The legality, benefits and dangers of autonomous weapon systems are the subject of current debate amongst a relatively small but growing number of professionals including military personnel, scientists, diplomats, ethicists, policy-makers, philosophers and lawyers.[28] As Professor Schmitt observes, autonomy in combat is still 'in its infancy.'[29] Thus, the focus of this dissertation will not rest on the military technologies of the past but on the present and future use of the computer-guided machines that, in general terms, are known as 'autonomous

[24] A Krishnan, *Killer Robots: Legality and Ethicality of Autonomous Weapons* (Surrey: Ashgate Publishing, 2009), p. 88.

[25] S LaGrone, 'Mabus: F-35 Will Be 'Last Manned Strike Fighter' the Navy, Marines 'Will Ever Buy or Fly,'' U.S. Naval Institute News, 15 April 2013, <http://news.usni.org/2015/04/15/mabus-f-35c-will-be-last-manned-strike-fighter-the-navy-marines-will-ever-buy-or-fly>.

[26] For just one example, see B Farmer, 'Brimstone: British Missile Envied by the US for War on Isil,' The Telegraph, 1 October 2014, http://www.telegraph.co.uk/news/uknews/defence/11133680/Brimstone-British-missile-envied-by-the-US-for-war-on-Isil.html; 'Brimstone,' Royal Air Force, <http://www.raf.mod.uk/equipment/Brimstone.cfm>.

[27] This trend will only increase. In the words of a recent U.S. Army Public Request for Information on unmanned Systems and autonomy: '[w]ith the continued employment of increasingly sophisticated forces of unmanned systems, there will be an ever-increasing demand for new, efficient, innovative and effective technologies.' 'Request of Information (RFI), - Unmanned Ground System Technologies,' Solicitation Number W15QKN-15-X-6644, Department of the Army, 12 November 2014, <http://www.fbo.gov/index?s=opportunity&mode=form&tab=core&id=27b1076773e46c0980eed74168730906>

[28] See for example, B Docherty, 'Losing Humanity: The Case Against Killer Robots,' Human Rights Watch & International Human Rights Clinic (Harvard Law School, November 2012), 1; P Singer, *Wired for War: The Robotics Revolution and Conflict in the 21st Century* (New York: The Penguin Press, 2009); B Boothby, 'How Far Will the Law Allow Unmanned Targeting to Go?' in D Saxon (ed.), International Humanitarian Law and the Changing Technology of War, pp. 45 - 63. A brief but helpful summary of the debate is J Thurnher, 'The Law That Applies to Autonomous Weapon Systems,' 17 *ASIL Insights,* 4 (18 January 2013), <http://www.asil.org/insights130118.cfm>.

[29] M Schmitt, 'Autonomous Weapons Systems and International Humanitarian Law: A Reply to the Critics,' Draft Current as of 2 December 2012, United States Naval War College, 24.

weapon systems.'[30] The great challenge for weapons developers, military professionals, government officials and lawyers for the remainder of this century will be to ensure that the design and use of autonomous weapon systems accord with international law.

This dissertation, therefore, primarily is what Immanuel Kant called 'a history of future times, i.e. *a predictive* history.'[31] As a predictive *legal* history, it attempts to define the international legal contours (i.e. the lex lata) of the design and employment of new generations of autonomous weapon technologies.[32] All law is based on the allocation of responsibility.[33] Thus, as part of a review of the implicit challenges for the application of treaty and customary law to these new weapons, I examine whether humans should retain their responsibility to think and reason about complex (and sometimes contradictory) value-based decisions.

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[30] The President of the International Committee of the Red Cross describes autonomous weapon systems and cyber weapons as 'new territories' requiring engagement with states to determine how these weapons might be used. P Mauer, remarks at Leiden University College The Hague, 22 May 2014.

[31] I Kant, 'The Contest of Faculties,' in Hans Reis (ed.), *Kant's Political Writings* (Cambridge, Massachusetts: Harvard University Press, 1970), p. 177, emphasis in original. Although the word 'history' most often refers to an account of past events, the term can also mean encompass 'acts, ideas or events that will or can shape the course of the future; immediate but significant happenings.' 'History,' Dictionary.com, <http://dictionary.reference.com/browse/history>. As Professor (now Judge) Crawford observed: 'history happens forwards. History happens day-by-day.' *Maritime Dispute (Peru v. Chile*) (Verbatim Record) [14 December 2012] ICJ [12] <http://www.icj-cij.org/docket/files/137/17230.pdf>. With respect to new weapon technologies, one commentator observes that 'we are at a point in history where we can see into the future of armed conflict and discern some obvious points where future technologies and developments are going to stress the current law of armed conflict.' E Talbot Jensen, 'The Future of the Law of Armed Conflict: Ostriches, Butterflies, and Nanobots,' 35 *Michigan Journal of International Law* 2 (2014), 253, 256.

[32] Study and analysis of challenges in international law with respect to changing weapon technologies are common. For reflections on the current and future law of autonomous weapon systems, see N Bhuta et. al. (eds.), *Autonomous Weapon Systems – Law, Ethics, Policy* (Cambridge University Press, 2016) and the '2015 Meeting of Experts on Lethal Autonomous Weapons Systems,' Convention on Certain Conventional Weapons, 13 – 17 April 2015, <http://www.unog.ch/80256EE600585943/(httpPages)/6CE049BE22EC75A2C1257C8D00513E26?OpenDocument>. In the context of cyber operations, see M Schmitt, 'Rewired Warfare: Rethinking the Law of Cyber Attack,' *International Review of the Red Cross* (2014) and P Margulies, 'Sovereignty and Cyber Attacks: Technology's Challenge to the Law of State Responsibility,' 14 *Melbourne Journal of International Law* (2013), 496.

[33] C Droege, 'Get Off My Cloud: Cyber Warfare, International Humanitarian Law, and the Protection of Civilians,' 94 *International Review of the Red Cross*, 886 (Summer 2012), 533, 541.

III. The Current Debate

A. International Law and Autonomous Weapon Systems

Technology plays a crucial role in the development of international law.[34] As weapons technology advanced over time, so has international law evolved to restrain its characteristics and use.[35] For example, during armed conflict, it is prohibited under international humanitarian law to use weapons, projectiles and material and methods of warfare of a nature to cause superfluous injury or unnecessary suffering.[36] Indiscriminate attacks, including 'those which employ a method or means of combat which cannot be directed at a specific military objective,' are unlawful.[37]

Today much of the debate about autonomous weapon systems focuses on the question whether it is lawful (and moral) to develop and deploy autonomous weapon systems that will exercise lethal force without human involvement or oversight.[38] Human Rights Watch and

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[34] C Picker, 'A View from 40,000 Feet: International Law and the Invisible Hand of Technology,' 23 *Cardozo Law Review* (2001), 149, 157.

[35] See inter alia, the 'St. Petersburg Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight,' 29 November/11 December 1868, <http://www.icrc.org/ihl/INTRO/130?OpenDocument> and Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, Protocol on Blinding Laser Weapons, Protocol IV (13 October 1995), <http://www.unog.ch/80256EDD006B8954/(httpAssets)/8463F2782F711A13C12571DE005BCF1A/$file/PROTOCOL+IV.pdf>.

[36] Art. 35, Additional Protocol I, 1977 to Geneva Protocol I Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts, (hereinafter 'API'). This rule also constitutes an obligation under customary international humanitarian law. Rule 70, 'Weapons of a Nature to Cause Superfluous Injury or Unnecessary Suffering', ICRC Customary International Humanitarian Law Study, <htpp://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter20_rule70>.

[37] Art. 51 (4), API. This rule also constitutes an obligation under customary international humanitarian law. Rule 71, 'Weapons That Are by Nature Indiscriminate,' ICRC Customary International Humanitarian Law Study, <http://www.icrc.org/customary-ihl/eng/docs/v1_rul_rule71>. The phrase 'means of combat' generally refers to the weapons used while 'methods of combat' generally refers to the way in which weapons are used. ICRC Commentary to art. 51, API, para. 1957, <http://www.icrc.org/applic/ihl/ihl.nsf/INTRO/470>.

[38] M Wagner, 'Autonomy in the Battlespace: Independently Operating Weapon Systems and the Law of Armed Conflict,' in D Saxon (ed.), International Humanitarian Law and the Changing Technology of War, pp. 99 – 122; K Anderson & M Waxman, 'Law and Ethics for Autonomous Weapon Systems: Why a Ban Won't Work and

the International Human Rights Clinic ('IHRC') at Harvard Law School have argued strenuously that lethal autonomous weapon systems should be banned because they will be unable to fulfil the requirements of international humanitarian law[39] and international human rights law,[40] and, when they fail to do so, will create a lacuna in the ability to hold individuals accountable for violations of international law.[41]

In response to Human Rights Watch and the IHRC, Michael Schmitt and Jeffrey Thurnher argue that a ban of autonomous weapon systems 'is unsupportable as a matter of law, policy and operational good sense.'[42] Schmitt and Thurnher contend that nothing in international humanitarian law *per se* supports a ban on autonomous weapons and, indeed, a ban on these weapons would deprive militaries of a valuable tool for *compliance* with the law.[43] Similarly, William Boothby concludes that, depending on the capacity of the technology, the employment of autonomous weapon systems will be lawful, at least in certain situations.[44]

Past and present officials of the International Committee of the Red Cross ('ICRC') acknowledge possible advantages in the development and use of autonomous weapon systems. When he was President of the ICRC, Jacob Kellenberger observed, cautiously, that

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How the Laws of War Can,' *American University Washington College of Law Research Paper* No. 2013-11 (Jean Perkins Taskforce on National Security and Law).

[39] Docherty, 'Losing Humanity,' pp. 5, 30 – 36 and 46 - 48. Human Rights Watch is part of an international consortium of organizations dedicated to achieving a ban on 'killer robots.' See Campaign to Stop Killer Robots, <http://www.stopkillerrobots.org/>.

[40] B Docherty 'Shaking the Foundations: The Human Rights Implications of Killer Robots,' *Human Rights Watch and International Human Rights Clinic* (Harvard Law School, May 2014), 25.

[41] B Docherty, 'Mind the Gap: The Lack of Accountability for Killer Robots,' *Human Rights Watch & International Human Rights Clinic* (April 2015), 25 and 37.

[42] M Schmitt & J Thurnher, 'Out of the Loop: Autonomous Weapon Systems and the Law of Armed Conflict,' 4 *Harvard National Security Journal* (2013), 231, 233.

[43] *Ibid*, pp. 243 – 265.

[44] B Boothby, 'How Far Will the Law Allow Unmanned Targeting to Go?' in Saxon, International Humanitarian Law and the Changing Technology of War, pp. 57–59 and 62.

a 'robot could be programmed to behave more ethically and far more cautiously on the battlefield than a human being.'[45] Similarly, Professor Sassóli, no stranger to situations of armed conflict, notes that 'weapon systems which do not base the use of force upon an ad hoc human decision offer the advantage of a greater possibility of respecting international humanitarian law.'[46]

B. Human Dignity and Autonomous Weapon Systems

Lawyers and philosophers make a legal/moral argument that human dignity is violated when an autonomous weapon (i.e. a machine) takes a human life. Peter Asaro, for example, explores the moral question 'whether computer, machine or automated process ought to make these decisions of life and death at all.'[47] He contends that it is immoral to kill without the involvement of human reason, judgment and compassion.[48] To enjoy dignity, persons must receive respect and respect (Asaro claims) includes a reason or reasons when the rights of persons are violated. Since autonomous weapons will kill in response to mathematical algorithms rather than reason(s), Asaro argues that when we permit a machine to make decisions about the taking of human life, we violate that person's dignity.[49]

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[45] 'Keynote Address,' International Humanitarian Law and New Weapon Technologies, 34th Round Table on Current Issues of International Humanitarian Law, San Remo, 8 September 2011, <http://www.icrc.org/eng/resources/documents/statement/new-weapon-technologies-statement-2011-09-08.htm>. 'Only humans can be inhuman and only human beings can deliberately choose not to comply with the rules they were instructed to follow.' M Sassóli, 'Autonomous Weapons and International Humanitarian Law: Advantages, Open Technical Questions and Legal Issues to Be Clarified,' 90 *International Law Studies* (2014), 308, 310.

[46] *Ibid*, 311. This argument presupposes that it is possible to build autonomous weapon systems that are as accurate as the average soldier vis a vis the targeting rules of international humanitarian law. *Ibid*.

[47] P Asaro, 'On Banning Autonomous Weapon Systems: Human Rights, Automation and the Dehumanization of Lethal Decision-Making,' 94 *International Review of the Red Cross*, 886 (Summer 2012), 687, 699.

[48] *Ibid*, 708.

[49] P Asaro, 'Human Dignity and Autonomous Weapon Systems,' Presentation to Conference on *Autonomous Weapon Systems – Law, Ethics, Policy*, European University Institute, Academy of European Law, 24 April 2014.

Similarly, Christoph Heyns, the United Nations Special Rapporteur for Extrajudicial and Summary executions, contends that the 'flipside of living a dignified life is dying a dignified death.' For Heyns, death with dignity, whether in an armed conflict or law enforcement situation, requires some degree of human thought in the determination of whether to exercise lethal force: 'Machines cannot fathom the importance of life, and the significance of the threshold that is crossed when a life is taken.'[50]

In chapter four of my dissertation, I argue that the conclusion of Professors Asaro and Heyns that the use of autonomous weapon systems to take human life constitutes a violation of human dignity is correct. However, the rationale that they provide in support of their conclusion – that we should focus our concerns on the dignity of the victim of the use of lethal force – is flawed. Instead, it is important to observe that as the technology advances, autonomous weapon systems will engage in hostilities and law enforcement activities at speeds measurable in miliseconds. As the velocity of autonomous machine actions and reactions increases, the role of artificial intelligence will expand as the space for human thought declines. Humans – even those ostensibly 'in-the-loop' or 'on-the-loop' - will be unable to discern the development of bad 'decisions' by autonomous machines and, crucially, to intervene to change those decisions.[51] This dynamic will obstruct the development of sound human judgment that arises from opportunities for human reflection on one's own

[50] C Heyns, Presentation to Convention on Certain Conventional Weapons Meeting of Experts on *Lethal Autonomous Weapon Systems,* 16 April 2015, p. 6, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/1869331AFF45728BC1257E2D0050EFE0/$file/2015_LAWS_MX_Heyns_Transcript.pdf>. Heyns also argues that if the decision to take human life is removed from the responsibility of military officers, their dignity as well is violated. *Ibid*.

[51] Michael Schmitt and Jeffrey Thurnher suggest that '[f]uture combat may … occur at such a high tempo that human operators will simply be unable to keep up. Indeed, advanced weapon systems may well "create an environment too complex for humans to direct."' 'Out of the Loop: Autonomous Weapon Systems and the Law of Armed Conflict', 238. (citing P Singer, *Wired for War*: The Robotics Revolution and Conflict in the 21st Century, New York, The Penguin Press, 2009, p. 128; quoting Thomas Adams, Colonel (Ret), U.S. Army).

experience and that of others. Such an evolutionary retreat is an implicit rejection of the value and autonomy of the *living* human person, which constitutes a violation of human dignity.[52]

C. The Function of Law and Autonomous Weapon Systems

In addition to discussions of specific international legal rules, a more foundational review of the function and application of law and their relevance to autonomous weapon systems is necessary. The fact that the use of weapons occurs within frameworks of legal norms[53] reflects the importance of law in society.[54] Descriptions of the function of law are myriad and often emphasise the use of law to maintain order in society.[55] This dissertation, however, adopts a more flexible approach expressed by a jurist during the last century: '… it is the objective of law to carry out the *adjustment of rights* between [persons] and between [individual] and sovereign according to the ideological purposes of the state.'[56] This broader view permits a more inclusive analysis of the use of autonomous weapon systems by multiple

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[52] Renaissance writers commonly understood man's unique ability to understand ideas and to act upon his judgment as his 'real dignity.' H Baker, *The Image of Man: A Study of the Idea of Human Dignity in Classical Antiquity, the Middle Ages, and the Renaissance* (New York: Harper and Row, 1961), p. 299. Pico della Mirandola, for example, warned that humans should never 'through slothful inaction to lose our power of reason, that faculty by which the mind examines, judges and measures all things.' G. Pico della Mirandola, *Oration on the Dignity of Man* (1486), <http://en.wikipedia.org/wiki/Oration on the Dignity of Man>.

[53] A 'norm' is the meaning of an act by which certain behavior is sanctioned, commanded, permitted, or authorized. H Kelsen, *Pure Theory of Law*, Max Knight (trans.) (Berkeley: University of California, 1978), pp. 5-6.

[54] For a discussion of how law, including international law, comprehends and regulates human behavior, see Kelsen, pp. 31, 33, 71, 320 and 325.

[55] See L Fuller, *The Morality of Law* (New Haven: Yale University Press, 1964), p. 106 (the function of law is 'to subject human conduct to the governance of rules.'); J Finnis, *Natural Law and Natural Rights* (Oxford, Clarendon Press, 1980), p. 268 ('…law brings definition, specificity, clarity and thus predictability into human interactions, ….'); R MacIver, *The Modern State* (Oxford: The Clarendon Press, 1926), pp. 289 – 290 ('Order is the foundation on which life builds, and order is precarious and hollow until international law is assured').

[56] C Clark, 'The Function of Law in a Democratic Society,' 9 *University of Chicago Law Review* (1942), 393, 400 (emphasis added). Clark explains that in democratic societies, law can be used to avoid the kinds of odious restraints and inhibitions found in autocracies. *Ibid*. Importantly, international law envisages the protection of individual interests, or natural rights, and not only rights resulting from a positive legal order. *Barcelona Traction, Light and Power Company* (Separate Opinion of Judge Morelli) Limited Judgment ICJ Rep. Part III [1970] para. 2.

societies and cultures with different expectations and understandings of law. Consistent with this definition, the function of law must also include the adjustment of rights between states when disputes arise between them.

Humans 'deliberate' (Aristotle's term for the process of thinking and reasoning) about matters that are in their power.[57] Autonomous technology, however, forces persons to relinquish this power of deliberation and decision to a machine.[58] If law's purpose is to facilitate the adjustment of rights between human beings, then we must understand how the employment of lethal autonomous weapons will impact human ability to make these adjustments. Will the benefits of delegating important responsibilities – such as reasoning and determinations about the use of lethal force - to autonomous machines outweigh the price of forfeited human ability to apply law and adjust the rights protected by law? This examination of the relationship between the function of law and autonomous weapon systems is absent in the literature.[59]

D. A Misplaced Assumption in the Literature

One common assumption in the legal and philosophical literature is that the important questions about lawfulness and morality of autonomous weapon systems can be resolved by agreement on semantic standards about their design and use. These standards are usually

[57] Aristotle believed that humans deliberate about ends rather than means. We determine a desired objective or outcome and then consider how and by what means it should be attained. Aristotle, *Nichomachean Ethics*, W D Ross (trans.), Book III, p. 5. '[E]xcellence in deliberation involves reasoning.' *Ibid*, Book VI, p. 7.

[58] Author interview with Gianfranco Visentin (Head), Automation and Robotics Section, European Space Research and Technology Centre, European Space Agency, Noordwijk, The Netherlands, 4 November 2013.

[59] On 15 April 2015, the organization Article 36 made a brief reference to this issue in its remarks to the Meeting of Experts on *Lethal Autonomous Weapon Systems*, sponsored by the Convention on Certain Conventional Weapons: '[m]achines do not make "legal judgments" and "apply legal rules." <http://www.unog.ch/80256EDD006B8954/(httpAssets)/330B1C078D81748CC1257E290046E3E7/$file/2015_LAWS_MX_Article+36_IHL.pdf>.

expressed as 'appropriate levels of human judgment' or 'meaningful human control' over the use of force by autonomous weapons.[60]

For several reasons, the application of phrases such as 'appropriate levels of human judgment' and 'meaningful human control' to autonomous weapon systems is problematic. First, obviously these constructions are open to multiple interpretations.[61] For example, in its statement to the 2015 Meeting of Experts on Lethal Autonomous Weapons sponsored by the state parties to the Convention on Conventional Weapons, the Government of Israel observed that:

> 'delegations have made use of various phrases referring to the appropriate degree of human involvement in respect to lethal autonomous weapon systems. Several states mentioned the phrase "meaningful human control.'' Several other states did not express support for this phrase. Some of them thought that it was too vague, and the alternative phrasing "appropriate levels of human judgment" was suggested. We have also noted, that even those who did choose to use the phrase "meaningful human control," had different understandings of its meaning.'[62]

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[60] Professor Beard uses the phrase 'effective exercise of human judgment.' J Beard, 'Autonomous Weapons and Human Responsibility,' 45 *Georgetown Journal of International Law* (2014), 617, 621.

[61] Jason Millar, an engineer and ethicist, observes that the active involvement of human beings in the direction of autonomous systems will not necessarily equate to 'meaningful human control.' Presentation to Convention on Certain Conventional Weapons Meeting of Experts on *Lethal Autonomous Weapon Systems*, 15 April 2015, p. 5, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/F483D421E67D230FC1257E2F0033E690/$file/Jason+Millar+-+Meaningful+Human+Control+and+Dual-Use+Technology.pdf>. Furthermore, the Government of Poland recently suggested that the undefined concept of 'meaningful human control' should be extended to include 'meaningful state control', i.e. evaluating 'meaningful human control' 'from the standpoint of state's affairs, goals and consequences of its actions.' Presentation of Poland to Convention on Certain Conventional Weapons Meeting of Experts on *Lethal Autonomous Weapon Systems*, 14 April 2015, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/16BDFE48306133F6C1257E31002BA329/$file/2015_LAWS_MX_Poland_characteristics.pdf>. Nevertheless, highly-specific restrictions also can be problematic because technology can be developed and/or re-designed to avoid the prohibited specifications. P. Appelqvist, 'Systems Approach to LAWs: Characteristics, Considerations and Implications,' Presentation to Convention on Certain Conventional Weapons Meeting of Experts on *Lethal Autonomous Weapon Systems*, 14 April 2015, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/059B98F445271A6BC1257E280041B71C/$file/CCW_LAWS_Appelqvist.pdf>.

[62] Government of Israel, 2015 Meeting of Experts on *Lethal Autonomous Weapons*, 15 April 2015, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/AB30BF0E02AA39EAC1257E29004769F3/$file/2015_LAWS_MX_Israel_characteristics.pdf>. Unhelpfully, the Government of Ireland endorsed a standard of "effective human control' over lethal autonomous weapon systems *and* the standard of 'meaningful human control.' Statement by Jacqueline O'Halloran Bernstein to Convention on Certain Conventional Weapons Meeting of Experts on *Lethal Autonomous Weapon Systems*, 15 April 2015,

Disagreements about the 'meaning' of 'meaningful human control' are not difficult to surmise. Does the word 'meaningful' refer to the human who exerts the control? Or does 'meaningful' refer to the result of the actions of an autonomous weapon system or systems during a particular attack, operation, or military campaign? In the context of armed conflict, should the term 'meaningful' also subsume considerations of military necessity and/or military advantage?

Secondly, phrases such as 'appropriate levels of human judgment' and 'meaningful human control' are not legal standards and, indeed, have no basis in international law. A focus on these terminologies creates a confusing distraction from the more fundamental questions concerning the legalities of autonomous weapons.[63]

Third, an emphasis on semantics ignores several important dynamics that affect the use and/or abuse of autonomous weapon systems and which are not examined carefully in the legal and philosophical literature. For example, the technical aspects and capacities of these weapon systems naturally affect their relationship with human beings and with international law. Will the perception of 'meaningful human control' change if the technology varies? Do cruder forms of autonomous technologies always require more control to be 'meaningful'? Or, if a highly sophisticated autonomous weapon system is available, will minimal or no human control suffice, as long as the overall result is 'meaningful'? To begin to address

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<http://www.unog.ch/80256EDD006B8954/(httpAssets)/E2C0823A66B1036DC1257E2900475E27/$file/2015_LAWS_MX_Ireland_Characteristics.pdf>.

[63] W Boothby, 'Possible Challenges to International Humanitarian Law,' Presentation to Convention on Certain Conventional Weapons Expert Meeting on *Lethal Autonomous Weapons,* April 2015, pp. 3-4, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/616D2401231649FDC1257E290047354D/$file/2015_LAWS_MX_BoothbyS+Corr.pdf>; The U.K. Government has stated that 'international humanitarian law provides the appropriate paradigm for discussion.' Statement to Convention on Certain Conventional Weapons Informal Meeting of Experts on *Lethal Autonomous Weapons*, April 2015, p. 2, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/1CBF996AF7AD10E2C1257E260060318A/$file/2015_LAWS_MX_United+Kingdom.pdf>.

these questions, chapter two is a typology that describes the different kinds of autonomous weapon technology now in use and/or being developed for the future, and the implications of this technology for human control.

E. The Subject of Design

The subject of 'design' speaks to a third important omission in the literature about autonomous weapon systems. The semantical 'standards' about 'appropriate levels of human judgment' and ' meaningful human control' reveal little about the challenges faced by persons and/or machines in understanding their environment, and each other, particularly during armed conflict and law enforcement activities where the need for human judgment is constantly shifting.[64] A better approach would be to focus more of the debate on the design of autonomous weapon systems[65] and apply a vision of autonomy referred to as 'coactive design' or 'human-machine interdependence.'

In particular battlespace circumstances, success (and compliance with the law) depends on neither the 'superior' technology nor the most sophisticated equipment, but instead the technology best suited to the resources and circumstances at hand.[66] The coactive design model attempts to leverage and integrate the different strengths of humans and

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[64] The form and substance of communications between humans and autonomous weapon systems may also evolve in ways that are difficult to foresee today. Robotic scientists have observed that, as interactions between humans and robots increase, the two entities begin to develop their own language. Professor Luc Steels, 'Ten Big Ideas of Artificial Intelligence,' *25th Benelux Conference on Artificial Intelligence*, Delft University of Technology, 8 November 2013.

[65] Christoph Heyns briefly mentions the issue of design in 'Autonomous Weapon Systems: Living a Dignified Life and Dying a Dignified Death,' in Bhuta et. al., Autonomous Weapon Systems – Law, Ethics, Policy, p. 14. Jason Millar observes that in order to design autonomous weapons to permit meaningful human control we must first 'understand the relationship between design features and human moral psychology….' Millar, Presentation to Convention on Certain Conventional Weapons Meeting of Experts on Lethal Autonomous Weapon Systems, p. 9.

[66] A Roland, 'Technology and War: A Bibliographic Essay,' in Merritt Roe Smith (ed.), *Military Enterprise and Technological Change: Perspectives on the American Experience* (Cambridge Massachusetts: The MIT Press, 1985), p. 378.

machines in order to maximize (and legalize) the performance of weapons systems.[67] For example, it is true that computers can outperform humans in tasks such as the collection and filtering of information. However, 'for decisions that matter, human judgment is better and faster'[68] because humans have greater ability to recognise context[69] and apply inductive reasoning for creative thinking.[70]

Thus, under the coactive perspective of autonomy, it is shortsighted to suggest that human factors and input can be minimised and segregated in the design and fielding of machines.[71] Priority should be given to the reinforcement of human machine teamwork – 'collaborative' autonomy'[72] - rather than separation of duties between humans and machines.[73] Therefore, autonomy can be viewed, not as an end in itself, but as a tool to accomplish particular objectives.[74]

IV. The Structure of the Dissertation

As Professor Benvenisti perceives, much of the ongoing legal and moral debate on autonomous weapon systems essentially is a manifestation of a 'circular argument between

[67] Author interview with Dr. Jeffrey Bradshaw, Senior Research Scientist, Florida Institute for Human and Machine Cognition, Leiden, Netherlands, 10 June 2014.
[68] Author interview with Dr. Matthew Johnson, Researcher, Florida Institute for Human and Machine Cognition, Leiden, Netherlands, 10 June 2014.
[69] Author interview with Dr. Jeffrey Bradshaw,
[70] Cummings, 'Man Versus Machine or Man + Machine?' pp. 12. Research efforts are underway to mimic human reasoning and judgment processes in machines. One example is KEEL Technology. 'KEEL stands for Knowledge Enhanced Electronic Logic,' electronic mail message from Tom Keeley, 2 and 13 June 2014. See 'Keel Technology for Complex Problems', <http://www.compsim.com/>.
[71] J Bradshaw, et. al., 'The Seven Deadly Myths of "Autonomous Systems,"' *Human - Centred Computing* (May/June 2013), pp. 57, <http://www.jeffreymbradshaw.net/publications/IS-28-03-HCC_1.pdf>.
[72] A Clare et. al., 'Assessing Operator Strategies for Real-time Replanning of Multiple Unmanned Vehicles,' 6 *Intelligent Decision Technologies* (2012), 221, 222.
[73] *Ibid,* pp. 58 – 60. As a team, humans and computers are far more powerful than either alone, especially under uncertainty. M Cummings, 'Man Versus Machine or Man + Machine?' 12. For example, if autonomous weapon systems can exercise 'self-recognition', i.e. the capacity to detect that it is operating outside the conditions for which it was designed, the machine will call on humans for increased supervision. Author interview with Dr. Matthew Johnson.
[74] Author interview with Gianfranco Visentin, Head, Automation and Robotics Section, European Space Research and Technology Centre, European Space Agency, Noordwijk, The Netherlands, 4 November 2013.

technological optimists and pessimists ….'[75] Inevitably, the 'circular argument' will produce an unsatisfactory result because, as mentioned above, the most important question for lethal autonomous systems is *not* simply whether a human or machine should decide to kill. The crucial question is whether there are certain responsibilities of human reasoning that we should not delegate to machines. To answer this question in a manner that will ground the optimists and satisfy the pessimists, this dissertation addresses the relationship between autonomous weapon systems, their design, human dignity and international law.

To facilitate the discussion, chapter two, 'Typology of Autonomous Weapon Systems,' describes basic concepts and elements of autonomous weapon systems as well as technical characteristics and capacities of specific systems. I describe how states are developing weapon systems with faster and more autonomous functions, including the capacity to identify targets and destroy them with lethal force. I argue that efforts to fit these systems into fixed categories such as 'in-the-loop,' 'on-the-loop,' 'semi-autonomous,' 'fully autonomous,' etc., fail to encompass the complexities of the systems and the fluid realities of modern armed conflict. Furthermore, as the speed of autonomous weapon systems increases, particularly with the advent and use of 'swarm' technology, semantic standards such as 'meaningful human control' become unrealistic and irrelevant. Instead, states that develop autonomous weapon systems should prioritise a design that ensures human-machine interdependence and teamwork so that human reasoning and judgment is not discarded at critical phases of warfighting, including decisions to use force.

[75] E Lieblich & E Benvenisti, 'The Obligation to Exercise Discretion: Why Autonomous Weapon Systems Are Illegal,' in Bhuta et. al., Autonomous Weapon Systems – Law, Ethics, Policy, p. 246.

In chapter three, 'The Sources of International Law and the "Place" of Human Dignity,' I discuss the three primary sources of international law as well as the concept of *jus cogens* (I refer to subsidiary sources such as judicial decisions and the writings of prominent commentators throughout this dissertation). I argue that human dignity is a treaty-based legal starting point, a guiding concept that states must use to operationalise the norms and values that underlie their existence as independent societies.

In chapter four, 'Autonomous Weapon Systems and Human Dignity,' I address the claim by some opponents of autonomous weapon systems that that the autonomous exercise of lethal force damages one of the conceptual pillars of international law: human dignity. I argue that the use of autonomous machines for warfighting per se does not undermine human dignity. However, I suggest that there are fundamental areas of life where humans – to preserve their value and autonomy as persons and hence their dignity – must retain their responsibility to think and express reason. The inevitable velocity of autonomous military engagements will obstruct the development of sound human judgment that arises from opportunities for reflection on questions and decisions involving complex values. This dynamic, I contend, *will* violate human dignity, as the ability of humans to fully develop their personalities – including the capacity to respect the rights of others - will inevitably diminish.

In chapter five, 'Autonomous Weapon Systems and International Humanitarian Law,' I identify the values-based decisions concerning the exercise of lethal force in international humanitarian law that demand the inclusion and direction of human reasoning. I argue that 1) humans should make decisions in situations where a balance must be struck between the most fundamental values of international humanitarian law: military necessity and humanity, 2) human involvement is not necessary in military decisions that require more automatic and

instinctive behaviour, such as close-quarters combat, or during processes of information gathering and fusion, and 3) the fundamental duty to protect human dignity limits armed forces and organized armed groups to the of use autonomous weapon systems with a co-active design that permits collaborative autonomy for complex, values-based decisions.

In chapter six, 'Autonomous Weapon Systems and International Human Rights Law,' I explain that international human rights law is most relevant to the use of autonomous weapon systems in two sets of circumstances: 1) in law enforcement/anti-terrorist situations where state authorities use lethal force, and 2) during armed conflict, where international human rights law applies concurrently with international human rights law. I demonstrate that, paradoxically, the deployment of lethal autonomous weapon systems by states outside of armed conflict potentially can reduce the frequency of the exercise of deadly force by state agents. However, the widespread use of lethal autonomous weapons carries a serious cost to human dignity, as the delegation to machines of the decision(s) to apply lethal force, as well as determinations about whether arrest or capture is more appropriate, restricts the rights to freedom of thought and expression. Thus, I argue that the burden on the enjoyment of these rights produced when autonomous weapon systems make these value-based decisions outweighs possible benefits to the protection of the right to life.

Chapter seven, 'Autonomous Weapon Systems and International Criminal Law,' describes how the employment of lethal autonomous weapon systems by militaries and security forces will influence efforts to hold individuals responsible for violations of the laws of war and gross violations of international human rights law, such as crimes against humanity. I address the question whether impunity for crimes committed with lethal autonomous weapon systems will be so onerous that it threatens the dignity of individuals,

and consequently the integrity of our legal system(s). I argue that the use of co-active designs for lethal autonomous weapon systems permits teamwork between humans and autonomous technologies that can result in lower levels of criminality and higher levels of accountability when crimes occur. This strategy serves to preserve the human dignity of all members of society, including participants in armed conflict and law enforcement operations.

Finally, in chapter eight, 'Autonomous Weapon Systems and the Responsibility of States and Arms Manufacturers,' I describe the responsibilities of states and arms manufacturers vis a vis the design, development and employment of autonomous weapon systems. I evaluate different theories available to states and to the international community to enforce secondary rules applicable to autonomous weapons. I argue that under existing law, states already bear an international legal responsibility to ensure that autonomous weapon systems permit human-machine interdependence in circumstances that call for assessment and weighing of complex values.

I conclude that international law, to preserve its capacity to adjust rights and responsibilities between states, and between states and individuals, must ensure the pre-eminence of the principle of human dignity. Yet, the delegation of human responsibility for complex, value-based judgments to autonomous weapon systems erodes human dignity and international law. To preserve human dignity and thereby the law's relevance, autonomous weapons systems must bear a co-active design to ensure human involvement in the complex value judgments that are necessary during armed conflict and civil strife.

Chapter 2

Typology of Autonomous Weapon Systems

I. Introduction

As stated in the Introduction, for the purposes of this dissertation, an 'autonomous weapon system' is defined as a 'weapon system that, once activated, can select and attack targets without further intervention by a human operator.'[76] Depending on how one interprets technical specifications, arguably such weapon systems have been in use for decades. For example, the navies of many nations operate the 'Phalanx Close in Weapons System' on their ships against urgent air warfare threats such as planes and missiles. The U.S. Navy describes Phalanx as 'the only deployed close-in weapon system capable of autonomously performing its own search, detect, evaluation, track, engage and kill assessment functions.'[77] In addition, South Korea and Israel have deployed autonomous weapons systems along their borders whose sensors can detect approaching soldiers or infiltrators and respond with lethal force.[78]

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[76] This dissertation limits its scope to kinetic autonomous weapon systems as opposed to autonomous cyber weapons. Malicious software, i.e. computer code designed to damage or disable other programs, and/or to collect intelligence, is referred to as 'malware.' K Hamlen, 'Stealthy Software: Next Generation Cyber-attacks and Defenses,' Proceedings of the 11th IEEE Intelligence and Security Informatics Conference (ISI), p. 109–112, June 2013, <http://www.utdallas.edu/~hamlen/hamlen13isi.pdf>. Cyber weapons are anonymous and invisible and the unique cyberspace domain makes geography and distance (in the physical sense) irrelevant between adversaries. H Harrison-Dinnis, 'Cyber Warriors, Patriotic Hackers and the Laws of War,' in D Saxon (ed.), *International Humanitarian Law and the Changing Technology of War* (Leiden: Martinus Nijhoff, 2013), pp. 252 – 256. In addition to state armed forces, 'adversaries' in cyber warfare easily can be individuals, loosely-organized groups of anonymous 'hackers,' as well as other non-state actors who take advantage of weaknesses in 'our collective armour.' Michael Daniel, Special Assistant to the President and White House Coordinator for Cybersecurity, remarks at 'Cybersecurity in a World Without Borders,' RSA Conference, 2014, <http://www.rsaconference.com/speakers/michael-daniel>. For comprehensive treatments of the relationship between cyber weapons and international law, see M Roscini, *Cyber Operations and the Use of Force in International Law* (Oxford University Press, 2014) and M. Schmitt (director), *Tallinn Manual on the International Law Applicable to Cyber Warfare* (Cambridge University Press, 2013).

[77] 'Phalanx Close-In Weapons System', About.Com, The United States Navy Fact File, <http://usmilitary.about.com/library/milinfo/navyfacts/blphalanx.htm>.

[78] J Cho, 'Robo-Soldier to Patrol South Korean Border,' ABC News, 29 September 2006, <http://abcnews.go.com/Technology/story?id=2504508>; E Cohen, 'Robots on Every Scene,' Israel Defence, 2

The crucial distinction is in the amount of freedom of manoeuvre delegated to the weapon system. For example, 'Wide-Area Loitering Munitions,' such as Israel's 'Harpy,' are missiles designed to patrol large areas of terrain or ocean from the air, detect enemy radar defence installations and destroy them.[79] Thus, the last human decision is a determination to launch the missile rather than a targeting judgment. In 2013, Professor Heyns singled out Harpy as a robotic weapon system 'currently in use' with a degree of autonomy and lethality.[80] Israel Aerospace Industries, the manufacturer of Harpy and its successor, 'Harpon,' asserts that 'there is always a man-in-the-loop in all target acquisition processes' and that the loitering mode of the system does not exist in current systems.[81] Publicly-available promotional material about the Harpy system from Israel Aerospace Industries, however, indicates that such autonomous loitering and targeting technology has existed in weapon systems for several years:

> 'Harpy operates autonomously, detecting, engaging and destroying emitting enemy radar. Harpy is ground launched and navigates autonomously to and in the target area. Harpy loiters for many hours, detecting and attacking emitting targets. …. Multiple

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December 2011, <http://www.israeldefense.com/?CategoryID=411&ArticleID=688>. According to Horowitz and Scharre, at least thirty countries possess similar 'human supervised autonomous defensive systems …. designed for situations where the time of engagement may be too short for human to adequately respond, necessitating automation.' 'Meaningful Human Control in Weapon Systems: A Primer,' Centre for a New American Security, March 2015, pp. 12-13.

[79] Israel Aerospace Industries describes the Harpy Loitering Weapon as 'a "Fire and Forget" autonomous weapon, launched from a ground vehicle behind the battle zone,' <http://www.iai.co.il/2013/16143-16153-en/IAI.aspx>, accessed 30 June 2015; 'IAI's MBT HARPY System', Israel Aerospace Industries, <https://www.youtube.com/watch?v=AyKXUfOubH0>; 'Weapons from Israel,' The Maccabean Online, March 2009, <http://www.freeman.org/MOL/pages/march2009/weapons-from-israel.php>. The United States' 'Harpoon' Anti-Ship Missile', system has similar capabilities although more recent versions permit human control over the final attack on a target. 'Harpoon', WeaponSystems.net, <http://weaponsystems.net/weapon.php?weapon=HH10+-+Harpoon>.

[80] 'Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions, Christoph Heyns', A/HRC23/47, 9 April 2013, para. 45.

[81] Electronic mail messages from Noga Nadler Mozes, Corporate Communications, Israel Aerospace Industries, 29 June 2015.

> Harpies are deployed to autonomously suppress and destroy the enemy radar systems in a wide area.'[82]

States that field fully autonomous weapons will experience an increase in their sense of military confidence and superiority over their enemies. Conversely, new autonomous weapons technology looms as a threat to all who lack it.[83] Furthermore, after conflict, there is a tendency for those who lose to imitate the victors.'[84] These dynamics will drive a continuing race to develop autonomous weapon systems because no one wants to be left behind in the race for better military technology:

> 'In the end, we want to prevent our enemies from leaping ahead of us. There is a risk associated with investing a lot of money and a risk to not doing anything. You have allies and potential threats that are moving forward with robotics. We have to acknowledge conditions on the battlefield in 2025 will include robotics whether we invest in it or not.'[85]

At the same time, weapons technology is outpacing law.[86] Moreover, like the fog of war, there is a 'fog of technology'[87] that also can cloud how human beings apply the law. In spite of the trend towards more autonomous unmanned weapon systems, the current legal

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[82] 'IAI's MBT HARPY System,' Israel Aerospace Industries, <https://www.youtube.com/watch?v=AyKXUfOubH0>. Also see 'HARPY,' Israel Aerospace Industries, <http://www.iai.co.il/2013/36694-16153-en/IAI.aspx> accessed 8 July 2015; 'Successful Flight Demonstrations for HAROP Loitering Munitions,' Israel Aerospace Industries, <http://www.iai.co.il/2013/32981-46464-en/MediaRoom_News.aspx> accessed 8 July 2015.

[83] See M McLuhan, *Understanding Media: The Extensions of Man* (Cambridge, Massachusetts: MIT Press, 1994), p. 344.

[84] J Weller, *Wellington in India* (London: Longman/Camelot Press, 1972), p. 296.

[85] Lt. Colonel Matt Dooley, Chief, Lethality Branch, Army Capabilities Integration Centre (ARCIC), in J Gould, 'U.S. Army Readying Unmanned Systems Doctrine', Defense News, 8 April 2015, <http://www.defensenews.com/story/defense/land/army/2015/04/08/us-army-readying-unmanned-systems-doctrine/25473749/>. The research and manufacture of autonomous weapon technologies is a twenty billion USD industry in forty different countries. A Kasperson, Head of International Security at the World Economic Forum, Remarks to 'Private Sector Perspectives on the Development of Lethal Autonomous Systems,' Geneva, 12 April 2016.

[86] L Antebi, 'Changing Trends in Unmanned Aerial Vehicles: New Challenges for States, Armies and Security Industries,' 6 *Military and Strategic Affairs* (August 2014), 24. To put the growing demand for more unmanned military technology in perspective, today, more than seventy nations operate unmanned aerial systems, including platforms with autonomous functions. Unmanned aerial systems are manufactured on every continent with the exception of Antarctica and, as of 2012, nearly fifty countries were producing almost 900 different types of unmanned aerial systems. Israel alone has exported unmanned aerial systems to dozens of nations. Non-state actors, such as Hizbollah, operate these systems for combat as well as intelligence purposes. *Ibid,* 23 - 28.

[87] D Hollis, 'The Fog of Technology and International Law,' Opinio Juris Blog, 15 April 2015.

literature contains limited discussion of the technical attributes and capacities of lethal autonomous weapon systems.[88] Without this knowledge, debates about whether autonomous weapon systems can be used in conformity with international law occur in a partial vacuum and it is impossible to ask the right questions and construct appropriate standards.[89] Thus, this chapter describes several basic concepts and elements of autonomous weapon systems as well as important technical characteristics and capacities of specific systems.

This chapter demonstrates that the focus of the design and development of certain autonomous weapons (and particular semi-autonomous weapons) is not directed to the creation of opportunities for human reasoning or the protection of human dignity. Nor, as discussed further below, does fulfillment of a 'meaningful human control' or other problematic, semantic standard appear to be an important prerequisite for the use of these weapons. Instead, the focus – and quite logically from a military perspective - is on the creation of faster, more autonomous and more overwhelming weapons.[90] This trend helps to illustrate why it is unrealistic to believe that human beings will have the ability to apply international law to kinetic and cyber autonomous weapons of the future.

We have already seen that the function of law is to allow humans to adjust their rights between themselves, and between individuals and states. As the technology of autonomous weapon system advances and increases in speed, however, humans will be unable to apply the

[88] For a description of several kinds of contemporary lethal autonomous weapons, see J Beard, 'Autonomous Weapons and Human Responsibilities' 45 *Georgetown Journal of International Law*, (2014), 617, 628 – 634.
[89] Even where definitive answers are elusive, it is still worthwhile to improve the questions. H Kelsen, 'What Is Justice?' in H Kelsen, *What Is Justice: Justice, Law and Politics in the Mirror of Science: Collected Essays*, (Berkeley, University of California, 1957), p. 1.
[90] 'In modern asymmetrical warfare, the number of [military] targets is increasing and the timeframe for engaging and killing each target is decreasing.' 'Aviation Defence Equipment Technology: Rafael Spice 250', AirRecognition.com, 14 January 2015, <http://www.airrecognition.com/index.php/focus-analysis-photo-report-aviation-defence-industry/aviation-defence-industry-technology/1424-rafaels-spice-250-precision-guided-glide-bomb-undergoing-adaptation-test-on-iafs-fighters.html>.

relevant law, much less adjust their rights and duties with respect to the use of these weapons. Indeed, with the introduction of 'swarm' technology, described below, we have reached a 'tipping point' with autonomous weapon technology. The use of larger and faster swarms of autonomous weapon platforms will make it impossible or nearly impossible to maintain human reasoning as part of the 'system.' The shrinking spaces for human reasoning in the operation of these weapons means that at best, humans will be 'programmers of the law.' That is a poor substitute for the foundational role of law and reasoning in human life. Limitations on autonomous functions, therefore, are necessary to maintain human machine teamwork and interdependence, and thus**,** the role of human reasoning in warfare.

In order to ensure the continued role of humans, care should be taken at the design phase of autonomous weapon systems to ensure that they operate as partners of humans rather than substitutes. Weapons designers and developers, therefore, must ensure that the design of autonomous weapons be based on an interdependent, "co-active design" in order to reduce the speed of autonomous weapon systems to a velocity where humans can: i) apply reasoning and law (in particular international humanitarian law and international human rights law) during their operation, and (ii) ensure that human reasoning and judgment is available for cognitive functions better suited for human than machines.

II. Autonomous Weapon Technologies

A. Automatic v. Autonomous

Preliminarily, it is important to distinguish between 'automatic' and 'autonomous' weapon systems. '"Automatic" systems are fully preprogrammed and act repeatedly and

independently of external influence or control.'[91] In a sense, even human soldiers exhibit automatic qualities because they are trained to act instinctively, without thinking, during basic combat functions such as shooting, moving and communicating.[92] Soldiers in the field who hesitate often put themselves and those around them in great danger.[93]

By contrast, 'autonomous' weapon systems are self-directed as they choose their behaviour to achieve a human-determined goal. Autonomous weapon systems, therefore, are 'capable of a higher level of performance compared to the performance of a system operating in a predetermined manner.'[94]

B. Artificial Intelligence and Computer Software

Autonomous weapon systems contain multiple components (for guidance, communication, targeting, etc.) that are directed and coordinated by computer programs (or 'software' or 'code'). Essentially, software comprises a series of instructions, expressed in

[91] 'Unmanned Systems Integrated Roadmap FY2011 – 2036,' U.S. Department of Defence, p. 43, <http://www.acq.osd.mil/sts/docs/Unmanned%20Systems%20Integrated%20Roadmap%20FY2011-2036.pdf>.

[92] Modern militaries want soldiers to operate in combat as quickly and effectively as possible. Thus, 'you want soldiers to be automated in terms of the technical aspects of fighting.' However, when situations – such as changing conditions in the battlespace – arise that require thinking and reasoning, the soldier must apply her contextual knowledge of the environment in which she operates. Author interview with Allen Borelli, former U.S. Army Intelligence Specialist, The Hague, 15 July 2015.

[93] M Waxman, 'Detention As Targeting: Standards of Certainty and Detention of Suspected Terrorists,' 108 *Columbia Law Review* (2008), 1365, 1409.

[94] *Ibid.* The 'Science of Autonomy' combines related fields such as biology/animal behaviour, computer science, economics, management theory, cognitive science, psychology and neuroscience. Long Range Broad Agency Announcement (BAA) for Navy and Marine Corps Science and Technology, U.S. Office of Naval Research, BAA Announcement No. ONRBAA15-001, p. 17, <http://www.onr.navy.mil/~/media/Files/Funding-Announcements/BAA/2015/15-001-LR.ashx>. Expertise in these and additional disciplines is necessary to overcome difficult challenges in autonomous weapon systems such as: 1) 'Autonomous learning, reasoning, and decision-making in unstructured, dynamic, and uncertain environments; 2) Human interaction/collaboration including understanding intent and actions of human team members, adversaries, and bystanders; and 3) Organic perception/understanding to support decision-making, reasoning, and actions in a complex, dynamic world. *Ibid*, 18.

mathematical terms, that computers follow to achieve certain tasks. These mathematical statements are known as 'algorithms' and they function at 'blinding speed.'[95]

The term-of-art for sophisticated computer software that guides autonomous systems is 'artificial intelligence.'[96] Hannah Arendt perceived that 'the main characteristic of mental activities is their invisibility.'[97] So a slight paradox underlies the term 'artificial intelligence' as all intelligence – including human intelligence – has an artificial quality because the processes of thinking and reasoning are intangible and invisible. Artificial intelligence, however, in the form of computer code, can be planned and programmed, checked after events, re-designed and re-programmed.[98] In that sense, 'artificial' intelligence is more tangible than human reasoning.

Thus, in addition to the important pieces of mechanical equipment of an autonomous weapon system, the different software/artificial intelligence systems also are critical components of the weapons platform. However, because software usually is a detailed expression of mathematical statements, it does not fail in the same sense as a mechanical system.[99] Software does not 'break;' instead it fails in a conceptual sense. Moreover, besides

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[95] B Gates, EdX Course CS50x3 (Computer Science 50), Harvard College, Week 1 2015. Fiber optic cables can transfer internet messages at close to the speed of light. In reality, however, internet speed often is slower because many fiber optic cables are made from cheaper materials that transmit code at slower speeds. Electronic mail message from Associate Professor Kevin Hamlen, University of Texas, Dallas, 28 May 2015.

[96] For example, the commonly-used 'Google' internet search engine is a form of artificial intelligence. L Steels, 'Ten Big Ideas of Artificial Intelligence,' remarks to 25th Benelux Conference on Artificial Intelligence, Delft Technical University, 8 November 2013. Although algorithm-based artificial intelligence is the most common form in use today, and will be the standard adopted by this dissertation, it is not the only design. For example, 'Statistical Machine Learning,' whereby autonomous robots learn to modify their behaviour by trial-and-error, is a significant area of research. *Ibid.* Author Interview with Gianfranco Visentin, Head, Automation and Robotics Department, European Space Agency, Noordwijk, 4 November 2013. P Margulies, 'Making Autonomous Weapons Accountable: Command Responsibility for Computer-Guided Lethal Force in Armed Conflicts.'

[97] *The Life of the Mind* (New York: Harcourt, 1978), p. 71.

[98] E Lubofsky, 'A Smarter Undersea Robot: Engineers Seek to Correct a Curious Deficiency,' Oceanus, 16 January 2015, <http://www.whoi.edu/oceanus/feature/a-smarter-undersea-robot>.

[99] J Lyons, ARIANE 5, Flight 501 Failure, Report by the Inquiry Board, 19 July 1996, <https://www.ima.umn.edu/~arnold/disasters/ariane5rep.html>.

failures caused by mistakes in the computer code, software also can function unpredictably due to design errors which lead to poor interaction between different systems.[100]

C. Autonomy Is a Dynamic State

Contemporary writers often frame debates about human supervision, if any, of autonomous weapon systems in the deceptively simply phraseology of 'semi-autonomous weapon systems' vs. 'fully autonomous weapon systems' vs. 'man-in-the-loop' systems vs. 'man-on-the-loop' systems.

The United States military uses a category called "semi-autonomous' weapon systems: a 'weapon system that, once activated, is intended to only engage individual targets or specific target groups that have been selected by a human operator.'[101] Modern fighter planes, for example, often operate essentially as 'semi-autonomous' weapons systems. During aerial missions where targets have been pre-selected and their coordinates pre-programmed into avionic software, fighter pilots approaching their targets verify that their weapons contain the right coordinates and that the weapons appear to be functioning correctly, and then simply drop their bombs.[102] Similarly, cruise missiles, after launch, fly

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[100] *Ibid*. 'Spy Plane Causes Air Traffic Chaos', BBC NEWS, 6 May 2014, <http://www.bbc.com/news/technology-27292440>. Given the potential for catastrophic results should computer programmes in autonomous weapon systems be inadequate, designers and developers should assume that the software is faulty until the most rigorous testing methods prove otherwise. Lyons, Flight 501 Failure, Report by the Inquiry Board.

[101] A Carter, 'Autonomy in Weapons Systems', Department of Defence Directive, United States of America, Number 3000.09, Part II, 'Definitions,' 21 November 2012, pp. 13.

[102] The burden to ensure that the pilot is bombing the correct target, in accordance with international humanitarian law and the rules of engagement, rests on the pilot's chain of command and the officer who approved the mission. Electronic mail message, General B.A. Fabio Giunchi, Commander of Air Cooperation School, Guidonia Airport, Italian Air Force, 16 February 2015. General Guinchi is a former fighter pilot and participant in the development of the F-35 Lightning II, the next-generation stealth, multirole fighter jet undergoing testing and development by the NATO powers.

for great distances and hit targets that have been identified, selected and approved by a human chain-of-command.[103]

Progressively, the categorization of 'semi-autonomous' v. 'autonomous' is becoming a distinction without a difference as the line between the two becomes more difficult to discern.[104] The reality of combat often requires automatic, instinctive human responses.[105]

For example, at present, flying the airplane is now a secondary or tertiary task of fighter pilots.[106] The onboard digital flight computer controls steering and the plane's stability. Similarly, a digital control system adjusts the power level of the engine within set limits, based on the pilot's input. This technology reduces the pilot's workload tremendously and he/she can focus on other tasks, such as engaging with targets. Nevertheless, the pilot of contemporary jets such as the F-16 must 'fuse' (i.e. interpret) different information provided by the aircraft's sensors and electronics that indicate whether an approaching object is an enemy fighter or a 'friendly' plane. In the future, the new, more technologically advanced F-35 fighter jet will fuse the different data and then present the best information to the pilot,

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[103] *Ibid*.

[104] Author interview with Colonel Denny Traas, MSc, Chief Air Force Branch, Plans Directorate, Defence Staff, Netherlands Ministry of Defence, The Hague, 20 February 2015. To create more sophisticated and complex ('semi-autonomous') weapon systems, the U.S. Government has begun a programme called 'SoSITE,' which stands for 'System of Systems Integration Technology and Experimentation.' SoSITE will link together a network of manned and numerous unmanned aerial vehicles (i.e. a 'swarm') 'to enhance mission effectiveness.' The unmanned systems would enter enemy territory with weapons, electronic warfare systems, etc., while the manned platforms would 'control' the unmanned systems using information fused by the technology. The pilot of the manned aircraft will 'command' the swarm of unmanned vehicles but he 'is relieved of control burdens through the use of advanced distributive battle management aids.' Prior to the pilot's decision to engage a target, 'only a limited amount of information' will be transmitted from the unmanned systems to the pilot.' Thus, 'the planning of the engagement, selection and programming of weapons and generation of a targeted solution again [will be] conducted with minimal pilot burden ….' 'New Concept for Air Warfare', DARPA Advancing System-of-Systems Open Architectures for Airborne Assets', AUVSI News, 31 March 2015, <http://www.auvsi.org/blogs/auvsi-news/2015/03/31/darpasos>. In reality, it is difficult to distinguish this 'semi-autonomous' weapon system from a fully autonomous system.

[105] F de Mulinen, Handbook on the Law of War for Armed Forces, International Committee of the Red Cross, Geneva, 1987, rule 278 ('Combat requirements'). For this reason, training in international humanitarian law must also form part of the basic training of soldiers. *Ibid.*

[106] Author interview with Colonel Denny Traas.

thereby removing this 'judgment call' from the pilot's responsibility.[107] 'Whether it's correct or not, I don't know. At least I don't have to spend time assessing information from multiple sources and worry about it.'[108] In such situations, attempts to classify the F-35 as a semi-autonomous or autonomous weapon system are artificial as the pilot's real participation in targeting decisions can vary significantly.[109]

Similarly, the phrase 'man-in-the-loop' refers to a design whereby the weapon system is supervised by human beings and has no independent decision-making ability.[110] 'Man-on-the-loop' refers to weapon systems with sufficient autonomy to operate and make decisions independently, but which also allow for humans to monitor their behaviour and either confirm or veto the machine's decisions; in other words, exercise human judgement over the behaviour of the weapons platform.[111] Although the F-35, in a technical sense, can be called a 'man-in-the-loop' weapon system, the human-machine interface, particularly at supersonic speeds when the pilot is so dependent on 'fused' information from his avionic suite, suggests a more autonomous system.

The difficulty with such labels and categories is that they reveal little about the challenges faced by persons and/or machines in understanding their environment, particularly

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[107] 'Much of the F-35's electronic warfare and intelligence, reconnaissance and surveillance (ISR) capabilities are made possible by a core processor that can perform more than one trillion operations per second.' Lockheed Martin, 'Multi-mission Capability for Emerging Global Threats', F-35 Lightning II, <https://www.f35.com/about/capabilities>.

[108] Author interview with Colonel Denny Traas. See for example, description of the M426S E-Scan IFF Interrogator, produced by SELEX ES, <http://www.selex-es.com/-/m426s>.

[109] Modern fighter pilots are 'automated' to rely and react to the information provided to his instruments; 'that's how he is trained.' Author interview with Allen Borelli.

[110] D Akerson, 'The Illegality of Offensive Lethal Autonomy,' in D Saxon (ed.), International Humanitarian Law and the Changing Technology of War, p. 71.

[111] *Ibid*, pp. 71 – 72. Akerson also describes a system of "variable autonomy" where autonomous weapon systems could switch from 'man-on-the-loop' mode to "man-in-the-loop" mode." *Ibid.* Markus Wagner also describes three categories of autonomy: 'remotely-controlled systems,' "automated systems" and 'autonomous weapons systems.' 'Autonomy in the Battlespace: Independently Operating Weapon Systems and the Law of Armed Conflict' in D Saxon (ed.), International Humanitarian Law and the Changing Technology of War, pp. 103 - 105.

during the stress of armed conflict and law enforcement activities.[112] In 'man-in-the-loop' systems, such as remote-controlled 'drones,' one of these challenges is simple boredom while, for example, intelligent and highly trained personnel must watch a house for many hours to see if an individual exits. The tedium of such tasks can result in complacency, leading to missed tactical opportunities and/or 'unintended engagements' that produce civilian casualties.[113] Furthermore, so-called "man-on-the-loop" systems must function in highly fluid and complex environments where the need for human judgement constantly shifts and can overwhelm the 'operator.'[114] It is important, therefore, to recognize that 'autonomy' should change as conditions in the battlespace evolve. Different kinds and different amounts of human reasoning and judgement are necessary depending on the situations of the autonomous weapon systems and their human operators.[115]

Decades ago, T.B. Sheridan developed a list of at least ten different levels of machine/computer autonomy based on an interface between a single human being and a single

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[112] 'To understand the world is never a matter of simply recording our immediate perceptions. Understanding inescapably involves reasoning. We have to 'read' what we feel and seem to see, and ask what these perceptions indicate and how we may take them into account without being overwhelmed by them.' A Sen, *The Idea of Justice* (London: Penguin, 2010), pp. viii. Indeed, traditionally, in battle, no one knows 'much of anything' except for what occurs in his own immediate environs. Thucydides, *The History of the Peloponnesian War* (431 BC), Richard Crawley (trans.), Chapter XXII, <https://www.gutenberg.org/files/7142/7142-h/7142-h.htm>.

[113] M Cummings et. al., 'Boredom and Distraction in Multiple Unmanned Vehicle Supervisory Control,' 25 *Interacting with Computers* (2013), 34–37.

[114] Increased autonomy empowers a single operator to monitor multiple robots while performing other tasks requiring coordination and complex decision-making. However, the cognitive capacity necessary to monitor multiple weapons platforms can exceed that of a single human operator, even with higher levels of automation and autonomy. F Gao et. al., 'Teamwork in Controlling Multiple Robots,' Proceedings of the seventh annual ACM/IEEE international conference on Human-Robot Interaction (2012), p. 81-88, <http://web.mit.edu/aeroastro/labs/halab/papers/hri167-gao.pdf>. Cf. 'Vehicle Management,' in VCS-4586 Capabilities Guide, Lockheed Martin, p. 4, <http://www.lockheedmartin.com/content/dam/lockheed/data/ms2/documents/cdl-systems/VCS-4586%20CAPABILITIES%20GUIDE-August2013.pdf>.

[115] At the European Space Agency, for example, robotics scientists apply a gradient containing four separate levels of autonomy. The highest level of autonomy (known as "E4") could be further sub-divided into additional degrees. Author Interview with Gianfranco Visentin.

computer.[116] Today, advances in technology permit additional and much more complex variations of autonomy. For example, a single human operator may monitor several autonomous weapon systems simultaneously.[117] A single autonomous weapon system, however, may contain multiple computer sub-systems, each with its own degree of autonomy. For example, a navigation sub-system may direct the autonomous weapon to change location due to bad weather, while the weapon sub-system simultaneously decides to launch an attack.[118]

Furthermore, models of a single autonomous weapon system actually represent a simplified version of modern warfare. Large military operations often are 'a system of systems' with the autonomous weapon platform forming only one portion of the overall system.[119] Absent from the single autonomous weapon system scenario, for example, are manned weapon systems,[120] satellites that are crucial for maintaining communications,[121]

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[116] 1. The computer offers no assistance to its human superviser(s); 2. The computer offers a complete set of alternatives to its human superviser(s); 3. The computer narrows the selection to a restricted set of options and sends the reduced list to the human superviser(s); 4. The computer sends a single option for action to its human superviser(s); and 5. The computer executes that option if the human superviser(s) approves; or 6. The computer allows the human superviser(s) to veto the action before automatic execution; or 7. The computer informs the human superviser(s) after execution; or 8. The computer informs the human superviser(s) after execution if he/she asks; or 9. The computer informs the human superviser(s) after execution if it decides to; or 10. The computer decides everything without communication to the human superviser(s). T B Sheridan, et al. 'Adapting Automation to Man, Culture and Society,' 19 *Automatica*, 6 (1983), 605, 611.

[117] *Joint Doctrine Note 2/11*, para. 506.

[118] Author Interview with Gianfranco Visentin.

[119] *Joint Doctrine Note 2/11*, paras. 104 and 513. Moreover, systems and the institutions that create and operate them 'interact to form more embracing systems.' T Hughes, 'Convergent Themes in the History of Science, Medicine and Technology, 22 *Technology and Culture* (July 1981), 550, 555.

[120] Modern manned weapons platforms also represent 'systems of systems.' For example, the last generation U.S. Navy fighter-bomber, the F-18, contains eleven different weapon systems to control different kinds of rockets, missiles, bombs and guns. Aircraft Weapon Systems, pp. 15-19 – 15-20, <http://www.globalsecurity.org/military/library/policy/navy/nrtc/14313_ch15.pdf>.

[121] For example, an autonomous weapon system may detect and report about its own position and condition, as well as moving objects such as unknown vehicles, non-combatants, allied and/or cooperating autonomous weapons systems, identifiable targets and threats. It might also detect and report about stationary objects such as targets and topographic obstacles. R Bamberger Jr. et. al, 'Flight Demonstrations of Unmanned Aerial Vehicle Swarming Concepts',' 27 *Johns Hopkins APL Technical Digest*, 1 (2006), 41, 49, <http://www.jhuapl.edu/techdigest/TD/td2701/Bamberger.pdf>.

sensors, radars and additional forms of technology such as (autonomous) cyber weapons. Moreover the armed forces from different states, may also integrate their systems so as to carry out joint operations.[122] Other factors will affect the use of autonomous weapons at different moments, such as the intent, orders and influences expressed by commanders at different levels.[123]

These scenarios will only become more complex with the ongoing development of 'swarm' technologies that permit large numbers of robotic weapon systems to operate cooperatively and communicate rapidly amongst themselves.[124] Swarm technologies developed from the combined efforts of engineers and social scientists to create a relatively simple algorithm that mimics the behavior of animals in nature, such as flocks of birds or schools of fish.[125] Over time, and importantly for later work on swarms of autonomous weapons, the developers modified and adjusted their algorithm to model this kind of social behavior, 'which is multidimensional and collision-free.'[126]

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[122] General J Shapland, lecture to Conference on *Air Defence in the Modern Era,* Institute for National Security Studies, 18 March 2014, <http://www.inss.org.il/index.aspx?id=4479&categoryid=59>.

[123] For example, in a Tactical Directive issued in 2010 for members of the International Security and Assistance Forces ('ISAF') in Afghanistan, General David Petraeus reminded his subordinates that '[s]trategic and operational commanders cannot anticipate every engagement. We have no desire to undermine the judgment of tactical commanders. However, that judgment should always be guided by my intent.' 'General Petraeus Issues Updated Tactical Directive: Emphasizes 'Disciplined Use of Force,'' ISAF News List, 2010-08-CA-004, 4 August 2010 (emphasis in original), <http://www.isaf.nato.int/article/isaf-releases/general-petraeus-issues-updated-tactical-directive-emphasizes-disciplined-use-of-force.html>.

[124] D Werner, 'Drone Swarm: Networks of Small UAVs Offer Big Capabilities,' Defence News, 12 June 2013, <http://www.defensenews.com/article/20130612/C4ISR/306120029/>. Israel's HARPY System can operate as a swarm of loitering autonomous missiles. 'IAI's MBT HARPY System,' Israel Aerospace Industries, <https://www.youtube.com/watch?v=AyKXUfOubH0> accessed 30 June 2015.

[125] J Kennedy & R. Eberhardt, 'Particle Swarm Optimization', Neural Networks, Proceedings, IEEE International Conference, 1995, 1942-1948, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.248.4138&rep=rep1&type=pdf>.

[126] *Ibid*, 1945. There are five basic principles of swarm intelligence: 1) proximity: the population should be able to carry out simple space and time computations; 2) quality: the population should be able to respond to quality factors in the environment; 3) diverse response: the population should not commit its activities along excessively narrow channels; 4) stability: the population should not change its mode of behaviour every time the environment changes; 5) adaptability: nevertheless, the population must be able to change its behaviour when necessary. *Ibid,* 1946 – 1947.

The ability to cooperate in the midst of uncertainty will be crucial to the success of any swarm.[127] Consequently, the design of contemporary, multi-algorithm swarm systems requires consideration of many factors such as ease of use, workload of the human operator, information flow between individual robots (including random communication interruptions), and between individual robots and the operator, speed of individual robots as well as speed of the swarm, whether individual robots will perform single tasks or multiple tasks (and how these tasks will be updated), and software and hardware maintenance.[128] Furthermore, when deciding whether to perform a current task, the artificial intelligence of individual vehicles in a swarm must consider 'what future tasks are possible in order to maximize the expected performance of the entire team.'[129] Swarm technology can be adapted for all weapons platforms in all battlespace domains[130] and logically, larger and faster swarms of robots are more difficult for humans to monitor and control.[131] To add to the complexity, in armed conflict scenarios, much of this autonomous behavior must occur in the face of opposition from enemy forces.

One might argue that similar military scenarios, albeit involving human commanders and units of human soldiers, existed throughout history. For example, during the Second World War, commanders in the United Kingdom, the U.S.A., the Soviet Union, Germany and Japan monitored and supervised military units spread over several continents and oceans

[127] *Ibid*, 262.
[128] J McLurkin, 'Speaking Swarmish: Human-Robot Interface Design for Large Swarms of Autonomous Mobile Robots,' Association for the Advancement of Artificial Intelligence (2006); E. Raboin, et. al, 'Model-Predictive Asset Guarding by Team of Autonomous Surface Vehicles in Environment with Civilian Boats', 38 *Autonomous Robot* (2015), pp. 261-263. Most of these factors also are relevant to the design and function of single autonomous weapon systems.
[129] *Ibid*, 262.
[130] In the future, operations of the Israeli Defence Forces will include swarms of autonomous land, air and sea weapon systems, including networks of miniature and nano-technology platforms. Lt. General B Gantz, 'The IDF in 2025,' Address to The Begin-Sadat Centre for Strategic Studies, 9 October 2013, <http://besacenter.org/new-at-the-besa-center/idf-chief-staff-benny-gantz-speaks-besa-center/>.
[131] A Kolling, 'Towards Human Control of Robot Swarms,' *Human-Robot Interaction* (2012), 89, 95 – 96.

(including submarines and air craft).[132] A distinguishing characteristic of current and future autonomous weapon systems, however, in addition to their independence, is the speed with which these machines communicate information and execute decisions.[133] This quality will generate opportunities for significant military advantages. It will also, however, further limit capacities for human command and control, i.e. the exercise of human reasoning and judgment.[134]

Schmitt and Thurnher argue that 'humans are never really 'out of the loop' because 'humans will decide when and where to deploy the [autonomous weapon] system and what parameters to embed within it.'[135] However, when autonomous weapons react to events and use force (as they already do in certain cases) at speeds that effectively prohibit human influence or intervention, soldiers, operators and commanders are, effectively, 'out of the loop.'[136]

The borders between automation and autonomy, however, need not be static. To improve the effectiveness of human-machine interactions, new engineering designs such as 'adjustable autonomy' and 'adaptive automation' permit the roles of humans and computers

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[132] B H Liddell Hart, *History of the Second World War* (New York: G.P. Putnam's Sons, 1970), pp. 99, 229, 235, 257, 259, 264, 269, 276, 329, 349, 438 and 684.

[133] D Werner, *Drone Swarm*; M Zenne, 'Death from a Swarm of Tiny Drones',' Daily Mail, 20 February 2013, <http://www.dailymail.co.uk/news/article-2281403/U-S-Air-Force-developing-terrifying-swarms-tiny-unmanned-drones-hover-crawl-kill-targets.html>; P Fiddian 'UAV Swarm Technology Trial Success,' Armed Forces International News, 7 August 2012, <http://www.armedforces-int.com/news/uav-swarm-technology-trial-success.html>.

[134] U.K. Doctrine on unmanned aircraft systems notes that 'practical methods to control swarming systems have yet to be fully developed and demonstrated' and refers to commentary 'that suggests that the increasing speed, confusion and information overload of modern war may make human response inadequate….' Joint Doctrine Note 2/11, paras. 316 and 520.

[135] M Schmitt and J Thurnher, 'Autonomous Weapon Systems and LOAC,' 4 *Harvard National Security Journal* (2013), 231, 280.

[136] Colonel Shane Riza, a U.S. Air Force fighter pilot, explains that presently military "communication occurs at the speed of light" and recognizes that autonomous weapons systems permit 'the speed of future decision cycles outpacing the human mind.' M Shane Riza, *Killing Without Heart: Limits on Robotic Warfare in an Age of Persistent Conflict* (Washington, D.C.: Potomac Books, 2013), p. 41.

to change within dynamic environments.[137] For example, the algorithms in 'Automated Planners' make adjustments – without human intervention – to the tasks of autonomous vehicles at the tactical level while human operators periodically update algorithms that guide the autonomous vehicles at the strategic level.[138] Due to the speed of communications between individual vehicles, the tactical adjustments occur at a faster rate than updates from the human operator.[139] This design could assist operators of swarms of autonomous weapon to moderate their workload and thereby avoid mistakes.[140]

D. Examples of Ground-Based Autonomous Weapon Systems

In addition to the Korean and Israeli ground-based lethal autonomous weapons mentioned above, the Russian military is developing an autonomous version of the Taifun-M, a robot capable of guarding strategic missile sites and detecting and destroying stationary or moving targets.[141] Furthermore, the U.S. Department of Defence, in collaboration with Carnegie Mellon University, has developed an autonomous ground-based vehicle called 'The Crusher.' The vehicle weighs more than 6,000 kilograms and can navigate independently from point to point for specific missions, including the use of force.[142] Currently, however,

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[137] A Clare, et. al. 'Assessing Operator Strategies for Real-time Replanning of Multiple Unmanned Vehicles,' 6 *Intelligent Decision Technologies* (2012), 221, 222.
[138] *Ibid*, 222 – 223.
[139] *Ibid*, 222.
[140] *Ibid*, 230.
[141] Defence and Security News – Russia, 23 April 2014, <http://www.armyrecognition.com/april_2014_global_defense_security_news_uk/russian_army_to_use_unmanned_ground_robot_taifun-m_to_protect_yars_and_topol-m_missile_sites_2304143.html>.
[142] 'Robotic Warriors: The Crusher,' 22 August 2013, <http://www.military.com/video/logistics-and-supplies/military-equipment/robotic-warriors-the-crusher/2623237187001/>.

consistent with Department of Defence Policy Directive 3000.09, the U.S. is not developing robots with autonomous capability to engage humans.[143]

The Israeli Defence Forces deploy the Guardium Unmanned Ground Vehicle. Designed for reconnaissance and leading troop movements, this weapon system possesses remote-controlled weapons as well as the capability for 'autonomous decision making.'[144] Israel has also developed 'Iron Fist,' a defensive autonomous weapon system mounted on tanks, armoured personnel carriers, etc. to protect them from rocket, grenade or missile attacks. The Iron Fist's sensors detect an approaching munition and launches a counter-shell that destroys it in mid-air.[145]

E. Examples of Air-Based Autonomous Weapon Systems

The United States Navy has developed LOCUST, a system of swarming autonomous aerial vehicles that can overwhelm an enemy. The relatively inexpensive individual weapons share information and work collaboratively in order to find and attack targets. Moreover, they will force adversaries to concentrate on responding to the swarm.[146] U.S. Naval officials state that 'there will always be a human monitoring the mission, able to step in and take control as desired.'[147]

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[143] D Vergun, 'Lethality Expert, TRADOC to Publish Helpful Robotics Doctrine,' WWW.ARMY.MIL, 9 April 2015, <http://www.army.mil/article/146129/Lethality_expert__TRADOC_to_publish_helpful_robotics_doctrine/>.
[144] 'Guardium Mark2 UGV: Field Proven UGV with Enhanced Combat Capabilities,' GNIUS Unmanned Ground Systems, <http://g-nius.co.il/pdf/brochures/GuardiumLS.pdf>.
[145] 'Future Weapons Israel: Iron Fist APS,' Discovery, <https://www.youtube.com/watch?v=fI_cbAdCZCw>.
[146] The LOCUST swarm can be launched from ground-based vehicles, ships and planes. D Smalley, 'LOCUST: Autonomous Swarming UAVs Fly into the Future,' America's Navy, 4 April 2015, <http://www.navy.mil/submit/display.asp?story_id=86558://>.
[147] *Ibid.*

The 'Switchblade' is a portable flying weapon system currently used in combat by the U.S. Army in Afghanistan. A soldier can carry in the system in her backpack and launch the miniature missile against enemy targets up to ten kilometres away. The missile can 'loiter' for up to ten minutes before engaging a stationary or moving target and can operate autonomously or via remote control.[148] In addition to the "Harpy' loitering missile discussed above, Israel also operates the "Spyder" ground-to-air missile system which seeks out, identifies and destroys enemy aircraft and munitions.[149] A human operator may launch the Spyder, or, the missile may launch autonomously in response to a perceived threat.[150]

'Brimstone' is a missile developed for the Royal Airforce of the United Kingdom with 'human-in-the-loop capability to meet restrictive rules of engagement.'[151] Released from a fighter jet, the missile seeks enemy targets at long range. It uses radar and lasers to 'distinguish between valid and invalid targets' before destroying them.[152] Brimstone missiles (currently in use in missions over Iraq and Syria) provide the ability to engage multiple targets simultaneously, including fast moving and maneuvering vehicles, tanks and armoured vehicles and 'swarming' naval vessels.[153]

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[148] 'Switchblade,' Overview, <https://www.avinc.com/downloads/Switchblade_Datasheet_032712.pdf>; 'Switchblade,' AeroVironment, <https://www.avinc.com/uas/adc/switchblade/>; B Carey, 'AeroVironment Seeks to Grow "Switchblade" Missile Business,' AINonline, 8 May 2015, <http://www.ainonline.com/aviation-news/defense/2015-05-08/aerovironment-seeks-grow-switchblade-missile-business>.

[149] 'Future Weapons Israel Special Part V, Spyder ADS,' Discovery, <https://www.youtube.com/watch?v=YW8G-8uyqdA>. 'SPYDER-SR ADS Short Range Air Defence System', Rafael Advanced Defence Systems Ltd., <http://www.rafael.co.il/Marketing/186-704-en/Marketing.aspx>.

[150] 'Future Weapons Israel Special Part V, Spyder ADS;' India's armed forces also operate the Spyder system. 'India Buys Israeli "SPYDER" Mobile Air Defence System,' Defence Industry Daily, 19 August 2009, <http://www.defenseindustrydaily.com/india-to-buy-israeli-spyder-mobile-air-defense-system-02702/>.

[151] 'Brimstone Precision Attack Weapon,' MBDA Missile Systems, http://www.mbda-systems.com/air-dominance/brimstone/.

[152] 'Brimstone,' Royal Air Force Website, http://www.raf.mod.uk/equipment/brimstone.cfm.

[153] 'Brimstone Precision Attack Weapon.'

Israel also produces the 'Spice Bomb,' a 'stand-off autonomous weapon system' that can be launched from modern jet fighters such as the F-15, F-16 and the F-35. The weapon can search for up to 100 optional, stationary and mobile targets.'[154] Rather than flying to pre-programmed Global Position System coordinates, each autonomous 'Spice Bomb' compares 'real time' images to 'reference images' that have been stored in the weapon's computer.[155] After it performs 'the scene-matching process, Spice 'acquires the target automatically.'[156] Israeli air, sea and ground platforms also launch 'Delilah,' another 'standoff' missile which autonomously seeks out and identifies pre-designated targets. Once the target is identified, the launching pilot, for example, from an F-16 or a ship, can confirm that it is correct, or change it, and direct the missile into the target.[157]

The U.S. Air Force launches the 'small diameter bomb ('SDB')' from aircraft to engage fixed, relocatable and/or moving targets at any time of day or night and in adverse weather conditions.[158] The SDB has 'autonomous stand-off attack capability.'[159] Also launched from an aircraft, the Sensor Fused Munitions,' in use since operation Iraqi Freedom, are large, aerial-launched 'pods,' which contain ten smaller sub-munitions. Each of the sub-munitions release four sensor-based warheads that loiter in the air and identify and engage

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[154] A Egozi, 'Israeli F-35s to Use Spice Bomb Kits,' F-16.Net, 13 March 2013, <http://www.f-16.net/forum/viewtopic.php?t=23226>.

[155] 'Spice: Precision Guided Weapon Kit', Rafael Advanced Weapon Systems, <http://www.rafael.co.il/Marketing/332-891-en/Marketing.aspx>.

[156] 'Spice: Smart, Precise-Impact and Cost-Effective Guidance Kits,' Rafael: Smart and To the Point, <http://www.rafael.co.il/marketing/SIP_STORAGE/FILES/4/924.pdf>.

[157] 'Future Weapons Israel Special Part VI Delilah Missile,' Discovery, <https://www.youtube.com/watch?v=zvMH-Z5IFjI>. 'DELILAH SL – Ship Launched,' Israeli Military Industries, Ltd., <http://www.imi-israel.com/vault/documents/delilah_SL.pdf> and <http://www.imi-israel.com/home/doc.aspx?mCatID=65740>. This semi-autonomous system requires that the human reasoning process continue until the destruction of the target or the abortion of the mission.

[158] Chairman of U.S. Joint Chiefs of Staff, Joint Publication 3-09, Joint Fire Support, 12 December 2014, p. III-8.

[159] *Ibid*.

stationary and moving targets. Thus, these forty warheads function akin to the swarm technologies discussed above.[160]

Similarly, the United States military has developed the Close-In Covert Autonomous Disposable Aircraft ('CICADA'). CICADAs are autonomous weapon systems that fit in the palm of a human hand. Planes will drop hundreds of CICADAs from high altitudes to simultaneously attack and overwhelm enemy positions[161]

F. Examples of Sea-Based Autonomous Weapon Systems

The United States Navy recently conducted a successful test of a swarm of thirteen autonomous boats that can defend friendly vessels and deter and attack enemy ships at sea. Each individual boat is directed by artificial intelligence software – originally developed for the Mars Rover - called Control Architecture for Robotic Agent Command and Sensing ('CARACAS'), which allows it to function autonomously as part of a swarm, and react to a changing environment.[162] Israel has developed a similar system, called 'Protector.'[163]

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[160] 'CBU-Sensor Fuzed Weapon/BLU-108 Submunition,' Textron Systems, <http://www.textronsystems.com/sites/default/files/pdfs/product-info/TS%20WSS%20Sensor%20Fused%20Weapons%20SFW.pdf>. 'Sensor Fused Weapon (SFW) CBU-105 With BLU-108 Submunitions,' Textron Systems, <https://www.youtube.com/watch?v=9HkauuIyDsM>.

[161] D Basulto, 'CICADAs, Locusts and the New Innovation of Military Infestations,' The Washington Post, 20 May 2015, <http://www.washingtonpost.com/blogs/innovations/wp/2015/05/20/cicadas-locusts-and-the-new-innovation-of-military-infestations/?wpisrc=nl_innov&wpmm=1>.

[162] P Tucker, 'Inside the Navy's Secret Swarm Robot Experiment,' Defence One, 5 October 2014, <http://www.defenseone.com/technology/2014/10/inside-navys-secret-swarm-robot-experiment/95813/>; 'Autonomous Swarm', U.S. Navy Research, 4 October 2014, <https://www.youtube.com/watch?v=ITTvgkO2Xw4&feature=youtu.be>.

[163] 'Protector: Unmanned Naval Patrol Vehicle,' Rafael Advanced Defence Systems, <http://www.rafael.co.il/Marketing/288-1037-en/Marketing.aspx?searchText=autonomous>.

In addition, autonomous underwater vehicles currently have the capacity to travel hundreds of miles beneath the ocean surface without human supervision.[164] Designed as anti-mine systems, these platforms can operate thousands of metres below the surface and can also engage submarines and shipping. Eventually, multiple autonomous underwater vehicles will be deployed from a 'mothership' to operate collaboratively rather than as single units.[165] Furthermore, the Stonefish class of sea mines uses acoustic, magnetic and pressure sensors to assess the characteristics of passing ships. When the mine determines that: 1) the target is genuine, 2) it represents an enemy target and 3) the target is within the destructive blast radius of the mine, it will detonate.[166]

G. Standards and Semantics

Recent legal, philosophical and policy debates addressing lethal autonomous weapon systems suggest that agreement on semantic standards about the design and use of these weapons will resolve concerns about their lawfulness and morality.[167] Commentators and state officials usually express these standards as 'appropriate levels of human judgment'[168] or 'meaningful human control'[169] over the use of force by autonomous weapons.[170]

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[164] D Parry, 'Navy Mine-Hunter AUV Sets Mission Endurance Record,' Naval Research Laboratory News, 20 November 2013, <http://www.nrl.navy.mil/media/news-releases/2013/navy-mine-hunter-auv-sets-mission-endurance-record>.

[165] G Turnbull, 'A New Era for Underwater Drones,' Naval Technology.com, 15 August 2013, <http://www.naval-technology.com/features/feature-new-era-underwater-drones-unmanned-systems/>.

[166] See 'Stonefish (mine),' Digplanet, <http://www.digplanet.com/wiki/Stonefish_(mine)>.

[167] See the comments of states, international institutions, non-governmental organisations and individual experts at the 2015 Meeting of Experts on *Lethal Autonomous Weapons* at the Convention on Certain Conventional Weapons, April 2015, <http://www.unog.ch/80256EE600585943/(httpPages)/6CE049BE22EC75A2C1257C8D00513E26?OpenDocument>.

[168] Carter, 'Autonomy in Weapons Systems,' part 4 (a).

[169] Statement of the Netherlands to the 2015 Meeting of Experts on *Lethal Autonomous Weapons* at the Convention on Certain Conventional Weapons, April 2015, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/4AD55D74C760290FC1257E2D002C7D0F/$file/2015_LAWS_MX_Netherlands_W.A.pdf>; Statement of Professor Christoph Heyns to the 2015 Meeting of Experts

However, further analysis reveals that phrases such as 'appropriate levels of human judgment' and 'meaningful human control' over autonomous weapon systems solve little and actually reduce clarity in the discussion.[171] As noted in the Introduction, these constructions are open to multiple interpretations[172] and disagreements about their 'meaning' are easy to surmise.[173]

For example, with respect to the phrase 'meaningful human control,' the word 'meaningful' can refer to the human who exerts the control, and the moral reasoning underlying her decisions, as well as the degree of operational and tactical control exercised by that human over the weapon.[174] Should the act of programming the computers that direct an autonomous weapon system constitute 'meaningful human control'? Or does the phrase only refer to human observations and/or interventions that occur during and after an attack? In

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on *Lethal Autonomous Weapons* at the Convention on Certain Conventional Weapons, April 2015, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/1869331AFF45728BC1257E2D0050EFE0/$file/2015_LAWS_MX_Heyns_Transcript.pdf>.

[170] In addition, Professor Beard refers to the 'effective exercise of human judgment' over autonomous weapon systems. J Beard, 'Autonomous Weapons and Human Responsibilities,' 45 *Georgetown Journal of International Law* (2014), 617, 681.

[171] Horowitz and Scharre observe that without clear definitions of these terms, they become empty platitudes, devoid of common meaning. M Horowitz and P Scharre, 'Meaningful Human Control in Weapon Systems: A Primer', Centre for a New American Security, Project on Ethical Autonomy Working Paper, March 2015, 6, <http://www.cnas.org/sites/default/files/publications-pdf/Ethical_Autonomy_Working_Paper_031315.pdf>.
For a critique of the United States' 'appropriate level of human judgment over the use of force' standard, see D. Saxon, 'A Human Touch: Autonomous Weapons, DOD Directive 3000.09 and the Interpretation of 'Appropriate Levels of Human Judgment Over the Use of Force,' in Nehal Bhuta et. al. (eds.), *Autonomous Weapons Systems – Law, Ethics, Policy* (Cambridge University Press, 2015), pp. 185 - 208.

[172] R Moyes, Director of Article 36, Remarks on 'Towards a Working Definition of Lethal Autonomous Weapon Systems,' Informal Expert Meeting on LAWs, Convention on Conventional Weapons, Geneva, 12 April 2016, http://www.unog.ch/80256EE600585943/(httpPages)/37D51189AC4FB6E1C1257F4D004CAFB2?OpenDocument.

[173] 'One can of course agree,' observes Jan Paulsson, 'that words should be taken to mean anything at all.' *Denial of Justice in International Law* (Cambridge University Press, 2005), pp. 57.

[174] Ethicist Jeroen van den Hoven argues that meaningful human control means that 'everything that transpires' with respect to the operation of autonomous weapon systems must satisfy demands of moral reasons and the process of moral reasoning so that, ultimately, a human is responsible for the effects of the weapon system. 'Why the Future Needs Us Today: Moral Responsibility and Engineering Autonomous Weapon Systems,' Presentation to 2015 Meeting of Experts on *Lethal Autonomous Weapon Systems* at the Convention on Certain Conventional Weapons, April 2015, p. 3-4, <http://www.unog.ch/80256EE600585943/(httpPages)/6CE049BE22EC75A2C1257C8D00513E26?OpenDocument>.

addition, 'meaningful' could speak to the retention of criminal and/or moral responsibility by the human over the machine vis a vis violations of international law.[175] Or, 'meaningful' can refer to the *result* of the actions of an autonomous weapon system or systems during a particular attack, operation, or military campaign.[176] Depending on the answer to the last question, the term 'meaningful' could also subsume considerations of military necessity and/or military advantage. A single definition for 'meaningful human control' (if possible) would be simpler. However, a perspective that is appropriate for ground combat – or one aspect of ground combat – may be unworkable in the air, sea and space domains.[177]

In recent years, experts on the topic of lethal autonomous weapon systems have proposed definitions of 'meaningful human control' ranging from the unrealistic to the vague. Professor Sharkey offers a draft definition with five aspirational components:

> A commander or operator will
>
> '1. have full contextual and situational awareness of the target area at the time of initiating a specific attack;
>
> 2. be able to perceive and react to any change or unanticipated situations that may have arisen since planning the attack, such as changes in the legitimacy of the targets;
>
> 3. have active cognitive participation in the attack;

[175] Horowitz and Scharre, 'Meaningful Human Control in Weapon Systems: A Primer,' 8.
[176] For example one objective of the 'System of Systems Technology and Experimentation Programme' ('SoSITE') under development by the U.S. Defence Advanced Research Projects Agency ('DARPA') is the application of 'warfighter-managed autonomy to coordinate *distributed effects*.' J Shaw, 'System of Systems Technology and Experimentation Programme (SoSITE)', DARPA, <http://www.darpa.mil/program/system-of-systems-integration-technology-and-experimentation>.
[177] Horowitz and Scharre, 'Meaningful Human Control in Weapon Systems: A Primer,' 11 and 12.

4. have sufficient time for deliberation on the nature of targets, their significance in terms of the necessity and appropriateness of an attack, and the likely incidental and possible accidental effects of the attack; and

5. have a means for the rapid suspension or abortion of the attack.'[178]

Each of these criteria is problematic because they create duties that do not exist in the laws of war and/or impose impossible burdens on commanders. For example, with respect to the first requirement, no rule of international humanitarian law requires commanders to have 'full contextual and situational awareness of a target area when initiating an attack.'[179] Indeed, in most combat situations, this appears to be an impossible standard to meet. For example, does 'contextual awareness' include the historical and political contexts or simply the military circumstances existing at the time? How will a commander know she her 'situational awareness' is complete or whether certain details may be missing?

Similarly, criteria two would instantly outlaw the use of artillery, rockets and missiles that are not reprogrammable in flight. As Mark Roorda explans: '[t]here is a moment that [sic] a person will perform an act – or not perform an act – after which it is irreversible that violent action will – or could – occur. In most cases this is the decision to fire or launch a weapon.'[180]

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[178] N Sharkey, 'Staying in the Loop: Human Supervisory Control of Weapons,' in Bhuta et. al. (eds.), Autonomous Weapons Systems: Law, Ethics, Policy, p. 28.

[179] Instead, international law imposes a duty on soldiers to take all feasible precautions when planning and executing attacks to spare the civilian population, civilians and civilian objects, see Art. 57, 1977 Geneva Protocol I Additional to the Geneva Conventions of 12 August 1949 and Relating to the Protection of Victims of International Armed Conflicts ('API').

[180] M Roorda, 'NATO's Targeting Process: Ensuring Human Control Over and Lawful Use of "Autonomous" Weapons,' *Amsterdam Law School Legal Studies Research Paper No. 2015-13* (Amsterdam Centre for International Law, June 2015), 10.

Criteria three would prohibit modern automated naval anti-ship missile defence systems such as 'Phalanx,' in use for decades by navies around the world, which operate so quickly that it is difficult to argue that humans have 'active cognitive participation" when the system fires on a target.[181] Although international humanitarian law requires combatants to consider the possible incidental effects of attacks on civilians, criteria four's additional requirement concerning 'possible accidental effects' has no legal basis. Criteria five has similar problems as criteria two. Thus, while admirable, these aspirational benchmarks are not practical and lie outside the law.

Horowitz and Scharre argue that 'meaningful human control' over autonomous weapon systems has three components:

1. Human operators are making informed, conscious decisions about the use of weapons.

2. Human operators have sufficient information to ensure the lawfulness of the action they are taking, given what they know about the target, the weapon, and the context for action.

3. The weapon is designed and tested, and human operators are properly trained, to ensure effective control over the use of the weapon.[182]

These criteria raise more questions than they answer. With respect to the first standard, it is unclear what amount of knowledge and experience with autonomous weapons systems (particularly for commanders who lack a background in science or engineering) is

[181] See 'Phalanx Close-In Weapons System,' The United States Navy Fact File, <http://usmilitary.about.com/library/milinfo/navyfacts/blphalanx.htm>.
[182] Horowitz and Scharre, 'Meaningful Human Control in Weapon Systems: A Primer,' 14 – 15.

necessary to make an 'informed' decision, in particular when the circumstances of a weapon's use can vary dramatically.[183] Moreover, the nature of a 'conscious' decision is a matter of debate, particularly when combatants must react to threats and/or information from their instruments in micro-seconds. Similarly, criteria two is oddly vague and redundant as 'sufficient information' is open to multiple interpretations and seems to depend on the similar phrase 'given what they know.' The phrase 'effective control' in criteria three refers to the human operator's understanding of the capacities and limitations of the autonomous weapon system so that it can be used 'appropriately.'[184] The term 'appropriately' however, is another vague term that opens up moral, legal and ethical discussions about the 'appropriate' use of lethal autonomous weapon systems. Furthermore, and confusingly, the term 'effective control' is the same standard used to define a superior-subordinate relationship between commanders and their (human) subordinates in international criminal law.[185]

In addition, phrases such as 'appropriate levels of human judgment' and 'meaningful human control' are not legal standards and, indeed, have no basis in international law. A focus on these terminologies creates a confusing distraction from the more fundamental questions concerning the legalities of autonomous weapons.[186]

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[183] Unfortunately, Horowitz and Scharre provide a very circular description of the amount of information that is 'adequate' to make an informed decision: '[i]t should be enough information about the target, the weapon, and the context for engagement for the person to make an informed decision about the lawfulness of their action.' *Ibid*, 13. This 'informed decision' standard appears to lower the bar below the 'feasible precautions' standard for planning and executing attacks enunciated in Art. 57 of API. In at least some circumstances, a broad range of options exist to reduce uncertainty and increase the 'informed' character of decisions. Roorda, 'NATO's Targeting Process: Ensuring Human Control Over and Lawful Use of "Autonomous" Weapons,' 12 and 16.

[184] *Ibid*, 13.

[185] *Judgment*, Prosecutor v. Delalić, No. IT-96-21-A, 20 February 2001, paras. 196 – 198.

[186] W Boothby, 'Possible Challenges to International Humanitarian Law', Presentation to Expert Meeting on *Lethal Autonomous Weapons*, Convention on Certain Conventional Weapons, April 2015, p. 3–4, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/616D2401231649FDC1257E290047354D/$file/2015_LAWS_MX_BoothbyS+Corr.pdf>; The U.K. Government has stated that 'international humanitarian law provides the appropriate paradigm for discussion.' Statement to Informal Meeting of Experts on *Lethal Autonomous Weapons*, Convention on Certain Conventional Weapons, April 2015, p. 2,

Furthermore, an emphasis on semantics ignores several important dynamics that affect the use and/or abuse of autonomous weapon systems and which are not examined carefully in the legal and philosophical literature. For example, the technical aspects and capacities of these weapon systems (as described above) naturally affect their relationship with human beings and with international law. Will the perception of 'meaningful human control' change if the technology varies? Do cruder forms of autonomous technologies always require more control to be 'meaningful'? Or, if a highly sophisticated autonomous weapon system is available, will minimal or no human control suffice, as long as the overall result is 'meaningful'?[187]

Arguably, this dissertation's emphasis on the importance of the concept of human dignity vis a vis autonomous weapon systems presents similar problems to the use of standards such as 'meaningful human control.' As I acknowledge, respected commentators offer more than one definition of human dignity and this notion is not amenable to scientific precision. Thus, it is not unreasonable to suggest that, by basing objections to the development and employment of autonomous weapons on human dignity, this thesis creates comparable issues of interpretation and semantics. Nevertheless, as I elaborate in the next chapter, human dignity has served as a foundational value of international law for generations. As reflected in treaty and customary law, human dignity grounds our understanding of, inter alia, international humanitarian law, international human rights law, international criminal law and the law of state responsibility. In spite of its contestable definition, the value of human dignity clearly informs our understanding and interpretation of the rules of international law.

<http://www.unog.ch/80256EDD006B8954/(httpAssets)/1CBF996AF7AD10E2C1257E260060318A/$file/2015_LAWS_MX_United+Kingdom.pdf>.

[187] Mark Roorda suggests the opposite, i.e. the more sophisticated the weapon system, the more a commander may restrict its use due to a lack of understanding of the system's capacities, reactions and effects. "NATO's Targeting Process: Ensuring Human Control Over and Lawful Use of "Autonomous" Weapons,' 16.

In that respect, human dignity is starkly different from language such as 'meaningful human control' and 'appropriate levels of human judgment.'

Professor Heyns contends that lethal autonomous weapon systems 'must be tools in the sense that humans use them to pursue their own objectives. Posing the requirement of meaningful human control is just another way of saying that autonomous weapon systems are acceptable only insofar as they are tools in the hands of humans.'[188] The crucial question then, is what kind of decisions require human control over these tools. I argue that, with respect to autonomous weapon systems, humans must make decisions that involve complex and/or conflicting values.[189] Consequently, autonomous weapon designs must ensure structural and cognitive interdependence between human operators, commanders and the machine.[190] I discuss the importance of this 'co-active' design in the next section.

H. Design: Autonomy v. Interdependence

The common denominator of the new autonomous weapon systems described above, is a desire to achieve and/or maintain military superiority As a matter of strategy and common sense, armed forces prefer not to go into battle at a disadvantage, or on an equal

[188] C Heyns, Comments to Informal Meeting of Experts on Lethal Autonomous Weapons, Convention on Conventional Weapons, 16 April 2015, p. 7, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/1869331AFF45728BC1257E2D0050EFE0/$file/2015_LAWS_MX_Heyns_Transcript.pdf>.

[189] The use of automated or autonomous defensive weapon systems, such as the Phalanx anti-missile/anti-plane system for use at sea and Israel's Iron Dome system used to intercept and destroy Hamas rockets in the air are less likely to implicate complex values than offensive systems designed to target human adversaries or manned military targets. Regarding the Iron Dome system, see 'How Israel's Iron Dome Missile System Works,' CBC News, 20 November 2012, <http://www.cbc.ca/news/technology/how-israel-s-iron-dome-missile-defence-system-works-1.1219839>.

[190] Social goals, to be meaningful, must be conceived in structural as well as intellectual terms, 'not simply as something that happens to people when their social ordering is rightly directed.' L Fuller, 'Means and Ends' in K Winston (ed.), *The Principles of Social Order: Selected Essays of Lon L. Fuller* (Durham: Duke University Press, 1981), pp. 57.

footing with their enemy.[191] These more autonomous weapon systems extend the offensive and defensive reach of armed forces.[192]

From a purely technical perspective, the objective of designing manned and unmanned systems should be to devise the most efficient means of conducting activities, 'with human intelligence operating in the most effective location.'[193] However, efficiency is not the only salient factor in the design of complex systems because new technology, including weapons technology, must preserve the fundamental role of reason and thinking in human affairs.[194]

Furthermore, even assuming for the sake of argument that efficiency *is* the first priority for the design of autonomous weapon systems, some computer and robotics scientists contend that the 'coactive design' model for autonomous systems (described in the Introduction) provides a more effective concept for human interaction with autonomous weapon systems than a focus on semantic standards.[195] The coactive design model suggests that as autonomous technologies improve, the interdependence between humans and machines

[191] J Wilson, 'Interview with Brig. General Gary L. Thomas, U.S. Marine Corps Assistant Deputy Commandant for Aviation,' DefenceMediaNetwork, 23 March 2012, <http://www.defensemedianetwork.com/stories/interview-with-brig-gen-gary-l-thomas-u-s-marine-corps-assistant-deputy-commandant-for-aviation/3/>.

[192] 'CARACAS (Control Architecture for Robotic Agent Command and Sensing)', Naval Drones, U.S. Office of Naval Research, Science and Technology, <http://www.navaldrones.com/CARACAS.html>. Conversely, as the control of human operators over these platforms increases, 'the less autonomous those systems can be, which defeats the purpose.' J Borrie, 'On Safety Aspects of Meaningful Human Control: Catastrophic Accidents in Complex Systems', Conference in Weapons, Technology and Human Control, United Nations Institute for Disarmament Research, New York, 16 October 2014.

[193] C Townes, 'Report of the Task Force on Space,' 8 January 1969, in J Logsdon (ed.) *Exploring the Unknown: Selected Documents in the History of the U.S. Civil Space Program* (Washington D.C.: 1995), Vol. I: Organizing for Exploration, pP. 505, < http://history.nasa.gov/SP-4407/vol1/intro.pdf>.

[194] John Finnis describes one of the 'basic goods' of human life as 'practical reasonableness,' i.e. the ability 'to bring one's own intelligence to bear effectively (in practical reasoning that issues in action) on the problems of choosing one's actions and lifestyle and shaping one's own character.' *Natural Law and Natural Rights*, (Oxford: Clarendon Press, 2002), pp. 88-89.

[195] M Johnson et. al., 'Beyond Cooperative Robotics: The Central Role of Interdependence in Coactive Design,' *Human – Centred Computing*, May - June 2011, 83, <http://www.ihmc.us/users/mjohnson/papers/Johnson_2011_HCC_BeyondCooperativeRobotics.pdf>

will *increase*.[196] More advanced coactive weapon systems with autonomous functions will create opportunities to accomplish more complex tasks.[197] Determinations as to which kinds of cognitive activities are most appropriate for computers and artificial intelligence and which are better left to humans will form a crucial aspect of weapons design and warfare itself.[198]

When weapons developers submit options to the military for new weapon systems, however, the key question for the individuals making procurement decisions is: '[w]ill it enhance my ability to carry out my strategic, military objective?'[199] Military interests require timely decision-making[200] and even with the best training of human operators, the challenge of maintaining meaningful or appropriate levels of human judgment and/or human-machine collaboration and teamwork will become increasingly difficult as decision-making cycles of autonomous weapon systems shrink to micro-seconds. Indeed, it is not difficult to envision future generations of autonomous weapon systems that will communicate between each other much more quickly than with humans.

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[196] *Ibid*. Indeed, research has shown that the 'more interactions that humans and robots have, they begin to develop their own language.' L Steels, 'Ten Big Ideas of Artificial Intelligence', Remarks to 25th Benelux Conference on Artificial Intelligence, Delft Technical University, 8 November 2013. Paul Scharre argues that 'the real future of combat – in the air and elsewhere – is human-machine teaming: physical teaming between "manned" and "unmanned" vehicles, and cognitive teaming that blends automation and human decision-making.' 'Yes, Unmanned Combat Aircraft Are the Future,' *Centre for a New American Security*, 11 August 2015, <http://www.cnas.org/opinion/yes-unmanned-combat-aircraft-are-the-future#.VhJzG03smdJ>.

[197] As several leading proponents of the coactive design model argue: 'the property of autonomy is not a mere function of the machine, but rather a relationship between the machine and a task in a given situation.' M Johnson et. al. 'Beyond Cooperative Robotics: The Central Role of Interdependence in Coactive Design', 84.

[198] Failure to carefully adhere to such allocations of function and responsibility can have catastrophic results. For example, one of the causes of the shoot-down of a civilian Iranian airliner in 1988 by the U.S. Navy vessel Vincennes was the crew's misreading of information, accurately provided by the ship's AEGIS Combat System, that the approaching airplane was ascending rather than descending. 'Investigation Report,' Formal Investigation into the Circumstances Surrounding the Downing of Iran Air Flight 655 on 3 July 1988, U.S. Department of Defence, 19 August 1988, p. 61.

[199] G Corn, remarks at Autonomous Weapon Systems – Law, Ethics and Policy Conference at European University Institute, Academy of European Law, 24 April 2014.

[200] W Boothby, *The Law of Targeting* (Oxford University Press, 2012), pp. 122. Lockheed Martin, 'F-35 Experience,' Video in F-35's Capabilities: Multi-Mission Capability for Emerging Global Threats, <https://www.f35.com/about/capabilities>. 'Every wasted minute of a senior leader …. has real impacts on the battlefield.' C Fussell, forme Aide-de-Camp to General Stanley McChrystal, The Tim Ferriss Show, <http://fourhourworkweek.com/2015/07/05/stanley-mcchrystal/>.

Common sense suggests that in situations where lives depend on the fastest possible actions and reactions, the likelihood that human supervisors and operators will intervene with autonomous weapons systems will be reduced.[201] Decisions about the design and development of new automated and autonomous technologies are really 'about speed of service. The better the automated system, the faster we can accomplish the mission. That is not the only consideration, but it is the main one.'[202] A danger exists, therefore, that opportunities to impose standards such as "appropriate levels of human judgment over the use of force" or 'meaningful human control' or 'coactive design' eventually will be reduced to very little or nothing.[203] When we reach that moment, the capacity of humans to guide the conduct of autonomous weapon systems will be in question.

Decisions made today in terms of research and development affect military capability decades in the future.[204] Accordingly, to preserve the relevance of human reasoning and the function of law, validation and verification of the system's human – machine interdependence as well as the capability to use it in compliance with international law must occur at the design phase of the weapon.[205]

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[201] One computer scientist observes that, as machines can function so must faster than humans, '"man-in-the-loop" means you lose.' A Fursman, Remarks to 'Private Sector Perspectives on the Development of Lethal Autonomous Systems,' Geneva, 12 April 2016. So many decisions on the battlefield are time-sensitive; to engage with the enemy and destroy them.' Corn, *supra* note ….. NATO doctrine provides that, as part of the 'battle rhythm' of NATO operations, coalition forces 'should maintain a rate of activity greater than that of the opponent.' AJP-3 (B), *Allied Joint Doctrine for The Conduct of Operations*, North Atlantic Treaty Organization, March 2011, para. 0424, available online at http://www.cicde.defense.gouv.fr/IMG/pdf/20110316_np_otan_ajp-3b.pdf.

[202] Col. John L. Haithcock, Jr. TSM FATDS, Fort Sill, OK, Letter to the Editor, Field Artillery, January – February 2006, available online at http://sill-www.army.mil/firesbulletin/archives/2006/JAN_FEB_2006/JAN_FEB_2006_FULL_EDITION.pdf.

[203] Neither abstract concepts nor the law are effective substitutes for armed conflict. H. Lauterpacht, *The Function of Law in the International Community* (Oxford: Clarendon Press, 1933), p. 437.

[204] B Burridge, Air Chief Marshall (ret.) U.K. Army, 'Military Capability is Founded on a Body of Knowledge to Which Industry Is a Major Contributor,' 2010, copy in Author's possession.

[205] Corn, remarks at Autonomous Weapon Systems – Law, Ethics and Policy Conference at European University Institute.

III. Conclusions

This chapter demonstrates that states are developing weapon systems with faster and more autonomous functions, including the capacity to identify targets and destroy them with lethal force. Efforts to fit these systems into fixed categories such as 'in-the-loop,' 'on-the-loop,' 'semi-autonomous,' 'fully autonomous,' etc., fail to encompass the complexities of the systems and the fluid realities of modern armed conflict. Furthermore, as the speed of autonomous weapon systems increases, particularly with the advent and use of swarm technology, semantic standards such as 'meaningful human control' become unrealistic and irrelevant. States that develop autonomous weapon systems should prioritize a design that ensures human-machine interdependence and teamwork so that human reasoning and judgment is not discarded at critical phases of warfighting and law enforcement activities, including decisions to use lethal force.

Chapter Three

The Sources of International Law and the 'Place' of Human Dignity

I. Introduction

Formal sources of international law include international conventions, customary international law (as evidence of a general practice of states accepted as law), general principles of law, and, as a subsidiary means for determining rules of law, judicial decisions and the writings of respected publicists.[206] This chapter will discuss the three primary sources as well as the concept of *jus cogens* (I refer to judicial decisions and the writings of prominent commentators throughout this dissertation). The particular status in international law awarded to the concept of human dignity can be traced, arguably, to treaty obligations, customary law, general principles of law, and even peremptory norms. Nevertheless, I demonstrate that human dignity is a treaty-based legal starting point, a guiding concept emanating from the United Nations Charter that states must use to operationalise the norms, values and rules that underlie their existence as independent societies.[207] Lastly, I explain that, in the context of international law, dignity consists of two components: respect for human rights and the development and maintenance of personal autonomy.

[206] Art. 38 (1), Statute of the International Court of Justice.

[207] Some jurists also include 'natural law' theory as a source of human dignity in international law. For example, Judge Cançado Trincade argues that '[e]very human person has the right to respect for his or her dignity, as part of the humankind.' Therefore, human dignity and the rights inherent to the human person precede, and are superior to, the State. *Accordance with International Law of the Unilateral Declaration of Independence in Respect of Kosovo* (Advisory Opinion: Separate Opinion) ICJ Reports 2010, paras. 197 and 198.

II. Treaties, Customary Law, General Principles and Jus Cogens

A. International Conventions or Treaties

A 'treaty' or 'convention' is an 'international agreement concluded between states in written form and governed by international law, ….'[208] The right to enter into international agreements 'is an attribute of state sovereignty.'[209] Accordingly, the law of treaties is grounded in two essential principles. First, as a corollary to the notion of state sovereignty, treaties must be based on the free consent of state parties.[210] Second, parties to a treaty in force must perform in good faith.[211] Thus, it follows, that states have a duty to act consistently with their treaty obligations[212] and must refrain from acts which would defeat the object and purpose of the treaty.[213] State parties, therefore, must interpret treaties in good faith in accordance with the ordinary meaning to be given to the terms of the convention in their context and in light of the document's object and purpose.[214] Finally, treaties need not be static. Drafters can design treaties, such as the Convention on Certain Conventional Weapons, that provide for the addition of protocols, annexes or further covenants.[215]

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[208] Art. 1 (a), Vienna Convention on the Law of Treaties, 23 May 1969.
[209] *Case of the S.S. Wimbledon* (Judgement) Permanent Court of International Justice 1923, p. 25.
[210] J Klabbers, *International Law* (Cambridge University Press, 2013), pp. 42 – 43. See *The Case of the S.S. Lotus* (Judgement) Permanent Court of International Justice Series A No. 10 1927, p. 18 (holding that the rules of law binding upon states emanate, inter alia, from their own free will as expressed in conventions). Preamble, Vienna Convention on the Law of Treaties.
[211] 'Pacta sunt Servanda,' art. 26, Vienna Convention on the Law of Treaties.
[212] Klabbers, International Law, p. 30.
[213] Art. 18, Vienna Convention on the Law of Treaties.
[214] Art. 31, Vienna Convention on the Law of Treaties. Together with the context of the agreement, parties shall also take into account: 1) subsequent agreements between the states regarding the interpretation of the treaty or the application of its provisions, 2) subsequent practice in the application of the treaty that demonstrates the agreement of the parties concerning its interpretation; and 3) relevant rules of international law applicable to the relations between the parties. *Ibid.*
[215] A Boyle & C. Chinkin, *The Making of International Law* (Oxford University Press, 2007), p. 241.

B. Customary International Law

The creation of customary international law requires a combination of state practice and opinio juris.[216] The first element, which can be demonstrated by a range of sources, must reveal consistent and uniform state actions over time.[217] The second, subjective element is proven by evidence that states act out of a belief that the law obliges them to do so.[218] The required number of instances of state practice, the space of time in which they should occur, and the characteristics of the countries which exhibit practice combined with opinio juris, will depend on the particular activities and states involved.[219]

Professor Talmon observes that '[t]here are probably few topics in international law that are more over-theorised than the creation and determination of custom.'[220] Scholars typically refer to the 'traditional' and 'modern' (or 'contemporary') doctrines.[221] 'Traditional custom' focuses primarily on state practice whilst opinio juris is a secondary consideration.[222] Traditional customary law develops through an 'evolutionary' process whereby, through

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[216] *North Sea Continental Shelf* (Judgment) ICJ Reports 1969, paras. 77 – 78.
[217] H Charlesworth, 'Law-making and Sources,' in J Crawford and M Koskenniemi (eds.) *The Cambridge Companion to International Law* (Cambridge University Press, 2012), p. 193.
[218] *Ibid.*
[219] For example, in its Judgment in North Sea Continental Shelf, the International Court of Justice noted, with respect to the creation of customary international law, that 'even without the passage of any considerable period of time, a very widespread and representative participation' in a form of activity 'might suffice of itself,' to form new customary law, provided it included participation of states whose interests were specially affected. Para. 73. In some circumstances, expressions of governments and their officials can serve to illustrate both state practice and opinio juris. *The Paquette Habana*, 175 U.S. 677, 686 – 708 (1900). The majority ruled that customary international law prohibited one belligerent state from seizing the fishing vessels of an enemy state during wartime, unless the vessel was used in connection with the hostilities.
[220] S Talmon, 'Determining Customary International Law: The ICJ's Methodology Between Induction, Deduction and Assertion', 26 *European Journal of International Law* 2 (2015), 417, 429. Discussions of this body of law 'fill volumes of treatises.' J Goldsmith & E Posner, *The Limits of International Law* (Oxford University Press, 2005), p. 45.
[221] Charlesworth, 'Law-making and Sources,' pp, 192 – 194.
[222] A Roberts, 'Traditional and Modern Approaches to Customary International Law: A Reconciliation,' 95 *American Journal of International Law* (2001), 757, 758.

inductive reasoning, general custom is derived from specific examples of state practice.[223] This process, however, has evolved 'in adapting itself to changes in the way of international life.'[224] Thus, modern customary law, by contrast, emphasises statements of opino juris rather than state practice.[225] Modern custom develops more rapidly than traditional customary law because it is deduced from multilateral treaties and the statements of international bodies such as the United Nations General Assembly.[226] Judges of the International Court of Justice have recognized this 'acceleration in the process of formation of customary international law.'[227]

Scholars have criticized both the inductive and deductive methods of formation and identification of customary law. Professor Talmon, for example, describes both forms of reasoning as 'subjective, unpredictable and prone to law creation' by the International Court of Justice.[228] Professors Alston and Simma preferred the slower but 'hard and solid' customary laws derived from inductive reasoning to the 'self-contained exercise in rhetoric;'

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[223] *Ibid.*

[224] *South West Africa Case, Second Phase,* Judgment, Dissenting Opinion of Judge Tanaka) ICJ Reports 1966, p. 291.

[225] Strong statements of opinio juris are important because they illustrate normative considerations about existing customs, emerging customs and can generate new customs. Roberts, 'Traditional and Modern Approaches to Customary International Law: A Reconciliation,' 788. Professor (and Judge) Meron, for example, supports the modern method of identifying customary international humanitarian law through the practice of state incorporation of provisions of the 1977 Additional Protocols into the military manuals of their armed forces. T Meron, *Human Rights and Humanitarian Norms as Customary Law* (Oxford, Clarendon Press, 1989), p. 78.

[226] Roberts, 'Traditional and Modern Approaches to Customary International Law: A Reconciliation,' 758. See, for example, the Judgment of the International Court of Justice in the *Case Concerning Military and Paramilitary Activities in and Against Nicaragua*, where the Court opined, without a discussion of the requirement of state practice, that it could deduce opinio juris, and therefore customary international law, from the attitude of states towards 'certain General Assembly resolutions.' *Nicaragua v United States of America* (Merits) 1986, paras. 188 - 194. Confusingly, the Court reverted to a more traditional analysis later in its judgment: '[t]he existence in the opinio juris of states of the principle of non-intervention is backed by established and substantial practice,' paras. 202 and 205 – 207.

[227] R Higgins, 'Fundamentals of International Law,' in *Themes & Theories: Selected Essays, Speeches, and Writings [of Rosalyn Higgins] in International Law* (Oxford University Press, 2009), p. 122; South West Africa, Second Phase, Dissenting Opinion of Judge Tanaka, p. 291.

[228] Talmon, 'Determining Customary International Law: The ICJ's Methodology Between Induction, Deduction and Assertion,' 432.

the phrase they used to describe the faster, deductive process.[229] The risk Simma and Alston perceived was the creation of 'a sort of "instant" customary international law of dubious relationship to the actual behavior and interests of states.'[230] The late Jonathan Charney, however, defended the modern method as more suitable for contemporary international society, given the existence of multilateral forums permitting state expressions regarding new international law.[231] In this sense, Charney appeared to view modern forms of customary law-making as more democratic, given that, from his perspective, customary law traditionally was made by a few interested states for all.[232]

Furthermore, Professor Talmon recently identified a third method used by the International Court of Justice for the creation of customary law: the simple *assertion* that a particular rule exists in international law, with little or no reasoning or supporting evidence.[233] Talmon provides the example of the Arrest Warrant Case, where a majority of the judges conclude, without reference to any supporting state practice and/or opinio juris:

The Court would observe at the outset that in international law it is firmly established that, as also diplomatic and consular agents, certain holders of high-ranking office in a State,

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[229] B Simma & P Alston, 'The Sources of Human Rights Law: Custom, Jus Cogens, and General Principles,' 12 *Australian Yearbook of International Law* (1988 – 1989), 89.
[230] *Ibid*, 97 (citing the Committee on the Formation of Customary International Law, American Branch of the International Law Association: 'The Role of State Practice in the Formation of Customary and Jus Cogens Norms of International Law', 19 January 1989, p. 7). Similarly, Professor Roberts observes that the strongest 'criticism of modern custom is that it is descriptively inaccurate because it reflects ideal, rather than actual, standards of conduct.' Roberts, 'Traditional and Modern Approaches to Customary International Law: A Reconciliation,' 769.
[231] 'Universal International Law,' 87 *American Journal of International Law*, 4 (October 1993), 529, 543 – 548. As the deductive method of law creation that he supported reduced the reliance on state practice common to the inductive process, Charney proposed to label this new modern law 'general international law' rather than customary international law. *Ibid*, 546.
[232] *Ibid,* 536 – 538.
[233] Talmon, 'Determining Customary International Law: The ICJ's Methodology Between Induction, Deduction and Assertion,' 434 – 443.

such as the Head of State, Head of Government and Minister for Foreign Affairs, enjoy immunities from jurisdiction in other states, both civil and criminal.[234]

Finally, it is important to remember that the development of international treaty and customary law are not mutually exclusive. For example, the ratification of a treaty may demonstrate opinio juris for the purpose of the creation of customary law.[235] Treaty provisions can obtain the status of customary law[236] and thus, rules codified in treaties may bind non-state parties as a duty of customary international law.[237]

C. General Principles of Law

Article 38 of the Statute of the International Court of Justice refers to 'the general principles of law recognized by civilized nations' as a source of international law.[238] General principles of law are broad and general notions within legal systems that underlie the various rules of law and can be applied to a variety of circumstances.[239] They extend to the

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[234] *Ibid,* 436, citing *Arrest Warrant of 11 April 2000 (Democratic Republic of the Congo v Belguim),* Judgment ICJ Reports 2002, para. 51. Another example offered of the Court's 'assertion' of customary law is the practice of making 'ex cathedra' pronouncements that a treaty provision reflects customary international law. Talmon, Determining Customary International Law: The ICJ's Methodology Between Induction, Deduction and Assertion,' 437 (citing *Questions Relating to the Obligation to Prosecute or Extradite (Belguim v Senegal)* Judgment, ICJ Reports 2012, para. 100 (holding that art. 28 of the Vienna Convention on the Law of Treaties reflects customary law)).

[235] *Prosecutor v Blagoje Simić et. al*, Decision on the Prosecution Motion Under Rule 73 for a Ruling Concerning the Testimony of a Witness, IT-95-9 27 July 1999 para. 74.

[236] For example, most provisions of the Geneva Conventions are considered to be declaratory of customary international humanitarian law. *Ibid*, para. 48.

[237] Art. 38, Vienna Convention on the Law of Treaties, North Sea Continental Shelf, para. 71; ICRC Introduction to *Convention (II) with Respect to the Laws and Customs of War on Land and its Annex: Regulations Concerning the Laws and Customs of War on Land*, The Hague, 29 July 1899, <https://www.icrc.org/ihl/INTRO/150?OpenDocument>; J Kellenberger, 'Foreword' to J Henckaerts & L. Doswald-Beck, *Customary International Humanitarian Law:* Volume I: Rules,' (Cambridge University Press, 2009) p. x.

[238] Art. 38, Statute of the International Court of Justice, <http://www.icj-cij.org/documents/?p1=4&p2=2>. The old-fashioned (and condescending) term 'civilized' commonly is interpreted to refer to the 'community of nations,' or at least those that possess a mature legal system. G Boas, *Public International Law: Contemporary Principles and Perspectives* (Cheltenham: Edward Elgar, 2012), p. 105.

[239] B Cheng, *General Principles of Law as Applied by International Courts and Tribunals* (London: Stevens & Sons Limited, 1953), p. 24; J. Klabbers, International Law, p. 34.

fundamental concepts of all branches of law, 'as well as to law in general,' so far as the community of states recognizes these principles.[240]

The notion of 'general principles of law' inherently includes elements of natural law.[241] These principles of law, therefore, do not depend upon positivist forms of law and may or may not be accepted de facto, or practiced, within a particular legal system.[242] When a principle is accepted, however, it does not remain at the margins 'but constitutes an intrinsic element which must be harmonized and adapted along with the other "general principles" of the system.'[243] We will consider this dynamic with respect to the general principle of human dignity below.

'General principles' of law are a recognized part of international humanitarian law,[244] international human rights law[245] and international criminal law.[246] Thus, for example, law of

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[240] *South West Africa Case*, Second Phase, Dissenting Opinion of Judge Tanaka, pp. 295 – 298 (observing that the concept of human rights and their protection falls within the category of 'general principles of law' for the purpose of art. 38 (1) (c) of the Statute of the International Court of Justice). Hersch Lauterpacht called the general principles of law 'a modern version of the laws of nature.' An International Bill of the Rights of Man (1945) (Oxford University Press, 2013), p. 42.

[241] *Ibid*, 298. Hersch Lauterpacht called the general principles of law 'a modern version of the laws of nature.' *An International Bill of the Rights of Man* (1945) (Oxford University Press, 2013), p. 42.

[242] *Ibid*; G Del Vecchio, *General Principles of Law*, F Forte (trans.) (Boston University Press, 1956), p. 50. Thus, general principles of law are not limited to national statutory provisions. Indeed, some of the more abstract general principles that form part of international law ('good faith,' 'freedom of the seas,' etc.), 'have been accepted for so long and so generally as no longer to be *directly* connected to state practice.' J Crawford, *Brownlie's Principles of Public International Law*, 8th ed. (Oxford University Press, 2012), p. 37 (emphasis in original).

[243] Del Vecchio, *General Principles of Law*, p. 50.

[244] *Department of Defense Law of War Manual*, Office of General Counsel, U.S. Department of Defense, June 2015, paras. 2.1.1 and 2.1.2, <http://www.defense.gov/Portals/1/Documents/pubs/Law-of-War-Manual-June-2015.pdf>.

[245] *Case of Khaled El Masri v Federal Yugoslav Republic of Macedonia,* Judgment, European Court of Human Rights ('ECtHR'), 13 December 2012, para. 106 (referring to case law of the Court of Appeal of England and Wales holding that arbitrary detention of persons at Guantánamo Bay contravened fundamental principles of international law).

[246] For example, the broad legal principle of the 'presumption of innocence' imposes more specific obligations on criminal proceedings, such as laying the burden of proof upon the prosecution to prove guilt beyond a reasonable doubt and the right of the accused to remain silent. W Schabas, *An Introduction to the International Criminal Court*, 4th ed. (Cambridge University Press, 2011), p. 216. Professor Werle argues that the Rome Statute of the International Criminal Court represents 'the high point of efforts at codification of general

war principles (discussed in chapter five) assist practitioners to interpret and apply specific treaty and customary rules, provide general guidelines for behaviour during armed conflict when no specific rule applies, and serve as interdependent and reinforcing parts of a coherent system.[247] Conversely, when many international conventions express a particular rule, '… it can be deemed an incontestable principle of law at least among enlightened nations.'[248] Similarly, state parties to international treaties accept the important principles expressed and implied therein.[249]

D. Jus Cogens Norms

These peremptory norms of international law are norms accepted and recognized by the international community as a whole as a norm from which no derogation is permitted and which only can be modified by a subsequent norm of international law possessing the same character.[250] Peremptory norms create fundamental obligations for states.[251] Moreover, since

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principles of international criminal law.' *Principles of International Criminal Law*, 2nd ed. (The Hague: T.M.C. Asser Press, 2009), para. 365.

[247] Department of Defense Law of War Manual, paras. 2.1.2. Emmanuel Voyiakis argues that the distinction between customary international law and general principles of law is not very consequential. In his view, general principles of law constitute a distinct source of international law only in the sense that they extend 'the database of existing legal material' used by international lawyers in support of their claims about international law. 'Do General Principles Fill "Gaps" in International Law,' in G Loibl & S Wittich (eds.) 14 *Austrian Review of International European Law* (2009) (Leiden: Martinus Nijhoff Publishers, 2013), p. 254.

[248] The Paquete Habana, 707 (citing Ignacio de Megrin, *Elementary Treatise on Maritime International Law* (1873)).

[249] For example, the International Criminal Tribunal for the Former Yugoslavia held that 'the parties [to the Geneva Conventions] must be taken as having accepted the fundamental principles on which the ICRC operates, that is impartiality, neutrality and confidentiality, and in particular as having accepted that confidentiality is necessary for the effective performance by the ICRC of its functions.' Prosecutor v. Blagoje Simić, et. al., Decision on the Prosecution Motion Under Rule 73 for a Ruling Concerning the Testimony of a Witness, para. 73.

[250] Art. 53, Vienna Convention on the Law of Treaties ('VCLT'), 23 May 1969. David Bederman describes *jus cogens* (rather glibly) as 'simply entrenched customary international law'). *Custom As a Source of Law* (Cambridge University Press, 2010), p. 159.

[251] International Law Commission, *Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries* (2001), Commentary to Chapter III, para. (7), <http://legal.un.org/ilc/texts/instruments/english/commentaries/9_6_2001.pdf>. In its Nicaragua Judgment, a majority of the International Court of Justice cited to authority that described jus cogens norms as fundamental or cardinal principles of customary law. Case Concerning Military and Paramilitary Activities in and Against

jus cogens norms 'constitute the pinnacle of the hierarchy of sources of international law,' … 'they bind states whether or not they have consented to them.'[252] Professor Bianchi observes that *jus cogens* norms reflect 'the inner moral aspiration'[253] of international law.[254] Given their special status, a comparatively small number of norms qualify as peremptory.[255]

III. Locating the Concept of Human Dignity Within the Sources of International Law

In this section, I argue that a legal obligation to protect and preserve human dignity arises from human dignity's special role as a point of departure for the formation and interpretation of international law. The legal basis of this guiding role is most evident in treaty and custom as opposed to other sources of international law.

A. Human Dignity As an Obligation of Treaty Law

The preamble to the United Nations Charter (the 'Charter'), 'sets forth the declared common intentions' of the member states.[256] In the preamble, the member states specifically reaffirmed their 'faith in fundamental human rights, [and] in the dignity and worth of the human person, ….'[257] Article 2 (4) of the Charter requires states to comply with the purposes

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Nicaragua, Judgment, para. 190, <http://www.icj-cij.org/docket/files/70/6503.pdf>. The Court expressly recognized the concept of peremptory norms in its Judgment in *Armed Activities on the Territory of the Congo* (New Application (2002) *(Democratic Republic of the Congo v Rwanda)* (Jurisdiction and Admissibility) ICJ Reports 2006, p. 52.

[252] A Boyle & C Chinkin, The Making of International Law, p. 114.

[253] A Bianchi, 'Human Rights and the Magic of Jus Cogens,' 19 *European Journal of International Law* (2008) 3, 491, 495.

[254] *Ibid*, 491 and 495. This is because 'human rights peremptory norms form the social identity of the group as well as one of the main ordering factors of social relations.' *Ibid,* 497.

[255] International Law Commission, Commentary to art. 40, paras. 4 – 7. Examples would include the prohibitions of aggression, slavery, discrimination and torture, and the right to self-determination.

[256] Department of Public Information, *Yearbook of the United Nations (1946 – 1947*) (Lake Success, New York: United Nations Publications, 1947), p. 17 (citing Drafting Committee I/1).

[257] Done at San Francisco, 26 June 1945. Entered into force on 24 October 1945, <http://www.un.org/en/sections/un-charter/preamble/index.html>.

of the United Nations.[258] These purposes encompass respect for human rights and the dignity and worth of the human person.[259]

Thus, as early as 1948, Professor Jessup concluded that: '[i]t is already the law, at least for Members of the United Nations, that respect for human dignity and fundamental human rights is obligatory. The duty is imposed by the Charter, a treaty to which they are parties. The expansion of this duty, its translation into specific rules, requires further steps of a legislative character.'[260] The obligation to protect human dignity, therefore, constitutes 'fundamental Charter law.'[261]

In the years since the drafting of the United Nations Charter, the realization of human dignity has informed the objectives of numerous bilateral[262] and multilateral treaties.[263] For example, during the drafting conference of the Convention on the Prevention and Punishment

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[258] *Legality of the Threat or Use of Nuclear Weapons,* Advisory Opinion, Dissenting Opinion of Judge Weeramantry, ICJ Reports 1996, p. 434, <http://www.icj-cij.org/docket/files/95/7521.pdf>.

[259] *Ibid.* Indeed, the dignity and worth of the human person is 'the cardinal unit of value in global society.' *Ibid,* 442.

[260] P Jessup, *A Modern Law of Nations* (New York: The MacMillan Company, 1948), p. 91. Similarly, in the South West Africa Case, Judge Tanaka observed that the provisions of the United Nations Charter referring to 'human rights and fundamental freedoms' imply that states bear an obligation to respect human rights and fundamental freedoms. (Dissenting Opinion: Second Phase) ICJ Reports 1966, p. 289.

[261] *Legality of the Threat or Use of Nuclear Weapons,* Advisory Opinion, Dissenting Opinion of Judge Weeramantry, p. 507.

[262] See the Maipú Treaty for Integration and Cooperation Between the Argentine Republic and the Republic of Chile, Buenos Aires, 15 June 2007 (declaring that this treaty is 'an instrument honouring the commitment to raise the quality of life and dignity of their inhabitants'); the Framework Agreement on Cooperation in the Field of Immigration Between the Kingdom of Spain and the Republic of Mali, Madrid, 23 January 2007 (recognizing that illegal migration 'must be fought effectively while ensuring full respect for the human rights and personal dignity of emigrants'); the Treaty Concerning Friendly Cooperation and Partnership in Europe Between Romania and the Federal Republic of Germany, Bucharest, 21 April 1992 (affirming that the parties 'shall place the human person, with his or her dignity and rights, … at the centre of their policy'); the Treaty Between Romania and the Italian Republic on Friendship and Collaboration, Bucharest, 23 July 1991 (agreeing that Romania and Italy shall develop their relations on the basis of trust, collaboration and mutual respect in keeping with, inter alia, the principle of human dignity).

[263] Indeed, soon after the Charter entered into force, and before Professor Jessup made this observation, the state parties to the United Nations Educational, Scientific and Cultural Organization ('UNESCO') recalled that 'the wide diffusion of culture, and the education of humanity for justice and liberty and peace are indispensable to the dignity of man and constitute a sacred duty which all the nations must fulfill in a spirit of mutual assistance and concern.'
Constitution of UNESCO, London, 16 November 1945, in The Royal Institute of International Affairs', *United Nations Documents, 1941 – 1945* (Oxford University Press, 1947), p. 225

of the Crime of Genocide, Mr. De L'A Tournelle, the French representative to the General Assembly, 'on behalf of Europe,' warned against making a mockery of the preamble to the Charter and the language affirming 'faith in fundamental human rights, and the dignity and worth of the human person.'[264] France was determined, Mr. De L'A Tournelle affirmed, to make 'the greatest efforts to speed the progress of international law in a sphere which touches so nearly on the destinies and dignity of human society.'[265] Similarly, Mr. Katz-Suchy, the Polish representative, to the United Nations Economic and Social Council ('ECOSOC'), argued that a prohibition of the crimes of genocide 'was only part of the great struggle for human dignity ….'[266]

Indeed, the protection and preservation of human dignity provides the foundation for much of international law, in particular treaty law:

> 'The essence of the whole corpus of international humanitarian law as well as human rights law lies in the protection of the human dignity of every person, whatever his or her gender. The general principle of respect for human dignity is the basic underpinning and indeed the very raison d'etre of international humanitarian law and human rights law; indeed in modern times it has become of such paramount importance as to permeate the whole body of international law. This principle is intended to shield human beings from outrages upon their personal dignity, whether such outrages are carried out by unlawfully attacking the body or by humiliating and debasing the honour, the self-respect or the mental well-being of a person.'[267]

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[264] A/PV.123, 21 November 1947, General Assembly Hall, Flushing Meadow, New York, in H Abtahi & P Webb, *The Genocide Convention: The Travaux Préparatoires* (Leiden: Martinus Nijhoff Publishers, 2008), p. 449.

[265] *Ibid,* p. 450.

[266] E/SR.218, General Statements on Draft Convention on the Crime of Genocide, 218th Meeting of ECOSOC, Paleis de Nations, Geneva, 26 August 1948, in Abtahi & Webb, The Genocide Convention: The Travaux Préparatoires, p. 1234.

[267] *Prosecutor v Anto Furundija* (Judgment) IT-95-17/1-T (10 December 1998) para. 183, <http://www.icty.org/x/cases/furundzija/tjug/en/fur-tj981210e.pdf>. 'No other ideal seems so clearly accepted as a universal social good.' O Schachter, 'Human Dignity As a Normative Concept', 77 *American Journal of International Law* (1983), 848, 849.

Thus, the principle of human dignity applies to every person, 'even during combat and conflict.'[268] Consequently, Common Article Three of the Four Geneva Conventions of 12 April 1949, prohibits, inter alia, 'outrages upon personal dignity, in particular, humiliating and degrading treatment.'[269] Article 75 (2) of Additional Protocol 1 to the Four Geneva Conventions and Article 4 (2) of Additional Protocol II contain the same admonition.[270]

Moreover, the notion of human dignity is separate from,[271] and indispensable for, the defence of human rights,[272] 'which derive from the inherent dignity of the human person.'[273] The European Court of Human Rights observes that '[a] person should not be treated in a way that causes a loss of dignity, as 'the very essence of the Convention is respect for human dignity and human freedom.'[274] Human dignity then, serves as a thread connecting all human rights recognized in international law.[275] For example, all contemporary international human rights instruments prohibit states from using torture as well as inhuman or degrading treatment or punishment.[276] Judgments of regional human rights courts and commissions

[268] *The Public Committee Against Torture in Israel v The Government of Israel* (Judgment: Separate Opinion of Vice President E. Rubin) HCJ 769/02 (11 December 2005) para. 5.
[269] International Committee of the Red Cross, Geneva Conventions and Commentaries <https://www.icrc.org/en/war-and-law/treaties-customary-law/geneva-conventions>.
[270] *Ibid*.
[271] For example, the Preamble to the Charter of the United Nations begins: '[w]e the Peoples of the United Nations Determined … to reaffirm faith in fundamental human rights, in the dignity and worth of the human person, in the equal rights of men and women and of nations large and small, …'
[272] G Kateb, *Human Dignity* (Cambridge: Harvard University Press, 2011), p. 42. In *Pretty v United Kingdom*, the European Court of Human Rights held that '[w]here treatment humiliates or debases an individual, showing a lack of respect for, or diminishing, his or her human dignity, or arouses feelings of fear, anguish or inferiority capable of breaking an individual's moral and physical resistance, it may be characterised as degrading and also fall within the prohibition of Article 3.' Judgment, Application No 2346/02 (ECtHR, 2002) para. 52 <http://hudoc.echr.coe.int/sites/eng/pages/search.aspx?i=001-60448>.
[273] Preamble, International Covenant on Economic, Social and Cultural Rights, 16 December 1966; c.f. Preamble, International Covenant on Civil and Political Rights, 19 December 1966.
[274] *Case of Husayn (Abu Zubaydah) v Poland*, Judgment, European Court of Human Rights, ECtHR, Application No. 7511/13, 24 July 2014, para. 532 (citing Pretty v the United Kingdom, Judgment, paras. 61 and 65).

[275] D Feldman, 'Human Dignity As a Legal Value: Part 2,' *Public Law* (2000), 5.
[276] Preamble, Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, 10 December 1984; Art 7, International Covenant on Civil and Political Rights, 16 December 1966; Art. 3, European Convention on Human Rights; Art. 5, African Charter for Human and Peoples' Rights. Article 5 (2) of

invoke human dignity as a basis for redress for victims of myriad forms of state human rights violations, such as poor detention conditions,[277] forced body cavity searches of family members of detainees,[278] discrimination against transsexuals,[279] failure to protect an indigenous community's right to property,[280] and racial violence.[281]

Thus, modern human rights and humanitarian law conventions follow the principles of protection that emanate from the inherent dignity of persons; that is, from the foundation of the Charter.[282] In that sense, the creation of the Permanent International Criminal Court ('ICC') was a 'logical sequel' to the 1949 Geneva Conventions and the 1977 Additional Protocols.[283] Indeed, during the drafting process of the Rome Statute of the ICC,

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the American Convention on Human Rights creates a positive duty for states to treat all detained persons 'with respect for the inherent dignity of the human person;' Art. 5, Universal Declaration of Human Rights, 10 December 1948 (The Universal Declaration of Human Rights is an 'aspirational' document rather than a treaty); Art. 1, UNESCO Convention Against Discrimination in Education, Paris, 14 December 1960.

[277] *Case of M.S.S. v Belguim and Greece*, Judgment, EctHR, Application No. 30696/09, 21 January 2011, paras. 233, 253 and 263, (holding that conditions of detention for an asylum seeker in Greece damaged the victim's dignity and that official indifference to an applicant's circumstances can constitute a lack of respect for her dignity); *Case of Kuznetsov v Ukraine*, Judgment, EctHR, Application No 39042/97, 29 April 2003, para. 126 (holding that conditions of detention for a convicted murderer diminished his human dignity);

[278] *Ms X v Argentina* Case 10.506 Report No. 38/96 OEA/Ser.L/V/II.95 Doc 7. Rev at 50, Inter-American Court of Human Rights ('Inter-Am. Ct. H.R.'), 1997, paras. 93, 96 and 100 (holding that requirement of vaginal searches of mother and daughter each time they visited their imprisoned relative violated their rights to dignity, privacy, honour and family life).

[279] *Case of Christine Goodwin v The United Kingdom* Judgement, ECtHR, Application No. 28957/95, 11 July 2002, para. 91 (holding that states can tolerate some inconvenience to enable persons to live in dignity in accordance with the sexual identity chosen by them).

[280] *Case of the Mayagna (Sumo) Awas Tingni Community v Nicaragua*, Judgement, Inter-Am. Ct. H.R, 31 August 2001, para. 140 (f) (citing the argument of the Inter-American Commission for Human Rights, 4 June 1998, that the Community's land and resources are protected by, inter alia, the rights to dignity and property and the State must adopt measures to fully guarantee the Communit's rights to its lands and resources).

[281] *Case of Nachova and Others v Bulgaria* Judgement, ECtHR, Application No. 43577/98, 5 July 2005, para. 145 (holding that racial violence – a violation of the prohibition of discrimination – is a particular affront to human dignity).

[282] *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v Serbia and Montenegro*) (Separate Opinion of Judge Weeramantry) ICJ Reports 2007, p. 645. On a smaller scale, in 2002, Argentina, Brazil, Paraguay and Uruguay signed an 'Agreement Regarding the Residence of Nationals of the States Parties to MERCOSUR.' The accord was motivated, in part, by the importance of combating human trafficking in persons, to reduce the incidence of 'situations involving denial of their human dignity, ….' *Treaty Series: Treaties and International Agreements Registered or Filed and Recorded with the Secretariat of the United Nations*, Vol. 2541, United Nations, 2008, p. 118.

[283] Mr. Dubouloz (Observer for the International Humanitarian Fact-Finding Commission), Statement to Plenary Meeting, 17 June 1998, *United Nations Diplomatic Conference of Plenipotentiaries on the Establishment of an*

representatives of several states emphasized the nexus between the establishment of the Court and respect for human dignity.[284]

Furthermore, the state parties to the (aptly named) Convention for the Protection of Human Rights and Dignity of the Human Being with Regard to the Application of Biology and Medicine: Convention on Human Rights and Biomedicine, pledge to, inter alia, protect the dignity and identity of all human beings.[285] The 2006 Convention on the Rights of Persons with Disabilities and Optional Protocol refers to the protection and promotion of the dignity of disabled persons nine times.[286] The parties to the 2008 Convention on Cluster Munitions recognize 'the inherent dignity' of the victims of these weapons and resolve to do their utmost to assist them.[287] The Charter of Fundamental Rights of the European Union ('EU Charter') provides that '[h]uman dignity is inviolable. It must be respected and protected.'[288]

This narrative of human dignity in international treaties illustrates state recognition, grounded in the Charter, that they bear a duty to prioritize human dignity in their treatment of citizens. Obviously the Charter preamble's expressed determination to reaffirm faith in, inter alia, the dignity and worth of the human person, is different from the more specific rules and

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International Criminal Court, Rome, Vol. II, Summary Records of the Plenary Meetings and of the Meetings of the Committee of the Whole, New York, United Nations, 2002, p. 95.

[284] *Ibid*, Statements of Archbishop Martino (Holy See), 16 and 18 June 1998, pp. 73 and 128; Statement of Ms. Nagel Berger (Costa Rica), 16 June 1998, p. 77; Statement of Mr. Gómez (Chile), 16 June 1998, p. 88; Statement of Mr. Alhadi (Sudan), 18 June 1998, p. 126. Art. 68 of the Statute obliges the Court to protect the dignity of victims and witnesses.

[285] Convention for the Protection of Human Rights and Dignity of the Human Being with Regard to the Application of Biology and Medicine: Convention on Human Rights and Biomedicine, Oviedo, 4 April 1997.

[286] Convention on the Rights of Persons with Disabilities and Optional Protocol, A/RES/61/106, 2006.

[287] Done at Dublin on 30 May 2008. Entered into force on 1 August 2010, CCM/77, 30 May 2008.

[288] The provisions of the EU Charter apply to national authorities only when they are implementing EU law. Art. 1, European Union Charter, 2012/3 326/02.

agreements usually expressed in a treaty.[289] Indeed, fifty years ago, in its majority decision in the second phase of the South West Africa case, the International Court of Justice held that the preambular sections of the Charter constitute 'the moral and political basis' for the specific legal rules set out in the treaty.[290] But the border between law and morality is indeterminate at best and certain concepts, such as human dignity, rest in both systems.[291] Simply put, it would be illogical to reject the normative legal power of a value incorporated into numerous international covenants, including operative articles of those conventions (as well as the vast majority of national legal systems, which I will discuss below).

B. Human Dignity and Customary International Law

In addition to the commitments of states to promote and protect human dignity expressed in treaty law, a majority of nations have expressly incorporated the value of human dignity into their constitutions. For example, research by Shultziner and Carmi reveals that, as of 2012, nearly 85% of countries use the term 'human dignity' in their constitutions.[292] Every one of the 49 constitutions enacted between 2003 and 2012 include the term, whether in the preamble, in sections containing 'fundamental principles,' in specific articles, or in

[289] It is important not to assume that all treaty 'rules' are necessarily specific. Indeed, less-than-precise language may serve as the best possible common denominator. As Philip Allott observed, a treaty 'is a disagreement reduced to writing.' 'The Concept of International Law,' 10 *European Journal of International Law* (1999) 31, para. 35.
[290] South West Africa Case, Second Phase, para. 50.
[291] In 1946, for example, the United Nations General Assembly declared that the crime of Genocide is contrary to 'moral law….' 'The Crime of Genocide,' Resolution 96 (I), Fifty-fifth Plenary Meeting, 11 December 1946. Indeed, it is impossible to separate law strictly from morality, politics and culture. S Marks, et. al., 'Responsibility for Violations of Human Rights Obligations: International Mechanisms,' in J Crawford, el. al. (eds.) *The Law of International Responsibility,* (Oxford University Press, 2010), p. 736. 'Law' is a synonym for the phrase 'moral rules.' Macmillan Dictionary, <http://www.macmillandictionary.com/thesaurus-category/british/moral-rules-and-rules-of-behaviour>.
[292] D Shultziner & G Carmi, 'Human Dignity in National Constitutions: Functions, Promises and Dangers,' 2 and related data. Draft paper in author's possession.

some combination.[293] Whilst the use of 'human dignity' in preambles and fundamental principles may take the form of broad, overarching expressions of human dignity as a value,[294] its inclusion in operative constitutional articles serves to guide the implementation of those provisions.[295] For example, specific articles may protect the dignity of persons imprisoned or detained,[296] address the dignity of labor conditions and compensation,[297] use dignity as a guide for guarantees concerning vulnerable groups such as the elderly, children and persons with disabilities,[298] etc.

When the term 'human dignity' is absent from the text of a national constitution, the concept still can imbue legal reasoning of the courts of that state. Whilst the United States 'Bill of Rights,' for example, does not specifically refer to 'human dignity,' its use in U.S. jurisprudence is 'intuitive.'[299] Accordingly, fundamental liberties enumerated in the 'Bill of Rights' extend to personal choices central to individual dignity and autonomy, such as

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[293] *Ibid*, 7 and 18 - 28. Several South American Constitutions refer to human dignity as a foundational norm, value or purpose of the state itself. Art. 1, (iii), 1998 Constitution of Brazil (Rev 2014), <https://www.constituteproject.org/constitution/Brazil_2014.pdf>; Art. 1, 1991 Constitution of Colombia (Rev 2005), <https://www.constituteproject.org/constitution/Colombia_2005.pdf>; Art. 1, 1992 Constitution of Paraguay (Rev 2011), <https://www.constituteproject.org/constitution/Paraguay_2011.pdf?lang=en>; Art. (9) (2), 2009 Constitution of Plurinational State of Bolivia, <https://www.constituteproject.org/constitution/Bolivia_2009.pdf>. According to the Charter of Fundamental Rights of the European Union, the Union is founded, inter alia, on the universal value of human dignity. 2000/C 364/01.

[294] By enshrining human dignity in a 'prime position,' such as the preamble or set of fundamental principles, states make this concept the normative and theoretical source of all other constitutional rights, or, a kind of 'mother right.' C Dupre, *The Age of Dignity: Human Rights and Constitutionalism in Europe* (Oxford: Hart Publishing), 2015, p. 71.

[295] Shultziner & Carmi, 'Human Dignity in National Constitutions: Functions, Promises and Dangers,' 22 – 23.

[296] Art. 5, Constitution of New Zealand of 1852 (with revisions through 2014), <https://www.constituteproject.org/constitution/New_Zealand_2014.pdf?lang=en>.

[297] Art. 32 (3), Constitution of South Korea of 1948, <https://www.icrc.org/ihl-nat.nsf/162d151af444ded44125673e00508141/aba339f342ad7493c1256bc8004c2772/$file/constitution%20-%20korea%20-%20en.pdf>.

[298] Arts. 54 and 57, Constitution of Kenya (Revised 2010), <http://www.lcil.cam.ac.uk/sites/default/files/LCIL/documents/transitions/Kenya_19_2010_Constitution.pdf>.

[299] A Barak, *Human Dignity: The Constitutional Value and the Constitutional Right* (Cambridge University Press, 2015), p. 206.

decisions concerning marriage or the use of contraceptives.[300] Similarly, although the Canadian Charter of Rights and Freedoms does not mention the value expressly, the specific rights guaranteed therein 'are inextricably tied to the concept of human dignity.'[301] Hence, the majority of modern domestic legal systems expressly or implicitly mandate respect for human dignity.[302]

In spite of these national commitments, it is trite to observe that no consistent state practice protecting and respecting human dignity exists; on the contrary, examples of serious violations of human dignity around the world are common. Thus, under the traditional analysis of customary law development, certainly no rule of customary law obliging respect for human dignity exists.

Adherents to the 'modern' view of customary law formation, however, might argue that respect for human dignity has become a duty of customary international law, given the many state expressions, in national constitutions,[303] of the necessity to protect and promote

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[300] *Obergefell v Hodges*, 576 U.S. ____, (2015), 10, 13, 21 and 28.
[301] *R v Morgentaler*, [1988] 1 SCR 30, 164.
[302] Del Vecchio, General Principles of Law, pp. 52 and 54.
[303] For example, in Germany, '[h]uman dignity shall be inviolable. To respect and protect it shall be the duty of all state authority.' Art. 1, Bundesministerium der Justiz, "Basic Law for the Federal Republic of Germany in the revised version published in the Federal Law Gazette Part III", classification no. 100-1, as amended by the Act of 21st July 2010 (Federal Law Gazette I), 944, <http://www.gesetze-im-internet.de/englisch_gg/englisch_gg.html#p0014>; Judgment of the First Senate of 15 February 2006, 1 BvR 357/05, <http://www.bundesverfassungsgericht.de/entscheidungen/rs20060215_1bvr035705en.html>. Article 1 of the Constitution of Brazil states that Brazil is founded on, inter alia, 'the dignity of the human person.' <http://www.wipo.int/wipolex/en/text.jsp?file_id=218270>. The preamble to the Constitution of India assures the 'dignity of the individual.', <http://lawmin.nic.in/olwing/coi/coi-english/Const.Pock%202Pg.Rom8Fsss(3).pdf>. In Iran, the dignity of the individual is inviolate, except in cases sanctioned by law. Art. 22, Constitution of Islamic Republic of Iran, <http://www.iranonline.com/iran/iran-info/government/constitution-3.html>. In Kenya, one of the national values and principles of governance is human dignity. Art. 10 (b), Constitution of Kenya [Rev 2010], <https://www.kenyaembassy.com/pdfs/The%20Constitution%20of%20Kenya.pdf>. In Nigeria, every 'individual is entitled to respect for the dignity of his person.' Art. 34 (1), Constitution of the Federal Republic of Nigeria, <http://www.nigeria-law.org/ConstitutionOfTheFederalRepublicOfNigeria.htm#Chapter_4>. According to Article 7 of the Swiss Constitution, '[h]uman dignity must be respected and protected.',< http://www.legislationline.org/documents/section/constitutions)>.

this value. Widespread state ratification of international treaties and other documents that acknowledge the importance of human dignity constitute additional evidence of opinio juris. The validity of this claim, however, depends on whether interested parties accept the modern, deductive method of customary law formation. Indeed, any assertion that a rule of customary law exists is problematic when that claim turns solely on choices between diverging doctrinal perspectives.

Yet, the discussion should not end there because state practice and opinio juris *do* demonstrate a more nuanced rule of customary law concerning human dignity. The overwhelming international and domestic practice of states, and their expressions of obligation, evidence a minimal legal duty *to commit themselves* de jure to the protection and promotion of human dignity. Customary international law has evolved to this point; anything less would contradict the principle that the 'rights inherent to the human person precede, and are superior to, the State.'[304]

Finally, even absent a rule of customary international law pertaining to the protection of human dignity, courts (and other national institutions) may still look to this concept for assistance in interpretation and application of domestic law.[305] Barriers exist 'that democracy cannot pass, even if the purpose that is being sought is a proper one.'[306] Human dignity, as a legal point of departure, is a constant reminder that rights, to be meaningful, must be respected.

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[304] Accordance with International Law of the Unilateral Declaration of Independence in Respect of Kosovo Separate Opinion of Judge Cançado Trindade, para. 198.
[305] Meron, Human Rights and Humanitarian Norms as Customary Law, p. 9; E Cameron, 'Dignity and Disgrace: Moral Citizenship and Constitutional Protection,' in Christopher McCrudden (ed.) *Understanding Human Dignity* (Oxford University Press, 2013), p. 474.
[306] *Adalah v Minister of Defence*, Judgment, President (Emeritus) A. Barak, HCJ 8276/05 [2006] (2) IsrLR 352, p. 377.

C. Human Dignity and General Principles of Law

In the mid-twentieth century, Professor del Vecchio argued strongly that an obligation to protect human dignity exists as a 'general principle' of international law. Professor Del Vecchio argued that in an effective legal system, 'directive ideas and the informative principles of the entire system take precedence over the particular rules.'[307] The most important legal principles are those that give expression and respect 'to the absolute import of the human personality,'[308] i.e. dignity. Concurrently, the general principle of respect for human dignity cannot be divorced from other logically complementary principles; a dynamic that requires the coordinated application of legal precepts in a single regime.[309] Justice, for example, is an essential, complementary obligation for governments that strive to preserve human dignity amongst its constituents.[310]

Whilst, from a progressive perspective, Professor Del Vecchio's ideas may seem compelling, his interpretation appears to 'force' the broad concept of human dignity into the same, smaller box of more precise, and more consistently defined, general legal principles incorporated by states, such as the presumption of innocence or nullem crimen nulla poena sine lege.[311] Essentially, however, '[h]uman dignity is based upon a generality.'[312] If the development and respect for human dignity bears 'absolute import,' it would seem to enjoy a

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[307] Del Vecchio, General Principles of Law, pp. 24 – 25.
[308] *Ibid*, pp. 52 and 54.
[309] *Ibid*, p. 54.
[310] N Schrijver & L van den Herik, *Leiden Policy Recommendations on Counter-terrorism and International Law*, Grotius Centre for International Legal Studies, 1 April 2010, para. 6. Similarly, early in the nineteenth century, the United States Supreme Court observed that international law is in part unwritten and in part conventional; to 'ascertain what is unwritten we resort to the great principles of reason and justice, ….' *Thirty Hogsheads of Sugar v Boyle*, 13 U.S. 191, 198 (1815).

[311] This norm prohibits prosecution of crimes that were not recognised as such at the time they were committed. W Schabas, *An Introduction to the International Criminal Court*, 4th ed. (Cambridge University Press, 2011), p. 73.
[312] Barak, Adalah v Minister of Defence, Judgment, p.159.

higher and wider power than the norms commonly considered 'general principles of law.' Indeed, South African courts recognize the notion of human dignity as a 'supreme'[313] and 'foundational'[314] value' that inspires and grounds the more specific rights enumerated in the South African 'Bill of Rights.'[315] It does a disservice to the importance and scope of human dignity if we attempt to clothe it with the label of a 'mere' general principle of law accepted by states.[316]

D. Human Dignity and Jus Cogens

Similar problems arise when we try to fit human dignity within the realm of preemptory or jus cogens norms. The concept of human dignity is much broader than individual preemptory norms and the breach of a preemptory norm actually constitutes an attack on the foundational value of human dignity, which underlies and reinforces the norm. For example, 'human trafficking' 'is a new form of slavery that violates the value of human dignity.'[317] Thus, many of these preemptory norms – such as the prohibitions on slavery, torture and aggression -- are more susceptible to precise definitions (and obligations) then the

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[313] See *S v Makwanyane*, Case No. CCT/3/94, Constitutional Court of South Africa, 6 June 1995, para. 57, citing with approval Justice Brennan's concurring opinion in *Furman v Georgia*, 408 U.S. 238 (1972), p. 296, ('… the dignity of the individual is the supreme value ….'). Similarly, human dignity is the supreme value of the state of Israel.

[314] *National Coalition for Gay and Lesbian Equality v Minister of Home Affairs*, Case No. CCT 10/99, Constitutional Court of South Africa, 2 December 1999, para. 42. 'It is a value that informs the interpretation of many, possibly all other rights.' *Dawood v Minister of Home Affairs*, Case No. CCT 35/99, Constitutional Court of South Africa, 7 June 2000, para. 35.

[315] *The Minister of Home Affairs v Watchenuka*, Case No. 10/2003, Supreme Court of Appeal of South Africa, 28 November 2003, para. 26.

[316] The drafters of the International Covenant on Civil and Political Rights ('ICCPR') appeared to share this view that the concept of human dignity falls outside the scope of general principles of law. The drafters explained that the preamble of each human rights covenant 'sets forth general principles *relating to* the inherent dignity of the human person ….' 'Commission on Human Rights, 8th Session (1952), A/2929, Chap. III, Sec. 1' in M. Bossuyt, *Guide to the 'Travaux Préparatoires' of the International Covenant on Civil and Political Rights* (Dordrecht: Martinus Nijhoff Publishers, 1987), p. 3 (emphasis added). What does constitute a 'general principle' is the notion that human dignity is one of the foundations of freedom, justice and peace. *Ibid*, Sec. 4, p. 4.

[317] 2010 Report on the Application of the EU Charter of Fundamental Rights, European Commission, p. 24, <http://ec.europa.eu/justice/fundamental-rights/files/annual_report_2010_en.pdf>.

foundational notion of human dignity.[318] Indeed, the real value of preemptory norms is their ethical power as norms for the *recognition* of human dignity.[319]

E. The Unique Place of Human Dignity

That leaves the almost universally accepted,[320] broad concept of human dignity with a different role in international (and domestic) law. Essentially, human dignity serves as a *guiding* legal concept for the creation and application of more specific legal norms and rules.[321] This analysis illustrates that human dignity is a starting point rather than a precise treaty or customary rule, a general principle of law, or a peremptory norm reasonably susceptible to (consistent) definition.[322] Yet it is an overarching legal point of departure, based in treaty and customary law, from which the majority of the world's governments navigate the conflicting interests, rights, beliefs and values inherent to communities and societies.[323] For at least the past seventy years, human dignity has constituted an obligatory

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[318] Most jus cogens norms refer to factual situations or actions rather than to claims under international law. S Talmon, 'The Duty Not to 'Recognize as Lawful' a Situation Created by the Illegal Use of Force or Other Serious Breaches of a Jus Cogens Obligation: An Obligation Without Real Substance?' in C Tomuschat & J MTheuvenin (eds.), *The Fundamental Rules of the International Legal Order: Jus Cogens and Obligations Erga Omnes* (Leiden: Martinus Nijhoff, 2006), p. 104.

[319] S Schmahl, 'An Example of Jus Cogens: The Status of Prisoners of War,' in Tomuschat & Theuvenin, p. 56.

[320] Professor Schmahl argues that the 'achieved "common conscience of values" in the modern international legal order, especially regarding human dignity and the inherent and equal value of every human being, is not disputed anymore.' *Ibid.*

[321] Professor Tomuschat describes how the concept of human dignity, in addition, to a moral value, serves as a tool for legal analysis because the notion helps us to construe legal rules and to balance common interests against the rights and interests of individuals. C Tomuschat, *Human Rights: Between Idealism and Realism* (Oxford University Press, 2014), p. 89.

[322] Shultziner & Carmi, 'Human Dignity in National Constitutions: Functions, Promises and Dangers,' 23. "[I]t is necessary not to confuse the moral ideal with the legal rule intended to give it effect.' South West Africa Case, Second Phase, para. 52.

[323] It would be wrong, however, to view human dignity as an absolute value; some (state) actions may violate human dignity but still be justifiable. D Kretzmer, 'Human Dignity in Israeli Jurisprudence,' in D Kretzmer & E Klein (eds.), *The Concept of Human Dignity in Human Rights Discourse* (The Hague: Kluwer Law International, 2002), p. 171.

starting point for the evolution of the legal conscience of the community of nations.[324] Human dignity must, therefore, serve as the starting point for the design and use of autonomous weapon systems as the community of states attempts to clarify the application of more precise rules of international law to these weapon systems.[325]

IV. A Modern Definition of Human Dignity in International Law

This section develops a definition of human dignity for application in modern international law.[326] I argue that human dignity comprises two components: the enjoyment of respect for one's human rights and personal autonomy.

Finding a consensus on a single, accepted concept of dignity is more difficult than mapping its presence in international law.[327] Michael Walzer, without mentioning the phrase 'human dignity,' succeeds as well as any modern thinker to capture its essence:

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[324] *Reservations to the Convention on Genocide*, Advisory Opinion, Dissenting Opinion of Judge Alvarez, ICJ Reports (191), p. 51, (describing the 'new international law reflecting the new orientation of the legal conscience of the nations').

[325] Jan Klabber argues that normative expressions should be presumed to have legal force, unless and until the opposite is proven. International Law, p. 39

[326] 'Dignity' derives from the Latin word *dingus* 'which means worthy of esteem and honor, due a certain respect, of weighty importance.' J Aguas, 'The Notions of the Human Person and Human Dignity in Aquinas and Wojtyla', 3 *Kritike*, 1 (June 2009), 40 - 41, note 5, <http://www.kritike.org/journal/issue_5/aguas_june2009.pdf>.

[327] Early considerations of human dignity and its relationship to law can be traced to Aristotle, who wrote of law that 'is based on nature.' Aristotle, Book I – Chapter 13, *On Rhetoric: A Theory of Civic Discourse*, G Kennedy (trans.), 2nd ed. (New York: Oxford University Press, 2007), p. 97. Aristotle observed that 'there is in nature a common principle of the just and unjust that all people in some way divine, even if they have no association or commerce with each other….' *Ibid.* Writing at the border of the middle ages and the renaissance, Thomas Aquinas believed that 'it is proper to justice, as compared with the other virtues, to direct man in his relations with others because it denotes a kind of equality …. Hence it is evident that right is the object of justice.' *The Summa Theologica*, II-II, Question 57, Art. 1, <http://dhspriory.org/thomas/summa/SS/SS057.html#SSQ57OUTP1>. For Aquinas, nothing in human affairs should violate 'natural justice' which emanates from the 'Divine right,' i.e. *human rights* bestowed by God: 'For the Divine Law commands certain things because they are good, and forbid others, because they are evil, while others are good because they are prescribed, and others evil because they are forbidden.' *Ibid.*

'Individual rights (to life and liberty) underlie the most important judgments that we make about war. How these rights are themselves founded I cannot try to explain here. *It is enough to say that they are somehow entailed in our sense of what it means to be a human being.* If they are not natural, then we have invented them, but natural or invented, they are a palpable feature of our moral world.'[328]

Unsurprisingly, notions of human dignity vary dramatically across societies[329] and critics of international law's reliance on 'human dignity' argue that it is a vague and vacuous term lacking a stable definition.[330] Others see it as an aspiration rather than a right.[331] It is true that a precise, scientific and universally accepted explanation of the scope and contours of human dignity may be beyond the skills of lawyers and philosophers. Nevertheless, it represents an ideal that serves as the foundation of many decades of progress in international law and international relations. While the definition of human dignity may vary, the reliance of statesmen-and-women on this principle to forge bridges between different peoples and cultures suggests that it is very real. As a starting point and guiding principle, human dignity plays two important roles: it helps define what humanity is and it creates the opportunity for a

[328] M Walzer, *Just and Unjust Wars: A Moral Argument with Historical Illustrations* (New York: Basic Books, 1977), p. 54 (emphasis added).
[329] R Howard & J Donnelly, 'Human Dignity, Human Rights, and Political Regimes,' 80 *American Political Science Review*, 3 (September 1986), 801 - 802.
[330] P Carozza, 'Human Dignity,' in D Shelton (ed.), *The Oxford Handbook of International Human Rights Law* (Oxford University Press, 2013), p. 1. However, in defence of the utility of the concept of human dignity, Carozza explains that the 'capaciousness of the word "dignity" allows it to represent an affirmation belonging to a wide array of different traditions, ….' *Ibid*, 3.
[331] Feldman, 'Human Dignity As a Legal Value,' Part 1. Feldman offers a particularly opaque definition of dignity: 'an expression of an attitude to life which we as humans should value when we see it in others as an expression of something which give particular point and poignancy to the human condition.' *Ibid*, 3.

discussion on the limits of human power.[332] Human dignity's very strength lies in its interpretive capacities within a changing world.[333]

Thus, dignity is 'a flexible concept'[334] and multiple definitions of the concept exist.[335] For Michael Rosen, dignity arises from the 'unconditional and intrinsic moral value'[336] possessed by every human as a moral agent. Hannah Arendt described a man's human dignity as 'his essential quality as man,'[337] realized through respect for human rights. John Finnis takes a broader view, describing the core of the notion of human dignity as 'unwavering recognition of the literally immeasurable value of human personality in each of its basic aspects.'[338] In this perspective, identity and autonomy play an important role in the construction of each person's dignity: '[i]ndividuals can only be selves--i.e. have the "dignity" of being "responsible agents" -- if they are not made to live their lives for the convenience of others but are allowed and assisted to create a subsisting identity across a lifetime.'[339] Thus, in totalitarian societies, realization of human dignity will be difficult, if not

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[332] C Byk, 'Is Human Dignity a Useless Concept? Legal Perspectives,' in M Düwell et. al. (eds.), *The Cambridge Handbook of Human Dignity: Interdisciplinary Perspectives* (Cambridge University Press, 2014), p. 364.
[333] *Ibid*.
[334] O Lepsius, 'Human Dignity and the Downing of Aircraft: The German Federal Constitutional Court Strikes Down a Prominent Anti-Terrorism Provision in the New Air-Transport Security Act', 7 *German Law Journal* 9 (2006), 770 (citing D Currie, *The Constitution of the Federal Republic of Germany* (Chicago: University of Chicago Press, 1994), p. 315.
[335] 'Human dignity will not necessarily have the same meaning in every legal system.' D Grimm, 'Dignity in a Legal Context and As an Absolute Right', in Christopher McCrudden (ed.), *Understanding Human Dignity*, (Oxford: Oxford University Press, 2013), p. 385.
[336] M Rosen, *Dignity: Its History and Meaning* (Cambridge, Massachusetts: Harvard University Press, 2012), p. 36.
[337] H Arendt, *The Origins of Totalitarianism* (New York: Harcourt, 1968), p. 297.
[338] J Finnis, *Natural Law and Natural Rights* (Oxford: Clarendon Press, 1980), p. 225.
[339] *Ibid*, 272. Similarly, in Latin America, twentieth century Catholic doctrine contained references to human initiative and responsibility as aspects of the concept of 'the dignity of man.' 'In our continent, millions of men find themselves marginalized from society and impeded from achieving their true destiny, whether due to the existence of inadequate and unjust structures or due to other factors such as selfishness and insensitivity.' 'Conclusions,' *The Church in the Actual Transformation of Latin America in Light of the Council*, II, Bogota, General Secretariat of Episcopal Conference of Latin America, 1968, p. 217, citing Paul VI, Enc. Populorum progressio, No. 30. Dignity, in this sense, arises from self-direction and freedom from certain forms of control and manipulation. Finnis, Natural Law and Natural Rights, p. 273.

impossible, as 'the self-coercion of totalitarian logic destroys man's capacity for experience and thought just as certainly as his capacity for action.'[340]

Rhoda Howard argues that human dignity is not private, individual or autonomous but rather public, collective and governed by social norms.[341] Consequently, Howard defines human dignity 'as the particular cultural understandings of the inner moral worth of the human person and his or her proper political relations with society.'[342] Indigenous groups, for example, may prioritise the realization of their collective dignity – affirmation of the value of their way of life – over the desires of individuals.[343] Similarly, in *Manual Wackenheim v. France,* the Human Rights Committee concluded that society's need to preserve public order (as a consideration of human dignity) can trump an individual's wish to obtain particular kinds of employment.[344]

Professor Peter Asaro describes dignity in the context of respect for human rights. He argues that if human rights are understood as *duties* of other persons to respect those rights, the term 'dignity' implies respect.[345] This argument is consistent with an observation made by Michael Rosen: '[t]o respect someone's dignity by treating them with dignity requires that

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[340] H Arendt, *The Origins of Totalitarianism*, p. 474.

[341] 'Dignity, Community and Human Rights,' in A An-Na'im (ed.), *Human Rights in Cross-Cultural Perspectives: A Quest for Consensus* (Philadelphia: University of Pennsylvania Press, 1992), p. 84. For example, non-liberal social systems (such as communism and fascism) rest on competing views of human dignity, all of which deny the centrality of the individual in society and the human rights of persons to make, and have enforced, claims against the state. R Howard & J Donnelly, 'Human Dignity, Human Rights, and Political Regimes,' 80 *American Political Science Review*, 3 (September 1986), 801, 816.

[342] Howard, 'Dignity, Community, and Human Rights,' 81 *Human Rights in Cross-Cultural Perspectives: A Quest for Consensus* (1992), 83.

[343] *Ibid,* 83.

[344] Communication No 854/1999, U.N.Doc. CCPR/C/75/D/854/1999, 2002.

[345] P Asaro, 'Human Dignity and Autonomous Weapon Systems,' Presentation to *Autonomous Weapon Systems – Law, Ethics, Policy*, Conference at European University Institute, 24 April 2015; Professor Myles McDougal observed that the 'contemporary image of man as capable of respecting himself and others, and of constructively participating in the shaping and sharing of all human dignity values, is the culmination of many different trends in thought, secular as well as religious ….' M McDougal, et al., *Human Rights and World Public Order: The Basic Policies of an International Law of Human Dignity* (New Haven: Yale University Press, 1980), p. 376.

one *shows* them respect, either positively, by acting toward them in a way that gives expression to one's respect, or, at least, negatively, by refraining from behaviour that would show disrespect.'[346]

Asaro and Rosen's concept of 'dignity' as the respectful treatment of the human person and their fundamental rights is simple and elegant and consistent with the development of international law starting with the United Nations Charter.[347] As described above, the value of human dignity finds expression in international treaty and customary law, in particular international human rights law and international humanitarian law. Indeed, during the drafting process of the Universal Declaration of Human Rights, the drafters included a reference to 'dignity' in Article 1 'in order to emphasize that every human being is worthy of respect.'[348] Thus, Article 1 refers to dignity, as opposed to specific rights, because it is intended to explain *why* persons have rights to begin with.[349] Similarly, the preambles of subsequent human rights covenants recognize that the rights contained in the treaties 'derive from the inherent dignity of the human person.'[350] Logically, this 'inherent dignity' has

[346] Rosen, Dignity: Its History and Meaning, p. 58 (emphasis added). Similarly, Judge Christian Byk argues that 'dignity is the founding value of respect due to each human person, whatever his or her biological or social condition may be.' 'Is Human Dignity a Useless Concept? Legal Perspectives,' p. 363. Human beings, wrote Kant, possess a dignity (an absolute inner worth) by which they exact respect for themselves from all other rational beings in the world. I Kant, *The Metaphysics of Morals*, M Gregor (ed.) (Cambridge University Press, 2005), p. 186. Every human being is, in turn, bound to respect every other. *Ibid*, 209.

[347] 'Human dignity is the basis of all fundamental rights.' 2010 Report on the Application of the EU Charter of Fundamental Rights, p. 21.

[348] M Glendon, *A World Made New: Eleanor Roosevelt and the Universal Declaration of Human Rights* (New York: Random House, 2002), p. 146.

[349] *Ibid.* Therefore, without the commitment to the idea of human dignity, modern human rights law would not exist. P Carozza, 'Human Rights, Human Dignity and Human Experience,' p. 620.

[350] International Covenant on Civil and Political Rights, 16 December 1966; International Covenant on Economic, Social and Cultural Rights, 16 December 1966.

meaning only if it signifies and encompasses respect for the precise human rights emanating from it.[351]

In addition, a definition of human dignity that requires respect for human rights is sensible and effective regardless of whether the rights at stake are 'individual,' 'group,' 'civil and political,' social or economic,' etc. In divergent legal traditions, the concept of human dignity denotes the requirement of respect for persons.[352] The crux of the matter, therefore, is whether those rights accepted by a society are respected, not the form of the rights.

In addition to the importance of respect for human rights, the importance of personal autonomy is the second component of human dignity.[353] The concepts of 'respect for rights' and 'personal autonomy' are related but not necessarily synonymous. If we continue to interpret human dignity as the enjoyment of respect for human rights, it would be the antithesis of respect and a violation of human dignity to create structures that encourage the delegation of responsibility for the exercise of these rights. 'Responsibilities, as well as rights, enhance the dignity and integrity of the person'[354] and the fulfillment of responsibilities deepens our belief in our own dignity. Importantly for this dissertation, an individual bears 'judgmental responsibility' for an act or omission if it is appropriate to appraise her conduct against standards of performance.[355] The development of this form of

[351] If human dignity is a 'normative status,' then 'many human rights may be understood as incidents of that status.' J Waldron, *Dignity, Rank and Rights* (Oxford University Press, 2012), p. 18.
[352] Carozza, 'Human Rights, Human Dignity and Human Experience,' p. 616.
[353] Judge García-Ramírez described the concept of 'personal autonomy' as the broad capacity of every human being to conduct her own life, 'to choose the best means to do it, to use the means and tools that serve to that end, selected and used with autonomy as a sign of maturity and a condition of freedom – and to legitimately resist or reject undue influence and aggression.' *Case of Ximenes-Lopes v Brazil,* Separate Opinion, Inter-Am. Ct. H.R., 4 July 2006, para. 10.
[354] *United States v Windsor*, 579 U.S. ____ (2013), p. 22.
[355] R Dworkin, *Justice for Hedgehogs* (Cambridge, Massachusetts: Harvard University Press, 2011), p. 223.

responsibility, however, is a process without end as persons attempt to integrate their life experiences and their moral, ethical and political values.[356]

Thus, the dignity of right-holders arises from the acknowledgement of the capacity and autonomy of the person to bear the responsibility implicit in the right.[357] In democratic societies, for example, political leaders assume personal responsibility for their actions and omissions. They cannot transfer this responsibility.[358] Similarly, in a number of countries all citizens must, under the law, exercise their duty to vote in elections.[359]

Indeed, it is significant that history is replete with examples of collective efforts to secure greater human responsibilities, rather than initiatives to discard them.[360] That is because the ultimate objective of a democratic state is to make persons free to develop their abilities.[361] Thus, 'the greatest menace to freedom [and dignity] is an inert people'[362] and

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[356] *Ibid*, pp. 107, 119 and 192 – 193.

[357] J Waldron, 'Dignity, Rights and Responsibilities' (New York University Public Law and Legal Theory Working Papers, 2010), p. 17, <http://lsr.nellco.org/cgi/viewcontent.cgi?article=1245&context=nyu_plltwp>.

[358] *Ibid,* 14.

[359] For example, Australia, Commonwealth Electoral Act 1918 – Sect 245 (1), 'Compulsory Voting,' <http://www.austlii.edu.au/au/legis/cth/consol_act/cea1918233/s245.html>; Argentina, Codigo Electoral Nacional, Ley No. 19,495, Capítulo 1, 'Deber a Votar,' Artículo 12, <http://infoleg.mecon.govar/infolegInternet/anexos/15000-19999/19442/texact.htm>; Peru, Ley Orgánica de Elecciones, 'Ejercício del Derecho al Voto,' Artículo 7, <http://pdba.georgetown.edu/Electoral/Peru/leyelecciones.pdf>. The United States Supreme Court has held that '[o]ther rights, even the most basic, are illusory if the right to vote is undermined.' *Wesberry v Sander*, 376 U.S. 1 (1964), p. 17.

[360] For example, the seeds of the eighteenth century war of independence fought by the North American colonies against British rule lay in the principle of 'no taxation without representation,' i.e. without some measure of responsibility in the process of governance. D McCullough, *John Adams* (New York: Simon & Schuster, 2001), p. 61. After extensive campaigns, women were granted the right to vote in the United States in 1920 and in the United Kingdom in 1928. Nineteenth Amendment to Constitution of the United States, <https://www.congress.gov/constitution-annotated>, 'Equal Franchise Act 1928', <http://www.parliament.uk/about/living-heritage/transformingsociety/electionsvoting/womenvote/parliamentary-collectionsdelete/equal-franchise-act-1928/>. During the twentieth century, national liberation movements in countries such as Vietnam and Mozambique sought to wrest political control from colonial powers. M Ishay, *The History of Human Rights: from Ancient Times to the Globalization Era* (Berkeley: University of California Press, 2004), p. 338; The 1993 Interim Constitution of South Africa for the first time accorded black citizens all duties, obligations and *responsibilities* of South African citizenship. Constitution of the Republic of South Africa Act 200 of 1993, Chapter 2 (5), <http://www.govza/documents/constitution/constitution-republic-south-africa-act-200-1993#Citizenship and Franchise>.

[361] *Whitney v California* (Brandeis J. Concurring) 274 U.S. 357 (1927), p. 375.

governments that arbitrarily restrict the rights of their citizens to make free choices, form their identities and develop their autonomy as persons violate human dignity.[363]

Conversely, dignity carries an obligation for individuals to retain their personal autonomy.[364] This implies a duty of self-respect: '[e]ach person must take his own life seriously; he must accept that it is a matter of importance that his life be a successful performance rather than a wasted opportunity.'[365] Anything less would render human dignity a dead letter.

With regard to particular rights, such as, for example, freedom of expression, individuals 'have a right, an indisputable, *unalienable, indefeasible* …' right to knowledge.[366] The right to thought, i.e. to think, must accompany this right to knowledge because '[t]rue knowledge is knowledge of why things are as they are, not merely what they are; ….'[367] The human capacity to think and reason, in particular about matters involving values and judgment, is a fundamental part of human identity and autonomy, and thus, human dignity.[368] Indeed, Professor Dworkin described 'judgmental responsibility' as 'the weft of all moral

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[362] *Ibid.* Indeed, 'there are many truths of which the full meaning *cannot* be realized until personal experience has brought it home.' J Mill, 'On the Liberty of Thought and Discussion,' in *The Basic Writings of John Stuart Mill* (New York: The Modern Library, 2002), p. 44 (emphasis in original).

[363] Carroza, 'Human Rights, Human Dignity and Human Experience,' p. 618.

[364] Waldron, Dignity, Rank and Rights, pp. 140 – 141.

[365] R Dworkin, *Justice for Hedgehogs* (Cambridge, Massachusetts: Harvard University Press, 2011), p. 203.

[366] J Adams, *A Dissertation on the Canon and Feudal Law* (1765), <http://grahamteach.com/wp-content/uploads/2012/08/A-Dissertation-on-the-Canon-and-Feudal-Law1.pdf> (emphasis added).

[367] I Berlin, 'My Intellectual Path', in H Hardy (ed.), *The Power of Ideas* (Princeton University Press, 2000), p. 7.

[368] See Schachter, 'Human Dignity As a Normative Concept,' 851 (concluding that human dignity 'includes recognition of a distinct personal identity, reflecting individual autonomy and responsibility'). George Kateb observes that 'when we speak of human dignity as the status of the individual or the stature of the human species, we are reaching for another sense of dignity, *the dignity of what is uniquely human in its identity.*' G Kateb, *Human Dignity* (Cambridge, Massachusetts: Harvard University Press, 2011), p.18 (emphasis added). Dignity, therefore, is an existential value that acknowledges the personal identity of every human being. *Ibid*, 10.

fabric.'[369] Over time, our powers of reason[370] evolve and provide new alternatives for addressing complex problems, demonstrating qualitative changes in human thought.[371]

Thus, the ability to exercise our autonomy contributes to our dignity.[372] The creation and protection of conditions necessary for humans to live an autonomous life become a 'normative priority' as part of a broader commitment to human dignity.[373] Phrased differently, a 'basic good' of life is the ability to 'bring one's own intelligence to bear effectively on the problems of choosing one's actions and lifestyle and shaping one's own character.'[374]

Indeed, the modern system of public international law is not a mere body of rigid rules, but a whole decision-making process.[375] The value of personal autonomy, consequently, is an important principle utilised by courts to interpret international human rights law.[376] In the context of treatment of persons suffering from mental illness, for example, human dignity demands 'the respect for the intimacy and autonomy of persons'

[369] Justice for Hedgehogs, p. 224.
[370] John Locke described the human mind's ability to reason about ideas as a 'great power.' 'Of Complex Ideas,' in *An Essay Concerning Human Understanding*,' (1690), Chapter XII, para. 2, <ftp://ftp.dca.fee.unicamp.br/pub/docs/ia005/humanund.pdf>.
[371] H Simon, *Reason in Human Affairs* (Stanford University Press, 1983), p. 106.
[372] See *Obergefell v Hodges*, 12 – 14 (holding that decisions about the rights to personal choices in matters such as marriage implicate concepts of individual autonomy and dignity).
[373] M Düwell, 'Human Dignity and Future Generations', in M Düwell et. al. (eds.), *The Cambridge Handbook of Human Dignity: Interdisciplinary Perspectives* (Cambridge University Press, 2014), p. 556.
[374] J Finnis, *Natural* Law and Natural Rights, p. 88 and pp. 100 – 101.
[375] M McDougal & N Schlei, 'The Hydrogen Bomb Tests in Perspective: Lawful Measures for Security,' 64 *Yale Law Journal* (1955), 656.
[376] Case of Pretty v the United Kingdom, Judgement, para. 61. In Pretty, a terminally ill applicant challenged a U.K. law prohibiting the practice of 'assisted suicide.' The European Court of Human Rights held that, particularly in cases where the potential for serious harm existed, states may balance 'considerations of public health and safety against the countervailing principle of personal autonomy.' *Ibid*, para. 74. In *S.W. v the United Kingdom*, the Court noted the 'progressive development' of recognition that women enjoyed autonomy over their bodies. Judgment, EctHR, Application No. 20166/92, 22 November 1995, para. 40.

receiving psychiatric treatment.[377] Accordingly, the inclusion of personal autonomy as the second component of human dignity is consistent with the development of international law since the drafting of the United Nations Charter.

In the next chapter, I will demonstrate why the use of autonomous weapon systems, in some circumstances, will violate the human dignity of the groups and persons who operate them. In chapters five, six and seven, I examine how the value of human dignity informs the application of the principles and rules of international humanitarian law, international human rights law and international criminal law to the design and employment of autonomous weapons. In the last chapter, I will examine how the concept of human dignity should guide the assessment of the responsibility of states and arms manufacturers for the design and use of autonomous weapon systems, as well as the harm caused by them.

V. Conclusions

The perception of human dignity as a treaty based, legal point of departure enables international and domestic legal systems to resort to this principle in order to define more precise rights and obligations in specific circumstances. A definition of human dignity that encompasses both respect for human rights and the realization of personal autonomy reflects the development of modern international law. If, as I have argued, the function of law is to adjust the rights between persons and between individuals and the state, the notion of human dignity plays a dual role: 1) to help to define those rights and 2) to determine their proper scope. Thus, the starting point of human dignity helps to make law and also provides a

[377] Case of Ximenes-Lopes v Brazil, Judgement, para. 130. The Court concluded that mental illness 'should not be understood as a disability for determination' and that mental health providers should operate on the assumption that mental patients are capable of expressing their will, i.e. their autonomy. *Ibid*.

barrier against the abuse of law.[378] Therefore, in the forthcoming chapters on the relationship between autonomous weapons and human dignity, international humanitarian law, international human rights law, international criminal law, and state responsibility, I will describe how the concept of human dignity speaks to the lawful design and use of autonomous weapon systems.

[378] For a discussion of how laws may lack the 'essential requirement of justice' and the perversion of law under the Nazi regime, see G Radbruch, 'Statutory Lawlessness and Supra-Statutory Law' (1946), 26 *Oxford Journal of Legal Studies* 1 (2006), 1 – 11.

Chapter Four

Autonomous Weapon Systems and Human Dignity

I. Introduction

This chapter addresses the argument that the autonomous exercise of lethal force offends human dignity, and, therefore, international law.[379] Proponents of this argument suggest that, by permitting lethal autonomous weapon systems to independently engage and kill human targets, operators of these systems, be they national armed forces, organized armed groups or law enforcement bodies, violate the human dignity of the persons killed.[380] I argue instead that by delegating to machines the fundamental right and responsibility to think about complex, value-based decisions, we violate the human dignity of *the living*.

This chapter demonstrates that the use of autonomous machines for warfighting and law enforcement activities per se does not undermine human dignity. However, the opportunity to exercise reason is an important evolutionary trait[381] manifested as a human

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[379] '[I]nternational law must be rooted in a respect for human dignity.' P Capps, *Human Dignity and the Foundations of International Law* (Oxford: Hart Publishing, 2009), p. 9.

[380] C Heyns, 'Autonomous Weapon Systems and Human Rights Law,' Presentation Made at Informal Expert Meeting Organized by the State Parties to the Convention on Certain Conventional Weapons, Geneva, 13 - 16 May 2014, p. 7 - 9, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/DDB079530E4FFDDBC1257CF3003FFE4D/$file/Heyns_LAWS_otherlegal_2014.pdf>. S Goose, Statement by Human Rights Watch to the Convention on Conventional Weapons Informal Meeting of Experts on *Lethal Autonomous Weapon Systems*, 13 May 2014, p. 2, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/6CF465B62841F177C1257CE8004F9E6B/$file/NGOHRW_LAWS_GenStatement_2014.pdf>. P. Asaro, 'On Banning Autonomous Weapon Systems: Human Rights, Automation, and the Dehumanization of Lethal Decision-Making,' 94 *International Review of the Red Cross*, 886 (2012), 687 and 708.,

[381] Charles Darwin postulated that thinking was an inherited characteristic. 'Evolution, he believed, explained every mental tic, … peoples's habits, instincts, thoughts, feelings, conscience and morality.' A Desmond & J Moore, *Darwin* (London: Penguin Books, 1992), pp. 243 and 250. Daniel Dennett concludes that evolutionary processes gradually brought purposes and reasons into (human) existence. 'The Evolution of Reasons' in B Bashour & H Muller (eds.) *Contemporary Philosophical Naturalism and Its Implications* (New York: Routledge, 2014), p. 49. Contemporary researchers of human cognition suggest that genetic adaptations combine with experiences derived from social interactions and culturally transmitted information to influence thought

need.[382] Consequently, there are fundamental areas of life where humans – to preserve their value as persons, their autonomy and hence their dignity – must retain their responsibility to think and express reason. The increasing speed of communications, data processing and autonomous weapon technology shortens the time available for manned and unmanned weapon systems to react to events and, when necessary, attack enemy combatants and objectives. The inevitable velocity of autonomous military engagements will obstruct the development of sound human judgment that arises from opportunities for human reflection on one's own important experiences and those of others. This dynamic *will* violate human dignity, as the ability of humans to fully develop their personalities – including the capacity to respect the rights of others - will inevitably diminish.[383]

Furthermore, as discussed in Chapter five, situations arise in the battlespace where humans can negotiate changing conditions more effectively than machines. Due to the greater speed of autonomous warfare, however, the ability of human combatants and security forces to become aware of these changing circumstances, as well as the need for their intervention, will decline. Thus, the advancing speed of autonomous weapons technologies will reduce the capacity for humans to use the judgment they *have* developed, to address, when necessary, the uncertainties and contradictions that inevitably arise during hostilities and law enforcement

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processes. C Frith, 'The Role of Metacognition in Human Social Interactions,' *Philosophical Transactions* (August 2012), <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3385688/> and N Shea, 'New Thinking, Innateness and Inherited Representation,' *Philosophical Transactions* (August 2012), <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3385690/>.

[382] H Arendt, *The Life of the Mind* (New York: Harcourt, 1978), pp. 99-100. Professor Allott concluded that 'such human progress as there has been, over the last several thousand years, has been due to three strange accidents of evolution or gifts of God: rationality (the capacity to order our consciousness); morality (the capacity to take responsibility for our future); and imagination (the capacity to create a reality for ourselves).' P Allott, 'The Concept of International Law,' 10 *European Journal of International Law*, 31 (1999) 50.

[383] Renaissance writers commonly understood man's unique ability to understand ideas and to act upon his judgment as his 'real dignity.' H Baker, *The Image of Man: A Study of the Idea of Human Dignity in Classical Antiquity, the Middle Ages, and the Renaissance* (New York: Harper and Row, 1961), p. 299.

actions.[384] This limitation of the expression of personal autonomy and identity will constitute a violation of human dignity – that of the individuals charged with the responsibility for the conduct of hostilities and law enforcement.

II. Human Dignity and Autonomous Weapon Systems

A. Autonomous Weapon Systems, Human Dignity and the Dead

Professor Asaro, a leader of the International Committee for Robot Arms Control,[385] offers a compellingly simple argument in support of a ban on lethal autonomous weapons: When we permit a machine to take human life, we demean the value of life.[386] People deserve respect, Asaro argues, *before* they are deprived of their rights.[387] As the taking of life is irrevocable, Asaro contends that humans who are killed deserve a valid reason for their loss of life.[388]

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[384] G. Pico della Mirandola, *Oration on the Dignity of Man* (1486), <http://en.wikipedia.org/wiki/Oration_on_the_Dignity_of_Man>. Pico della Mirandola warned that humans should never 'through slothful inaction to lose our power of reason, that faculty by which the mind examines, judges and measures all things.' Erasmus believed that man's ability to use his faculties of reason was crucial to human dignity. Baker, The Image of Man, p. 267. Similarly, Immanuel Kant argued that man 'has both the opportunity and the responsibility to make use of his mind in the spirit of criticism.' The Contest of Faculties,' in Hans Reiss (ed), *Kant's Political Writings* (Cambridge University Press, 1979), p. 15.

[385] See <http://icrac.net/who/>.

[386] P Asaro, 'Human Dignity and Autonomous Weapon Systems,' Presentation to Conference on *Autonomous Weapon Systems – Law, Ethics, Policy*, European University Institute, Academy of European Law, 24 April 2014.

[387] Professor McDougal described respect as 'an indispensable component and determinant in all human rights.' M McDougal, et al., *Human Rights and World Public Order: The Basic Policies of an International Law of Human Dignity* (New Haven: Yale University Press, 1980), pp. 7 and 451 - 455. Importantly for the use of lethal force by autonomous weapons, respect can include a number of values such as: 'protection of respect even under conditions of crisis; … the availability of processes of authoritative decision and effective power to defend and fulfill respect; … freedom to employ the different instruments of policy (diplomatic, ideological, economic, military) in the protection of respect; … freedom from imposition of disrespect by the use of different instruments of policy; ….' *Ibid,* pp. 7 – 8. Moreover, respect can entail the ability to 'participate in all value processes in accordance with capability, that is, without discrimination for reasons irrelevant to capability. *Ibid* p. 452.

[388] Asaro, 'Human Dignity and Autonomous Weapon Systems.' Francis Fitzgerald describes how the Vietnamese 'on-the-ground' experienced the United States' bombing campaigns during the 1960's: 'For the other people the war would come one out of a clear blue sky. In a few minutes it would be over: the bombs, released by an invisible pilot with incomprehensible intentions, would leave only the debris and the dead

Asaro claims that when computers/machines make the decision to take a human life, the result is an affront to the dignity/respect owed to the person who is killed.[389] Algorithmic calculations by artificial intelligence software, however, are not the same as a human review and thus, cannot fulfill this right to respect.[390] Asaro argues that algorithmic reviews are deficient because they are 'locked in; they preclude moral growth.'[391] Humans may develop new moral values[392] and forms of reasoning but machines will not.

In chapter three, I adopted a definition of human dignity that accords with Asaro's emphasis on the importance of respect for human rights, and there is some merit to his argument in opposition to the use of autonomous weapon systems to take human life. For instance, history contains examples of persons who, as Asaro suggests, demonstrate moral growth even in the midst of armed conflict. The violence of war is brutal and often degrading[393] and usually requires the suppression of much in our nature that is human and

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behind.' F FitzGerald, *Fire in the Lake: the Vietnamese and the Americans in Vietnam* (Boston: Little, Brown and Company, 1972), p. 5 (emphasis added).

[389] Asaro, 'Human Dignity and Autonomous Weapon Systems.' Similarly, Professor Heyns acknowledges the argument that '[h]uman life can only be taken as part of a process that is potentially deliberative and involving human decision-making.' C Heyns, 'Autonomous Weapon Systems: Living a Dignified Life and Dying a Dignified Death,' in *Autonomous Weapon Systems – Law, Ethics, Policy*, N Bhuta, et. al (eds.) (Cambridge University Press, 2016). R Moyes, 'Meaningful Human Control Over Individual Attacks: A Framework for Debate on Autonomous Weapons,' Conference on Weapons, Technology and Human Control, United Nations Institute for Disarmament Research, New York, 16 October 2014.

[390] Asaro, 'Human Dignity and Autonomous Weapon Systems,' Presentation to Conference on Autonomous Weapon Systems – Law, Ethics, Policy, European University Institute, Academy of European Law, 24 April 2014. Professor Christoph Heyns, United Nations Special Rapporteur for Extrajudicial Executions, argues, but with little support, that a determination of life and death by a machine is inherently arbitrary, due to an unspoken assumption of international human rights law that the final decision to use lethal force must be reasonable and made by a human. Machines cannot 'reason' in the way that humans do and thus cannot make 'reasonable' decisions on their own. Presentation at annual meeting of State Parties to the Convention on Certain Conventional Weapons, Geneva, 13 – 16 May 2014, p. 6.

[391] Asaro, 'Human Dignity and Autonomous Weapon Systems,' Presentation to Conference on Autonomous Weapon Systems – Law, Ethics, Policy, European University Institute, Academy of European Law, 24 April 2014.

[392] Immanual Kant observed that '… man has a moral character, or at least the makings of one.' Kant, 'The Contest of Faculties,' p. 182.

[393] Many soldiers of the First and Second World War expressed 'their sense of littleness, almost of nothingness, of their abandonment in a physical wilderness, dominated by vast impersonal forces from which even such

humane.[394] Nevertheless, during warfare, the suppression of humanity,[395] identity[396] and meaning[397] by human combatants is occasionally offset by (often irrational) expressions of compassion and illogical, even irresponsible acts of courage.[398] Consequently, examples of soldiers declining to use all of their powers of violence – their 'moral force'[399] – during

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normalities as the passage of time had been eliminated.' J Keegan, *The Face of Battle* (New York: Penguin Books, 1978), p. 328. Battlefield conditions 'reduced his subjective role, objectively vital though it was, to that of a mere victim.' *Ibid*.

[394] J Hatzfeld, *A Time for Machetes: The Rwandan Genocide: The Killers Speak* (London: Serpent's Tail, 2008), pp. 98 and 136; J Hatzfeld, *Into the Quick of Life: The Rwandan Genocide Survivors Speak* (London, Serpent's Tail, 2008), pp. 164 – 165.

[395] Lt. Col. D Grossman observes that 'there is within most men an intense resistance to killing their fellow man.' *On Killing: The Psychological Cost of Learning to Kill in War and Society* (Boston: Little, Brown & Company, 1996), pp. 4 and 39.

[396] '[A]n identity – that is, dignity – is necessary' in order to live. Primo Levi, *The Drowned and the Saved* (New York: Vintage International, 1989), p. 128.

[397] 'Meaning came out of living.' K Marlantes, *Matterhorn* (London: Corvus, 2010), p. 664; 'Man conceals mysterious reasons for wishing to go on surviving. The more we died, the more ready we were to die, and yet the faster we ran to gain an extra moment of life.' Hatzfeld, Into the Quick of Life, p. 72.

[398] See R Chantler, 'Translator's Introduction' to V. Grossman*, Life and Fate* (London: Flamingo, 1985), pp. 12; D Avery, *De Man Die Naar Auschwitz Wilde (The Auschwitz Volunteer*) (Antwerp: The House of Books, 2011), pp. 162 – 163. Some philosophers argue that this may be reasoned, even obligatory behavior. Amartya Sen contends that "effective power" to assist others in need creates an obligation to at least consider taking action. *The Idea of Justice*, pp. 205 - 207, 270 – 271 and 372 - 376.

[399] Keegan, The Face of Battle, p. 280.

wartime are common.[400] This ability to empathize with human beings, whether soldier or civilian, would be absent from robotic weapons.[401]

Nevertheless, further reflection reveals a number of legal and philosophical weaknesses in Asaro's dignity-based argument. First, human beings have killed other human beings for millennia without necessarily providing a 'reason' for the use of lethal force to the victim. A requirement of a reason would alter important rules of, inter alia, international humanitarian law, which permits combatants to kill other combatants with no duty to provide a reason for their use of lethal force.[402] For example, the principle of proportionality permits loss of civilian life that is incidental to an otherwise lawful attack, if it is not excessive in relation to the anticipated military advantage.[403] Civilians who die during a proportionate attack are unlikely to be aware of the reasoning process that resulted in the attack.

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[400] During the American Civil War in December 1862, for example, after Confederate forces repulsed the attacking Union army at Fredericksburg, Virginia, the Confederate forces declined to counter-attack the weakened and vulnerable Union divisions. A Confederate officer who was present explained later that this decision had no basis in strategy or military necessity but rather, lack of appetite for further bloodshed. 'We had no want of it.' General G Moxley Sorrel, *Recollections of a Confederate Staff Officer* (New York: The Neale Publishing Company, 1905), pp. 144. In 1871, Prussian forces invaded France and closed the entrances to Paris. When angry civilians demonstrated against these measures, Prussian commanders ordered their subordinates 'to shoot in the last resort.' This was a step too far for one officer who recalled: 'I did not care to give that order, and preferred to go out and give some blows with the flat of my sabre.' U Wilamowitz-Moellendorf, *My Recollections: 1848 – 1914* (London: Chatto & Windus, 1930), pp. 144. During the Second World War, even hardened Nazi leaders recognized the value of compassion, albeit only for (certain) Germans. Writing on 16 December 1941, Hans Frank, Reich-Commissar for the Coordination of Justice and Governor General of Poland, stated: "[a]s a matter of principle we shall have pity only for the German people – and for no one else in the world.' H Shawcross, 'Closing Speech,' 27 July 1946, *The Trial of German Major War Criminals, Proceedings of The International Military Tribunal Sitting at Nuremberg, Germany*, Part 19 (1949), p. 440. Near the end of the war, mourning the combat death of a friend and colleague, Joseph Goebells wrote (apparently without a trace of irony) that he 'shall treasure his memory. How much valuable blood has been spilt in this war!' *Final Entries 1945: The Diaries of Joseph Goebbels',* H Trevor-Roper (ed.) (New York: G.P. Putnam's Sons, 1978), p. 27 (entry of 2 March 1945).

[401] 'Losing Humanity, the Case Against Killer Robots,' *Human Rights Watch and the International Human Rights Clinic of Harvard Law School* (2012), p. 38.

[402] Art. 48, Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts ('API'), 8 June 1977.

[403] API, Art. 57 (2) (a) (iii).

Second, today international humanitarian law and international human rights law provide a framework for armed forces to navigate 'the moral limits of war.'[404] Accordingly, although dignity is a fundamental quality of human beings, there are exceptional circumstances where international law permits armed forces to violate the dignity of persons in areas of armed conflict. In extreme cases of imperative military necessity, for example, during an invasion, belligerent parties in retreat may destroy objects that are indispensable to the survival of the civilian population under its control in its own territory.[405] Any subsequent loss of dignity resulting from the destruction of such objects may be balanced against, and justified by, the imperative strategic or military necessity at stake.[406] The commentary to this rule of international humanitarian law does not reveal any suggestion of a duty to explain to the affected civilian population the reason for the destruction of these indispensable objects.[407] Therefore, neither rigid concerns about strategic consequences nor dogmatic views on morality and human dignity should control soldiers' decisions in time of conflict.[408]

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[404] J Witt, *Lincoln's Code: The Laws of War in American History* (New York: Free Press, 2012), pp. 280.

[405] API, Art. 54 (5). This might include, for example, the flooding of low-lying areas to obstruct attacking forces. *JSP 383, The Joint Service Manual of the Law of Armed Conflict*, U.K. Ministry of Defence, para. 5.27.1.

[406] During the American civil war, Abraham Lincoln, more famous for his service to humanity than for cold-blooded calculations, instituted policies directed to the victory of Union forces over Southern secessionists and for eventual racial justice for African-Americans. One of Lincoln's policies was a refusal to return freed slaves to their owners in exchange for the parole of Union prisoners-of-war languishing in miserable Southern camps. The cost of this policy was extended and severe suffering for thousands of Union prisoners-of-war. Lincoln, however, was compelled to balance 'conflicting dignities,' i.e. racial justice for freed slaves versus humane treatment for Union prisoners. Witt, Lincoln's Code, p. 262.

[407] ICRC Commentary to Art. 54, API, para. 2122, <http://www.icrc.org/applic/ihl/ihl.nsf/Comment.xsp?viewComments=LookUpCOMART&articleUNID=C5F28CACC22458EAC12563CD0051DD00>; L Green, *The Contemporary Law of Armed Conflict*, 2nd ed. (Manchester University Press, 2000), pp. 144; Y Dinstein, *The Conduct of Hostilities Under the Law of International Armed Conflict*, 2nd. ed. (Cambridge University Press, 2010), pp. 219 – 220; S Oeter, 'Methods and Means of Combat,' in Dieter Fleck (ed.) *The Handbook of International Humanitarian Law*, (Oxford University Press, 2009), p. 220; Commentary to Rule 54, 'Attacks Against Objects Indispensable to the Survival of the Civilian Population,' *ICRC Customary International Humanitarian Law Study*, <https://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter17_rule54>.

[408] M Ignatieff, *The Lesser Evil: Political Ethics in an Age of Terror* (Princeton University Press, 2004), p. 8.

Third, Asaro partially conflates the loss of human life during wartime with the loss of dignity. These processes, however, are not the same and should be addressed separately. The importance of dignity often lies more in how we live rather than how we die. For example, at the end of the Second World War, survivors of Nazi extermination camps told Soviet journalist Vasily Grossman that 'it was many times more terrible to live in Treblinka than to die there.'[409] The 1943 uprising by the inhabitants of the Warsaw Ghetto 'was not about preserving Jewish life but about rescuing human dignity.'[410] Previously, in occupied Soviet territory on the Eastern front, conditions at one prisoner-of-war camp were so awful that Soviet prisoners submitted written requests to their German captors asking to be shot.[411] As Asaro observes, our dignity is injured when we are treated disrespectfully. What is crucial, therefore, is *how* we are treated and *why*, not *who* or *what* is treating us.[412]

Indeed, conceptually, some international criminal tribunals and human rights courts separate the protection of the right to life from the preservation of human dignity. The International Criminal Tribunal for the Former Yugoslavia held that:

> '… [M]urder in and of itself cannot be characterized as an outrage upon personal dignity. *Murder causes death, which is different from concepts of serious humiliation, degradation or attacks on human dignity.* The focus of violations of dignity is primarily on acts, omission, or words that do not necessarily involve long-term physical harm, but which nevertheless are serious offences deserving of punishment.'[413]

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[409] Grossman, On Killing, p. 303.
[410] T Snyder, *Bloodlands: Europe Between Hitler and Stalin* (London: Random House, 2010), p. 291.

[411] *Ibid*, p. 179.
[412] Marco Sassóli notes that 'International Humanitarian Law does not seek to promote 'love, mercy or *human* empathy (a robot is indeed unable to have such feelings), but respect based upon objective criteria.' 'Autonomous Weapons and International Humanitarian Law: Advantages, Open Technical Questions and Legal Issues to Be Clarified', 90 *International Law Studies* (2014), 308 and 318.

[413] *Prosecutor v. Kvočka et. al*., Judgment, IT-98-30/T, 2 November 2001, para. 172 (emphasis added) and para. 217. Cf Heyns, *supra* note …. 7. Cf. Judgment of the First Senate of 15 February 2006, 1 BvR 357/05, p. 18,

The European Court of Human Rights ('ECtHR') also conducts separate analyses of alleged violations of article two of the European Convention of Human Rights ('ECHR') (the right to life of the deceased) and alleged violations of article 3 (the right, of the deceased's next of kin, not to be subject to torture or inhuman or degrading treatment or punishment).[414] When considering whether treatment is "degrading" within the meaning of Article 3, the Court will evaluate 'whether its object is to humiliate and debase the person concerned and whether, as far as the consequences are concerned, it adversely affected his or her personality in a manner incompatible with Article 3.'[415]

Similarly, the InterAmerican Court of Human Rights ('Inter-Am. Ct. H.R.'), makes a distinction between the right to life and the right to be treated with dignity. For example, in the case of *Durand and Ugarte v. Peru* the Court clarified that arbitrary deprivations of the right to life do not implicate the ACHR's prohibitions against cruel, inhumane or degrading treatment.[416]

<http://www.bundesverfassungsgericht.de/entscheidungen/rs20060215_1bvr035705en.html>. The Court observed that 'human life is the vital basis of human dignity' as the fundamental constitutive principle, and as the supreme value of the German Constitution. Thus, in Germany, when the State violates the right to life, it offends the ban on the disregard of human dignity. *Ibid*, pp. 6 and 18.

[414] See for example, *Case of Janowiec and Others v. Russia* Judgment, ECtHR, Application No. 55508/07 and 2952/09 (21 October 2013), paras. 152 - 189.

[415] *Case of Savenkovas v. Lithuania* Judgment, ECtHR, Application No 871/02, 18 November 2002, para. 78. In *El Masri v. Macedonia*, the Court reiterated that "any recourse to physical force which has not been made strictly necessary by the applicant's own conduct diminishes human dignity and is in principle an infringement of the right set forth in Article 3 of the Convention.' Importantly, the issue is the *use* of unnecessary force, *not the source of the force.* Judgment, Application No. 39630/09 12 December 2012, para. 207.

38 Judgment, Inter-Am. Ct. H.R., 16 August 2000, para. 78, citing *Neiral Alegría & Others v. Peru*, Judgment, Inter-Am. Ct. H.R., 19 January 1995, para. 86. In the case of *Juan Humberto Sánchez v. Honduras,* the Inter-American Court of Human Rights ruled that the state violated Sánchez' right to life because, inter alia, his death was due to an extra-legal execution perpetrated by military agents and because Honduras failed to establish what happened to Sánchez during his detention. *Juan Humberto Sánchez v. Honduras*, Judgement, Inter-Am. Ct. H.R. 2003, paras. 109 and 111. In parallel, the Court found that Sánchez' next of kin were victims of cruel, inhuman and degrading treatment pursuant to article 5 of the ACHR as they suffered from, inter alia, the uncertainty of not knowing the whereabouts of Sánchez for over a week, the signs of extreme violence on Sánchez's body, and the lack of investigation and punishment of those responsible for these circumstances. *Ibid*, para. 101. Also see *Case of Bámaca Velásquez v. Guatemala*, Judgement, Inter-Am. Ct. H.R. 25 November 2000, paras. 145 and

It is stating the obvious that when armed forces or other state agents (whether humans or autonomous machines) take human life, it would be nonsensical to worry about 'adverse affects' to the deceased's personality. Such concerns are salient while a person is alive.[417] Indeed, 'the human quality' terminates upon death and, therefore, the prohibition of degrading treatment – at least in international human rights law - will not apply to deceased persons.[418]

Pursuant to this jurisprudence, the question remains whether an autonomous weapon system's 'decision' to take human life might have the additional objective to humiliate and degrade the person concerned. This scenario is unlikely because the artificial intelligence computer software that controls autonomous weapons is designed to carry out specific missions and respond, or decline to respond, to particular circumstances. Modern states with the economic resources and technical sophistication to develop and field autonomous weapon systems will have little incentive to 'design in' base artificial emotions such as the desire to humiliate and degrade human targets. Furthermore, the deployment and use of any such

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150 (holding that incommunicado detention may constitute an act against human dignity and the forced disappearance of Efraín Bámaca Velásquez and his confinement in a clandestine prison constituted cruel and inhuman treatment that damaged his physical and moral integrity as well as his dignity). In addition, the state violated the right to humane treatment of the victim's next of kin. *Ibid,* and para. 165. Separately, the InterAmerican Court of Human Rights concluded that Guatemala violated Bámaca Velásquez' right to life. *Ibid*, para. 175.

[417] In *Öcalan v. Turkey*, the European Court of Human Rights held that the fear and uncertainty caused by a death sentence imposed after an unfair trial could constitute inhuman and degrading treatment. Judgment, Application No. 46221/99, 12 May 2005, paras. 168 – 169. The same is true for prolonged periods of solitary confinement. 'Complete sensory isolation coupled with total social isolation can destroy the personality and constitutes a form of inhuman treatment that cannot be justified by the requirements of security or any other reason. *Ibid,* para. 191.

[418] *Akinpar & Altun v. Turkey,* Judgment, 27 February 2007, Application No. 56760/00, para. 82. In the same case, a Chamber of the European Court of Human Rights held that a violation of article 3 of the ECHR had occurred when the father of one of the deceased 'was presented with the mutilated body of his son,' an insurgent who was killed by Turkish security forces. In this case, however, *the surviving father* was a victim of degrading treatment, not the deceased. *Ibid*, para. 84. Also see Judgment, *Khashiyev and Akayeva v. Russia,* Application No. 57942/00 and 57945/00, 24 February 2005, paras. 172 and 179 - 180 (holding that the Court could not conclude beyond a reasonable doubt that the applicants' relatives, *before being killed*, had been subject to torture and/or inhuman or degrading treatment).

artificial intelligence in a weapon would violate international humanitarian law's prohibition of the infliction of unnecessary suffering.[419]

The International Criminal Court ('ICC') generally has followed the jurisprudence of the ad-hoc international criminal tribunals by separating the protection of the right to life from the right to dignity. According to the *Katanga* pre-trial chamber, the war crime of 'committing outrages upon personal dignity, in particular humiliating and degrading treatment' requires that the perpetrator, by action or omission, caused the humiliation, degradation, or violation of the personal dignity of individuals: (i) who are aligned or whose allegiance is to a party to the conflict who is adverse or hostile to the perpetrator; and (ii) who are in the hands of the party to the conflict to which the perpetrator belongs.'[420] This definition of the crime does not include actions that cause the death of the victim. Moreover, criteria (i) and (ii) suggest that this offence refers to mistreatment of prisoners-of-war or other detainees rather than the killing of persons.

However, one of the basic legal texts of the ICC is the 'Elements of Crimes.' According to article 9 (1) of the Rome Statute, the Elements of Crimes shall assist the tribunal in the interpretation and application of the articles that contain the crimes falling within the court's jurisdiction. The first element of the war crime of outrages upon personal dignity requires that the 'perpetrator humiliated, degraded or otherwise violated the dignity of one or

[419] According to customary International Humanitarian Law (as well as treaty law), the 'use of means and methods of warfare which are of a nature to cause superfluous injury or unnecessary suffering is prohibited. J Henckaerts & L Doswald-Beck, *ICRC Customary International Humanitarian Law* (Cambridge University Press, 2005), Rule 70, <http://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter20_rule70>; Art. 35, API.
[420] *The Prosecutor v. Germain Katanga and Mathieu Ngudjolo Chui*, Decision on the Confirmation of Charges, ICC-01/04-01/07, 30 September 2008, para. 368 (emphasis added).

more persons.'[421] It is understood that the victim need not personally be aware of the existence of the humiliation or degradation or other violation. The first element also contains a footnote: '[f]or this crime, "persons" can include dead persons. This element takes into account relevant aspects of the cultural background of the victim.'[422] Thus, in the Katanga proceedings, the pre-trial chamber observed that 'burying corpses in latrine pits' constituted an outrage upon personal dignity.[423]

Although the ICC case-law extends the scope of 'outrages upon personal dignity' to the mistreatment of dead bodies, this finding – consistent with the jurisprudence from Kvoćka et. al. above - does not include the *killing* of human beings as a form of the offence. Furthermore, the elements and case-law from the international courts concerning this offence speaks to the *kinds of mistreatment* inflicted upon the victim as opposed to whether a human being or a machine perpetrated the abuse.[424] Consequently, overall this body of legal doctrine

[421] 'Elements of Crimes', International Criminal Court, 2011, <http://www.icc-cpi.int/NR/rdonlyres/336923D8-A6AD-40EC-AD7B-45BF9DE73D56/0/ElementsOfCrimesEng.pdf>.

[422] *Ibid*. Justice Barak takes a similar view, arguing that the body of a deceased and her memory are entitled to human dignity. A Barak, *Human Dignity: The Constitutional Value and the Consitutional Right*, D Kayros (trans.) (Cambridge University Press, 2015), p. 239.

[423] The Prosecutor v. Germain Katanga and Mathieu Ngudjolo Chui, Decision on the Confirmation of Charges, para. 371. See art. 34 of API, which requires state parties to treat the remains of deceased with respect and provide access to the relatives of the deceased, where circumstances permit, to the graves of persons who died during combat or due to conditions of occupation. The Supreme Court of Israel has observed that 'human dignity is the dignity of the living and dignity of the dead.' *President A Barak, Physicians for Human Rights v. IDF Commander*, Judgement, HCJ 4764/04 [2004] IsrL 200, para. 27. Similarly, the *Report of the Commission of Inquiry for the Democratic People's Republic of Korea* describe how bodies of political prisoners who died in labor camps were 'disposed of with no respect for cultural tradition and the dignity of the dead.' A/HRC/25/CRP.1, 7 February 2014, <http://www.ohchr.org/EN/HRBodies/HRC/CoIDPRK/Pages/CommissionInquiryonHRinDPRK.aspx>.

[424] For example, according to the Katanga pre-trial chamber: 'the following acts constitute outrages upon personal dignity: compelling victims to dance naked on a table using detainees as human shields or trench diggers; forcing detainees to relieve bodily functions in their clothing; imposing conditions of constant fear of being subjected to physical, mental, or sexual violence on detainees; forced incest, burying corpses in latrine pits; and leaving infants without care after killing their guardians.' *Ibid.* Similarly, Rule 113 of the ICRC Customary International Humanitarian Law Study provides: '[e]ach party to the conflict must take all possible measures to prevent the dead from being despoiled. Mutilation of dead bodies is prohibited.' <https://www.icrc.org/customary-ihl/eng/docs/v1_rul_rule113>.

does not support Professor Asaro's argument that 'decisions' by an autonomous weapon system to kill humans are per se a violation of human dignity.

Finally, a contradiction exists in Asaro's concerns that the fixed algorithms in artificial intelligence systems that guide robotic weapons preclude moral growth.[425] Although technically that statement may be correct, it proves little because the nature of many human beings, unfortunately, also precludes moral growth.[426] Immanual Kant, for example, described the unpredictable aspects of human morality:

> 'If it were possible to credit human beings with even a limited will of innate and unvarying goodness, we could certainly predict a generally improvement of mankind, for this would involve events which man could himself control. But if man's natural endowments consist of a mixture of evil and goodness in unknown proportions, no-one can tell what effects he should expect from his own actions.'[427]

Hence, Kant cautioned against high expectations of progressive moral improvements in human beings,[428] and he was not alone.[429] Reflecting upon the Holocaust, Primo Levi concluded that 'the true crime, the collective general crime of almost all Germans of that time

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[425] As an example of 'moral growth,' Cicero believed that self-control is the ultimate virtue of man: '[t]o overcome emotion, restrain anger, be temperate in victory, not just lift up a prostrate foe, but enhance his former dignitas – the man who has done this I do not compare with the greatest men, but I judge most like God.' M. Tulli Ciceronis, *Pro M. Marcello Oratio*, quoted in H Gotoff, 'Cicero's Caesarian Orations,' in J May (ed.) *'Brill's Companion to Cicero: Oratory and Rhetoric,* (Leiden: Brill, 2002), p. 228.

[426] George Kateb observes that human identity rests on unique characteristics which make human beings capable of commendable works and ways of being as well as misdeeds of every kind and degree. *Human Dignity* (Cambridge: Harvard University Press, 2011), p. 18.

[427] I Kant, 'The Contest for Faculties', in *Kant's Political Writings*, H Reis (ed.) (Cambridge: Cambridge University Press, 1970), pp. 181. Observing the behavior of his contemporaries, Kant noted that 'the main difference between the savage nations of Europe and those of America is that while some American tribes have been entirely eaten up by their enemies, the Europeans know how to make better use of those they have defeated than merely by making a meal of them. They would rather use them to increase the number of their own subjects, thereby augmenting their stock of instruments for conducting even more expensive wars.' I Kant, 'Perpetual Peace,' in Hans Reis (ed.) *Kant's Political Writings* (Cambridge, Cambridge University Press, 1970), p. 103.

[428] *Ibid,* 188; cf p.184 where Kant also predicted that 'the human race will … henceforth progressively improve without any more total reversals.'

[429] In his history of the North American Indian wars during the late eighteenth century, U.S. President Theodore Roosevelt observed how 'the iron times brought out all that was best and all that was basest in the human breast.' *The Winning of the West: Part II, In the Current of the Revolution* (New York: The Current Literature Publishing Co., 1905), p. 289.

was that of lacking the courage to speak.'[430] Hannah Arendt observed that perfectly normal persons may be completely incapable of distinguishing right from wrong, or skilled in colouring wrongful behaviour in benign terms.[431] According to Ervin Staub, '[e]vil that arises out of ordinary thinking and is committed by ordinary people is the norm, not the exception.'[432] This perversion of ideas of 'normal' human behaviour is especially trenchant when we consider the survival instincts of soldiers and armies: '[we] are filled with a terrible hate. Our actions are born of a terrible fear, the will to survive. Some of the Germans were getting out of their trenches, their hands up in surrender; others were running back to their reserve trenches. To us they had to be killed. Kill or be killed. You are not normal.'[433]

More recently, members of the so-called Islamic State have executed hundreds of captured Iraqi and Syrian soldiers and Shia prison inmates, kidnapped and forced thousands of Yezidi women and girls into sexual slavery and expelled Syrian Kurdish communities from

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[430] Levi, The Drowned and the Saved, p. 182. For example, before he was tried, convicted and hung at Nuremburg, Oswald Pohl, who directed the collection of valuables from Jews taken to concentration camps, including the production of gold bars made from melted gold teeth, explained why his conscience was clear: '[w]hat could I do? I never ordered these things to be taken. It was not my responsibility. … All I did was follow orders.' L Goldensohn, *Nuremburg Interviews*, R Gellately (ed.) (New York: Vintage Books, 2005), pp. 402 – 405.

[431] H Arendt, *Eichmann in Jerusalem: A Report on the Banality of Evil* (New York: Penguin Books, 1977), pp. 26 and 69. For example, Otto Ohlendorf commanded Einsatzgruppe D on the Eastern front during the Second World War and oversaw the execution of approximately 90,000 Jews. Subsequently, Ohlendorf attempted to describe his participation in these events in honourable terms: '[t]hose Jews stood up, were lined up and shot in true military fashion. I saw to it that no atrocities or brutalities occurred.' Goldensohn, Nuremburg Interviews, p. 390.

[432] C Browning, *Ordinary Men: Reserve Police Battalion 101 and the Final Solution in Poland* (New York: Harper Collins Publishers, 1992), p. 167, citing E Staub, *The Roots of Evil: The Origins of Genocide and Other Group Violence* (Cambridge: Cambridge University Press), p. 126. Daniel Goldhagen takes a more optimistic view of human nature. 'Something profound must happen to people before they become willing perpetrators of enormous mass slaughter.' *Hitler's Willing Executioners: Ordinary Germans and the Holocaust* (London: Abacus, 1997), p. 414. For Goldhagen, the profound event of the Nazi German revolution 'was primarily the transformation of consciousness – the inculcation in the Germans of a new ethos.' *Ibid*, 456. During his closing speech at the trial of German Major War Criminals, Sir Hartley Shawcross described German as 'a nation trained in brutality.' Proceedings of the International Military Tribunal Sitting at Nuremberg, Germany, Part 19, 26 July 1946, p. 410. If Goldhagen's perspective on history and human nature is correct, this suggests that artificial intelligence, if programmed 'correctly,' has the potential to be more consistently moral and lawful than the pliable human consciousness.

[433] M Middlebrook, *The First Day on the Somme: 1 July 1916* (London: Penguin Books, 1984), p.184.

their homes.[434] '[O]bviously, being inhuman is also quite human ….'[435] Thus, it is not surprising that, in 2011, Jacob Kellenberger, then President of the International Committee of the Red Cross, observed that a 'robot could be programmed to behave more ethically and far more cautiously on the battlefield than a human being.'[436]

B. Autonomous Weapon Systems, Human Dignity and the Living

Up to now I have demonstrated that it is incorrect to argue that the otherwise lawful exercise of lethal force by an autonomous weapon system violates the human dignity of the person killed. However, the analysis should not stop there. As science advances, the principle of human dignity compels us to consider the scope and meaning of our humanity, particularly with respect to transformations of this humanity brought about by technological change.[437] 'The question is really whether we foresee that human kind will cause less harm to itself and coming generations by relying on machines or relying on humans and their judgment. This is where we need to converge our opinions further.'[438] Accordingly, this

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[434] 'Iraq: Islamic State Executions in Tikrit,' Human Rights Watch, 2 September 2014, <http://www.hrw.org/news/2014/09/02/iraq-islamic-state-executions-tikrit>; 'Iraq: ISIS Executed Hundreds of Prison Inmates,' Human Rights Watch, 30 October 2014, <http://www.hrw.org/news/2014/10/30/iraq-isis-executed-hundreds-prison-inmates>; 'Rule of Terror: Living Under ISIS in Syria', Report of the Independent International Commission of Inquiry on the Syrian Arab Republic, 14 November 2014, paras. 14, 28 – 29 and 53 – 57, <http://www.ohchr.org/Documents/HRBodies/HRCouncil/CoISyria/HRC_CRP_ISIS_14Nov2014.pdf>.

[435] Kateb, Human Dignity, p. 114.

[436] 'Keynote Address,' *International Humanitarian Law and New Weapon Technologies,* 34th Round Table on Current Issues of International Humanitarian Law, San Remo, 8 September 2011, <https://www.icrc.org/eng/resources/documents/statement/new-weapon-technologies-statement-2011-09-08.htm>. 'Only humans can be inhuman and only human beings can deliberately choose not to comply with the rules they were instructed to follow.' Sassóli, 'Autonomous Weapons and International Humanitarian Law,' 310.

[437] C Byk, 'Is Human Dignity a Useless Concept? Legal Perspectives,' in *The Cambridge Handbook of Human Dignity: Interdisciplinary Perspectives,* M Düwell et. al. (eds.) (Cambridge University Press, 2014), p. 364.

[438] Concluding Remarks of Finland, 2015 Meeting of Experts on Lethal Autonomous Weapon Systems, Convention on Certain Conventional Weapons, 17 April 2015, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/06EE5826D66D6B58C1257E2D002C3ED4/$file/2015_LAWS_MX_Finland_W.A.pdf>.

section explores the impact of employment of autonomous weapon systems on living members of society.

First, humans, via experience, also develop instincts (our 'sixth sense') that often assist them to navigate difficult situations where strict rules may not suffice.[439] This 'ultimate test of experience' provides an essential contribution to the human realm of ideas.[440] Furthermore the development of 'good' human judgment often requires divergence from absolute values to find solutions to value-based problems.[441] Instead of using our ability to deliberate about matters of importance, however, the employment of autonomous technology compels humans to transfer this power to a machine.[442] It is wholly inconsistent with human dignity to propose that these human attributes, knowledge and experience be alienable or transferable to artificial intelligence software for decisions implicating important values and responsibilities.[443] There are limits to a state's power to serve its interests through science at the expense of the dignity and personality of human beings.[444]

Logically, the use of autonomous weapons involves the delegation of responsibility from humans to machines for determinations about the use of lethal force. It is hard to identify a decision more momentous than the determination to take human life. When a reasoned and complex decision to use deadly force shifts from the political and military

[439] For example, human soldiers can enter an environment and 'get a feeling about it' that often is correct. Machines cannot do that. Author interview with Allen Borelli, former Intelligence Specialist, U.S. Army, The Hague, 15 July 2015.
[440] H Lauterpacht, *An International Bill of the Rights of Man* (1945) (Oxford University Press, 2013), p. 39.
[441] H Kelsen, 'What Is Justice?' in *What Is Justice: Justice, Law and Politics in the Mirror of Science: Collected Essays by Hans Kelsen* (Berkeley: University of California, 1957), p. 10.
[442] Author Interview with Gianfranco Visentin, Head, Automation and Robotics Section, European Space Research and Technology Centre, European Space Agency, Noordwijk, The Netherlands, 4 November 2013.
[443] R Dworkin, Justice for Hedgehogs (Cambridge, Massachusetts: Harvard University Press, 2011), p. 212. The protection of human dignity, for example, requires states to look 'to the evolving standards of decency that mark the progress of a maturing society.' *Hall v. Florida*, 572 U.S. …. (2014), 5 (citing *Trop v. Dulles*, 356 U.S. 86 (1958), 101, concerning the scope of 'cruel and unusual punishment').
[444] *Skinner v. Oklahoma ex rel. Williamson*, 316 U.S. 535 (1942), 546, Justice Jackson Concurring.

officials in whose name it is done to a computer, the individuals 'cease to be moral agents: people who take a decision and assume responsibility for it.'[445] Therefore, the transfer of this important role and responsibility for the use of lethal force from humans to machines reduces personal autonomy and therefore, violates human dignity. It is also true that, in some circumstances, a requirement to leave such decisions with more vulnerable human soldiers may result in increased loss of life. Nevertheless, 'the right to life properly understood is the right to a *dignified* life.'[446] Thus, if dignity is to be a meaningful right, it 'must in some cases be able to trump other rights, including the right to life.'[447]

One obvious response to my argument is that it ignores the natural tendencies of states and militaries to further their own interests,[448] in particular their security needs.[449] Writing in 1955 about the legality of the United States' testing of the Hydrogen Bomb, Professor McDougal argued that 'proponents of the dignity of man cannot rationally expect, by writing self-inhibiting meanings into the concepts of "military necessity," "legitimate objectives," and "humanitarianism," that 'totalitarians' would respect these limitations.'[450] It is true, consistent with McDougal's point, that today large numbers of states are developing autonomous weapon systems. It is equally true that there is a certain arrogance in the

[445] C Heyns, 'Comments to Informal Meeting of Experts on Lethal Autonomous Weapons: Convention on Conventional Weapons,' 16 April 2015, p. 6, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/1869331AFF45728BC1257E2D0050EFE0/$file/2015_LAWS_MX_Heyns_Transcript.pdf>.
[446] *Ibid*, 9.
[447] C Heyns, 'Autonomous Weapon Systems: Living a Dignified Life and Dying a Dignified Death,' in Bhuta, et. al., Autonomous Weapon Systems – Law, Ethics, Policy, p. 69.
[448] J Goldsmith & E Posner, *The Limits of International Law* (Oxford University Press, 2005), pp. 3, 26, 169 and 225.
[449] Historically and to the present, considerations of self-defence and self-preservation play an important role in the rule-making processes of an 'imperfectly organized world community.' M McDougal and N Schlei, 'The Hydrogen Bomb Tests in Perspective: Lawful Measures for Security,' 64 *Yale Law Journal* (1955) nte 145.
[450] *Ibid*, p. 690. Historically, it is the commander's task to bring her enemies to battle on her own terms and force them to fight by her rules not theirs. J Keegan, The Face of Battle, p. 23.

suggestion that soldiers and law enforcement officers should not have weapons available that might reduce their exposure to danger.[451]

However, '… numbers [and security] do not always add up to wisdom; ….'[452] It is folly to destroy human dignity and freedom in the pursuit of strategic advantages or stability. Both dignity and freedom encompass 'the objective of keeping alive the creative, choosing, and purposive side of man's nature.'[453] The responsibility implicit in personal autonomy and choice often generates anxiety and insecurity in human beings.[454] But unless we choose to degrade our human dignity and freedom, opportunity for these processes must be kept alive.[455]

Human dignity has a 'perplexing capacity' to pull in several directions.[456] For example, a tension exists between the necessity to conserve our powers of thought and reason (our personal autonomy) as part of our human dignity, and the encouragement of the uniquely human capacity for 'great achievements' as another manifestation our dignity.[457] The development of autonomous technologies for military and civilian use represents a dramatic leap in computer science, engineering and robotics. Restrictions on the use of this technology, however, can discourage further research, the realization of more 'great

[451] I am grateful to Geoffrey Corn for this insight.
[452] *Prosecutor v. Anto Furundija* Judgment, Declaration of Judge Shahabuddeen, IT-95-17/1-A, Appeals Chamber, 21 July 2000, para. 264.
[453] L Fuller, 'Freedom – A Suggested Analysis,' 68 *Harvard L. Rev*. (June 1955), 1305, 1311. There is thus, a chain of association that connects the concepts of dignity and freedom, the ideas of choice and agency, and the ability to maintain and express personal identity. M Ignatieff, 'Response to Commentators,' in *Human Rights as Politics and Idolatry* (Princeton University Press, 2001), pp. 165 – 166.
[454] G Colombo, *On Rules*, Amsterdam University Press, 2015, p. 130.
[455] *Ibid.*
[456] D Feldman, 'Human Dignity As a Legal Value: Part 2,' *Public Law* (2000), 3. The concept of freedom within society possesses similar contradictions, as some form of order (i.e. constraint) is often essential to freedom. L. Fuller, 'Means and Ends,' in Kenneth Winston (ed.) *The Principles of Social Order: Selected Essays of Lon L. Fuller*, (Durham: Duke University Press, 1981), p. 59.
[457] George Kateb argues that great achievements, which may derive from individuals or collectives, 'are the central manifestation of the partway separation of the human species from nature and thus help to substantiate the special kind of human uniqueness and hence human dignity.' Human Dignity, pp. 115 and 123 – 131.

achievements' and, consequently, humankind's advancement towards the full realisation of her abilities.[458] Nevertheless, this risk to 'human potentiality,'[459] is limited by the dual use nature of autonomous technologies. The vast number of potential civilian applications of this technology ensures continued challenges and accomplishments for scientists and other professionals.[460]

One also might argue that humans already delegate important responsibilities for certain tasks to machines with autonomous functions. For example, many commercial airplanes operate extensively on 'autopilot' where the pilot does not physically control the plane. Autonomously driven automobiles currently receive testing in the United States. Developers of the so-called 'Google Self-Driving Car' expect that, eventually, it will be self-sufficient without human-machine interdependence.[461] Recently, the unmanned New Horizons spacecraft flew autonomously for several hours, at 31,000 miles per hour, 3 billion miles away from Earth, pursuant to a computer program.[462] There is a major qualitative

[458] Writing in 1945 about the concept of natural rights, Professor Lauterpacht emphasised the importance of the state as the 'absolute condition of the civilised existence of man and of his *progression toward the full realisation of his faculties*.' An International Bill of the Rights of Man, p. 16 (emphasis added).

[459] Human potentiality is an important human trait. Kateb, p. 124.

[460] For example, the United States' National Air and Space Agency ('NASA') sponsors an annual 'Robotic Mining Competition' to encourage the design and development of mining robots that can traverse simulated Martian terrain. Teams fielding robots that demonstrate the most autonomy receive a special award. 'RMC – About the Competition,' 17 May 2015, <http://www.nasa.gov/offices/education/centers/kennedy/technology/nasarmc/about>. Furthermore, in the future, swarms of miniature autonomous submarines could one day assist in underwater search operations. E. Ackerman, 'World's Largest Swarm of Miniature Robots', IEEE Spectrum, 5 May 2015, <http://spectrum.ieee.org/automaton/robotics/artificial-intelligence/worlds-largest-swarm-of-miniature-robot-submarines>. Autonomous ground and air vehicles one day may join humans and dogs in emergency search and rescue teams. E Ackerman, 'Emergency Response Teams Combine Mobile Robots, Drones and Dogs', IEEE Spectrum, 6 May 2014, <http://spectrum.ieee.org/automaton/robotics/military-robots/emergency-response-teams-combine-mobile-robots-drones-and-dogs>.

[461] Electronic mail message from G Santhanam, Senior Engineer at Google X, 31 May 2015. Google employees believe that humans are unreliable partners for a driver-less car. D Bohn, 'Astro Teller: Google X "Encouraged Too Much Attention' for Project Glass', The Verge, 17 March 2015, <http://www.theverge.com/2015/3/17/8235277/sxsw-astro-teller-google-x>.

[462] J Achenbach, 'After a Wait, Spacecraft Confirms That It Survived Its Close Pass of Pluto,' The Washington Post, 14 July 2015, < http://www.washingtonpost.com/national/health-science/new-horizons-finally-makes-it-to-

difference, however, between autonomous technology programmed to comply with 'mechanical' rules that under normal circumstances require little human thought -- such as altitude levels for airplane autopilots or speed limits for autonomous cars or receiving scientific data – and autonomous technology that is 'programmed ' to apply complex and sometimes contradictory principles and values in fluid circumstances, resulting in the destruction of life and infrastructure.

It is also obvious that in certain difficult and complex situations, many human beings prefer to delegate decision-making responsibilities to other persons or to computers:

> 'The yearning that lies in men for clear vision, and a doubt-free knowledge of right and wrong, cannot be suppressed, though it may be assuaged for a time by the promise of early fulfilment. But for the most part, deep perplexities seem to be the price of awareness of our situation; and even when the perplexities are endured, judgment still remains tortured by uncertainty. The temptation is strong to run to easier courses which dispense with the need for understanding, which keep the task of adjusting human claims from men's conscious decision, submitting it with resignation to some blind impersonal force ….'[463]

For example, it is trite to observe that war often generates powerful and lasting emotions in its protagonists and victims.[464] Persons who suffer trauma – such as soldiers compelled to make decisions concerning life and death in the battlespace – often 'try, usually in vain and at great expense of energy, to banish what has happened to them from their

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pluto-sees-craters-and-great-mounds/2015/07/14/9bcb0f04-2a1f-11e5-bd33-395c05608059_story.html?wpisrc=nl_evening&wpmm=1>.

[463] J Stone, *The Province and Function of Law* (Sydney: Associated General Publications, 1946), p. 782. This tendency towards indecision is prevalent particularly during armed conflict as 'the decision-makers of the world community have never been able to become very precise about the "legitimate objectives" of violence or, hence, about the degree of destruction permissible under "military necessity."' McDougal & Schlei, 'The Hydrogen Bomb Tests in Perspective: Lawful Measures for Security, 689.

[464] Writing in his World War I diary of life in the trenches of France, a British corporal recorded that he had 'a slight fit about 12 o'clock (fists clenched, felt a desire to kill someone, and collapsed) Rested all day after.' WWI War Diary Transcription of Acting Cpl. James Strangeway, S8922. No3 Section, 12th Platoon 'C' Co. 2nd Battn. Rifle Brigade, <https://www.forces-war-records.co.uk/library/document/1980/wwi-war-diary-transcription-of-acting-cpl-james-strangeway-s8922-no3-section-12th-platoon-c-co-2nd-battn-rifle-brigade/page-8/?searchCategory=war+diary&searchTag=wwi&searchPage=1&filterPagesOnSearchQuery=False&filterPagesOnSearchQueryExact=True>.

minds.'[465] The use of autonomous weapon systems has the potential to reduce the exposure of soldiers to violence and the responsibility to make decisions when all options are bad, helping to prevent 'the anguish of memory,'[466] and the bitter and violent excesses that often result from such trauma.[467] During armed conflict, this technological advance could reduce the suffering and loss of dignity to combatants and civilians alike.[468]

As we have seen above, however, human dignity is more than the absence of suffering; it also speaks to the realisation and fulfillment of the human condition. Reflection about our actions is a significant feature of human life.[469] 'We think about which acts to perform and when to perform them.'[470] Absent extraordinary circumstances such as the 'capture or kill' scenario discussed in chapter six), the long-term cost of delegating important decisions concerning the use of lethal force to autonomous weapon systems is not worth the price. The transfer of the responsibility to think and reason about important events to machines is an unacceptable surrender of human dignity that devalues the human person.[471]

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[465] W Sebald, *On the Natural History of Destruction* (London: Hamish Hamilton, 2003), p. 153. Primo Levi observed that it "… is easier to deny entry to a memory than to free oneself from it after it has been recorded." The Drowned and the Saved, p. 31.

[466] *Ibid*.

[467] For example, during the Second World War and in Vietnam, '[s]oldiers who were inured to violence, numbed to the taking of human life, embittered over their own casualties and frustrated over the tenacity of an insidious and seemingly inhuman enemy sometimes exploded and at other times grimly resolved to have their revenge at the first opportunity.' Browning, Ordinary Men, p. 160. Following a battle in June 1862 during the American civil war, a Union soldier reflected on the dead and wounded that he saw on the battlefield: '[m]en get hardened seeing so much misery.' A Davenport, Letter in *Soldiers' Letters: Camp, Battlefield and Prison*, L Post (ed.) (New York: Bunce & Huntington, 1865), p. 90.

[468] However, it is also possible that the traumatic memories of warfare play a role in deterring additional armed conflicts. Surviving Japanese veterans of World War II argue that it is their 'generation's bitter experiences, and resulting aversion to war, that have kept Japan firmly on a pacifist path since 1945.' M Fackler, 'Japanese Ace in World War II Is Pacifist Voice,' The New York Times, 4 April 2015, pp. A1 and A5.

[469] Frith, 'The Role of Metacognition in Human Social Interactions.

[470] *Ibid.*

[471] *Ibid.*

[471] George Kateb argues that human beings can never forfeit their dignity. Human Dignity, p. 13. Dan Zupan recognizes, with a confession of some philosophical discomfort, the possibility that, in some complex circumstances, such as on the battlefield, it may be justifiable for human beings to suspend their private judgments of other human beings. However, rather than a surrender of 'moral autonomy,' such decisions are a demonstration of 'moral humility,' i.e. an affirmation of human dignity because they acknowledge the possibility

Over time, it disables the human autonomy and abilities to address difficult problems and exercise rights, which is the antithesis of a democratic society. International law's foundational requirement for the protection of human dignity demands that limits be set to this transfer of responsibility from humans to lethal autonomous weapon systems – even if these restraints emanate from 'principled paternalism or legal moralism.'[472]

As mentioned at the start of this chapter, Asaro argues that the rights and dignity of humans will be disrespected when machines take their lives because computers cannot 'reason' the way humans can about such important decisions. This argument actually misses a finer point. Although human reasoning is often malevolent and immoral and one day artificial intelligence may equal or surpass the capacity of humans, the increasing speed of autonomous weapon systems will lead to a de facto absence of 'reasons' for lethal force. In a practical and strictly legal sense, if high-speed algorithms make the 'right' decisions under the law, no harm is done. The great speed, however, will make it impossible for humans to comprehend the development of 'bad' 'reasoning' by autonomous machines as it occurs and to intervene to stop the lethal exercise of that reasoning. Even worse, although in retrospect humans may review electronic records and data to observe the basis for a machine's 'decision,' the meaning of that 'decision' is lost. The limited information that it conveys ceases 'to suggest ideas, or suggest[s] only a small portion' of the concepts and beliefs originally employed to shape the decision.[473] That loss of opportunity for human thought,

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that judgments may be mistaken. 'A Presumption of the Moral Equality of Combatants,' in D Rodin & H Shue (eds.) *Just and Unjust Warriors: The Moral and Legal Status of Soldiers* (Oxford University Press, 2008), pp. 223 – 224.

[472] D Feldman, 'Human Dignity As a Legal Value: Part 2,' 9.

[473] J Mill, 'On the Liberty of Thought and Discussion,' in *The Basic Writings of John Stuart Mill* (New York: The Modern Library, 2002), pp. 36 – 40 (describing the dangers of accepting what one is told as 'truth' and the absence of free discussion). Similarly, computational models leave out a great deal of information. 'What we

when it arrives, will diminish the dignity of persons (be they operators of autonomous weapon systems or surviving victims of the use of force) that underlies international law and the function of law itself.

III. The Function of Law, Autonomous Weapon Systems and Human Dignity

As explained in the introductory chapter, the fact that the use of weapons must occur within frameworks of legal norms[474] reflects the importance of law in society. But what is the function of law? In addition to discussions of specific international legal rules in subsequent chapters, a more foundational review is necessary of the function and application of law and reason and their relevance to autonomous weapon systems.

There is no single, accepted definition of the function of law. Lon Fuller contended that the function of law was 'to subject human conduct to the governance of rules.'[475] John Finnis observes, more precisely, that 'law brings definition, specificity, clarity and thus predictability into human interactions, ….'[476] Others view the law as an institution dedicated to the protection of the safety, order and moral welfare of States.[477] Lord Wright, referring to the Martens Clause[478] in international humanitarian law, opined, rather circularly, that: '… the

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are really doing, most or all of the time with computations, is *approximating* the world.' P Asaro, 'Determinism, Machine Agency, and Responsibility,' 2 *Politica & Societa*, 266, 273 and 275 (emphasis added).

[474] A 'norm' is the meaning of an act by which certain behavior is sanctioned, commanded, permitted, or authorized. H Kelsen, *Pure Theory of Law*, Max Knight (trans.) (Berkeley: University of California, 1978), pp. 5-6.

[475] L Fuller, *The Morality of Law* (New Haven: Yale University Press, 1964), p. 106. In this context, Professor Kelsen saw law as 'a coercive order.' Pure Theory of Law, pp. 38 and 62.

[476] J Finnis, *Natural Law and Natural Rights* (Oxford: Clarendon Press, 1980), p. 268.

[477] *Shaw v. Director of Public Prosecutions*, Opinion of Viscount Simonds House of Lords (4 May 1961), 7.

[478] This provision is a statement in the preamble to the 1899 Convention with Respect to the Laws and Customs of War on Land: '[u]ntil a more complete code of the laws of war is issued, the High Contracting Parties think it right to declare that in cases not included in the Regulations adopted by them, populations and belligerents remain under the protection and empire of the principles of international law, as the result from the usages established between civilized nations, from the laws of humanity, and the requirements of the public conscience.'

object of all law is to secure as far as possible in the mutual relations of the human beings concerned the rule of law and of justice and humanity.'[479]

Law and its function, however, need not always be rule and state-centric.[480] While some laws validly forbid or negate action, the law and must be dynamic and constructive.[481] Amartya Sen, for example, is concerned less about the development of positive rules to govern institutions and persons and more about whether law actually realizes justice. For Sen, justice (which should inform the making and execution of laws) is about preventing manifestly severe injustice rather than the development of ostensibly perfect institutions and rules to guide them:[482]

> '… justice cannot be indifferent to the lives that people can actually live. The importance of human lives, experiences and realizations cannot be supplanted by information about institutions that exist and the rules that operate. Institutions and rules are, of course, very important in influencing what happens, and they are part and parcel of the actual world as well, but the realized actuality goes well beyond the organizational picture, and that includes the lives that people manage – or do not manage to live.'[483]

Between the two opposite perspectives of law as a rigid instrument for limiting human autonomy and a spontaneous force for the righting of wrongs lies a common ground for the promotion of social control through law.[484] Reason, as well as the rulebook, is the soul of

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[479] Lord Wright, Foreword, 15 *Digest of Laws and Cases, Law Reports of Trials of War Criminals*, p. xi (United Nations War Crimes Commission, 1948), <http://www.loc.gov/rr/frd/Military_Law/pdf/Law-Reports_Vol-15.pdf>.

[480] This conservative perspective belies the fact that law can be empowering and creative and often the law makes possible the achievement of ends that could not have been otherwise achieved in human societies. C Clark, 'The Function of Law in a Democratic Society,' 9 *University of Chicago Law Review* (1942), 399; J Raz, 'On the Functions of Law,' in A Simpson (ed.) *Oxford Essays in Jurisprudence*, 2nd ed. (Oxford: Clarendon Press, 1973), p. 292.

[481] Clark, 'The Function of Law in a Democratic Society,' 393 and 399.

[482] A Sen, *The Idea of Justice* (London: Penguin Books, 2010), pp. 20 – 21. Law and justice are two different concepts. 'Justice' addresses competing theories of moral and political rights and acceptable levels of equality and inequality. R Dworkin, *Law's Empire* (Oxford: Hart Publishing, 1998), p. 97; H Hart, *The Concept of Law*, 2nd ed. (Oxford University Press, 1997), pp. 159 – 167; Sen, pp. xi, 5 – 7, 18 – 21 and 400 – 401.

[483] A Sen, The Idea of Justice, p. 18.

[484] J Stone, *The Province and Function of Law* (Sydney: Associated General Publications, 1946), p. 782.

law.[485] This point is particularly important because, in certain situations, persons rightfully may choose to apply a law in an uncommon way, or not to apply the law at all, in order to protect a greater value.

Thus, rather than adopting a strictly positivist approach to the function of law, this dissertation adopts a more flexible perspective expressed by a jurist during the last century: '… it is the objective of law to carry out the *adjustment of rights* between [persons] and between individual and sovereign according to the ideological purposes of the state.'[486] This broad view permits a more logical and inclusive analysis of the use of autonomous weapon systems by multiple societies and cultures with different expectations and understandings of law.

In addition to the domain of law, the ability and opportunity to reason and choose – to develop and exercise one's personal autonomy --) is a significant aspect of human life.[487] The freedom of thought (and speech) 'is the matrix, the indispensable condition, of nearly every other form of freedom.'[488] In a moral sense, if we do not think, we are not fully alive.[489] As autonomous technology develops, however, the final 'adjustments' concerning the exercise of force between machines, persons, non-state actors and states become the realm of software. Effectively, we transfer our own autonomy (i.e. a portion of our moral worth and human dignity) to the weapon system.

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[485] R Traynor, 'The Limits of Judicial Creativity,' 29 *Hastings Law Journal* (1978) 1033.
[486] Clark, 'The Function of Law in a Democratic Society,' 400 (emphasis added).
[487] Sen, The Idea of Justice, p. 18. The act of reasoning helps us to 'disalienate' ourselves from an often confusing and unfamiliar world. H Arendt, *The Life of the Mind* (New York: Harcourt, 1978), pp. 99 – 100.
[488] *Palko v. Connecticut*, 302 U.S. 319 (1937), 326 – 327. The U.S. Supreme Court overruled Palko (but left this reasoning intact) in *Benton v. Maryland*, 395 U.S. 784 (1969).
[489] Arendt, The Life of the Mind, p. 191.

This de facto delegation of responsibility for compliance with the law to computers signals a seismic shift in how we view law and its function in society. Typically, in addition to making laws, of course, human beings also apply them.[490] Social orders guided by law, for example, are orders of human behaviour.[491] In addition to normative functions, laws have many indirect social effects such as strengthening respect for moral values, as well as creating a feeling of participation in the affairs of a community.[492] Thus, ideally, in democratic societies, the law does not impose its will on individuals but serves them in realizing their own will.[493] However, this important, indirect function of law loses its strength the more humans defer their legal decisions to autonomous machines.

As autonomous weapon systems operate at blinding speed, concepts such as 'appropriate levels of human judgment over the use of force' and 'meaningful human control' will lose their relevancy. In these circumstances, following the launch of an autonomous weapon or weapon system, the suggestion that humans will apply the law (or 'judgment' or 'control') to these weapons as they engage targets is unrealistic. Humans may programme the weapon to evaluate circumstances in accordance with the law prior to taking a course of action. Nevertheless, the evaluation, i.e the application of law, is a matter for the machine and the artificial intelligence that directs it. As machines increasingly apply law, this dynamic will reduce the function and role of law in society because fewer humans will understand how the law is applied, and fewer still will have the capacity to apply it, or use law to their benefit.

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[490] Clark, 'The Function of Law in a Democratic Society,' 395.
[491] Kelsen, Pure Theory of Law, p. 33.
[492] Raz, On the Functions of Law, p. 299.
[493] The legal and political systems of liberal democracies 'rely on the participation of self-reliant, self-directed persons' whose judgment and actions serve to advance their interests. M Oshana, 'How Much Should We Value Autonomy?' *Social Philosophy & Policy* (2003) 99 and 107. Professor Lauterpacht observed that the 'ultimate purpose of law is to serve the interests of those subjected to its sway.' H Lauterpacht, *The Function of Law in the International Community* (Oxford: The Clarendon Press, 1933), p. 430.

Moreover, legal systems, such as the corpus of international law and international legal structures, are normative systems.[494] 'It is common to all norms that they guide *human behaviour* … [and they] provide a standard for evaluating *human behaviour.*'[495] As mentioned previously, however, when the speed of autonomous weapon activity increases, as well as the speed of communication between autonomous weapon systems, the ability of human 'operators' to protect legal norms progressively will become more limited. The inevitable negation of responsibility for these decisions vitiates the possibility for normative judgment, and, thus, of law itself.[496]

When law evolves it should do so rationally.[497] When technology atrophies human ability and motivation to think and reason about legal norms and to apply them, it subverts the law's purpose and capacity to properly adjust the rights and interactions between persons, and between persons and states.[498] A clear link exists, therefore, between the effect of lethal autonomous weapons on the function of law, and the preservation of human dignity.

IV. Conclusions

Neither the autonomy of new weapons technology nor its use per se undermines human dignity. The increasing delegation of responsibility and opportunity, however, for human thinking about important values that lie at the heart of the use of force will reduce personal autonomy and thereby undermine human dignity. Nevertheless, the greater speed offered by autonomous functions offers strategic, operational and tactical advantage for

[494] Raz, On the Functions of Law, p. 284.
[495] *Ibid*, pp. 280 – 281 (emphasis added).
[496] E Lieblich & E Benvenisti, 'The Obligation to Exercise Discretion in Warfare: Why Autonomous Weapon Systems Are Unlawful,' in Bhuta, et. al., Autonomous Weapon Systems: Law, Ethics, Policy, p. 251.
[497] R Traynor, 'The Limits of Judicial Creativity,' 29 *Hastings Law Journal* (1978) 1032.
[498] Prescriptive norms cannot exist without human (i.e. political) will (as distinguished from human reasoning). Kelsen, What Is Justice: Justice, Law and Politics in the Mirror of Science: Collected Essays by Hans Kelsen, pp. 20 – 21.

armies. It will not be easy to use moral or legal arguments about human dignity to override the most basic criteria of military necessity: the simple need of soldiers and armies to survive.[499]

Thus, the priority of speed over time for measured human 'reasoning' and/or 'judgment' will tilt the balance between necessity and humanity that is the foundation of international humanitarian law. Accordingly, the next chapter addresses the employment of autonomous weapon systems within the framework of the laws of war and whether a 'co-active design' will permit greater autonomy as well as compliance with international law.

[499] M Schmitt, 'The Interpretive Guidance on the Notion of Direct Participation in Hostilities: A Critical Analysis,' 1 *Harvard National Security Journal* (2010) 6.

Chapter Five

Autonomous Weapon Systems and International Humanitarian Law

I. Introduction

During armed conflict, soldiers must conduct combat according to norms entrenched in both international and domestic law, so that military activity does not take place in a normative void.[500] Although '[v]iolence is appropriate to war,'[501] for many generations writers have advocated that 'it is worthy of civilized nations … "to restrain the destructive force of war, while recognizing its inexorable necessities."'[502] Lord Wright, who edited The Law Reports of Trials of War Criminals following the Second World War, observed that the laws of war attempt 'to diminish the evils of war so far as military requirements permit.'[503] Thus, law cannot serve as a substitute for war.[504] It can, however, constrain the conduct of hostilities to reduce the suffering that occurs during armed conflict.

The efforts of international humanitarian law[505] (as well as international human rights law) to promote the 'humanization of war' intuitively presuppose that war's protagonists and decision-makers – soldiers, military commanders, civilian superiors and insurgents – are human. This assumption is reinforced by relevant treaties and other instruments that frequently use personal pronouns and/or refer to human beings. For example, Article 57 of

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[500] *The Public Committee Against Torture in Israel v. The Government of Israel*, Separate Opinion of President D. Beinisch, HCJ 769/02, December 11, 2005.
[501] L White, Jr. *Medieval Technology and Social Change* (Oxford: The Clarendon Press, 1962), p. 103.
[502] Preface, *The Laws of War on Land*, Institute of International Law, Oxford, 9 September 1880, citing Baron de Jomini, <https://www.icrc.org/applic/ihl/ihl.nsf/ART/140-80005?OpenDocument>.
[503] Foreword, Vol. 15, Digest of Laws and Cases, *Law Reports of Trials of War Criminals,* London, United Nations War Crimes Commission, 1949*,* xiii, <http://www.loc.gov/rr/frd/Military_Law/pdf/Law-Reports_Vol-15.pdf>.
[504] H Lauterpacht, *The Function of Law in the International Community* (Oxford: Clarendon Press, 1933), p. 437.
[505] In this dissertation, I use the phrases 'international humanitarian law,' 'the law of armed conflict' and 'the law of war' synonymously.

the 1863 Lieber Code provided that when 'a *man* is armed by a sovereign government and takes the soldier's oath of fidelity, *he* is a belligerent; *his* killing, wounding, or other warlike acts are not individual crimes or offenses.'[506] Article 13 of the 1949 Geneva Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field ('Geneva Convention') applies to members of militias and organized resistance movements that are 'commanded by a *person* responsible for *his* subordinates.'[507] Article 87 (3) of Protocol I Additional to the Geneva Conventions of 12 August 1949 ('API') requires 'any commander who is aware that subordinates or *other persons under his control* are going to commit or have committed breaches' of the Geneva Conventions or API, to initiate steps to prevent and/or punish the perpetrators.[508]

Concurrently, however, the growing use of technology by armed forces has driven the development of the laws of war.[509] As we saw in chapter two, increasingly, war is and will be fought by machines – and virtual networks linking machines - which, to varying degrees, are controlled by humans. In chapter four, I demonstrated how the delegation to machines of the responsibility for important, value-based thought and reasoning damages human dignity.

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[506] *General Orders No. 100, Instructions for the Government of Armies of the United States in the Field* (emphasis added), <http://avalon.law.yale.edu/19th_century/lieber.asp#art1>. Article 72 provided that 'all officers, when captured, must surrender *their* side arms to the captor. They may be restored to the prisoner in marked cases, by the commander, to signalize admiration of *his* distinguished bravery or approbation of *his* humane treatment of prisoners before *his* capture. In the 1868 Declaration Renouncing the Use, in Time of War, of Certain Explosive Projectiles, the state signatories agreed that, for the purpose of weakening the military forces of the enemy, 'it is sufficient to disable the greatest number of *men*' (emphasis added). <https://www.icrc.org/ihl/INTRO/130?OpenDocument>.

[507] (Emphasis added).

[508] Furthermore, according to Article 44 (2) of Additional Protocol I of 1977 ('API'), violations of international humanitarian law 'shall not deprive a combatant of *his* right to be a combatant or, if *he* falls into the power of an adverse Party, of *his* right to be a prisoner of war….' (emphasis added).

[509] Centuries ago, advances in technology 'ended the face-to-face combats and the "individualism of combat" between medieval warriors,' and 'ultimately generated the need for international rules of war to humanize the conduct of hostilities ….' T Meron, *Bloody Constraint: War and Chivalry in Shakespeare* (Oxford University Press: 1998), p. 12.

Respect for human dignity is 'the very raison d'etre'[510] of the entire body of international law, including the law of armed conflict. Indeed, the preservation and restoration of human dignity is the essence of the work of the International Committee of the Red Cross, which received its mandate from the 1949 Geneva Conventions and the 1977 Additional Protocols.[511]

Therefore, in this chapter, I describe the development of international humanitarian law, its basic principles and the rules of targeting, which are particularly relevant to the design and employment of lethal autonomous weapon systems. I identify the kinds of values-based decisions concerning the exercise of lethal force in international humanitarian law that demand the inclusion and direction of human reasoning. I argue that 1) the principles of humanity and military necessity in international humanitarian law are intrinsically linked to the concept of human dignity, 2) humans should make decisions in situations where these principles are in tension, 3) human involvement is not necessary in military decisions that require more automatic and instinctive behaviour, such as close-quarters combat, or during processes of information gathering and fusion, and 4) the duties to protect human dignity and to employ the guiding concept of dignity limits armed forces and organized armed groups to the use of autonomous weapon systems with a co-active design that permits collaborative autonomy for complex, values-based decisions.

[510] *Prosecutor v. Anto Furundĵija, Judgment*, IT-95-17/1-T, 10 December 1998, para. 183.
[511] 'Memorandum: The ICRC's Privilege of Non-Disclosure of Confidential Information,' 895 *International Review of the Red Cross* (October 2015), p. 2; Arts. 3 (2), 9, 10, 11, 56, 72, 75, 79, 123, 125 and 126, Geneva Convention III; Arts. 5, 17, 33, 38, 78 and 81, API.

II. The Development and Applicable Principles and Rules of Modern International Humanitarian Law

A. The Development of Modern International Humanitarian Law

More than two thousand years ago, Marcus Tullius Cicero, the Roman philosopher, politician and orator famously declared that '[i]n times of war, the law falls silent.'[512] By the medieval era, however (if not before), rules constraining behaviour during armed conflict were more common.[513] This process accelerated during the last few centuries and today a comprehensive body of customary and treaty-based international humanitarian law has developed that regulates the conduct of hostilities and protects persons who are vulnerable to the violence and suffering of war.

Dutch jurist Hugo Grotius, writing in the seventeenth century, was a catalyst for new thinking about the importance of law during armed conflict. Grotius introduced the principle that the lawful exercise of force during warfare is not unlimited.[514] He argued that 'the power of the sword must be *restrained* from inflicting promiscuous death.'[515] Grotius linked this notion of restraint with the importance of 'moderation and humanity' in the conduct of war and foreshadowed how commanders might be held accountable should they fail to adhere to

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[512] 'Silent enim leges inter arma;…' The literal translation is '[f]or laws are silent when arms are raised.' M Cicero, 'Oration for Titus Annius Milo,' The Society for Ancient Languages, section IV, <http://www.uah.edu/student_life/organizations/SAL/texts/latin/classical/cicero/promilone1e.html#celeven>. For a general description of 'codes of conduct' for warfare implemented by ancient cultures, see C Greenwood, 'Historical Development and Legal Basis,' D Fleck (ed.) *The Handbook of International Humanitarian Law* (2nd ed.) (Oxford University Press: 2009), pp. 15 – 16.

[513] For example, the *Qur'ān* prohibits attacks against non-combatants such as women, children, the aged, the blind, the sick and incapacitated persons. M Badar, 'Jus in Bello Under Islamic International Law,' 13 *International Criminal Law Review* (2013), 593, p. 606; For an analysis of the rules of Chivalry, see Meron, Bloody Constraint: War and Chivalry in Shakespeare.

[514] Grotius explained that his subject was to decide 'how far the power of lawfully destroying an enemy, and all that belongs to him, extends.' *On the Law of War and Peac*e (1625), Translated by A.C. Campbell (Kitchener: Batoche Books, 2001, p. 286, available online at http://socserv2.socsci.mcmaster.ca/econ/ugcm/3ll3/grotius/Law2.pdf.

[515] *Ibid* (emphasis added).

these principles.[516] Similarly, a century later, Emerich de Vattel contended that the right to use violence during armed conflict 'goes hand in hand *with necessity* and the exigency of the case, but never exceeds them.'[517] This connection between the exercise of force and necessity, de Vattel claimed, is part of Natural Law.[518] Thus, hostile acts by armed forces that are necessary to overpower the enemy's resistance and attain the end of a lawful war are lawful under international law.[519]

Just a few years after Vattel's treatise, Jean-Jacque Rousseau advanced the same nexus between necessity and lawful conduct: '[w]ar gives no right which is not necessary to the gaining of its object.'[520] Rousseau also drew a distinction between the treatment of persons taking part in hostilities and those who did not, arguing that once persons lay down their arms, they should not be subject to attack.[521]

These Enlightenment doctrines eventually developed into the proscriptive and empowering rules of modern international humanitarian law, which is divided generally into two categories: 'Hague Law' and 'Geneva Law.' Hague Law[522] generally encompasses rules

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[516] *Ibid*, pp. 319 – 324. Grotius' description of the importance of moderation resembles the modern principle of 'military necessity discussed below:' '[b]y way of conclusion to this subject it may be observed, that all actions no way conducive to obtain a contested right, or to bring the war to a termination, but calculated merely to display the strength of either side are totally repugnant to the duties of a Christian and to the principles of humanity.' *Ibid*, para. XIX.

[517] *The Law of Nations* (1758) (Philadelphia: T. & J. W. Johnson, Law Booksellers, 1844), section 137, <http://www.loc.gov/rr/frd/Military_Law/Lieber_Collection/pdf/DeVattel_LawOfNations.pdf>.

[518] *Ibid,* sections 137 – 138.

[519] *Ibid,* section 137.

[520] *The Social Contract* (1762), translated by G.D.H. Cole, p. 8, <http://www.ucc.ie/archive/hdsp/Rousseau_contrat-social.pdf>.

[521] *Ibid.*

[522] Sources of Hague Law include, inter alia, The Lieber Code, the 1868 Saint Petersburg Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight, the 1874 Brussels Project of an International Declaration Concerning the Laws and Customs of War, the 1880 Oxford Manual on the Laws of War on Land, the 1899 Hague Convention (II) with Respect to the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, the 1907 Convention (IV) Respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, 18 October 1907 and related Declarations, the Protocol for the Prohibition of the Use

for the conduct of hostilities whilst Geneva Law[523] addresses the protections due to civilians who are not directly participating in hostilities as well as combatants who find themselves hors de combat.[524]

Several nineteenth century foundational documents for these branches of international humanitarian law deserve mention. With respect to 'Hague Law,' the so-called 'Lieber Code,' drafted by Professor Francis Lieber at the request of U.S. President Abraham Lincoln during the increasingly vicious American civil war, constituted the first single set of instructions for soldiers and officers in the field pertaining to the laws and customs of war. Lieber was a realist, a tough humanitarian who believed that war should be waged vigorously.[525] 'Blood,' he once wrote to the General-in-Chief of the Union armies, 'is occasionally the rich dew of history.'[526] Thus, although the Lieber Code proscribes acts of inhumanity ('[m]ilitary necessity does not admit of cruelty, that is, the infliction of suffering for the sake of suffering or for revenge, ….'),[527] it does so pragmatically to facilitate the return to peace.[528] Moreover, the Code sanctions and provides a framework for 'all direct

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of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, Geneva, 17 June 1925, and the 1980 Convention on Prohibitions on the Use of Certain Chemical Weapons.

[523] Sources of Geneva Law include, inter alia, the Convention for the Amelioration of the Condition of the Wounded in Armies in the Field, Geneva, 22 August 1864, Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, Geneva, 12 August 1949, Convention (II) for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea, Geneva, 12 August 1949, Convention (III) Relative to the Treatment of Prisoners of War, Geneva, 12 August 1949, and Convention IV Relative to the Protection of Civilian Persons in Time of War, Geneva, 12 August 1949. The 1977 Additional Protocols to the Geneva Conventions of 1949 ('API' and 'APII') effectively combine Hague and Geneva Law, as they extend the protections of the Conventions as well as develop the rules concerning the conduct of hostilities.

[524] 'Introduction to the Commentary on the Additional Protocols I and II of 8 June 1977,' ICRC, <https://www.icrc.org/ihl/INTRO/470>.

[525] J Witt, *Lincoln's Code: The Laws of War in American History* (New York: Free Press, 2012), p. 196; 'The more vigorously wars are pursued, the better it is for humanity. Sharp wars are brief.' Art. 29, The Lieber Code.

[526] Witt, p. 196 and notes 177 and 196.

[527] Art. 16, The Lieber Code.

[528] *Ibid*.

destruction of life or limb of armed enemies' and other persons who suffer incidental but unavoidable injury as a consequence of war.[529]

In addition to the Lieber Code's regulation of the conduct of hostilities, the 1868 Declaration of St. Petersburg was the first formal international agreement that prohibited the use of certain weapons. The Declaration prohibited the use of bullets that explode on impact and reiterated the principle suggested by Grotius, Vattel and Rousseau that 'the only legitimate object which States should endeavor to accomplish during war is to weaken the military forces of the enemy.'[530] Accordingly, the Declaration banned the use of weapons that would needlessly aggravate the sufferings of persons, or render their death inevitable, a rule that is now part of customary international humanitarian law, as well as treaty law.[531]

A number of the tenets expressed in the Lieber Code and the Declaration of St. Petersburg became part of the 1899 Regulations Concerning the Laws and Customs of War on Land and the 1907 Regulations Concerning the Laws and Customs of War on Land (the '1899 and/or 1907 Hague Regulations').[532] For example, articles 22 and 23 of both the 1899 and 1907 Regulations echo the Lieber Code's admonition that there are limits to the lawful exercise of violence during armed conflict. The comprehensive rules codified in the

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[529] *Ibid*, art. 15.

[530] Declaration Renouncing the Use, in Time of War, of Certain Explosive Projectiles. Saint Petersburg, 29 November/11 December 1868, <https://www.icrc.org/applic/ihl/ihl.nsf/Article.xsp?action=openDocument&documentId=568842C2B90F4A29C12563CD0051547C>.

[531] Rule 70, 'Weapons of a Nature to Cause Superfluous Injury of Unnecessary Suffering,' *ICRC Customary International Humanitarian Law Study*, <https://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter20_rule70>; Art. 35, API.

[532] The influence of the Lieber Code and the St. Petersburg Declaration also can be seen in the unratified International Declaration Concerning the Laws and Customs of War ('Brussels Declaration') of 1874 and the 1880 Oxford Manual of the Laws and Customs of War ('Oxford Manual'). For example, like the Lieber Code, the Brussels Declaration affirms that prisoners of war must be humanely treated (compare arts. 72 – 76 of the Lieber Code with art. 23 of the Brussels Declaration). Similarly, art. 9 (a) of the Oxford Manual, which prohibits the use of weapons calculated to cause superfluous suffering or aggravated wounds, specifically refers to the St. Petersburg Declaration.

Regulations address important areas of the conduct of hostilities including 1) the qualifications of lawful combatants, 2) the treatment of prisoners of war, 3) legal and illegal means and methods of warfare, 4) the status and treatment of spies during armed conflict, 5) flags of truce, capitulations and armistices and 6) military occupation of enemy territory.[533]

In addition, the preamble to the 1899 Regulations contains the 'Martens Clause:'

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

The 1977 Additional Protocols to the Geneva Conventions of 1949 partly affirmed and developed the principles and rules embodied in the 1899 and 1907 Hague Conventions.[534] For example, API, applicable to international armed conflicts,[535] contains, in addition to a modified version of the Martens Clause,[536] a detailed framework that articulates conduct (including acts and omissions) necessary for compliance with the basic principles of international humanitarian law.[537]

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[533] See 'History and Sources of the Law of Armed Conflict,' in G Corn et. al, (eds.), *The Law of Armed Conflict: An Operational Approach* (New York: Wolters Kluwer, 2012), pp. 40 – 43.

[534] 'General Commentary to 1899 Regulations,' ICRC, <https://www.icrc.org/ihl/INTRO/150?OpenDocument>. Similarly, whilst the 1899 Declaration 2 Concerning Asphyxiating Gases banned the used of projectiles intended to diffuse asphyxiating or deleterious gases, the 1925 Geneva Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare extended this ban to include the use of bacteriological methods of warfare. A Roberts & R Guelff, *Documents on the Law of War*, 3rd ed. (Oxford University Press: 2000), pp. 155 – 159.

[535] Art. 1 (3).

[536] Art. 1 (2), '[i]n cases not covered by this Protocol or by other international agreements, civilians and combatants remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity and from the dictates of public conscience.'

[537] For example, see Art. 57, API, 'Precautions in Attack,' discussed below.

The development of 'Geneva Law' began after Henry Dunant's experience tending to the wounded and dying survivors of the battle of Solferino.[538] Dunant's proposals for reducing the kinds of suffering that he had witnessed led to the drafting of the Geneva Convention for the Amelioration of the Condition of the Wounded in Armies in the Field and, gradually, the development of the International Committee of the Red Cross.[539] A Second (more comprehensive) Convention for the Amelioration of the Condition of the Wounded in Armies in the Field was promulgated in 1906.[540] In 1929, a diplomatic conference drafted the Third Geneva Convention Relative to the Treatment of Prisoners of War.[541]

The disastrous events of the Second World War revealed significant gaps in 'Geneva Law.' In many areas, the law was vague.[542] Furthermore, even with respect to provisions that were relatively clear and precise, breaches of the law demonstrated the need for more effective rules to monitor compliance and hold violators accountable. Consequently, a diplomatic conference produced the four 1949 Geneva Conventions (the '1949 Conventions'). The First, Second and Third 1949 Conventions significantly broadened the protections due to wounded and sick combatants as well as prisoners of war. Perhaps most importantly, 1949 Geneva Convention IV Relative to the Protection of Civilian Persons in Time of War was the first treaty devoted exclusively to the protection of civilians during armed conflict.[543]

The 1949 Geneva Conventions share several common articles pertaining to the scope of the treaties. Common Article 2 provides that the Conventions apply to any armed conflict

[538] H Dunant, *A Memory of Solferino* (1862) (Geneva: International Committee of the Red Cross, 1986), pp. 13 - 128.
[539] *Ibid*, Afterword by H Haug, pp. 129 – 131.
[540] <https://www.icrc.org/ihl/INTRO/180?OpenDocument>.
[541] <https://www.icrc.org/ihl/INTRO/305?OpenDocument>.
[542] Roberts and Guelff, Documents on the Law of War, p. 194.
[543] *Ibid*, p. 299.

(whether formally declared or not) between two or more state parties. Thus, the four Conventions apply to international armed conflicts. Common Article 2 also invokes the power of the Conventions over situations of partial or total occupation of the territory of a state party, even when the occupation meets with no armed resistance. Common Article 3 compels parties to a non-international armed conflict occurring in the territory of a state party to treat persons taking no active part in hostilities humanely.

Additional gaps in Geneva Law (in particular concerning the protection of civilians and the status and treatment of prisoners war) were identified during the post-World War II conflicts of decolonization as well as the Korean and Vietnam Wars.[544] Hence, in 1977, another diplomatic conference promulgated two Additional Protocols to the four 1949 Geneva Conventions.[545] As noted above, in addition to filling gaps in Geneva Law and obliging state parties to review the legality of new means and methods of warfare,[546] API includes more precise rules regarding the conduct of hostilities, including provisions that codify the rules of targeting.[547] Importantly for chapter seven, 'Autonomous Weapon Systems and International Criminal Law,' API also obliges state parties to hold accountable persons who commit grave breaches of the 1949 Conventions and API, as well as commanders who fail to prevent or punish subordinates for violations of the laws of war.[548]

Many of the provisions of Hague Law and Geneva Law embody rules of customary international humanitarian law[549] and thus, also bind states that are not parties to the treaties

[544] *Ibid*, p. 244.
[545] < https://www.icrc.org/ihl/INTRO/470> and <https://www.icrc.org/ihl.nsf/INTRO/475?OpenDocument>.
[546] *Ibid,* art. 36.
[547] *Ibid*, arts. 48 – 59.
[548] *Ibid*, arts. 85 – 87.
[549] As explained in chapter three, the creation of customary international law requires a combination of state practice and opinio juris. *North Sea Continental Shelf*, Judgment, I.C.J. Reports 1969, paras. 77 – 78. In the

and conventions.[550] Indeed, the International Court of Justice has concluded that the fundamental rules expressed within the Hague Regulations and Geneva Conventions 'constitute *intransgressible* principles of international customary law.'[551] While the Geneva Conventions have achieved almost universal application,[552] the same cannot be said for the Additional Protocols.[553] Nevertheless, many rules of customary international humanitarian law apply in both international and non-international armed conflicts.[554] Importantly, the application of customary international humanitarian law to non-international armed conflicts serves to fill gaps in APII's limited regulation of the conduct of hostilities and the general provisions of common Article 3.[555] Furthermore, customary rules of international humanitarian law are reflected in other international treaties such as the Rome Statute of the International Criminal Court.[556]

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context of international humanitarian law, where multiple treaties codify legal obligations during armed conflict, the primary significance of a norm's customary character is that the norm binds states that are not parties to the instrument that restates the norm. T Meron, *Human Rights and Humanitarian Norms as Customary Law* (Oxford: Clarendon Press, 1989), p. 3.

[550] ICRC Introduction to *Convention (II) with Respect to the Laws and Customs of War on Land and its Annex: Regulations Concerning the Laws and Customs of War on Land*, The Hague, 29 July 1899, available online at https://www.icrc.org/ihl/INTRO/150?OpenDocument; Greenwood, 'Historical Development and Legal Basis,' p. 11; J Kellenberger, to J Henckaerts & L Doswald-Beck (eds.) *Customary International Humanitarian Law*: Volume I: Rules,' (Also referred to below as the 'ICRC Customary International Humanitarian Law Study'*)*, p. x.

[551] Legality of the Threat or Use of Nuclear Weapons, para. 79 (emphasis added).

[552] Most provisions of the Geneva Conventions are considered to be declaratory of customary international humanitarian law. *Prosecutor v Blagoje Simić et. al*, Decision on the Prosecution Motion Under Rule 73 for a Ruling Concerning the Testimony of a Witness, IT-95-9, 27 July 1999, para. 48.

[553] Kellenberger, 'Foreword' p. x.

[554] 'Introduction' to Customary International Humanitarian Law: Volume I, p. xxix.

[555] *Ibid*, pp. xxviii – xxix.

[556] Roberts & Guelff, Documents on the Law of War, pp. 60 and 157. For example, art. 8 (2) (b) (xviii) reflects the customary rule banning the use of 'asphyxiating, poisonous or other gases, and all analogous liquids, materials or devices.' Similarly, Art. 6 (b) of the Charter of the International Military Tribunal at Nuremberg reflected the laws and customs of war first codified in the 1907 Regulations. *Judgment*, The Trial of German Major War Criminals, Proceedings of the International Military Tribunal Sitting at Nuremberg, Germany, 1 October 1946, p. 467.

B. *Basic Principles and Rules of Modern International Humanitarian Law*

The application of modern international humanitarian law is an attempt to achieve an equitable balance between humanitarian requirements and the demands of armed conflict,[557] e.g. between the principles of humanity and military necessity.[558] The principle of 'humanity' – the heart of international humanitarian law[559] - prohibits the infliction of suffering, injury or destruction not actually necessary for the accomplishment of a legitimate military purpose.[560] 'These considerations are based upon the rights of the individual, and his [human] dignity.'[561]

Francis Lieber defined 'military necessity' as 'the necessity of those measures which are indispensable for securing the ends of the war, and which are lawful according to the modern law and usages of war.'[562] The U.K. armed forces use a more nuanced definition that mirrors the principle of humanity:

> '[m]ilitary necessity is now defined as 'the principle whereby a belligerent has the right to apply any measures which are required to bring about the successful conclusion of a military operation and which are not forbidden by the laws of war. Put another way a state engaged in an armed conflict may use that degree and kind of force, not otherwise prohibited by the law of armed conflict, that is required in order to achieve the legitimate purpose of the conflict, namely the complete or partial

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[557] L May & M Newton, *Proportionality in International Law* (New York: Oxford University Press, 2014), pp. 171 and 177; *ICRC Commentary to Art. 57*, API, para. 2206, <https://www.icrc.org/ihl/INTRO/470>.

[558] ICRC Commentary to Art. 57, API, para. 2206, https://www.icrc.org/applic/ihl/ihl.nsf/Comment.xsp?action=openDocument&documentId=D80D14D84BF36B92C12563CD00434FBD.

[559] Legality of the Threat or Use of Nuclear Weapons, para. 95, <http://www.icj-cij.org/docket/files/95/7495.pdf>.

[560] This principle is based on the concept that once a military purpose has been achieved, the further infliction of suffering is unnecessary. JSP 383, *The Joint Service Manual of the Law of Armed Conflict*, (2004 ed.) Joint Doctrine and Training Centre, U.K. Ministry of Defence, paras. 2.4 and 2.4.1, <https://www.gov.uk/government/publications/jsp-383-the-joint-service-manual-of-the-law-of-armed-conflict-2004-edition>.

[561] *The Public Committee Against Torture in Israel v. The Government of Israel*, Opinion of President (Emeritus) A Barak, HCJ 769/02, December 11, 2005, para. 22. For example, when civilians are present in a combat zone, their human dignity must be protected during military operations. *Judgment*, *Physicians for Human Rights v. IDF Commanders*, Opinion of President A. Barak, HCJ 4764/04, [2004] IsrLR 200, paras. 11 – 12.

[562] Art. 14, The Lieber Code.

> submission of the enemy at the earliest possible moment with the minimum expenditure of life and resources.'[563]

Evident in both of these legal principles is the presence and influence of the concept of human dignity. Humanity's goal to reduce the suffering caused by war demands the (feasible) respect for human rights during armed conflict. In parallel, military necessity's limits on permissible use of force demands the same regard for human rights. Accordingly, humanity and military necessity are an expression of the interplay of human dignity and human rights within international humanitarian law.[564]

In addition to humanity and military necessity, two other 'crucial'[565] principles determine the effectiveness of modern international humanitarian law. First, the principle of distinction establishes that belligerents must always distinguish between enemy combatants and civilians and never intentionally target civilians or civilian objects.[566] Consequently, indiscriminate attacks, i.e. those that are of a nature to strike military objectives and civilians without distinction, as well as the use of weapons that are indiscriminate, are unlawful.[567]

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[563] *JSP 383, Joint Services Publication 383 -- The Manual of the Law of Armed Conflict Amendment 3* (September 2010), (22), para. 2.2.

[564] The term 'international humanitarian law' itself emerged from the influence of human rights doctrine on the law of armed conflict. Prosecutor v. Duško Tadić a/k/a 'Dule,' Decision on Defence Motion for Interlocutory Appeal on Jurisdiction, No. IT-94-1, 2 October 1995, para. 87. Like human rights law, the rules of international humanitarian law rest on 'the principle of respect for human personality,' i.e. human dignity. ICRC Commentary to Common Art. 4 of 1949 Geneva Conventions.

[565] The Legality of Nuclear Weapons, paras. 77 and 78, citing Art. 23 (e) of *1907 Convention (IV) Respecting the Laws and Customs of War on Land and Its Annex: Regulations Concerning the Laws and Customs of War on Land*, which prohibits the use of arms, projectile or material calculated to cause unnecessary suffering. <https://www.icrc.org/ihl/INTRO/195>.

[566] Art. 48, API. The principle of distinction 'is the foundation upon which the codification of the laws and customs of war rests.' International Committee of the Red Cross, 'Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts ("API"), 8 June 1977: 'Commentary' (ICRC, 2012) available online at http://www.icrc.org/ihl.nsf/COM/470-750073?OpenDocument (visited 22 March 2014), at para. 1863. This principle has become part of customary international humanitarian law. Rule 1, 'The Principle of Distinction between Civilians and Combatants' and 'Rule 7, The Principle of Distinction between Civilian Objects and Military Objective,' ICRC Customary International Humanitarian Law Study, <https://www.icrc.org/customary-ihl/eng/docs/v1_rul>.

[567] Art. 51 (4), API. The prohibition of indiscriminate attacks is also part of customary international humanitarian law. 'Rule 11, Indiscriminate Attacks' and 'Rule 12, Definition of Indiscriminate Attacks,' ICRC Customary International Law Study.

Second, belligerent parties may not employ means and methods of warfare in a manner that causes superfluous injury or unnecessary suffering.[568] The phrase 'means of combat' generally refers to the weapons used while 'methods of combat' generally refers to the way in which weapons are used.[569] This constraint reflects the 'most fundamental customary principle'[570] of the law relating to the conduct of hostilities; that the right of belligerents to adopt means of injuring the enemy, including the choice of weapons, is not unlimited.[571]

No rule of international humanitarian law specifically addresses autonomous weapon systems, which is unsurprising given the state of technology in 1977, when the 1949 Geneva Conventions were last revised. Nevertheless, activity that is not specifically prohibited in treaty law is not necessarily lawful.[572] Article 1 (2) of API contains a revised version of the Martens Clause: '[i]n cases not covered by this Protocol or by other international agreements, civilians and combatants remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity and from

[568] Art. 35 (2), API, This constraint on the means and methods of warfare also forms part of customary international humanitarian law. 'Rule 70, Weapons of a Nature to Cause Superfluous Injury or Unnecessary Suffering, ICRC Customary International Law Study. In *The Nuclear Weapons Case*, the International Court of Justice defined 'unnecessary suffering' as 'a harm greater than that unavoidable to achieve legitimate military objectives.' para. 78. By prohibiting unnecessary suffering, international humanitarian law acknowledges that '*necessary suffering* to combatants is lawful, and may include severe injury or loss of life.' W H Parks, 'Conventional Weapons and Weapons Reviews,' *Yearbook of International Humanitarian Law* (2005), 55, 140 (emphasis in original).

[569] ICRC Commentary to art. 51, API, para. 1957, <https://www.icrc.org/applic/ihl/ihl.nsf/INTRO/470>. The humanitarian character of the principles of the law of armed conflict applies to all forms of warfare and all kinds of weapons, *including future weapons. The Legality of Nuclear Weapons*, para. 86.

[570] Roberts & Guelff, Documents on the Law of War, p. 9.

[571] In his Dissenting Opinion in The Legality or Threat of Use of Nuclear Weapons Advisory Opinion, Judge Shahabudeen makes a compelling argument that the prohibition on causing unnecessary suffering must apply to civilians as well as combatants, p. 404.

[572] T Meron, 'The Martens Clause, Principles of Humanity, and Dictates of Public Conscience,' 94 *The American Journal of International Law*, 1 (2000), 78 – 79, 87

the dictates of public conscience.' The Martens Clause itself is a rule of customary international law.[573]

The practical effect of the dynamic principles of 'considerations of humanity' and 'dictates of public conscience' varies depending on the means and/or method of warfare at issue[574] and these phrases from the Martens Clause do not usually, by themselves, delegitimize weapons and methods of war.[575] Modern human rights law, including the United Nations Charter, informs interpretations of these principles.'[576] Thus, the doctrinal basis of human dignity underlying the Charter and other international conventions instructs our application of the 'considerations of humanity' and 'dictates of public conscience' language of the Martens Clause to means and methods of warfare. The 'dictates of public conscience' with respect to the development and use of autonomous weapons systems are still evolving.[577] Nevertheless, the requirement of 'considerations of humanity' must inform our current discussions about autonomous weapons. This new technology, by removing complex war-fighting decisions from the responsibility of humans, creates new practical effects on humanity, i.e. virtually *all* of humanity.

[573] Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, I.C.J. Reports 1996 (Dissenting Opinion Judge Shahabuddeen), p. 405.
[574] *Ibid*, p. 406.
[575] Meron, 'The Martens Clause, Principles of Humanity, and Dictates of Public Conscience,' p. 88. One example where the Martens Clause arguably delegitimizes a means or method of warfare is the use of nuclear weapons. *Ibid*, Legality of the Threat or Use of Nuclear Weapons, (Dissenting Opinion Judge Shahabuddeen), p. 411.
[576] Legality of the Threat or Use of Nuclear Weapons, (Dissenting Opinion Judge Weeramantry), pp. 490 - 491.
[577] M Rosenberg & J Markoff, 'At Heart of U.S. Strategy, Weapons That Can Think,' *The New York Times*, 26 October 2016, pp. 1 and 23.

Arguably, the basic principles of international humanitarian law have become *jus cogens* norms, i.e. canons from which no derogation is permitted.[578] Many of the more precise rules of humanitarian law, however, do not enjoy this status.[579]

III. The Law of Targeting: The Use of Force During Armed Conflict

In order to understand how the development and employment of autonomous weapon systems impacts the exercise of force, it is necessary to review the process(es) modern armed forces undertake to plan and execute attacks. In modern warfare, the process of selecting and engaging targets can be extraordinarily complex, involving multiple stakeholders, interests and values, and includes a mix of human thinking, automation and autonomy. Word limits prevent a comprehensive description of all facets of targeting. Instead, I will review the general principles and concepts that guide this process, using the targeting doctrine of the United States, the United Kingdom and Australian armed forces as a model.

'A target is any structure, object, person, organization, thought process, attitude or behaviour which can be influenced by a weapon ….'[580] Selected targets should be relevant to strategic, operational and tactical goals.[581] Essentially, the targeting process identifies resources that the enemy can least afford to lose or that provide her with the greatest advantage. Subsequently, targeters identify the subset of those targets that must be neutralized to achieve success.[582]

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[578] Greenwood, 'Historical Development and Legal Basis,' p. 39.
[579] *Ibid*.
[580] 'Campaign Execution,' *Joint Doctrine Publication 3-00*, 3rd ed. U.K. Ministry of Defence, October 2009, para. 3B-2, nte 2. Therefore, the targeting process may include the use of 'non-lethal' force as well. However, this dissertation will focus primarily on the use of lethal force by autonomous weapon systems.
[581] Chairman, U.S. Joint Chiefs of Staff, *Joint Targeting, Joint Publication 3-60*, 31 January 2013, p. vii.
[582] *Ibid*, pp. vii - viii.

The North Atlantic Treaty Organisation ('NATO') defines targeting as the 'process of selecting and prioritizing targets and matching the appropriate response to them, taking into account operational requirements and capabilities.'[583] According to U.S. military doctrine, valid targets are those that have been vetted as: '[a] part of target development that ensures all vetted targets meet the objectives and criteria outlined in the commander's guidance and ensures compliance with the law of armed conflict and rules of engagement.'[584]

Four general principles guide the targeting process. First, it should be focused, i.e. every target proposed for engagement should contribute to attaining the objectives of the mission. Second, targeting should be 'effects-based,' i.e. it attempts to produce desired effects with the least risk and least expenditure of resources. Third, it is interdisciplinary in that targeting entails participation from commanders and their staffs, military lawyers, analysts, weaponeers,[585] 'other agencies, departments, organisations, and multinational partners.'[586] Finally, targeting should be systematic; a rational process that methodically analyses, prioritises, and assigns assets against targets.[587] A single target may be significant because of its particular characteristics. The target's real importance, however, 'lies in its relationship to other targets within the operational system'[588] of the adversary.

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[583] *NATO Glossary of Terms and Definitions*, North Atlantic Treaty Organisation, Nato Standardisation Agency, 2008, p. 2-T-3, <available online at https://fas.org/irp/doddir/other/nato2008.pdf>.

[584] 'No-Strike and the Collateral Damage Estimation Methodology,' CJCSI 3160.01A, *Chairman of the Joint Chiefs of Staff Instruction*, U.S. Department of Defence, 12 October 2012, Enclosure C, p. C-2, nte. 7, citing JP 3-60, *Joint Targeting*, reference f.

[585] A weaponeer is an 'individual who has completed requisite training to determine the quantity and type of lethal or nonlethal means required to create a desired effect on a given target.' *Ibid*, p. GL-11.

[586] JP 3-60, Joint Targeting, p. viii.

[587] *Ibid*. See P Margulies, 'Making Autonomous Weapons Accountable: Command Responsibility for Computer-Guided Lethal Force in Armed Conflicts,' in J Ohlin (ed.) *Research Handbook on Remote Warfare* (Northampton: Edward Elgar Press, forthcoming 2016). (<http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2734900>.

[588] JP 3-60, Joint Targeting, p. II-5; 'Operations Series, ADDP 3.14,' *Targeting*, 2nd ed. Australia Department of Defence, 2009, para. 1.21, <http://www.defence.gov.au/foi/docs/disclosures/021_1112_Document_ADDP_3_14_Targeting.pdf>.

There are two general categories of targeting: deliberate and dynamic. Deliberate targeting shapes the battlespace and addresses planned targets and efforts, i.e. beyond the next twenty-four hours. Dynamic targeting manages the battlespace and refers to decisions requiring more immediate responses, usually within the current twenty-four hour period.[589] Targets have temporal characteristics in that their vulnerability to detection, attack, or other engagement varies in relation to the time available to engage them.[590] Targets that are especially time-sensitive present the greatest challenges to targeting personnel who must compress their normal decision cycles into much shorter periods.

As mentioned above, targeting decisions must satisfy law of war obligations (discussed in more detail below).[591] In this context, targeting personnel bear three essential responsibilities. First, they must positively identify and accurately locate targets that comport with military objectives and rules of engagement. Second they must identify possible concerns regarding civilian injury or damage to civilian objects in the vicinity of the target.[592] Finally, they must conduct collateral damage estimates with due diligence and 'within the framework of the operational imperatives of accomplishing mission objectives, force protection and collateral damage mitigation.'[593]

Australian targeting doctrine contains a fifth principle: legitimacy: '[a]ll legal obligations, domestic and international are understood and met.' *Ibid*, para. 1.6.

[589] JP 3-60, Joint Targeting, pp. II-1 – II-2 and ADDP 3.14, Targeting, paras. 1.10 – 1.1.2.

[590] JP 3-60, Joint Targeting, p. I-5.

[591] 'Targeteers and planners must understand and be able to apply the basic principles of international law as they relate to targeting.' *Ibid*, Appendix A, Legal Considerations in Targeting, p. A-1.

[592] *Joint Doctrine Publication 3-00*, para. 337.

[593] 'No-Strike and the Collateral Damage Estimation Methodology,' Chairman of the Joint Chiefs of Staff Instruction, U.S. Department of Defence, 12 October 2012, Enclosure A, p. A-6 (emphasis added)'; Joint Doctrine Publication 3-00, para. 3B-8; ADDP 3.14, Targeting, para. 1.24.

In U.S. military doctrine, the methodology of collateral damage estimation 'is a balance of science and art.'[594] Targeting personnel must use their combined expertise, experience and current intelligence to apply the science to the conditions of the operational environment. In addition to the potential for collateral damage and other law of war considerations, commanders may weigh and balance many other factors into their decision-making such as operational and strategic objectives, rules of engagement, target characteristics, political risks and risks to friendly forces and the mission itself.[595]

After targets are engaged, commanders must assess the effectiveness of the engagement.[596] 'Direct' effects are the immediate consequences of military action whilst 'indirect' effects are the delayed and/or displaced second, third or higher order consequences, resulting from intervening events or mechanisms. Effects can 'cascade,' i.e. ripple through a targeted system and effect other systems.[597] The assessment process is continuous and helps commanders adjust operations as necessary and make other decisions designed to ensure the success of the mission.[598]

Finally, the work of targeting is increasingly an automated (if not autonomous) process. 'Targeting automation is decision support technology.'[599] It refers to the use of

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[594] *Ibid*, Enclosure D, p. D-2. The U.S. military personnel must consider five essential questions when performing collateral damage estimates: 1) Is the target positively identified? 2) Are there protected or collateral objects, civilian or noncombatant personnel, involuntary or unwitting human shields, or significant environmental concerns within the effects range of the weapon recommended to attack the target? 3) Can the damage to those collateral concerns be mitigated by striking the target with a different weapon or with a different method of engagement, yet still accomplish the mission? 4) If not, what is the estimate of the number of civilians and noncombatants that will be injured or killed by the attack? and 5) Are the expected collateral effects of the attack excessive in relation to the expected military advantage gained and should this decision to attack the target be addressed by the next level of command based on the ROE in effect? *Ibid,* pp. D-A-6-D-A-7.
[595] *Ibid*, pp. D-3 and D-A-2.
[596] Joint Doctrine Publication 3-00, para. 338.
[597] ADDP 3.14,' Targeting, para. 1.21.
[598] 'No-Strike and the Collateral Damage Estimation Methodology,' p. D-1.
[599] *Ibid*, Appendix B Targeting Automation, p. B-1. (emphasis added).

computer applications to speed the accurate development and use of information that matches objectives with targeting, and facilitates the assessment of effects. U.S. military doctrine holds that, whilst automation increases the speed of the targeting process, 'it is not a replacement for human thinking or proactive communications'[600] and personnel must 'fully comprehend foundational targeting concepts.'[601] The next section describes the most important targeting rules of international humanitarian law with respect to autonomous weapon systems.

A. Applicable Rules of Targeting in International Humanitarian Law

The international humanitarian law provisions prescribing how belligerents should conduct targeting – i.e. Articles 48 – 59 of API – integrate the principles of military necessity and humanity. The targeting rules (perhaps the most important in international humanitarian law[602]) attempt to delineate the parameters for the use of force during armed conflict and therefore are the most relevant to a discussion of the development and use of autonomous weapon systems.

Articles 48 and 52 enshrine the customary law duty of parties to an armed conflict to distinguish between the civilian population and combatants and between civilian objects and military objectives, and thus direct operations only against combatants and/or military objectives.[603] Consequently, military necessity will not provide a basis for derogation from

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[600] *Ibid,* p. B-4.
[601] *Ibid*.
[602] M Waxman, 'Detention As Targeting: Standards of Certainty and Detention of Suspected Terrorists,' 108 *Columbia Law Review* (2008) 1365, 1394, nte 103 (citing Christopher Greenwood, 'The Law of War (International Humanitarian Law)' in M Evans (ed.) *International Law*, 2nd ed. (Oxford University Press, 2003) p. 793. 'The question who, or what, is a legitimate target is arguably the most important question in the law of war ….').
[603] *Prosecutor v. Tihomir Blaškić*, Judgment, IT-95-14-A, Appeals Chamber, 29 July 2004, para. 109. Article 52 defines 'military objectives' as "those objects which by their nature, location, purpose or use make an effective

this prohibition.[604] In addition to attacks directed against civilians, '[a]cts or threats of violence the primary purpose of which is to spread terror among the civilian population are prohibited.'[605] Article 51 (4) expresses the rule of customary international humanitarian law that prohibits indiscriminate attacks, which include:

(a) those which are not directed at a specific military objective;[606]

(b) those which employ a method or means of combat which cannot be directed at a specific military objective; or

(c) those which employ a method or means of combat the effects of which cannot be limited as required by API.[607]

Article 54 prohibits attacks against objects that are indispensable to the survival of the civilian population 'for the specific purpose of denying them for their sustenance value to the civilian population or to the adverse Party,'[608] regardless of motive. Such indispensable

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contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage.'

[604] *Prosecutor v. Stanislav Galić*, Judgment, IT-98-29-A, Appeals Chamber, 30 November 2006, para. 130.

[605] Art. 51 (2), API. The object and purpose of Article 51 (2) is to confirm the customary rule that civilians must enjoy general protection against the danger arising from hostilities as well as the customary prohibition against attacking civilians. Galić, para. 103.

[606] The ICRC Commentary to art. 51 explains that military objectives principally include 'the armed forces, their members, installations, equipment and transports.' para. 1951, <http://www.icrc.org/applic/ihl/ihl.nsf/Comment.xsp?viewComments=LookUpCOMART&articleUNID=4BEBD9920AE0AEAEC12563CD0051DC9E>. Limited areas of strategic physical space, such as bridgeheads or mountain passes may, in certain circumstances, qualify as military objectives. *Ibid*, para. 1955.

[607] Oeter, 'Methods and Means of Combat,' pp. 127 -128. Attacks that employ certain means of combat which cannot discriminate between civilians and civilian objects and military objectives are 'tantamount to direct targeting of civilians.' *Prosecutor v. Pavle Strugar*, Judgment, IT-01-42-A, Appeals Chamber, 17 July 2008, note 689 (citing *Galić* Trial Judgment, note 101). Similarly, encouragement of soldiers to fire weapons for which they lack training may be indicative of the indiscriminate nature of an attack. *Strugar*, para. 274. Furthermore, the indiscriminate nature of an attack may be circumstantial evidence that the attack actually was directed against the civilian population. Galić (Appeals Chamber), at para. 132.

[608] A belligerent party may, in extreme cases of military necessity, destroy objects that *are* indispensable to the survival of the civilian population in portions of *its* territory that are under *its* control. ICRC Commentary to Art. 54 of API, para. 2121,

objects would include food supplies, crops ripe for harvest, drinking water reservoirs and water distribution systems.[609] To avoid additional civilian suffering, Article 56 bans attacks against works or installations containing dangerous forces, i.e. dams, dykes and nuclear power plants.

Article 57 addresses the precautions that 'those who plan or decide upon' an attack must exercise to avoid or minimize civilian casualties. Planners and executors of attacks must do everything feasible to verify that the target of the attack is a military objective and the provisions of API do not forbid the operation.[610] Furthermore, belligerent forces must 'take all feasible precautions in the choice of means and methods of attack'[611] to avoid and minimize incidental injury to civilians and damage to civilian objects.[612] 'Feasible precautions' are precautions that are practicable or practically possible considering all

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<http://www.icrc.org/applic/ihl/ihl.nsf/Comment.xsp?viewComments=LookUpCOMART&articleUNID=C5F28CACC22458EAC12563CD0051DD00>.

[609] *Ibid.* Article 54 was drafted before the development of nation-wide and global computer networks that operate and maintain vital communication, transportation, electrical and defence systems. Whether these networks should be considered as objects indispensable to the survival of the civilian population will be considered in the chapter on international criminal law.

[610] Art. 57 (2) (a) (i). As technology develops, the scope of what is 'practicable,' and therefore legally necessary, may expand accordingly. J Beard, 'Law and War in the Virtual Era,' 103 *American Journal of International Law*, 3 (July 2009), 409, at 433 – 439.

[611] Art. 57 (2) (a) (ii).

[612] Rules 15 – 17, ICRC Customary International Law Study, *supra* note …. According to U.K. military doctrine, when considering the means or methods of attack to be used, 'a commander should have regard to the following factors:

a. the importance of the target and the urgency of the situation;

b. intelligence about the proposed target—what it is being, or will be, used for and when;

c. the characteristics of the target itself, for example, whether it houses dangerous forces;

d. what weapons are available, their range, accuracy, and radius of effect;

e. conditions affecting the accuracy of targeting, such as terrain, weather, and time of day;

f. factors affecting incidental loss or damage, such as the proximity of civilians or civilian objects in the vicinity of the target or other protected objects or zones and whether they are inhabited, or the possible release of hazardous substances as a result of the attack;

g. the risks to his own troops of the various options open to him. JSP383, Joint Service Manual of the Law of Armed Conflict, para. 5.32.4.

circumstances ruling at the time, including humanitarian and military considerations.[613] Thus, this duty does not require an attacker to be certain that the target of the attack is lawful.[614] Instead the obligation is to act with due diligence and in good faith.[615]

The rule of proportionality, expressed in Articles 51 (5) (b) and 57 (2) (a) (iii), is the most challenging obligation within the realm of 'precautions-in-attack.' This rule requires parties to armed conflict to 'refrain from deciding to launch any attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.'[616] This duty requires consideration and balancing of at least three abstract values: '*excessive* incidental injury to civilians and/or damage to civilian objects,' 'concrete and direct' and 'military advantage.'

The adjective 'excessive' is important because, as Professor Dinstein observes, incidental civilian damage during armed conflict is inevitable due to the impossibility of keeping all civilians and civilian objects 'away from the circle of fire in wartime.'[617] However, the term does not lend itself to empirical calculations as it is impossible to prove

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[613] Art. 10, Protocol II to Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects ("CCW").

[614] Y Dinstein, *The Conduct of Hostilities Under the Law of International Armed Conflict*, 2nd ed. (Cambridge University Press, 2010), p. 139; W Boothby, *The Law of Targeting* (Oxford University Press, 2012), p. 121.

[615] *Dinstein*, p. 139. Feasibility determinations depend on diverse factors such as access to intelligence concerning the target and the target area, availability of weapons, personnel and different means of attack, control (if any) over the area to be attacked, the urgency of the attack and 'additional security risks which precautionary measures may entail for the attacking forces or the civilian population.' J Wright, '"Excessive' Ambiguity: Analysing and Refining the Proportionality Standard,' 94 *International Review of the Red Cross* (Summer 2012), 819, 827 (citing N Melzer, *Targeted Killing in International Law* (Oxford University Press, 2009), p. 365).

[616] Art 57 (2) (a) (iii). 'Concrete and direct,' JSP 383, Joint Service Manual of the Law of Armed Conflict, para. 5.33.3. For a discussion of the customary law basis of the rule of proportionality customary law, see *Prosecutor v. Zoran Kupreškić*, Judgment, IT-95-16-T, 14 January 2000, para. 524.

[617] Y Dinstein, 'The Principle of Distinction and Cyber War in International Armed Conflicts,' 17 *Journal of Conflict & Security Law*, 2 (2012), 261, 269.

that a particular factory is worth X number of civilians.[618] Furthermore, calculations of *expected* incidental damage to civilians (whether excessive or not) will always be approximations[619] 'to help inform a commander's decision making.'[620]

The language 'concrete and direct' means that the advantage to be gained is identifiable and quantifiable and flows directly from the attack, as opposed to a vague hope that it might improve the military situation in the long term.[621]

The ICRC Commentary to Article 52 (2) (a) (iii) observes that 'a military advantage can only consist in ground gained and in annihilating or weakening the enemy armed forces.'[622] Other commentators, however, argue that military advantage is a contextual notion with diverse variables.[623] Furthermore 'an attack' in this context may be comprised of a number of coordinated actions including diversionary tactics and disruption of communications.[624] Thus, the military advantage anticipated from an attack refers to the

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[618] A Rogers, *Law on the Battlefield*, 2nd ed. (Manchester University Press, 2004), p. 20. Commanders may consider a (non-exhaustive) list of intangible concerns to determine what is excessive: '[h]ow important is the military objective sought to be achieved? What are the pros and cons of each option available to achieve that objective? For each option, what is the probability of success? What are the costs of failure? What are the risks of civilian casualties present in each option? What are the risks of military casualities involved in each option? How are casualites of either kind to be weighed against the military benefits of the attack?' Department of Defense Law of War Manual, nte. 320.

[619] United States military doctrine defines 'Collateral Damage Estimate' as '[a]n approximate calculation of potential collateral damage through analysis prior to target engagement.' 'No Strike and the Collateral Damage Estimation Methodology,' *Chairman of the Joint Chiefs of Staff Instruction*, CJCSI 3160.01A, 12 October 2012, p. GL-4. Thus, collateral damage estimates do not predict the actual outcome of weapon use. Operational environments, weapon performance and accuracy of intelligence can contribute to collateral damage estimates that differ from actual results. *Ibid*, p. D-2.

[620] *Ibid*, p. D-2.

[621] JSP 383, Joint Service Manual of the Law of Armed Conflict, para. 5.33.3.

[622] *Ibid*, para. 2218. Such advantage, however, 'may or may not be temporally or geographically related to the object of the attack.' Elements of Article 8 (2)(b)(iv) of the Rome Statute for the International Criminal Court, note 36.

[623] For example, the 'the military advantage' of an attack may change depending on the overall purpose of the military mission. Y Dinstein, 'Legitimate Military Objectives Under the Current Jus in Bello,' in A Wall (ed.), *Legal and Ethical Lessons of NATO's Kosovo Campaign*, 78 *International Law Studies* (Newport, Naval War College, 2002), p. 186.

[624] Department of Defense Law of War Manual, Section 5.7.7.3.

advantage expected from the attack considered as a whole and not only from isolated or specific parts of the attack.[625] Phrased differently, 'military advantage' is not restricted to immediate tactical gains, but may be assessed in the full strategic context.[626]

Proportionality analyses, often made during the stress of military operations, are notoriously difficult and require a degree of subjectivity on the part of military commanders.[627] In 2000, a report issued by the Office of the Prosecutor of the International Criminal Tribunal for the Former Yugoslavia ('ICTY') observed that '[i]t is much easier to formulate the principle of proportionality in general terms than it is to apply it to a particular set of circumstances because the comparison is often between unlike quantities and values. One cannot easily assess the value of innocent human lives as opposed to capturing a particular military objective.'[628] The language contained in Articles 51 (5)(b) and 57 (2)(a)(iii): 'which would be excessive in relation to,' links and relativises the two core values at stake, and guarantees that proportionality 'does not function as a rule of equity within armed conflict.'[629]

Thus, the proportionality rule 'is not a standard of precision.'[630] Rather, military commanders must use their common sense and good faith when they weigh up the

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[625] JSP 383, Joint Service Manual of the Law of Armed Conflict, para. 5.33.5. Importantly, the terms 'anticipated' and 'expected' guarantee that proportionality analysis will not be retrospective. It does not concern the actual incidental damage caused nor the military advantage achieved by the attack. The 'decision taken by the person responsible has to be judged on the basis of all information available to him at the relevant time, and not on the basis of hindsight.' Galić, nte. 109, citing the Statements of Understanding made by Germany upon ratification of API, 14 February 1991.

[626] Department of Defense Law of War Manual, Section 5.7.7.3.

[627] ICRC Commentary to Art. 57, API, para. 2208, <https://www.icrc.org/applic/ihl/ihl.nsf/Comment.xsp?action=openDocument&documentId=D80D>.

[628] *Final Report to the Prosecutor by the Committee Established to Review the NATO Bombing Campaign Against the Federal Republic of Yugoslavia* (2000), para. 48 <http://www.icty.org/sid/10052>.

[629] May & Newton, Proportionality in International Law, p. 172.

[630] *The Targeted Killing Case*, Judgment, Supreme Court of Israel, President A. Barak, 11 December 2005, para. 58.

humanitarian and military interests at stake.[631] The ICRC Commentary recognizes that the rule, 'such as it is,'[632] attempts to balance the competing interests of military necessity and the protection of civilian populations.[633] Not surprisingly, the ICRC prefers to set this balance substantially on the side of humanity: '[t]he Protocol does not provide any justification for attacks which cause extensive civilian losses and damages. Incidental losses and damages should *never* be extensive.'[634] More recently, a group of international humanitarian law experts, in disagreement with the latter approach, opined that 'extensive collateral damage may be legal if the anticipated concrete and direct military advantage is sufficiently great. Conversely, even slight damage may be unlawful if the military advantage expected is negligible.'[635]

The requirements of the Article 57 rules concerning precautions-in-attack (as well as the other targeting rules codified in API) reflect elementary considerations of humanity (i.e. human dignity) and the international humanitarian law principle that civilians and civilian objects shall be spared, as much as possible, from the effects of hostilities.[636] Similarly, these rules speak to military necessity and the need of armed forces for disciplined soldiers

[631] ICRC Commentary to Art. 57, API, para. 2208.
[632] The ICRC acknowledged that the rule 'is by no means as clear as it might have been.' *Ibid*, para. 2219.
[633] Questions that may impact a commander's proportionality analysis include: what are the relative values to be assigned to the anticipated military advantage gained and the expected injury to non-combatants and/or damage to civilian objects; what do you include or exclude in calculating these values; to what extent is a military commander obligated to expose her own forces to danger in order to limit civilian casualties or damage to civilian objects? Final Report to the Prosecutor by the Committee Established to Review the NATO Bombing Campaign Against the Federal Republic of Yugoslavia, para. 49. Since different commanders possess different doctrinal backgrounds and different levels of combat experience, this report suggested that the standard to apply for assessing past proportionality determinations should be that of the 'reasonable military commander.' *Ibid,* para. 50.
[634] ICRC Commentary to Article 51 (5), para. 1980, (emphasis added), <http://www.icrc.org/applic/ihl/ihl.nsf/Comment.xsp?viewComments=LookUpCOMART&articleUNID=4BEBD9920AE0AEAEC12563CD0051DC9E>.
[635] Tallin Manual, Rule 51 (7). The Netherlands armed forces distinguish between what is lawful and what is *acceptable* in proportionality analysis. Thus, when planning attacks, Dutch commanders must try to ensure that no collateral damage occurs. Author interview with Colonel Hans Folmer, Commander of Cyber Command, Netherlands Ministry of Defence, 20 January 2015.
[636] Galić, Judgment, para. 190.

who will fight most effectively and facilitate the re-establishment of peace.[637] Thus, this dual proscriptive and permissive approach – based in the value of human dignity -- runs through the laws and customs of war from the writings of Grotius, Vattel and their contemporaries to modern day treaty and customary international humanitarian law.

Given the complexities of combat and the battlespace, the general principles of Article 57 do not give rise to specific rules that particular types of weapons must be used in a specific case.[638] Instead, parties to armed conflict 'retain considerable discretion to prioritise military considerations and the framework of operational requirements, and not simply humanitarian constraints.'[639] Targeting assessments, therefore, often entail a degree of subjectivity.[640]

Nevertheless, the targeting rules of international humanitarian law apply to the use of autonomous weapon systems (like any other weapon systems). Professional armies must 'expect military commanders employing a system with autonomous functions to engage in the decision-making process that is required by international humanitarian law.'[641] Logically, it is impossible for commanders to *direct* weapons at specific military objectives, as required by Article 51 (4) (b) of API, without a proper understanding of the weapon. Thus, deployment of autonomous weapons systems without a proper understanding of how the system works

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[637] '[n]o responsible military commander would wish to attack objectives which were of no military interest.' ICRC Commentary to Art. 57, API, para. 2195, available <https://www.icrc.org/applic/ihl/ihl.nsf/Comment.xsp?action=openDocument&documentId=D80D14D84BF36B92C12563CD00434FBD>.

[638] Oeter, 'Methods and Means of Combat,' pp. 189 – 190. Nor does the rule imply any prohibition of specific weapons. ICRC Commentary to Art. 57, API, para. 2201, <https://www.icrc.org/applic/ihl/ihl.nsf/Comment.xsp?action=openDocument&documentId=D80D14D>.

[639] Oeter, 'Methods and Means of Combat,' p. 190.

[640] 'In considering whether commanders and others responsible for planning, deciding upon, or executing attacks have fulfilled their responsibilities, it must be borne in mind that they have to make their decisions on the basis of their assessment of the information from all sources which is available to them at the relevant time.' Joint Service Manual on the Law of Armed Conflict, p. 85. This means looking at the situation as it appeared to the individual at the time when she made her decision. *Ibid.* Tallin Manual, note 384.

[641] Colonel R. Jackson, Panel on 'Autonomous Weaponry and Armed Conflict', Annual Meeting of American Society of International Law, Washington DC, April 2014.

will constitute an indiscriminate attack and be subject to criminal sanction, at least in jurisdictions that recognize the dolus eventualis standard for mens rea.[642] Moreover, prior to deploying an autonomous weapon,[643] the superior must ensure one of two criteria: 1) once programmed, the artificial intelligence software controlling the autonomous weapon system has the robust capacity to comply with Article 57, or 2) deployment of the autonomous weapon system is itself an expression of a 'feasible precaution in the choice of means and methods of attack' within the meaning and spirit of the law.[644]

B. Autonomous Weapon Systems and Compliance with the Laws of Targeting

Nothing in international humanitarian law per se, makes the application of these targeting rules by autonomous weapon systems unlawful, *provided* that the artificial intelligence of the autonomous functions is capable of compliance with the rule(s).[645] Currently, the limited powers of artificial 'vision' and object recognition severely restrict the capacity of autonomous technologies to comply with the principle of distinction.[646] Thus,

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[642] M Schmitt, Remarks during Panel on "The International Legal Context" at 'Autonomous Military Technologies: Policy and Governance for Next Generation Defence Systems,' Chatham House, London, 24 February 2014; Permission to cite provided in electronic mail message to author, 15 March 2014.

[643] By definition, once the commander deploys an autonomous weapon platform, she may lose her ability to take additional feasible precautions as well as make proportionality judgments. During the Clinton administration, after U.S. armed forces under his command launched automated cruise missiles against the headquarters of Saddam Hussein's intelligence service in Baghdad, President Clinton was aghast to learn that the missiles neither had cameras mounted on them, nor could they be 'turned back' prior to striking their targets. R Clarke, *Against All Enemies: Inside America's War on Terror* (New York: Free Press, 2004), pp. 82 – 83.

[644] Jackson, Panel on 'Autonomous Weaponry and Armed Conflict'; Art. 8 (2) (b) (iv) of the Rome Statute of the International Criminal Court prohibits attacks where the anticipated civilian injury and damage is 'clearly excessive" to the expected military advantage. No similar provision exists in treaty or customary law that criminalises failures to take feasible precautions under Arts. 57 (2) (a) (i) or (ii). I am grateful to Professor Robin Geiß for clarifying this point.

[645] The humanitarian character of the principles of the law of armed conflict applies to all forms of warfare and all kinds of weapons, including future weapons. The Legality of Nuclear Weapons, *supra* note … para. 86.

[646] M Cummings, 'Man versus Machine or Man + Machine?' *IEEE Intelligence Systems*, September/October 2014, 7, <http://hal.pratt.duke.edu/sites/hal.pratt.duke.edu/files/u10/IS-29-05-Expert%20Opinion%5B1%5D_0.pdf>. Peter Margulies, on the other hand, claims that machine recognition of human faces and landscape images have improved greatly, although still requires 'regular, frequent human monitoring and assessment.' Margulies, 'Making Autonomous Weapons Accountable: Command Responsibility for Computer-Guided Lethal Force in Armed Conflicts.'

deployment of an autonomous weapon system programmed to seek out and attack an enemy (and only that enemy) would be lawful exclusively in remote areas such as deserts or the high seas, where the likelihood of the presence of civilians is extremely low and more complex assessments, such as proportionality, unnecessary.[647] Even this restricted scenario contains additional challenges. Article 41 of API, for example, prohibits the targeting of individuals who clearly express an intention to surrender. Although this assessment can be difficult for human soldiers, sailors and pilots as well,[648] the launch of an autonomous weapon system without this recognition capability would be unlawful.[649]

Indeed, the ability to make the difficult value judgments often present in complex proportionality analysis (as well as other precautions in attack) probably presents the greatest cognitive challenge to the lawful operation of autonomous weapon systems.[650] The data-processing strengths of modern computers miss the qualitative ability to assess the competing human priorities of military advantage and the protection of civilians. This reflective capacity, the presence of accumulated knowledge, experience, instinct[651] and 'common-sense,' resides, at times, in the human mind.[652] Given the present state of artificial intelligence, without human-machine teamwork in situations where proportionality

[647] B Boothby, 'How Far Will the Law Allow Unmanned Targeting to Go?' in D Saxon (ed.) *International Humanitarian Law and the Changing Technology of War* (Leiden: Martinus Nijhoff, 2013), pp. 57 – 59 and 62.
[648] During the trench warfare of the first world war, the 'onus fell rather on the would-be prisoner to get his surrender accepted, something difficult to do when friend and enemy met so rarely face-to-face, when face-to-face encounters tended to provoke hair-trigger reactions, and when a pacific shout from a dark dug-out in a foreign language might be misinterpreted.' J Keegan, *The Face of Battle* (New York, Penguin Books, 1978), pp. 282 – 283.
[649] Boothby, 'How Far Will the Law Allow Unmanned Targeting to Go?' p. 59.
[650] M Schmitt and J Thurnher, '"Out of the Loop": Autonomous Weapon Systems and the Law of Armed Conflict,' 4 *Harvard Natl. Sec. J.* (2013), 231, 266 - 267. M Sassóli, 'Automomous Weapons and International Humanitarian Law: Advantages, Open Technical Questions and Legal Issues to Be Clarified,' 90 *International Law Studies* 308 (2014), 331 – 33.
[651] Reliance on one's natural instincts, of course, can be fallible. Aristotle, *On Rhetoric: A Theory of Civic Discourse*, George A. Kennedy, Trans. 2nd ed. Oxford, Oxford University Press, 2007, p. 94.
[652] Sassòli, 'Automomous Weapons and International Humanitarian Law: Advantages, Open Technical Questions and Legal Issues to Be Clarified,' 334. ICRC Commentary to Art. 57, API, para. 2208, <https://www.icrc.org/applic/ihl/ihl.nsf/INTRO/470>.

evaluations and other value-based decisions are necessary, the deployment of a lethal autonomous weapon system would be illegal pursuant to the targeting rules of international humanitarian law.

Nevertheless, as the technology improves, it is possible to envisage scenarios where an autonomous weapon system can fulfill targeting obligations more successfully than humans.[653] Tests of new 'machine-learning' systems[654] demonstrate that 'machine-learning' artificial intelligence often exhibits better judgment than humans in response to certain situations.[655] Unburdened by stress and fatigue and capable of processing more data, more quickly, than human soldiers, machines – in some situations - will exhibit more 'tactical patience'[656] and, potentially, more accuracy when distinguishing between civilian and combatants.

Similarly, autonomous weapon systems could provide opportunities for greater pre-cautionary measures – including more accurate proportionality analysis - than human soldiers planning and executing an attack. An autonomous weapon system, unworried about its own survival, can delay the use of force, thereby reducing doubt about the nature of a target. It can

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[653] Sassòli, 'Automomous Weapons and International Humanitarian Law: Advantages, Open Technical Questions and Legal Issues to Be Clarified,' 310 – 311.

[654] Although algorithm-based artificial intelligence is the most common form in use today, 'Statistical Machine Learning,' whereby autonomous robots learn to modify their behaviour by trial-and-error, is a significant area of research. L Steels, 'Ten Big Ideas of Artificial Intelligence,' *Remarks to 25th Benelux Conference on Artificial Intelligence*, Delft Technical University, 8 November 2013; Author Interview with Gianfranco Visentin, Head, Automation and Robotics Department, European Space Agency, Noordwijk, 4 November 2013; P Margulies, 'Making Autonomous Weapons Accountable: Command Responsibility for Computer-Guided Lethal Force in Armed Conflict.'

[655] R Brooks, 'A Brave New World? How Will Advances in Artificial Intelligence, Smart Sensors and Social Technology Change Our Lives?' Panel Discussion at World Economic Forum, 22 January 2015, <http://www.weforum.org/videos/brave-new-world>.

[656] 'Tactical patience' refers to the ability to permit a combat situation to develop to ensure that actions taken (such as attacks) are appropriate and lawful. T McHale, 'Executive Summary for AR 15-6 Investigation, 21 February 2010 CIVCAS Incident in Uruzgan Province,' *Memorandum for Commander, United States Forces-Afghanistan/International Security Assistance Force*, Afghanistan, <http://www.rs.nato.int/images/stories/File/April2010-Dari/May2010Revised/Uruzgan%20investigation%20findings.pdf>.

also use less force, including non-lethal force, when engaging the enemy, and so put civilians at lesser risk.[657] Consequently, the use of these autonomous systems will, in some situations, impact the process of balancing military necessity and humanity embodied in proportionality analysis.[658] Indeed, the introduction of these weapons to the battlespace can alter the meaning and scope of these two principles.[659]

A number of individuals and non-governmental organizations have called for an international ban on the development and use of lethal autonomous weapon systems,[660] arguing inter alia, that use of these weapon systems will violate international humanitarian law. Human Rights Watch, for example, contends that 'fully autonomous weapons' would not be able to fulfill the requirements of distinction, 'especially in contemporary combat environments.'[661] Moreover, Human Rights Watch argues that autonomous weapon systems lack the 'human qualities' that are necessary to assess an individual's intentions, an

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[657] Sassòli, 'Automomous Weapons and International Humanitarian Law: Advantages, Open Technical Questions and Legal Issues to Be Clarified,' 310; M Schmitt and J Thurnher, '"Out of the Loop": Autonomous Weapon Systems and the Law of Armed Conflict,' 264.

[658] Professors May and Newton suggest that the time has arrived to consider, as *lex ferenda*, the lives of combatants as factors in a proportionality assessment. Proportionality in International Law, p. 151. In that context, in certain circumstances, particularly when capture is possible, there may be little military advantage to be gained from the use of lethal force by autonomous weapon systems against, or in the vicinity of, human soldiers.

[659] The notions of military necessity and humanity can evolve as new technology affects the ways wars can be fought and social perceptions of acceptable human suffering change. H Natsu, 'Nanotechnology and the Future of the Law of Weaponry,' 91 *International Law Studies* (2015), 486, 501 – 502 and 507; Margulies, 'Making Autonomous Weapons Accountable: Command Responsibility for Computer-Guided Lethal Force in Armed Conflict.'

[660] See the Campaign to Stop Killer Robots, <http://www.stopkillerrobots.org/>. Professor Christoph Heyns, United Nations Special Rapporteur for Extrajudicial Executions, has called for national moratoria on the production, transfer, deployment and use of lethal autonomous robots ('LARs') 'until such time as an internationally agreed upon framework on the future of LARs has been established; ….' Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Execution, A/HRC/23/47, 9 April 2013, para. 113, http://www.ohchr.org/Documents/HRBodies/HRCouncil/RegularSession/Session23/A-HRC-23-47_en.pdf.

[661] *Losing Humanity: The Case Against Killer Robots*, Human Rights Watch, November 19, 2012, pp. 30 – 31, available online at http://www.hrw.org/reports/2012/11/19/losing-humanity-0. Also see *Killer Robots and the Concept of Meaningful Human Control*, Memorandum to Convention on Conventional Weapons (CCW) Delegates, Human Rights Watch, April 2016, pp. 2, 4 and 16.

assessment that is key to distinguishing targets.'[662] If an autonomous weapon system is used in an environment where it cannot distinguish between combatants and civilians, then its use is indiscriminate and unlawful.[663]

While that last statement is correct in principle, it would not preclude the use of autonomous weapon systems in conditions where they *can* distinguish between combatants and civilians. Furthermore, nothing in international humanitarian law speaks to a general duty to gauge 'an individual's intentions' prior to engaging a target.[664] A belligerent may attack an enemy soldier, and kill her, without measuring that enemy's thought processes or emotional state at the time. Soldiers often fire artillery at human targets many kilometres distant. Pilots often drop bombs on targets from high altitudes. A suggestion that all such attacks violate the law of armed conflict and/or that the weapon systems used are illegal is untenable.[665] Thus, Human Rights Watch appears to find 'obligations' in the principle of distinction that do not exist in law.

Human Rights Watch also claims that lethal autonomous weapon systems should be banned because they 'cannot identify with humans, which means that they are unable to show compassion, a powerful check on the willingness to kill.'[666] The laws of war, however, do 'not seek to promote 'love,' 'mercy' or human empathy …, but respect based on objective

[662] *Ibid*, p. 31.
[663] Art. 51 (4)(b), API.
[664] An exception would be an enemy soldier manifesting her intention to surrender as discussed above.
[665] M Schmitt & J Thurnher, '"Out of the Loop": Autonomous Weapon Systems and the Law of Armed Conflict,' 248.
[666] Losing Humanity: The Case Against Killer Robots, p. 38.

criteria.'[667] This contention, therefore, is also irrelevant under international humanitarian law.

Furthermore, Human Rights Watch claims (without providing any scientific evidence) that an autonomous weapon system 'could not be programmed to duplicate the psychological processes in human judgment that are necessary to assess proportionality.'[668] The organization contends that 'humans are better suited to make such value judgments, which cannot be boiled down to a simple algorithm.'[669] Although these arguments are true, today,[670] the ability of computers to address complex decisions will increase as artificial intelligence technology continues to develop.[671] More importantly, however, the delegation of these value judgments to autonomous weapon systems constitutes a transfer of the power of human reasoning. As discussed below, *that* scenario produces a loss of human dignity, contradicting the very raison d'etre of international humanitarian law.

IV. Autonomous Weapon Systems, the Law of Targeting, and Human Dignity

Many of the tasks involved in the targeting process(es) do not require weighing of, or reflection about, important values. The gathering of data, calculations of expected damage (to targets and civilians and civilian objects), even the fusion of information for the identification

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[667] Sassòli, 'Automomous Weapons and International Humanitarian Law: Advantages, Open Technical Questions and Legal Issues to Be Clarified,' 318.
[668] *Ibid*, 34.
[669] *Ibid*.
[670] M Cummings, 'Man versus Machine or Man + Machine?' *IEEE Intelligence Systems*, September/October 2014, 7, <http://hal.pratt.duke.edu/sites/hal.pratt.duke.edu/files/u10/IS-29-05-Expert%20Opinion%5B1%5D_0.pdf>.
[671] In addition, Human Rights Watch makes the confusing argument that even when autonomous weapons can acquire the required level of reason, they would fail to have other qualities '– such as the ability to understand humans and the ability to show mercy – that are necessary to make wise legal and ethical choices *beyond the proportionality test*.' Losing Humanity: The Case Against Killer Robots, p. 34 (emphasis added). It is important to clarify that the law does not impose obligations on belligerents 'beyond the proportionality test,' or beyond other international humanitarian law rules.

of objects and persons as friendly or enemy, are illustrative of sub-processes more efficiently performed by autonomous and/or automatic technology.

Conversely, final decisions concerning feasible precautions combine subjective and objective judgments involving the principles of military necessity and humanity. Evaluation of what is necessary in war is a difficult and subjective process. Consequently, 'different people often assess military necessity differently.'[672] Commanders making these assessments may consider the broader imperatives of winning the armed conflict in addition to the demands of the immediate circumstances. Considerations of military necessity that encompass only immediate situations 'could prolong the fighting and increase the overall suffering of the war.'[673] Therefore, in addition to knowledge and experience, interpretations of 'everything feasible' and 'all feasible precautions' will be a matter of common sense and good faith.'[674]

Delegation of responsibility for these decisions to artificial intelligence directing autonomous weapons would remove a great deal of pressure from soldiers and their commanders. This short-term gain, however, creates a long-term disadvantage. As discussed in chapters three and four, the ability to think and communicate about difficult concepts and values reflects the core of personal autonomy and human identity. Conveyance of this responsibility to machines is a transfer of human value; nothing could damage human dignity more. The onus for taking the precautionary measures described in Article 57 of API,

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[672] *U.S. Department of Defense Law of War Manual*, Office of General Counsel, 12 June 2015, para. 2.2.3.
[673] *Ibid,* 2.2.3.1.
[674] ICRC Commentary to art. 57, API, para. 2198, <https://www.icrc.org/applic/ihl/ihl.nsf/Comment.xsp?action=openDocument&documentId=D80D14D84BF36B92C12563CD00434FBD>.

therefore, must remain with the human commanders and operators who have the capacity to exercise their judgment over, and interact with, lethal autonomous weapon systems.

Some commentators might respond that the human reasoning process for these value-based decisions is simply shifted from the human commander or soldier to the person who programmes the artificial intelligence software for each weapon. For example, William Boothby observes that it 'may sometimes be possible at the mission planning stage for a human being to determine that in all foreseeable circumstances programmed attacks will always comply with these evaluative rules.'[675] With respect to an autonomous aerial weapon system, the person planning the mission inter alia will specify the area to be searched and/or the objective to be targeted, the munitions to be carried, the associated target recognition technology required for the mission and the necessary quality of recognition.[676]

The unpredictability of warfare, however, makes this argument unsatisfactory. The moral and legal reasoning involved in these planning decisions only brings the autonomous weapon system to the entrance of the battlespace. It is impossible to foresee all of the changing circumstances that result from the fluidity and violence of armed conflict. Consequently, it would be impossible for an operator of an autonomous weapons system to programme the machine to address every contingency. The human planner – whether intentionally or simply by default – leaves many other issues to the artificial intelligence software.

[675] Presentation to Expert Meeting on Lethal Autonomous Weapon Systems, Convention on Certain Conventional Weapons, 13 – 17 April 2015, p. 3.
[676] Boothby, The Law of Targeting, p. 283.

In addition, one can argue that my position will lead to a counter-productive 'normative drift'[677] in international humanitarian law. By using concerns about human dignity to limit the use of lethal autonomous weapons, the international humanitarian law goal of reducing the suffering of war is 'turned on its head.' For example, robotic swarms of autonomous weapons are designed to quickly overwhelm an opponent, resulting in sharp, but short wars. The fielding of these lethal autonomous weapon systems, therefore, has the potential to reduce human casualties of the attacking forces, and possibly avoid civilian injuries as well.[678] Consequently, the employment of these weapons, consistent with the principle of military necessity, could accelerate and facilitate the return to peace.[679] Open-ended claims about threats to human dignity, consequently, apart from skewing the balance between military necessity and humanity, could lead to greater violations of international humanitarian law. On the other hand, this same balancing process, operating at the heart of international humanitarian law, might simultaneously affirm the use of autonomous weapons and avert their offence to human dignity.

This argument, however, ignores the fact that the concept of human dignity can inform assessments of military necessity and humanity in multiple, nuanced ways, depending on the circumstances.[680] For example, autonomous machines can still replace humans in many important functions during the conduct of hostilities – thereby reducing the suffering caused by war – while human soldiers and commanders continue to make complex, value-based

[677] C Tams, 'The Use of Force Against Terrorists,' 20 *European Journal of International Law* (2009), 383, 389 and 392 (discussing jus ad bello and the 'normative drift' with respect to the scope of the right of states to self-defence).
[678] M Newton, 'Back to the Future: Reflections on the Advent of Autonomous Weapon Systems,' 47 *Case Western Reserve Journal of International Law* (2015), 16-17 and 21-22.
[679] By mitigating human suffering and property damage, armed forces can accelerate recovery in post-conflict situations. 'No-Strike and the Collateral Damage Estimation Methodology,' CJCSI 3160.01A, p. C-4.
[680] J Waldron, *The Harm in Hate Speech* (Cambridge Massachusetts, Harvard University Press, 2012,) p. 140.

decisions more effectively. Boothby, for example, describes how, if humans plan an autonomous weapon attack in a 'relatively depopulated area,' or 'within an exclusively military area,' then precautions taken in the pre-mission planning may address legal concerns adequately for the duration of the mission,[681] while minimizing risk to human soldiers. This outcome would support the principles of military necessity and humanity, as well as the over-arching value of human dignity.

Furthermore, circumstances could arise during armed conflict where the use of autonomous weapon systems could improve compliance with international humanitarian law. For example, autonomous weapon systems might neutralize, more quickly and accurately than human soldiers, an armed group that is mistreating prisoners of war and/or civilians. In those particular situations, concerns about law and human dignity arguably would demand their use.[682] This argument, however, actually supports the claim that the *systematic* use of autonomous weapons vitiates human dignity. If a military commander has the ability to identify those complex situations where a particular autonomous weapon system should be used, she will do so based on her training, experience and accumulated knowledge.[683] These qualities of reason and reflection – the capacity to respect and protect the rights of others -- will not develop (much less be used) when the employment of autonomous weapons becomes the default norm.

[681] Boothby, The Law of Targeting, p. 284.
[682] A similar situation might arise where the only available soldiers available to a commander have a history of disrespect for the rules of international humanitarian law and/or human rights law.
[683] Boothby, *The Law of Targeting* p. 409.

V. The Law of Targeting, Human Dignity and the Design of Autonomous Weapon Systems

International humanitarian law facilitates 'the difficult moral and legal choices that *require human judgment* in order to preserve human dignity and life to the greatest degree possible in light of the military mission.'[684] As autonomous technology for warfare continues to develop within the framework(s) of international law, the importance of preserving human dignity compels the use of coactive design of autonomous technology and human machine interdependence. An emphasis on teamwork between human and computer protects the principals and obligations enshrined in international humanitarian law *and* encourages the development of more advanced technologies:

> '….the U.K. position is that [international humanitarian principles], and the requirement for precautions in attack, are best assessed and applied by a human. Within that process a human may of course be supported by a system that has the appropriate level of automation to assist the human to make informed decisions. This is *the intelligent partnership* we referred to yesterday.'[685]

A coactive design of autonomous weapon systems permits flexibility in the degree of human-to-machine supervision in the face of the uncertainties of armed conflict.[686] Humans can provide 'high-level direction' whilst machines autonomously perform complex computations for specific tasks according to predetermined rules.[687]

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[684] M Newton, 'Back to the Future: Reflections on the Advent of Autonomous Weapon Systems,' 16 (emphasis added).
[685] U.K Government, 'Statement to the Informal Meeting of Experts on Lethal Autonomous Weapon Systems, *Convention on Certain Conventional Weapons*, April 2015, para. 2 (emphasis added), http://www.unog.ch/80256EDD006B8954/(httpAssets)/3AA5E280106A73EFC1257E2900472797/$file/2015_LAWS_MX_UK_IHL.pdf.
[686] A Clare, et. al. 'Assessing Operator Strategies for Real-Time Replanning of Multiple Unmanned Vehicles,' 6 *Intelligent Decision Technologies* (2012), 221 – 222.
[687] *Ibid*, 221, M Newton, 'Back to the Future: Reflections on the Advent of Autonomous Weapon Systems,' 21-22.

Tension will arise, however, between the methodical practice of 'deliberate' targeting to assure compliance with the law of war and the ever-increasing speed of autonomous weapon technology.[688] Modern communication technology permits state armed forces and non-state actors to use the 'long screwdriver,' i.e. the predilection for more high-ranking and, by implication, more remote control over attack decisions.[689] Increasingly autonomous weapons technology, however, shortens the screw-driver, resulting in a significant military advantage. In battlespace environments where reaction cycles are measured in micro-seconds, for example, what will the term 'feasible' precautionary measures actually mean? Kimberly Trapp argues that during warfare, the feasibility of precautionary measures are 'conditioned by time constraints and by the speed limitations of a State's information gathering and dissemination capabilities.'[690]

This reality (which, arguably, provides more weight to the priorities of military necessity than concerns about humanity) ignores the possibility that autonomous weapons technology will one day operate at such speeds that *all* threats will be immediate and the notion of 'deliberate' target assessments impossible and/or suicidal. Professor Sassóli observes that '[a]s the weapons actually delivering kinetic force become increasingly quicker and more complex, it may be that humans become simply too overwhelmed by information

[688] Such pressures are not a recent phenomenon. In 1841, for example, in correspondence with the Government of the U.K concerning 'The Caroline Case,' U.S. Secretary of State Daniel Webster articulated a standard for the use of force in self-defence: 'a show of necessity of self-defence, instant, overwhelming, *leaving no choice of means, and no moment of deliberation*.' 'British-American Diplomacy: The Caroline Case,' *Lillian Goldman Library, The Avalon Project,* 2008 (emphasis added), <http://avalon.law.yale.edu/19th_century/br-1842d.asp>. Although this standard derives from the jus ad bello context, it fairly describes armed conflict situations in which the need to return fire and/or attack will be immediate. K Trapp, 'Great Resources Mean Great Responsibility: A Framework of Analysis for Assessing Compliance with API Obligations in the Information Age,' in Saxon, International Humanitarian Law and the Changing Technology of War, note 50.

[689] Boothby, The Law of Targeting, p. 408.

[690] *Ibid*, p. 167. 'The extent to which a state prioritises the safety of its armed forces is … the fault line of compliance with API obligations to take precautionary measures.' *Ibid*, p. 170.

and the decisions that must be taken to direct them.'[691] The growing development of autonomous swarm technology represents the clearest trend toward this state of affairs. Decisions made literally at the speed of light by machines will obliterate opportunities for reasoned reflection and gradually reduce human involvement in the application of the law.[692]

These concerns militate for a co-active design for autonomous weapon systems to ensure that the use of autonomous weapon systems complies with international humanitarian law. That policy would be consistent with the positions of states that advocate for limitations to autonomous weapon systems so that they remain subject to 'restrictions' expressed variously as 'meaningful human control,' appropriate levels of human judgment over the use of force,' etc.[693] Human-machine interdependence would ensure continued protection for human dignity implicit in the duties of international humanitarian law.

It is crucial, therefore, to consider how the design of lethal autonomous weapons systems should be adapted to the targeting rules of International Humanitarian Law. Law

[691] Sassòli, 'Automomous Weapons and International Humanitarian Law: Advantages, Open Technical Questions and Legal Issues to Be Clarified,' 310, citing R Arkin, *Ethical Robots in Warfare*, Georgia Institute of Technology (Jan. 20, 2009), 2. <http://www.cc.gatech.edu/ai/robot-lab/online-publications/arkin-rev.pdf>.

[692] E Jensen, 'The Future of the Law of Armed Conflict: Ostriches, Butterflies and Nanobots,' 35 *Michigan Journal of International Law* (Winter 2014), 253, 300 (citing Colonel (ret.) Thomas Adams who contends that future autonomous weapons 'will be too fast, too small, too numerous and will create an environment too complex for humans to direct'). 'Robots on Battlefield: Robotic Weapons Might be the Way of the Future, But They Raise Ethical Questions About the Nature of Warfare,' Townsville Bull (Austr.), 18 September, 2009, 210.

[693] 'Statement by South Africa,' Meeting of Experts on Lethal Autonomous Weapon Systems, Convention on Certain Conventional Weapons, 13 - 17 April 2015; 'Statement of Chile,' Meeting of Experts on Lethal Autonomous Weapon Systems, Convention on Certain Conventional Weapons, 13 April 2015; 'Denmark: 'General Statement by Susanne Rumohr Haekkerup, Ambassador for Disarmament, Non-Proliferation and Arms Control, Meeting of Experts on Lethal Autonomous Weapon Systems, Convention on Certain Conventional Weapons, 13 - 17 April 2015; 'Final Statement by Germany,' Meeting of Experts on Lethal Autonomous Weapon Systems, Convention on Certain Conventional Weapons, 17 April 2015; U.S. Department of Defence Policy Directive 3000.09, 21 November 2012, Enclosure 3 (1) (b) (1).

should steer the development of new weapons technologies.[694] Therefore, Article 36 ('New Weapons') of API admonishes that '[i]n the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party.'[695] The purpose of Article 36 is to prevent the use of weapons that violate international law in all circumstances and to impose limits on the use of weapons that violate international law in some circumstances. Article 36 requires states to determine their lawfulness before the new weapons are developed, acquired[696] or otherwise incorporated into the state's arsenal.[697]

This rule has not yet acquired the status of customary law[698] as only a relatively small number of states have acknowledged that they have established formal review processes

[694] S Sohm, 'Obligations Under International Law Prior to the Use of Military Force: Current Developments Relating to the Legal Review of New Weapons and Methods of Warfare,' 28 *Journal of International Law of Peace and Armed Conflict* (2015), 104 – 110, presented to Convention on Certain Conventional Weapons ('CCW') Meeting on Lethal Autonomous Weapon Systems, Geneva 11 – 15 April 2016. Professor Jensen refers to the 'vital signaling role' that international humanitarian law plays in the development of state practice, in particular vis a vis the development of new weapons. E Jensen, 'The Future of the Law of Armed Conflict: Ostriches, Butterflies and Nanobots,' 35 *Michigan Journal of International Law* (Winter 2014), 253, 262.

[695] <https://www.icrc.org/ihl/INTRO/470>. Means of warfare refer to weapons while methods of warfare refer to how the weapon is used. Thus, an autonomous weapon system would be a means of warfare. Schmitt and Thurnher, '"Out of the Loop": Autonomous Weapon Systems and the Law of Armed Conflict,' 271.

[696] For the purposes of compliance with art. 36, it is insufficient to rely on the promise of another state or the manufacturer of an autonomous weapon system that it can be used in compliance with international law, because that assessment may be incorrect. G Giacca, Remarks to panel on 'Challenges '[of Autonomous Weapons] to International Humanitarian Law,' Informal Expert Meeting on Lethal Autonomous Weapons, Convention on Conventional Weapons, Geneva, 13 April 2016, http://www.unog.ch/80256EE600585943/(httpPages)/37D51189AC4FB6E1C1257F4D004CAFB2?OpenDocument.

[697] *A Guide to the Legal Review of New Weapons, Means and Methods of Warfare: Measures to Implement Article 36 of Additional Protocol I of 1977*, ICRC, Geneva, 2006, p. 4, < https://www.icrc.org/eng/assets/files/other/icrc_002_0902.pdf>.

[698] Cf Schmitt and Thurnher, '"Out of the Loop:" Autonomous Weapon Systems and the Law of Armed Conflict,' 271, who argue that 'the obligation to conduct legal reviews of new means of warfare before their use is generally considered … reflective of customary international law.

under Article 36.[699] However, one of those countries, the United States, is perhaps the leading developer of autonomous weapon systems. Therefore, it is worthwhile to examine the appropriate contours of a legal review for these systems.

Preliminarily, as Parks observes, 'no single model for compliance with Article 36 exists.'[700] It is important, in the context of autonomous weapon *systems*, to consider what must be reviewed during an Article 36 process. A weapon system includes the weapon itself – the device that is designed to kill or injure persons and/or damage property – and other components necessary for the weapon's operation.[701] Logically, a legal review of an autonomous weapon system must evaluate the weapon or weapons designed for (the intended) use) of the system as well as the artificial intelligence hardware and software that will control targeting processes.[702]

For states that produce autonomous weapon systems for their own use or for export, legal reviews should commence at the concept or design phase and continue through the development, testing and acquisition periods. This policy will compel researchers and developers to focus their efforts, at the earliest possible stage, on ensuring that the results of their work will comply with the demands of international humanitarian law.[703] It also ensures that human dignity maintains its place as the point of departure for this legal analysis.

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[699] As of 2006, only nine states had informed the ICRC that they had 'in place national mechanisms to review the legality of weapons ….' 'A Guide to the Legal Review of new Weapons, Means and Methods of Warfare: Measures to Implement Article 36 of Additional Protocol I of 1977,' nte 8.

[700] Parks, 'Conventional Weapons and Weapons Reviews,' 107. As Schmitt and Thurnher observe, all state parties to API are under a treaty obligation to Art. 36 conduct legal reviews. '"Out of the Loop": Autonomous Weapon Systems and the Law of Armed Conflict,' 271.

[701] *Parks*, 'Conventional Weapons and Weapons Reviews,' 115 – 116.

[702] Legal reviews address the general legality of a weapons system as such, not its use in a specific situation. Schmitt and Thurnher, '"Out of the Loop": Autonomous Weapon Systems and the Law of Armed Conflict,' 276.

[703] ICRC, A Guide to the Legal Review of New Weapons, Means and Methods of Warfare, 951 – 952.

Moreover, after autonomous weapon systems are deployed to the battlefield, they should be subject to regular review based on their technical performance.[704]

As new technologies emerge and are applied to weapon systems, participants in legal reviews must have a reasonable understanding[705] of how the systems work, or will work, or possess the ability to obtain this knowledge.[706] The complexities of autonomous weapon systems will require a multi-disciplinary approach, with computer scientists, robotics engineers and other specialists assisting the military lawyers conducting the review.[707] Given the speed at which autonomous technologies are changing and advancing, complete records of each legal review of each new system, and each new modification of a system, are necessary to ensure consistency.[708]

For the reasons described above, legal reviews of the designs of new lethal autonomous weapon systems must ensure that the system will function consistently with international humanitarian law. In order to preserve human dignity, reviewers should insist that each new system employs a co-active design that permits the exercise of human reasoning for complex, value-based decisions such as proportionality evaluations.[709] This

[704] Giacca, 'Remarks to panel on 'Challenges '[of Autonomous Weapons] to International Humanitarian Law,' In addition, novel uses of existing capabilities or technology may require legal review. *Ibid.*

[705] Parks suggests the rather vague criteria that legal reviewers have 'some sense' how the new weapons work. Parks, 'Conventional Weapons and Weapons Reviews,' 100.

[706] Comparisons of proposed new weapons to already existing weapon systems may inform a legal review. For example, although the drafting of DOD Directive 3000.09 was not a 'legal review' in the context of Article 36 of API, military lawyers with experience in Article 36 reviews participated in the process, which included studies of the performance of older weapon systems such as the Patriot missile defence system and Aegis system. Colonel R Jackson, Panel on 'Autonomous Weaponry and Armed Conflict,' Annual Meeting of American Society of International Law ('ASIL'), Washington D.C. April 2014.

[707] ICRC, A Guide to the Legal Review of New Weapons, Means and Methods of Warfare, pp. 1, 6, 22 and 26; Sohm, 'Obligations Under International Law Prior to the Use of Military Force: Current Developments Relating to the Legal Review of New Weapons and Methods of Warfare,' 7 (CCW version).

[708] 'A Guide to the Legal Review of New Weapons, Means and Methods of Warfare,' *supra* note …, p. 955.

[709] See Margulies, 'Making Autonomous Weapons Accountable: Command Responsibility for Computer-Guided Lethal Force in Armed Conflict' ('Approval of an autonomous weapon system in the weapons review phase should be contingent on substantial ongoing human engagement with the weapon system').

policy should continue as legal reviews of the same system(s) are completed at the development, testing and acquisition phases.

VI. Conclusions

In international humanitarian law, the 'hard cases are those which are in the space between the extreme examples.'[710] In order for the use of autonomous weapons systems to comply with the rules of this body of law, as well as its underlying precept of human dignity, armed forces should not field fully autonomous weapons. At the same time, militaries should not abandon autonomous technologies that assist soldiers and commanders to do their jobs more effectively within legal limits. Co-active designs of autonomous weapon systems that guarantee human-machine interdependence during targeting processes will to help to ensure compliance with international humanitarian law, including the concept of human dignity.

Nevertheless, continued pressure for faster weapon systems and 'systems-in-systems' to increase 'military effectiveness' (i.e. military advantage over opponents) will work against efforts to maintain teamwork between human warfighters and their machines.[711] Fundamentally, this condition will impede the exercise of human thought and reasoning in decisions during armed conflict, weakening personal autonomy and the value of human dignity as a starting point for compliance with the law.

[710] Barak, The Targeted Killing Case, para. 46.
[711] Professor Jensen argues that 'the incorporation of autonomous weapons into regular armed forces will diminish the role of humans in targeting decisions.' 'The Future of Armed Conflict: Ostriches, Butterflies and Nanobots,' 286.

Chapter Six

Autonomous Weapon Systems and International Human Rights Law

I. Introduction

In the preceding chapter, I demonstrated that during armed conflict, autonomous weapons potentially have the capacity to comply with the rules governing the conduct of hostilities. Nevertheless, humans should continue to make decisions in situations involving complex and (often) conflicting values. Anything less would result in violations of human dignity, which is the foundation and guide of all international law.

In this chapter, I explain that international human rights law is most relevant to the use of autonomous weapon systems in two sets of circumstances: 1) in law enforcement/anti-terrorist situations where state authorities use lethal force, and 2) during armed conflict, where international human rights law applies concurrently with international human rights law. Three international human rights are most germane to this discussion: 1) the right to life, 2) the right to freedom of thought and 3) the right to freedom of expression. Underlying all three rights is the value of human dignity.

As autonomous technology advances, autonomous weapons may have the capacity to fulfill the requirements of international human rights law. However, consistent with my arguments in chapter five concerning international humanitarian law, I demonstrate that the regular use of autonomous weapons in law enforcement situations requiring the assessment of, complex values violates human dignity and the rights to freedom of thought and freedom of expression.

This chapter begins with a brief review of the sources of international human rights law. It continues with a general discussion of the scope of the rights to life, freedom of thought and freedom of expression in international human rights law. I describe the capacity of autonomous weapons to protect these human rights during law enforcement/anti-terrorist operations. Subsequently, I review the interplay between international humanitarian law and international human rights law during armed conflict and explain when the use of autonomous weapons during law enforcement/anti-terrorist operations and/or armed conflict can comport with the principle of human dignity. Finally, I conclude that a co-active design of autonomous weapon systems provides the strongest opportunity for this new technology to fulfill the objectives of international human rights law.

II. The Sources of International Human Rights Law

Unlike international humanitarian law, which strives to find a balance between the imperatives of military necessity (i.e. the use of violence) and the value of humanity, the *basic assumption* of human rights law is the universal principle of human dignity.[712] Logically, then, this ubiquitous, bedrock principle must inform all interpretations of human rights law.[713] Dignity is a source, as well as a product, of fundamental human rights because '[h]uman rights flow from, and are necessary for, the recognition of human dignity.'[714] Thus, in the

[712] Benvenisti, 'Human Dignity in Combat: The Duty to Spare Enemy Civilians,' nte 12. See *Husayn Abu Zubaydah v. Poland,* para. 532, citing *Pretty v. the United Kingdom*, Judgment, ECtHR, Application No. 2346/02, 29 July 2002, paras. 61 and 65.

[713] The preambles to the ICCPR and the ICESCR, for example, explain that the rights contained therein 'derive from the inherent dignity of the human person.' The American Convention on Human Rights recognizes that the essential rights of persons "are based upon attributes of the human personality' whilst the ICESCR requires that the right to education 'shall be directed to the full development of the human personality and the sense of its dignity, ….' Preamble, ACHR and Art. 13, ICESCR, 16 December 1966.

[714] B Beyer, 'Economic Rights: Past, Present, and Future,' in T Cushman, (ed.) *Handbook of Human Rights*' (New York: Routledge, 2012), p. 297. See P Carroza, 'Human Dignity,' in Dinah Shelton (ed.), *The Oxford Handbook of International Human Rights Law* (Oxford University Press, 2013), pp. 2 and 5 (observing that

context of international human rights law, violations of the value of human dignity take on a nearly primordial significance.[715]

Writing in the seventeenth century, British political philosopher John Locke observed that human beings cannot alienate their fundamental rights which, for Locke, emanated from natural law.[716] Any early (but limited) Western expression of these rights can be found in the Bill of Rights of 1689, which provided members of the English Parliament with certain rights and protections against abuses of power by their sovereign.[717] One hundred years later, the National Assembly of France attempted to codify 'in a solemn declaration the natural, unalienable, and sacred rights of man, ….'[718] Moreover, beginning in 1791 and continuing into the twentieth century, a number of these rights were adopted and/or extended in the Bill of Rights attached to the Constitution of the United States.[719]

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human dignity serves as a foundation for generic claims of human rights as well as a normative principle for the interpretation and application of specific rights).

[715] 'Man … can lose all so-called Rights of Man without losing his essential quality as man, his human dignity.' H Arendt, *The Origins of Totalitarianism* (New York: Harvest Books, 1976), p. 297.

[716] 'Concerning the True Original Extent and End of Civil Government' in *Two Treatises of Government*, paras. 22, 87 and 135, available online at http://socserv2.socsci.mcmaster.ca/econ/ugcm/3ll3/locke/government.pdf.

[717] *An Act Declaring the Rights and Liberties of the Subject and Settling the Succession of the Crown*, available online at http://avalon.law.yale.edu/17th_century/england.asp.

[718] *Declaration of the Rights of Man – 1789*, available online at http://avalon.law.yale.edu/18th_century/rightsof.asp. This Declaration also emphasized the importance of the rule of law. Art. 16. More than 18 hundred years previously, in his oration in defence of Titus Annius Milo (referred to in Chapter five on International Humanitarian Law and Autonomous Weapon Systems), Cicero argued in favour of the existence of law 'not written, but born with us, … imbibed from nature herself; ….' Part IV, para. 2, <http://www.uah.edu/student_life/organizations/SAL/texts/latin/classical/cicero/promilone1e.html#cfour>. I am grateful to Frenkchris Sinay for this point.

[719] <https://www.law.cornell.edu/constitution/overview>. Jean-Jacques Rousseau also advocated for the importance of 'natural rights,' at least for men. *The Social Contract (or Principles of Political Right)* (1762), Translated by G Cole, p. 22, <http://www.ucc.ie/archive/hdsp/Rousseau_contrat-social.pdf>. The concept of 'natural rights' was rejected and famously mocked by Jeremy Bentham who called the notion 'nonsense on stilts.' *Anarchical Fallacies: Being an Examination of the Declaration of Rights Issued During the French Revolution* (1843), Art. II, pp. 4 – 5, <http://english.duke.edu/uploads/media_items/bentham-anarchical-fallacies.original.pdf>. Bentham argued that all 'rights' originate from laws made by governments. *Ibid*.

The genesis of the 'detailed tapestry'[720] of modern international human rights law lies in the United Nations Charter of 1945 ('UN Charter').[721] In the Preamble, state parties 'reaffirm faith in fundamental human rights, in the dignity and worth of the human person, in the equal rights of men and women and of nations large and small, ….'[722] Moreover, one of the purposes of the United Nations is to promote and encourage respect for human rights and fundamental freedoms without distinction as to race, sex, language or religion.[723] Concurrently, however, Article 7 constrains international intervention to protect human rights as it reaffirms the sovereign power of states to address matters arising within their domestic jurisdiction.

Following the adoption of the UN Charter, a large and comprehensive body of international and regional human rights conventions (and corresponding monitoring and judicial mechanisms) were produced. The Universal Declaration of Human Rights (the 'Universal Declaration') was ratified on 10 December 1948. The Universal Declaration was drafted as a non-binding,[724] aspirational document and the arguable development of its provisions into customary international law will be discussed below. The United Nations General Assembly adopted the Convention on the Prevention and Punishment of the Crime of Genocide ('the Genocide Convention') just one day before the ratification of the Universal

[720] H Duffy, *The 'War on Terror' and the Framework of International Law*, 2nd ed. (Cambridge University Press, 2015), p. 466.
[721] C Chinkin, 'Sources,' in Daniel Moeckli, et. al. (eds.) *International Human Rights Law* (Oxford University Press, 2010), p. 105.
[722] Signed in San Francisco, 26 June 1945.
[723] Art. 1 (3). Art. 1 (2) affirms the principle of equal rights and self-determination of peoples. Art. 13 (1) (b) charges the General Assembly with 'assisting in the realization of human rights and fundamental freedoms for all ….'
[724] M Ishay, *The History of Human Rights: From Ancient Times to the Globalisation Era* (Berkeley: University of California Press, 2004), p. 223.

Declaration. The contracting parties to the Genocide Convention accepted the duty to undertake to prevent and punish the crime of Genocide.[725]

States enacted a number of international and regional human rights treaties and conventions during the last half of the twentieth century; the two most prominent are the International Covenant on Civil and Political Rights ('ICCPR')[726] and the International Covenant on Economic, Social and Cultural Rights ('ICESCR').[727] These two covenants, together with the Universal Declaration, are referred to as the 'International Bill of Rights.'[728] In addition to their substantive provisions expressing international human rights norms, the ICCPR, ICESCR and other 'core' international human rights treaties[729] establish monitoring bodies (or 'treaty bodies') that review state party compliance with their obligations and provide guidance or ('General Comments') on the nature and scope of these duties.[730] These treaty bodies may also conduct inquiries into well-founded reports and complaints of serious violations of the relevant convention by a state party.[731]

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[725] No. 1021, Adopted by the General Assembly of the United Nations on 9 December 1948.
[726] Adopted by the United Nations General Assembly on 16 December 1966, entered into force on 23 March 1976.
[727] Adopted by the United Nations General Assembly on 16 December 1966, entered into force on 3 January 1976.
[728] Chinkin, 'Sources,' p. 106.
[729] Markus Schmidt opines that the 'core' United Nations human rights treaties are: the ICCPR and the ICESCR (as well as their Optional Protocols), and the International Conventional on the Elimination of Racial Discrimination ('ICERD'), the Convention Against Torture and Other Forms of Cruel, Inhuman and Degrading Treatment ('UNCAT'), the Convention on the Elimination of All Forms of Discrimination Against Women ('CEDAW') (as well as its Optional Protocol), the Convention on the Rights of the Child ('CRC') (as well as its Optional Protocols), the International Convention on the Rights of Migrant Workers and Their Families ('ICRMW'), the Convention on the Rights of Persons with Disabilities ('CRPD') (as well as its Optional Protocol), and the International Convention for the Protection of All Persons from Enforced Disappearances. M Schmidt, 'United Nations,' in Moeckli, International Human Rights Law, p. 405. One might add to this list, inter alia, the 1951 Convention Relating to the Status of Refugees and the International Convention on the Suppression and Punishment of the Crime of 'Apartheid.'
[730] *Ibid*, pp. 404 - 409.
[731] *Ibid*, pp. 409 – 415.

Moreover, a number of human rights rules expressed in these conventions, such as the prohibitions of slavery, torture and genocide, have been described as part of *jus cogens*.[732] Indeed, Professor Bianchi observes that there 'is an almost intrinsic relationship between *jus cogens* and human rights.'[733]

Furthermore, several regional human rights conventions[734] – and the human rights judicial systems they created – have led to the development of a large body of international human rights jurisprudence.[735] Indeed, in *1994* two commentators concluded that the European Convention on Human Rights' 'achievements have been quite staggering, the case-law of the European Commission and Court of Human Rights exerting an ever deeper influence on the laws and social realities of the State parties.'[736]

Determinations of the customary status of international human rights obligations are complex given the frequent disparity between state expressions of their human rights obligations and the common occurrence of gross human rights violations around the world; in other words, the dichotomy between opinio juris and state practice.[737] Professor Chinkin

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[732] Chinkin, 'Sources,' p. 113. The International Law Commission also includes the prohibitions of aggression, racial discrimination and crime against humanity, violations of the duty to respect the right of self-determination as well as violations of basic rules of international humanitarian law as constituting peremptory norms. *Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries* (2001), Commentaries to Arts. 26 and 40, <http://legal.un.org/ilc/texts/instruments/english/commentaries/9_6_2001.pdf>.

[733] A Bianchi, 'Human Rights and the Magic of Jus Cogens,' in 19 *European Journal of International Law* (2008) 3, 491, 495.

[734] See the European Convention for the Protection of Human Rights and Fundamental Freedoms ('ECHR)', and its fourteen additional Protocols; the American Convention on Human Rights ('ACHR'), available online at 'Pact of San Jose, Costa Rica; African Charter on Human and Peoples' Rights.

[735] Chinkin, 'Sources,' pp. 460 – 473; D Harris et. al. *Law of the European Convention on Human Rights* (Oxford University Press, 2014); H Steiner & P Alston, *International Human Rights in Context*, 2nd ed. (Oxford University Press, 2000), pp. 787 – 937.

[736] A Drzemczewski & M Ladewig, 'Principle Characterisitics of the New ECHR Control Mechanism, as Established by Protocol No. 11,' 15 *Human Rights Law Journal* 81 (1994), 82.

[737] B Simma & P Alston, 'The Sources of Human Rights Law: Custom, Jus Cogens, and General Principles,' 12 *Australia Yearbook of International Law* 82 (1988-1989), 88 – 100. The formation of customary international law will be addressed in Chapter 8, 'Autonomous Weapon Systems and the Responsibility of States and Arms Manufacturers.'

notes, for example, that 'many commentators' believe that the contents of the Universal Declaration of Human Rights have become customary law.[738] Simma and Alston, however, strongly rejected this view, arguing that it is impossible to elevate the Universal Declaration and other documents to the status of customary international law 'in a world where it is still customary for a depressingly large number of states to trample upon the human rights of their nationals.'[739]

In addition, the development of international human rights law may occur over time through forms and expressions of 'soft law.'[740] Examples would include the work of the 'treaty bodies' mentioned above and other human rights mechanisms,[741] as well as the vast body of United Nations General Assembly and Security Council Resolutions that pronounce on human rights issues,[742] reports of United Nations Special Rapporteurs and Special Experts,[743] the Universal Periodic Review process conducted by the United Nations Human Rights Council,[744] reports by international Commissions of Inquiry[745] and more.

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[738] Chinkin, 'Sources,' p. 120. M A Glendon, *A World Made New: Eleanor Roosevelt and the Universal Declaration of Human Rights* (New York: Random House, 2001), p. 178.

[739] Simma & Alston, 'The Sources of Human Rights Law: Custom, Jus Cogens, and General Principles,' 90. C.f. the concurring opinion of U.S. Supreme Court Justice Breyer in *Kiobel v. Royal Dutch Petroleum Co*, et. al. where Breyer argued that acts of torture (prohibited, *inter alia*, by article 5 of the Universal Declaration) and genocide violate customary international law. 569 U.S. ___ (2013), p. 5. The Kiobel decision took a restrictive view of the ability of victims of violations of customary international law occurring outside the territory of the United States to seek damages in U.S. courts. Justice Roberts, pp. 1 – 14.

[740] Chinkin, 'Sources,' pp. 119 – 122.

[741] For example, General Comment 31 of the ICCPR's Human Rights Committee addressed 'The Nature of the General Legal Obligation Imposed on States Parties to the Covenant.' U.N. Doc. CCPR/C/21/Rev.1/Add.13 (2004), <https://www1.umn.edu/humanrts/gencomm/hrcom31.html>.

[742] L Henkin, *How Nations Behave: Law and Foreign Policy* (New York, Frederick A. Praeger, 1968), p. 27. For example, in December 2015, the General Assembly passed a Resolution condemning violence against and intimidation of human rights defenders. 'General Assembly Adopts 64 Third Committee Texts Covering Issues Including Migrants, Children's Rights, Human Rights Defenders.' 17 December 2015, <http://www.un.org/press/en/2015/ga11745.doc.htm>. In October 2013, the Security Council issued its seventh resolution addressing the empowerment of women and girls, gender equality and the effects of violence against women in conflict and post-conflict situations. S/Res/2122 (2013), <http://www.un.org/en/ga/search/view_doc.asp?symbol=S/RES/2122(2013)>.

[743] For example, on 9 April 2013, Professor Christoph Heyns, United Nations Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions, issued a report entitled 'Lethal Autonomous Weapons and the

Finally, whilst obviously the development of this large body of international human rights law and its associated structures and enforcement mechanisms creates enormous potential for furthering the rule of law, primary responsibility for its implementation lies with national governments and courts.[746]

III. The Rights to Life, Freedom of Thought and Freedom of Expression

A. The Right to Life

According to the ICCPR, '[e]very human being has the inherent right to life. This right shall be protected by law. No one shall be arbitrarily deprived of his life.'[747] The European Convention for the Protection of Human Rights and Fundamental Freedoms ('ECHR'), the American Convention on Human Rights ('ACHR') and the African Charter on Human and Peoples' Rights ('ACHPR') also prohibit the arbitrary deprivation of life.[748]

The right to life is a condition precedent for realisation of other rights and when disrespected, 'all the other rights lack meaning.'[749] Thus, Professor Benvenisti refers to the norm that every human being has the inherent right to life as '*the premise* that permeates

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Protection of Life,' <A/HRC/23/47, https://documents-dds-ny.un.org/doc/UNDOC/GEN/G13/127/76/PDF/G1312776.pdf?OpenElement>.

[744] Described in detail at <http://www.ohchr.org/EN/HRBodies/UPR/Pages/UPRMain.aspx>.

[745] See for example, the comprehensive 'Report of the Detailed Findings of the Commission of Inquiry on Human Rights in the Democratic People's Republic of Korea,' A/HRC/25/CRP.1, 7 February 2014.

[746] Duffy, The 'War on Terror' and the Framework of International Law, p. 466; U.N. Security Council Resolution 2122 (2013*)*, p. 2. For example, the *Torture Victim Protection Act of 1991* gives victims of torture or extrajudicial execution perpetrated by foreign nationals the right to sue those foreign individuals for damages in U.S. federal courts. H.R.2092, <http://thomas.loc.gov/cgi-bin/query/z?c102:H.R.2092.ENR>.

[747] Art. 6.1, ICCPR.

[748] Article 2, ECHR; Article 4 (1), American Convention on Human Rights "Pact of San Jose, Costa Rica," Article 4, African Charter on Human and Peoples' Rights.

[749] *Case of Myrna Mack Chang v. Guatemala*, Judgment, InterAmerican Court of Human Rights ('Inter-Am. Ct. H.R.'), November 25, 2004, para. 152.

human rights law.'[750] States, therefore, must take 'all appropriate measures' to ensure the creation of conditions required to avoid violations of inalienable human rights.[751] In the context of the right to life, these steps include all necessary measures, not only to prevent and punish deprivation of life as a consequence of criminal acts, in general, but also to prevent arbitrary executions by its own security agents.[752] This positive, proactive obligation applies to legislators and all state institutions, in particular those who must protect security, i.e. its police and armed forces.[753]

At the same time, circumstances may compel constraints on the right to life, particularly when the cost to other rights is too high. Thus, international human rights law permits states or their agents *to take life* via the use of force which is no more than absolutely necessary:

> (a) in defence of any person from unlawful violence;
>
> (b) in order to effect a lawful arrest or to prevent the escape of a person lawfully detained;
>
> (c) in action lawfully taken for the purpose of quelling a riot or insurrection.[754]

Thus, in certain circumstances, the use of lethal force by state security forces in peacetime may be justifiable.[755] However, due to the fundamental nature of the right to life,

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[750] E Benvenisti, 'Human Dignity in Combat: The Duty to Spare Enemy Civilians,' 39 *Israel Law Review.* 2 (2006), 83 (emphasis in original).

[751] *Velasquez Rodriguez v. Honduras*, Judgment, Inter-Am. Ct. H.R, 29 July 1998, para. 188; Myrna Mack Chang v. Guatemala, paras. 152 and 153.

[752] *Juan Humberto Sánchez v. Honduras*, Judgment, Inter-Am. Ct. H.R. (2003), para. 110.

[753] *Ibid; The Massacres of El Mozote and Nearby Places v. El Salvador*, Judgment, Inter-Am. Ct. H.R. October 25, 2012, para. 146. According to article 1 of the ECHR, '[t]he High Contracting Parties shall secure to everyone within their jurisdiction the rights and freedoms defined in Section I of this Convention.' The American Convention on Human Rights and the African Charter on Human and Peoples' Rights contain similar provisions. Article 1, African Charter on Human and Peoples' Rights ('ACHPR'); Article 2, American Convention on Human Rights. The latter two instruments require state parties to undertake to adopt such 'legislative or other measures' to give effect to the rights contained therein.

[754] Art. 2, European Convention for the Protection of Human Rights and Fundamental Freedoms.

the scope of circumstances where its deprivation is justified is construed narrowly.[756] For example, when state agents use lethal force with the aim of protecting persons from unlawful violence, deadly force must be 'absolutely necessary'[757] to achieve one of the three purposes listed above. In other words, the force used must be 'strictly proportionate' to the achievement of the permitted aims.[758] In the context of human rights law (in contrast with international humanitarian law), 'necessity' means that force must only be used as a last resort and, in such circumstances, states should use a graduated approach.[759]

Consequently, during law enforcement and anti-terrorist operations, government authorities must plan and control activities so as to minimise, as much as possible, recourse to lethal force.[760] Police may not use lethal force, for example, against a fleeing burglar who poses no immediate danger, although the burglar will escape, because the preservation of property rights does not justify the intentional taking of life.[761] Force should only be used

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[755] *Akpinar and Altun v. Turkey*, Judgment, European Court of Human Rights ('ECtHR'), Application no. 56760/00, 27 February 2007, para. 50.

[756] *Case of Putintseva v. Russia*, Judgment, ECtHR, First Section, application no. 33498/04, 10 August 2012, para, 42.

[757] *McCann and Others v. the United Kingdom,* Judgment, ECtHR, Application No. 18984/91, 27 September 1995, para. 213. In *McCann*, U.K. soldiers shot dead three members of the Irish Republican Army on a street in Gibraltar. The soldiers feared that the IRA members carried a remote control device for the purpose of exploding a car bomb. A majority of the ECtHR held that the U.K. was in breach of Article 2 because the state could have planned and performed the operation without killing the suspects.

[758] 'A balance must be achieved between the aim pursued and the means employed to achieve it.' *Case of Isayeva v Russia*, Judgment, ECtHR, Application No. 57950/00, paras. 173 and 181, 24 February 2005.

[759] C Heyns, United Nations Special Rapporteur for Extrajudicial Executions, presentation to Annual Meeting of State Parties to Convention on Certain Conventional Weapons, 13 – 16 May 2014, p. 5, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/DDB079530E4FFDDBC1257CF3003FFE4D/$file/Heyns_LAWS_otherlegal_2014.pdf>.

[760] McCann and Others v. the United Kingdom*,* para. 194.

[761] Heyns, presentation to Annual Meeting of State Parties to Convention on Certain Conventional Weapons, 13 – 16 May 2014, p. 6.

against a person if that person poses an imminent threat of violence '—normally implying a matter of seconds or even split-seconds.'[762]

Accordingly, authorities should minimize to the greatest extent possible recourse to lethal force in circumstances of arrest and detention.[763] For example, where it is known that a person escaping from lawful detention poses no threat to life or limb and is not suspected of having committed a violent offence, recourse to deadly force does not meet the 'absolutely necessary' standard.[764]

Moreover, protection of the right to life requires states to ensure that their agents do not perform unregulated and arbitrary actions involving the use of lethal force.[765] Thus, governments must create a framework of rules and safeguards to guard against the arbitrary exercise of force.[766] This framework should include modern and effective laws regulating the use of weapons by state agents in peacetime,[767] as well as systems for planning and controlling law enforcement and anti-terrorist operations so as to minimise, as much as

[762] *Ibid,* p. 6. The hostile intent of the target often plays a decisive role in the application of human rights law. The target's intention in the context of international humanitarian law, however, is irrelevant since the focus is on status or conduct. *Ibid.*

[763] Putintseva v. Russia, para. 71. In *Putintseva*, the commandant of the detention facility entrusted care of the prisoner to a subordinate who, shortly before shooting the deceased, previously had a physical altercation with him. The ECtHR held that the Russian authorities failed to minimise possible recourse to lethal force and risk to the life of the deceased.

[764] *Ibid*, para. 69.

[765] *Case of Makaratzis v. Greece*, Judgment, ECHR, App. 50385/99, 20 December 2004, para. 58.

[766] In *Makaratzis*, the ECtHR concluded that Greece's laws concerning the use of firearms by police were 'obsolete and incomplete in a modern democratic society.' Thus, the 'chaotic' shooting of the deceased while the police effected his arrest constituted a violation of his right to life. *Ibid*, at paras. 58 and 70.

[767] *Ibid*, at para. 70.

possible, resort to lethal force [768] In circumstances where the risk to innocents is great, the primary aim of such operations should be to protect lives from unlawful violence.[769]

Finally, the obligation to protect the right to life implicitly requires an effective form of official investigation when citizens die as a result of the use of force by state agents.[770]

B. The Rights to Freedom of Thought and Freedom of Expression

Throughout history and today, human societies often repress the freedom of thought, in particular new ideas.[771] Nevertheless, intellectuals have advocated the importance of this right for millennia. Socrates, for example, when tried for impiety and corruption of the youth of Greece, argued to the Athenians serving as his jurors that the greatest good of humankind is to discuss excellence, i.e. the improvement of the human condition.[772] In 1644, John Milton argued that a restriction on the expression of ideas 'strikes at that ethereal and fifth essence, *the breath of reason itself*; [and] slays an immortality rather than a life.'[773]

The exercise of freedom of thought 'is an axiom of human progress.'[774] This right refers to the freedom of individuals to have independent thoughts, ideas and beliefs.[775] Thus, it is 'largely exercised inside an individual's heart and mind;'[776] a 'far-reaching and profound'

[768] McCann and Others v. the United Kingdom, para. 193.
[769] Isayeva v Russia, para. 191.
[770] Juan Humberto Sánchez v. Honduras, para. 112.
[771] J Bury, *A History of Freedom of Thought* (1913) (London: Thornton Butterworth Ltd. 1932), p. 8.
[772] Plato, *Apology of Socrates* (around 399 B.C.), J Redfield, trans. p. 31, http://www.philosophy.uncc.edu/mleldrid/intro/apol.pdf.
[773] "Areopagitica: A Speech of Mr. John Milton for the Liberty of Unlicensed Printing to the Parliament of England' (Cambridge at the University Press, 1918), p. 7, http://files.libertyfund.org/files/103/1224_Bk.pdf.
[774] J Bury, A History of Freedom of Thought, p. 250.
[775] K Boyle, 'Thought, Expression, Association, and Assembly,' in Moeckli, International Human Rights Law, p. 261.
[776] Harris, Law of the European Convention on Human Rights, p. 594 (citing D Gomien, *Short Guide to the European Convention on Human Rights*, Council of Europe Press, 1991, p. 69).

right that 'encompasses freedom of thought on all matters.'[777] The rights to freedom of thought and freedom to form and hold opinions are related[778] and both rights cannot be subject to derogation, even in times of emergency.[779] The imposition of an 'official ideology,' for example, cannot impair the freedom of persons who reject and/or oppose the official ideology.[780]

The freedoms of expression and the right to thought are intrinsically linked as expression and the dissemination of ideas is crucial for the advancement of knowledge.[781] Freedom of expression subsumes the right to engage in open discussion of difficult problems in order to, inter alia, express opinions on possible solutions.[782] It also includes freedom to seek, receive and impart information and ideas of all kinds, regardless of frontiers, in any media.[783] This last element is crucial for the existence of the right, which 'includes the right to hear other views and to exchange ideas and information with others.'[784] Thus, the right to

[777] Human Rights Committee, General Comment 22, Article 18 (Forty-eighth session, 1993), <https://www1.umn.edu/humanrts/gencomm/hrcom22.htm>.
[778] Human Rights Committee, General Comment No. 34, *Article 19: Freedoms of Opinion and Expression*, 102nd Session, CCPR/C/GC/34, 12 September 2011, para. 5.
[779] Arts. 4 and 18, ICCPR; Art. 9, ECHR.
[780] General Comment 22, para. 10. A contemporary example of the effective use of state ideology to restrict freedom of thought is North Korea. 'The people of the DPRK are taught from young [sic] to revere the Kim family and to internalize the state ideology as their own thoughts and conscience.' … The DPRK operates an all-encompassing indoctrination machine which takes root from childhood to propagate an official personality cult and to manufacture absolute obedience to the Supreme Leader (*Suryong*), effectively to the exclusion of any independent thought from the official ideology and state propaganda.' 'Report of the Detailed Findings of the Commission of Inquiry on Human Rights in the Democratic Republic of Korea,' paras. 196 and 260.
[781] Areopagitica: A Speech of Mr. John Milton, p. 6. 'To advance knowledge and to correct errors, unrestricted freedom of discussion is required.' Bury, A History of Freedom of Thought, p. 239.
[782] *Case of Ceylan v. Turkey*, Judgment, ECtHR, no. 23556/94, 8 July 1999, para. 31.
[783] Art. 19, ICCPR.
[784] Boyle, 'Thought, Expression, Association, and Assembly,' p. 267.

freedom of expression is an essential foundation of a democratic society, 'one of the basic conditions for its progress and for the development of every man.'[785]

The rights to freedom of thought and freedom of expression are mutually reinforcing and enshrined in several international human rights covenants.[786] The guarantee of each right is necessary for the enjoyment of the other and indeed for the exercise of many human rights.[787] 'Thus, freedom of expression is necessary if freedom of thought is to be exercised. In turn freedom of expression has little meaning without the individual having freedom to think.'[788]

Law, like the state, cannot control the totality of human relations.[789] For example, law regulates the external conduct of persons;[790] it does not control their thought processes. Consequently, under international human rights law, states do not have the authority to restrict the right to freedom of thought under any circumstances.[791] States can constrain the right to freedom of expression, however, but only in very limited circumstances such as during periods of 'public emergency which threatens the life of the nation,'[792] or, in the interests of national security, territorial integrity or public safety, when the restrictions are prescribed by

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[785] *Case of Handyside v. the United Kingdom*, Judgment, ECtHR, application no. 5493/72, 7 December 1976, para. 49. See *Rekvényi v. Hungary*, Judgment, ECtHR no. 25390/94, 20 May 1000, para. 42 (holding that freedom of expression is a basic condition for 'each individual's self-fulfillment').
[786] Boyle, 'Thought, Expression, Association, and Assembly,' p. 277. Also see articles 8 and 9 of the ACHPR (protecting the freedom of conscience, the right to receive information and the right to express and disseminate his opinions within the law). The ICCPR protects the right to both the freedom of thought (article 18) and freedom of expression (article 19). Articles 9 and 10 of the ECHR do the same.
[787] 'Freedom of Opinion and Expression: Mandate of the Special Rapporteur on the Promotion and Protection of the Right to Freedom of Opinion and Expression, Human Rights Council, A/HRC/25/L.2/Rev.1, 24 March 2014, < http://daccess-dds-ny.un.org/doc/UNDOC/LTD/G14/123/41/PDF/G1412341.pdf?OpenElement>.
[788] Boyle, 'Thought, Expression, Association, and Assembly,' pp. 257 – 258.
[789] H Lauterpacht, *The Function of Law in the International Community* (Oxford: Clarendon Press, 1933), p. 390.
[790] *Ibid.*
[791] Articles 4, 5 and 18, ICCPR; Articles 9 and 15 of the ECHR.
[792] Article 4, ICCPR.

law and are necessary in a democratic society.[793] When these conditions are present, the interests of the society as a whole override the rights of the individual.[794] The interference with the right, however, must be proportionate to the legitimate aim. Thus, consistent with the concept of human dignity, only the minimum restriction of the right which secures the objective is permissible.

IV. The Use of Autonomous Weapon Systems and the Protection of the Rights to Life, Freedom of Thought and Freedom of Expression

A. Autonomous Weapon Systems and the Protection of the Right to Life

The jurisprudence of regional human rights courts requires states to plan and control law enforcement and anti-terrorist activities 'so as to minimise, to the greatest extent possible, recourse to lethal force.'[795] To achieve that objective, authorities must take all feasible precautions in the choice of means and methods of security operations.[796] '[T]he more predictable a hazard, the greater the obligation to protect against it.'[797] Thus, if the deployment of an autonomous weapon system – even one with lethal capabilities - feasibly can minimise the necessity of lethal force, international human rights law should require the use of the weapon.

However, as discussed above in section A, international human rights law provides that during peacetime, states may use lethal force only in three complex and value-laden situations: 1) to defend persons from unlawful violence; 2) to effect a lawful arrest or to

[793] Article 10, ECHR.
[794] B Rainey, et. al., *The European Convention on Human Rights* (6th ed.) (Oxford University Press, 2014), p. 309.
[795] McCann and Others v. the United Kingdom, para. 194.
[796] *Finogenov and Others v. Russia*, Judgment, ECtHR, Application No. 18299/03, 20 December 2011, paras. 208 and 209.
[797] *Ibid*, para. 243.

prevent the escape of a lawfully detained person or 3) in lawful actions to quell riots or insurrections.[798] Moreover, a state's use of lethal force must be 'absolutely necessary and proportionate,'[799] which substantially reduces the incidence of lawful lethal force in law enforcement situations. The current generation of autonomous machines, however, cannot make such complex, values-based judgments.[800] Thus, the contemporary use of lethal autonomous weapons during law enforcement and/or anti-terrorist operations will violate international human rights law.

Will this situation change, however, when artificial intelligence capabilities advance? Might use of more advanced autonomous weapon systems in some situations reduce recourse to lethal force? Threats to the life and safety of law enforcement officials are a threat to the stability of society as a whole.[801] Thus, police officers and other state agents rightly can consider their own security when evaluating whether the use of lethal force is 'absolutely necessary' to save a third party, to apprehend a fleeing detainee, or to control a riot or insurrection.[802] Therefore, where it is known that a person facing arrest or escaping from lawful detention poses an imminent threat to the arresting officer, recourse to deadly force may meet the 'absolutely necessary' standard. But where the same suspect or detainee confronts an autonomous weapon, the presence of the autonomous weapon system should *preclude* the use of lethal force – which will not be absolutely necessary - unless the suspect

[798] Art. 1, European Convention for the Protection of Human Rights and Fundamental Freedoms.
[799] Putintseva v. Russia, para. 71.
[800] Professor Heyns contends that 'there is significantly less room' for the use of lethal autonomous weapons 'in law enforcement, where it will be difficult to outperform human beings.' C Heyns, Presentation to 2015 Meeting of Experts on LAWS, Convention on Certain Conventional Weapons, 16 April 2015, p. 10, <http://www.unog.ch/80256EE600585943/(httpPages)/6CE049BE22EC75A2C1257C8D00513E26?OpenDocument>.
[801] Preamble, *Basic Principles on the Use of Force and Firearms by Law Enforcement Officials*, Eighth United Naitons Congress on the Prevention of Crime and the Treatment of Offenders, 7 September 1990, http://www.ohchr.org/EN/ProfessionalInterest/Pages/UseOfForceAndFirearms.aspx.
[802] *Ibid*, paras. 9 and 16.

poses an immediate danger to third parties in close proximity. In these circumstances, the use of autonomous weapons would result in reduced loss of life.

Legislators and other state institutions, in particular security forces, have a positive obligation to regulate 1) the deployment of autonomous weapon systems in law enforcement and anti-terrorist situations, and 2) the degrees of force that these systems may employ.[803] Accordingly, states will need new laws that regulate the use of autonomous weapon systems during law enforcement and anti-terrorist activities.[804] For example, as in the case of military operations, fast decisions and actions are important for successful police efforts to apprehend criminals, protect third parties, control riots, etc.[805] Nevertheless, the speed of decisions by autonomous weapon systems is inversely proportional to the degree of human judgment available to guide or override the machine. A balance must be struck, therefore, between faster, fully autonomous weapons systems and systems that permit the influence of human judgment over complex, value-based law enforcement decisions. Therefore, interdependent human-machine systems, a co-active design that ensures full compliance with human rights law, should be the subject of democratic debate and codified in legislation.

[803] The Massacres of El Mozote and Nearby Places v. El Salvador, paras. 145 - 146.

[804] Professor Heyns has suggested that it may be necessary to develop a system for autonomous weapons to be used in law enforcement that is analogous to the Article 36, API procedure. C Heyns, United Nations Special Rapporteur for Extrajudicial Executions, presentation at annual meeting of State Parties to the Convention on Certain Conventional Weapons, Geneva, 13 – 16 May 2014, p. 4, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/DDB079530E4FFDDBC1257CF3003FFE4D/$file/Heyns_LAWS_otherlegal_2014.pdf>.

[805] Makaratzis v Greece, para. 70 (observing that the police officers involved in the fatal shooting under review did not have sufficient time to evaluate all the parameters of the situation and carefully organise their operation).

B. Autonomous Weapons and the Protection of the Rights to Freedom of Thought and Freedom of Expression

The design and use of autonomous weapon systems do not per se constitute affirmative restrictions or limitations on freedom of thought and expression. Government decisions and policies to design, develop and use weapons with autonomous functions are different from de jure laws, declarations or state practices *intended* to repress the rights to think, believe and express one's opinions. The latter are positive measures for the restriction of human rights. Instead, the delegation from humans to machines of responsibility for complex, value-based decisions concerning the use of force effectively transforms these rights (and human dignity) into impotent and unnecessary concepts. States and groups that field these autonomous weapons exchange – in a de facto sense - the importance of human thought and expression (personal autonomy) for the value of speed in the exercise of violence. Soldiers, police officers and their commanders can use their intellects and communication skills to influence the use of non-autonomous weapons such as rifles and tanks. The purpose of autonomous weapon systems, however, is to obviate the need for thought, reason and expression in the interests of achieving military and/or law enforcement advantage.

The right to thought must, logically, include the right and ability to determine our moral and legal responsibilities. Moral reasoning, in particular, involves drawing on an embedded series of convictions about value, each of which could, in turn, draw on other such convictions.[806] Yet, this process is never complete as humans constantly reinterpret their

[806] R Dworkin, *Justice for Hedgehogs* (Cambridge, Massachusetts: Harvard University Press, 2011), pp. 118 – 119.

concepts as they use them.[807] We reinterpret our normative values to resolve our dilemmas and progress towards a more integrated understanding of our responsibilities.[808] We do this to strengthen respect for our own human rights and the rights of others, and to advance our personal autonomy.

International human rights jurisprudence (consistent with my inclusion of 'personal autonomy' as a component of human dignity), describes how 'the notion of personal autonomy is an important principle *underlying the interpretation*' of human rights guarantees.[809] As discussed above, underlying the right to freedom of thought is the ability to develop and employ one's powers of reasoning. In chapter three, I explained that the dignity of right-holders arises generally from the capacity and autonomy of persons to bear the responsibilities implicit in the right. In chapter four, however, I described how the increased use of autonomous weapon systems will limit the development of powers of human reasoning and judgment that arise from important experiences, thereby reducing the ability of individuals to bear and exercise these responsibilities. This constraint on personal autonomy, whether viewed as a violation of human dignity, as a violation of the right to freedom of thought, or both, contravenes international law.[810] Moreover, this dynamic exists regardless of whether the autonomous weapon system eventually exercises lethal force. Indeed, it is

[807] *Ibid*, p. 119.
[808] *Ibid.*
[809] *Case of Pretty v. The United Kingdom*, Judgment, ECtHR, application no. 2346/02, 29 July 2002, para. 61 (emphasis added).
[810] John Locke called the human ability to form and exercise judgments 'the end and use of our liberty.' *An Essay Concerning Human Understanding*, 1690, Chapter XXI, para. 49, <https://ebooks.adelaide.edu.au/l/locke/john/l81u/B2.21.html>.

precisely those decisions *not* to use force that often require the most sophisticated and courageous forms of thinking and reasoning.[811]

Part of personal autonomy entails making decisions about moral and legal values.[812] Our decisions may not always be – objectively – the 'right' decision. But that is not the point. The benefits (and the human dignity) are in the process and it is immoral, therefore, to restrict the ability of persons to have moral ideas.[813]

In addition, as discussed in chapter four, the right to thought has a crucial relationship to the broader concepts of the function and the 'rule of law.' Through the promulgation of laws, the right to thought permits societies to express the humanity of individuals:

> 'The social nature of man; his physical and mental constitution; his sentiment of justice and moral obligation; his instinct for individual and collective self-preservation; his desire for happiness; his sense of human dignity; his consciousness of man's station and purpose in life – all these are not products of fancy but objective factors in the realm of existence. As such, they are productive of laws which may be flouted by arbitrariness, ignorance, or force, but which are in conformity *with the more enduring reality of reason and the nature of man.*'[814]

Thus, as we narrow opportunities for thought, we restrict our development as moral persons, including our ability to make and use laws.

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[811] Professor Heyns argues that the deployment of lethal autonomous weapons will eviscerate human hope for expressions of compassion or last minutes changes of mind about the use of force. 'Dignity in many instances depends on hope, and high levels of lethal machine autonomy can do deep damage to our collective sense of worth.' Heyns, Autonomous Weapon Systems and Human Rights Law,' pp. 8 and 9. C Heyns, 'Autonomous Weapon Systems and Human Rights Law,' Presentation Made at Informal Expert Meeting Organized by the State Parties to the Convention on Certain Conventional Weapons, Geneva, 13 - 16 May 2014, p. 7 - 9, <http://www.unog.ch/80256EDD006B8954/(httpAssets)/DDB079530E4FFDDBC1257CF3003FFE4D/$file/Heyns_LAWS_otherlegal_2014.pdf>.

[812] Essentially law is an extension of morality. M Minnow, 'In Memoriam: Ronald Dworkin,' 127 *Harvard Law Review* 2 (2013), 504.

[813] The price of 'intellectual pacification is the sacrifice of the entire moral courage of the human mind.' J Mill, 'On Liberty,' in D Miller (ed.), *The Basic Writings of John Stuart Mill*, D Miller (New York: The Modern Library, 2002), p. 34.

[814] H Lauterpacht, *An International Bill of the Rights of Man* (1945) (Oxford University Press, 2013), p. 35 (emphasis added).

Every right, however, must have a right holder.[815] When autonomous weapon technology demands the delegation of value-based decisions to computer software, soldiers, police officers and their commanders (as well as members of armed forces) and any other persons usually tasked with determinations about the use of force, lose an important aspect of their dignity and freedom of thought. They are denied the opportunity to assess their moral and legal responsibilities and gain the essential intellectual capacities and knowledge that results from this experience.[816] They are denied, therefore, the *development* of their personal autonomy.[817]

One might argue that individuals *do not have to be* police officers or soldiers. Policemen and women, after all, can refuse to follow orders and/or use certain weapons and officers can resign their positions. Indeed, in states where 'volunteer' armies are the norm, no one need put herself in a position whereby she might have to cede her responsibilities to a machine. While this claim may be true, it misses the point. The result still will be that human beings will not develop the ability to perform the kinds of moral and legal reasoning necessary to make difficult decisions during armed conflict and law enforcement operations. This narrowing of thousands of years of human thinking is plainly inconsistent with the norm of human dignity and, therefore, human rights law. Thus, in addition to individuals, society

[815] I Bantekas & L Oette, *International Human Rights Law and Practice* , 2nd ed. (Cambridge University Press, 2016), p. 72.
[816] It is indispensable, argued Mill, to enable human beings to attain the mental stature which they are capable of. 'On Liberty,' p. 35.
[817] As I acknowledged in Part V, Section B of chapter 4, humans already delegate important responsibilities for certain tasks to machines with autonomous functions. Commercial airplanes, for example, operate extensively on 'autopilot' where the pilot does not physically control the plane. Nevertheless, there is a major qualitative difference between autonomous technology programmed to comply with 'mechanical' rules that normally require little human thought -- such as altitude levels for airplane autopilots – and autonomous technology that is programmed to apply complex and sometimes contradictory instructions and values in fluid and confusing circumstances, resulting in the destruction of life and infrastructure.

as a whole suffers constraints on its 'rights' to freedom of thought and expression, similar to states that impose particular forms of indoctrination on its citizens.

Others might contend that the use of autonomous weapon systems simply creates new forms of thinking and new methods to address moral and legal questions. Yet this seems to be a disingenuous and illogical argument. One cannot abdicate opportunities for moral and legal reasoning, and then call it 'new forms of reasoning.' Similarly, as described in chapter five, the reasoning applied to orders to deploy autonomous weapons, or the act of programming their onboard computers, ignores many of the moral and legal balancing processes inherent to the law of targeting and the use of lethal force in war and peacetime. When human beings leave these processes to software, whether as a matter of policy, for strategic or tactical reasons, or simply out of convenience, the result is a restriction of the human dignity that underlies the right to freedom of thought.

As discussed above, the right to freedom of thought is non-derogable. In certain situations, however, persons can waive their human rights if they do so on the basis of informed consent.[818] However, no such waivers of human rights are acceptable when they contradict an important public interest.[819] As explained above and in chapter four, the freedom of thought (and speech) 'is the matrix, the indispensable condition, of nearly every other form of freedom.'[820] As it is indisputable that the maintenance of the right to freedom of thought constitutes an important public interest, international human rights law disallows 'waivers' of this right produced by the employment of autonomous weapon systems.

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[818] *Case of D.H. and Others v. The Czech Republic*, Judgment, ECtHR, Application No. 57325/00, 13 November 2007, para. 202.
[819] *Ibid*, para. 204. In D.H., the ECtHR held that Roma parents could not waive their right not to be discriminated against.
[820] *Palko v. Connecticut*, 302 U.S. 319 (1937), 326 – 327. The U.S. Supreme Court overruled Palko (but left this reasoning intact) in *Benton v. Maryland*, 395 U.S. 784 (1969).

Constraints to the right to freedom of expression, however, require a different analysis. The imperative of national security can justify restrictions to the right to freedom of expression.[821] National security concerns 'protect the safety of the State against enemies who might seek to subdue its forces in war or subvert its government by illegal means.'[822] In disputes where a state justifies a limitation of the right to freedom of expression on national security grounds, human rights courts must determine whether the restriction strikes a fair balance between the individual's fundamental right to freedom of expression and a democratic society's right to protect itself against internal or external threats.[823]

'Extraordinary situations may not wisely or fairly be subjected to tests or regulations that are fitting for the commonplace or normal.'[824] Thus, the European Court of Human Rights grants states a wide margin of appreciation when national security interests are implicated given that the protection of large numbers of persons is at stake and that states often base their decisions to limit the exercise of rights on very sensitive information.[825] Indeed, the Court's jurisprudence holds that dissemination of information about a new weapon outside the armed forces can cause considerable damage to national security.[826] Therefore, national security grounds can justify limitations on the right to freedom of expression that arise when states field lethal autonomous weapons.

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[821] *Adams and Benn against the U.K.,* European Commission of Human Rights, 13 January 1997, <http://caselaw.echr.globe24h.com/0/0/united-kingdom/1997/01/13/adams-and-benn-v-the-united-kingdom-3464-28979-95.shtml>.
[822] Rainey, The European Convention on Human Rights, pp. 315 – 316, quoting P Kempees, '"Legitimate Aims" in the Case-Law of the European Court of Human Rights,' in *Protecting Human Rights: The European Perspective: Studies in Memory of Rolv Ryssdal*, Koln, Carl Heymanns, 2000, p. 662.
[823] *Case of Zana v. Turkey*, Turkey, ECtHR Application No. 18954/91, 25 November 1997, para. 55.
[824] *Pokora v. Wabash Railway Co*., 292 U.S. 98 (1934), pp. 105 – 106.
[825] Rainey, The European Convention on Human Rights, p. 330.
[826] *Case of Hadjianastassiou v. Greece*, Judgment, ECtHR, Application No. 12945/87, 16 December 1992, para. 45.

V. The Interplay of International Human Rights Law and International Humanitarian Law

As discussed in chapter five, during armed conflict international humanitarian law protects certain categories of persons from deliberate targeting by belligerents. Conversely, under the same body of law, the intentional killing of enemy combatants and civilians directly participating in hostilities is lawful. However, international human rights law prescribes standards for the use of lethal force that are more rigorous than the laws of war. If belligerents must uphold the protection against 'arbitrary' deprivations of life in conditions of armed conflict, armed forces and organized armed groups must consider whether their use of autonomous weapon systems complies with the requirements of international human rights law. This section examines the application of international human rights law during armed conflict and its relationship with international humanitarian law. It foreshadows how the development and use of autonomous weapon systems can shape this relationship.

Although international humanitarian law and international human rights law are distinct bodies of law, they protect similar principles and interests[827] and, as explained in the previous chapter, in a normative sense, modern international humanitarian law has roots in international human rights law. For example, the principle of humanity in international humanitarian law and related rules such as the duty to distinguish between combatants and civilians and the obligation to treat prisoners and wounded combatants decently are linked to fundamental human rights such as the right to life, the right to be free of torture, cruel and

[827] 'Both bodies of law take as their starting point the concern for human dignity, which forms the basis of a list of fundamental minimum standards of humanity.' *Prosecutor v. Zejnil Delalić, et. al*, Judgment, IT-96-21-A, 20 February 2001, para. 149.

inhuman treatment, etc.[828] Indeed, the Geneva Conventions contain certain norms that can be regarded as *jus cogens*; those higher rights that are invoked as moral and legal barriers to derogations from violations of human rights.'[829]

Thus, '… humanitarian law also contains a prominent human rights component'[830] and human rights law continues to apply during armed conflict. According to the International Court of Justice, international humanitarian law is the *lex specialis* designed to regulate the conduct of hostilities, while international human rights law continues to function as the *lex generalis*.[831] Consequently, some circumstances in armed conflict may conform only to matters of international humanitarian law; others may speak exclusively to international human rights law, and others may implicate both branches of international law.[832] In its Judgment in the 'Case Concerning Armed Activities on the Territory of the Congo,' for example, the Court ruled that Ugandan forces, as the occupying power of parts of the

[828] The preamble to APII recalls 'that international instruments relating to human rights offer a basic protection to the human person' but a need exists to ensure a better protection for the victims of armed conflicts.
[829] T Meron, *Human Rights and Humanitarian Norms as Customary Law* (Oxford: Clarendon Press, 1989), p. 9. For example, Common Article 3's requirement that civilians and persons hors de combat must be treated humanely 'is an overarching concept,' given expression by the detailed rules incorporated into modern international humanitarian law. 'Commentary,' *Rule 87. Humane Treatment*, ICRC Customary International Humanitarian Law Study, <https://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter32_rule87>.
[830] Meron, Human Rights and Humanitarian Norms as Customary Law, p. 10.
[831] *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, International Court of Justice, 8 July 1996, para. 25. The principle of lex specialis derogat lex generali stands for the idea that because general rules may be interpreted in more than one way, we should interpret them in light of specific rules rather than vice versa. W Abresch, 'A Human Rights Law of Internal Armed Conflict: the European Court of Human Rights in Chechnya,' 16 *European Journal of International Law* (2005), 741, 744. For a strong critique of lex specialis as an interpretive model for analysis of the relationship between international humanitarian law and international human rights law, see M Milanović, 'Norm Conflicts, International Humanitarian Law and Human Rights Law,' in Orna Ben-Naftali (ed.), *Human Rights and International Humanitarian Law: Collected Courses of the Academy of European Law*, Vol. XIX/1 (Oxford University Press, 2010).
[832] *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, Advisory Opinion, International Court of Justice, 9 July 2004, para. 106. The Court held that Israel, by constructing a wall that passed through occupied territory, breached various obligations under the applicable international humanitarian law and international human rights law. *Ibid*, para. 137. C.f. *Case of Al-Jedda v. The United Kingdom*, Judgment, ECtHR, 7 July 2011, para. 105.

Democratic Republic of Congo, were obliged to secure respect for the applicable rules of international humanitarian law *and* international human rights law.[833]

In some situations, therefore, international human rights law can inform (if not control) the scope of law of war obligations. For example, the ability of persons interned during armed conflict to appeal the restrictions on their freedom provides the protected persons a stronger guarantee of fair treatment[834] and layers the application of international humanitarian law with responsibilities imposed by international human rights law. The human right to fair legal procedures also resonates in Article 84 of Geneva Convention (III) Relative to the Treatment of Prisoners of War, which provides: '[A] prisoner of war shall be tried only be a military court, …. In no circumstances whatever shall a prisoner of war be tried by a court of any kind which does not offer the essential guarantees of independence and impartiality….' These 'essential guarantees,' and others, are enshrined, inter alia, in Article 14 of the ICCPR.[835] Thus, parties holding prisoners of war should look to international human rights instruments when they initiate proceedings under Article 84.

Conversely, as mentioned above, relevant provisions of international humanitarian law instruments serve as guides for the interpretation of international human rights law.[836] For example, Article 9 (1) of the ICCPR provides that '[e]veryone has the right to liberty and security of person. No one shall be subjected to arbitrary arrest or detention. No one shall be deprived of his liberty except on such grounds and in accordance with such procedure as are

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[833] *Case Concerning Armed Activities on the Republic of the Congo (Democratic Republic of the Congo v. Uganda)*, Judgment, 19 December 2005, paras. 179 and 216 – 220. Professor Schabas interprets the Court's language as treating international humanitarian and international human rights law 'as two complementary systems, as parts of a whole.' W Schabas, 'The Right to Life,' in A Clapham et. al. (eds), *The Oxford Handbook of International Law in Armed Conflict* (Oxford University Press, 2014), p. 5.
[834] Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory, para. 368 (2).
[835] C.f. art. 6, ECHR; art. 8, ACHR; art. 7, ACHPR.
[836] *Case of Bámaca Velásquez v. Guatemala*, Judgment, Inter-Am. Ct. H.R, 25 November 2000, para. 209.

established by law.' During international armed conflicts the Fourth Geneva Convention grants Occupying Powers the authority to intern protected persons 'for imperative reasons of security.'[837] Thus, in these circumstances, allegations of violations of Article 9 (1) should be viewed through the lens of the Fourth Geneva Convention.

In important ways, 'the standards of human rights law, at least as applied by the [European Court of Human Rights], are probably more rigorous than those of international humanitarian law.'[838] For example, international humanitarian law permits combatants to kill their enemy in situations where capture might be an alternative.[839] The European Court of Human Rights, on the other hand, requires that every use of lethal force be 'no more than absolutely necessary' to achieve the desired aim.[840] As Professor Hampson observes:

> '… the key distinction between an international humanitarian law analysis and a human rights law analysis is that the former allows targeting by reference to status. That means that a person can be targeted on account of their membership of a group, whether that is opposing armed forces or an organised armed group in which the individual exercises a continuous combat function. Generally speaking, a human

[837] Art. 78 of Convention (IV) Relative to the Protection of Civilian Persons in Time of War, 12 August 1949. Persons interned pursuant to Art. 78 need not be guilty of any violation of the laws of the Occupying Power. Nevertheless, that Power may consider them dangerous to its security and thus entitled to restrict their liberty of movement. ICRC Commentary to Art. 78, para. 368 (1), <http://www.icrc.org/applic/ihl/ihl.nsf/Comment.xsp?viewComments=LookUpCOMART&articleUNID=0DFFF94F559B0D17C12563CD0051C023>. C.f. articles 40, 41 and 42.

[838] F Hampson, Written Statement, Appendix 3 to 'Expert Meeting,' *The Use of Force in Armed Conflicts: Interplay Between the Conduct of Hostilities and Law Enforcement Paradigms*, Geneva, ICRC, 2013, p. 78.

[839] Unless a combatant is hors de combat, she can be made the object of attack by her adversary. JSP 383, *The Joint Service Manual of the Law of Armed Conflict*, U.K. Ministry of Defence, 2004, para. 5.5. See art. 23 (c), Regulations Respecting the Laws and Customs of War on Land, 1907 Hague Convention IV Respecting the Laws and Customs of War on Land (It is forbidden to 'kill or wound an enemy who, having laid down his arms, or having no longer means of defence, has surrendered at discretion;').

[840] Isayeva v Russia, para. 181. The Isayeva case addressed the deaths of civilians as a consequence of the Russian military's bombing of a village in Chechnya during the Chechnyan internal armed conflict in 2000. In an effort to avoid the ultra vires application of international humanitarian law, the ECtHR disingenuously described the context of the events as 'outside wartime' and implied that the Russian armed forces were a 'law enforcement body.' *Ibid*, para. 191. This jurisprudence raises the question whether the ECtHR disregards international humanitarian law, at least in internal armed conflict. Abresch, 'A Human Rights Law of Internal Armed Conflict: the European Court of Human Rights in Chechnya,' 746.

rights paradigm only allows targeting based on the behaviour of the individual targeted.'[841]

The precise contours, however, of the application of international human rights law during armed conflict, and its interplay with international humanitarian law, remain a matter of debate. Preliminarily, there is no single applicable rule that controls the relationship between the two regimes.[842] Professor Jinks makes an articulate argument that international humanitarian law 'is best understood as a floor of humanitarian protection – but the application of this law does not require the level of legal protection down to this floor. … the inference that the [Geneva] Conventions displace much, if not all, of international human rights law is unwarranted.'[843]

The European Court of Human Rights takes a similar view. In Hassan v. the United Kingdom, the Court concluded, first, that international human rights law continues to apply during international armed conflict, 'albeit interpreted against the background of the provisions of international humanitarian law.'[844] In the words of the majority, relevant provisions of international human rights covenants 'should be accommodated, as far as possible' with the relevant laws of war.[845] Thus, when circumstances arise where conflicting rules of both regimes apply, preference can be given (implicitly) to the rules of international humanitarian law. In Hassan, the applicant was an Iraqi citizen detained, 'screened' and

[841] Hampson, Written Statement, p. 69.
[842] *Case of Hassan v. The United Kingdom*, Judgment, ECtHR, Application No. 29750/09, 16 September 2014, para. 95 (referring to submission of third party Human Rights Centre of the University of Essex).

[843] D Jinks, 'International Human Rights Law in Time of Armed Conflict,' in Andrew Clapham et. al. (eds), The Oxford Handbook of International Law in Armed Conflict, pp. 3 and 4.
[844] Hassan v. The United Kingdom, para. 104. This language appears to be an implicit rejection of a rigid application of the 'lex specialis' terminology originally used by the International Court of Justice in the 'Nuclear Weapons' Advisory Opinion, para. 25.
[845] *Ibid.* C.f. Serdar Mohammed v. Ministry of Defence, Judgment, Case No. HQ12X03367, 2 May 2014, para. 288, (holding that in a situation where a more specialised body of international law also applies, provisions of the Convention should be interpreted as far as possible in a manner consistent with that *lex specialis*).

released by British forces in April 2003. The Court observed that Hassan's capture and detention was consistent with the rules prescribed in the Third and Fourth Geneva Conventions.[846] Accordingly, the Court ruled that Hassan's detention conformed with the essential purpose of Article 5 (1) of the European Convention of Human Rights, which is to protect the individual from arbitrary detention.[847]

Perhaps no aspect of the interplay between international humanitarian law and international human rights law is more controversial today than the 'kill or capture' debate emanating from the 'Interpretive Guidance on the Notion of Direct Participation in Hostilities Under IHL'[848] ('Interpretive Guidance'), published by the International Committee of the Red Cross ('ICRC'). In part IX of the Interpretive Guidance, the ICRC opined:

> In addition to the restraints imposed by international humanitarian law on specific means and methods of warfare, and without prejudice to further restrictions that may arise under other applicable branches of international law, the kind and degree of force which is permissible against persons not entitled to protection against direct attack must not exceed what is actually necessary to accomplish a legitimate military purpose in the prevailing circumstances.[849]

Effectively, the ICRC suggests that international law prohibits (or should prohibit) soldiers from killing enemy combatants when the possibility of capture or other non-lethal

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[846] Arts. 4 (A) and 21 of Geneva Convention III Relative to the Treatment of Prisoners of War of 1949 and Arts. 43 and 78 of Geneva Convention IV Relative to the Protection of Civilian Persons of 1949.

[847] Hassan v. The United Kingdom, Judgment, paras. 105 – 11. The Court specified that its broad interpretation of a state's powers of detention under Art. 5 of the ECHR – and the Court's implicit deference to the laws of war in situations of capture or internment - could only apply to an international armed conflict where the safeguards provided by international humanitarian law and international human rights law co-exist. *Ibid*, para. 104. In a strongly-worded dissent, however, five judges contended that the majority decision 'effectively disapplies or displaces' the ECHR's fundamental safeguards for permissible detention 'by judicially creating a new, unwritten ground for a deprivation of liberty and hence, incorporating norms from another and distinct regime of international law in direct conflict with the Convention provision.' Partially Dissenting Opinion of Judge Spano, Joined by Judges Nicolaou, Bianku and Kalaydjieva, para. 18. Effectively, the Court incorporated the rules concerning capture and internment (from the law of armed conflict) into Article 5 of the ECHR. C De Koker, 'A Different Perspective on Hassan v. United Kingdom: A Reply to Frederic Bernard,' *Strasbourg Observers*, 14 October 2014, <http://strasbourgobservers.com/2014/10/14/a-different-perspective-on-hassan-v-united-kingdom-a-reply-to-frederic-bernard/>.

[848] N Melzer, May 2009, <http://www.icrc.org/eng/assets/files/other/icrc-002-0990.pdf>.

[849] *Ibid*, at 77.

means to neutralise the enemy exists.[850] This constraint is consistent with the 'absolutely necessary' standard for the use of lethal force under human rights law reflected in the jurisprudence of the European Court of Human Rights. The language of the more recent Hassan judgment, directing states to accommodate, 'as far as possible' relevant provisions of international human rights law with the rules of international humanitarian law, echoes the Interpretive Guidance.[851]

Part IX of the ICRC's Interpretive Guidance has been the subject of sustained and forceful criticism, in particular from international humanitarian law experts with military expertise,[852] who contend that the ICRC incorrectly imposes international human rights standards into the norms and obligations of the law of war. Indeed, the capture-if-possible standard proposed in the Interpretive Guidance is absent from the ICRC's extensive study and formulation of rules of modern customary international humanitarian law.[853] Furthermore, the ICRC position contradicts a 2003 NATO policy that '[t]here is no legal obligation to resort to

[850] *Ibid,* 82. The Israeli Supreme Court has taken a similar position with respect to the possible arrest of suspected terrorists, in particular under conditions of belligerent occupation. Thus, in Israeli domestic law, 'among the military means, one must choose the means whose harm to the human rights of the harmed person is smallest.' *The Public Committee Against Torture in Israel v. The Government of Israel* ('Targeted Killing Case'), Judgment, HCJ 769/02, 11 December 2005, para. 40. Importantly, the Court based its decision on 'the rules of international law' as well as Israeli law. *Ibid*, para. 61.

[851] As one commentator observed, it is unsurprising that, in Hassan, the ECtHR rejected the United Kingdom's argument that the application of international humanitarian law in the circumstances excluded the authority of international human rights law. The majority decision, like the Interpretive Guidance, strengthens the jurisdiction of international human rights law during armed conflict. S Rau, *EJILTalk*, 18 September 2014, <http://www.ejiltalk.org/the-grand-chamber-judgment-in-hassan-v-uk/>. Professor Milanović refers to this jurisprudence as an example of the Court's 'interpretive self-empowerment.' M Milanovic, 'A Few Thoughts on Hassan v. United Kingdom,' *EJILTalk*, 22 October 2014, http://www.ejiltalk.org/a-few-thoughts-on-hassan-v-united-kingdom/.

[852] M N Schmitt, 'The Interpretive Guidance on the Notion of Direct Participation in Hostilities: A Critical Analysis' 1 *Harvard National Security Journal* (2010), 5 - 44; W H Parks, 'Part IX of the ICRC "Direct Participation in Hostilities" Study: No Mandate, No Expertise, and Legally Incorrect,' 42 *International Law and Politics* (2010), 769; K Watkin, 'Opportunity Lost: Organized Armed Groups and the ICRC "Direct Participation in Hostilities" Interpretive Guidance' 42 *International Law and Politics* (2010), 641. For a more positive view, see the remarks of R Goodman in 'The Changing Character of the Participants in War: Civilianization of War-Fighting and the Concept of "Direct Participation in Hostilities"' (US Naval War College, International Law Conference 2010) <http://www.usnwc.edu/Events/International-Law-Conference-2010.aspx> accessed 27 August 2012.

[853] Customary International Humanitarian Law Database, <https://www.icrc.org/customary-ihl/eng/docs/home>.

non-lethal force when lethal force is authorised and today there is no foreseeable reason why this may change in the future.'[854]

Time will tell whether states will adopt the Interpretive Guidance's more restrictive approach to the use of lethal force during armed conflict.[855] The increasing use of autonomous weapon systems, however, could facilitate the development of state practice and opinio juris in this direction. The availability of autonomous weapon systems with the capacity to make these 'capture or kill' judgments puts fewer human soldiers at risk from enemy combatants and reduces the dangers of efforts to capture the enemy (i.e. the dangers of accommodating international human rights law).[856] Thus, by fielding sophisticated autonomous weapon systems, belligerent parties reduce the number of situations where the use of lethal force is 'actually/absolutely necessary,' thereby changing the balance between military assessment and humanity. Therefore, modern armed forces that follow the ICRC's standard and field lethal autonomous weapon systems will constantly assess whether it is inappropriate (if not illegal) to use lethal force instead of capturing enemy combatants.

Artificial intelligence software has not yet advanced to a level whereby computers can make complex, value-based determinations as to the 'actual/absolute necessity' of using lethal force against enemy targets to serve 'a legitimate military purpose' in the 'prevailing circumstances.' However, should the Interpretive Guidance's standard for the use of lethal

[854] The RTO Studies, Analysis and Simulation Panel (SAS), 'NATO Policy on Non-Lethal Weapons' (Annex B to RTO-TR-SAS-040, Non-Lethal Weapons and Future Peace Enforcement Operations, December 2004, in (n 65) 5-2, <http://www.cso.nato.int/pubs/rdp.asp?RDP=RTO-TR-SAS-040>.

[855] Hitoshu Nasu contends that the power to kill or capture debate should be seen as a possible future legal approach to weapons law, 'heralding a new humanitarian law era in which questions concerning "humane" ways to attack lawful targets may be more fully explored, rather than an argument that reflects lex lata.' 'Nanotechnology and the Future of the Law of Weaponry,' 91 *International Law Studies* (2015), 486, 508 – 509.

[856] For a discussion of the related issue of the capacity of autonomous weapon systems to recognize the intent of combatants to surrender, see R Sparrow, 'Twenty Seconds to Comply: Autonomous Weapon Systems and the Recognition of Surrender,' 91 *International Law Studies* (2015), 699.

force one day become an obligation under customary international humanitarian law, the fielding of autonomous weapon systems lacking this capacity will violate the law's prohibition of means and methods of warfare designed to cause unnecessary suffering. Under the same standard, use of these weapons to exercise lethal force potentially would violate international human rights law's proscription of arbitrary deprivations of the right to life.

The analysis should not end, however, when artificial intelligence in autonomous weapon systems possesses the capability to make the complex assessments necessary to fulfil the Interpretive Guidance's rigorous standard for the exercise of lethal force. It must be determined whether, under international humanitarian law as well as international human rights law, the delegation of power and responsibility to make such decisions from humans to machines comports with the rights to freedom of thought and expression and, by extension, human dignity. That is the subject of the next section of this chapter.

VI. Autonomous Weapons, Human Dignity and the Interplay of International Humanitarian Law and International Human Rights Law

In chapter five, we saw how the delegation of responsibility from persons to lethal autonomous weapon systems for complex, value-based decisions during armed conflict violates human dignity. Norms with sufficient importance to apply during wartime - in particular the value of human dignity - ought to apply during peacetime as well.[857] If state authorities can protect (or take) human life in armed conflict, law enforcement, or anti-terrorist operations without recourse to autonomous weapons, they protect the human rights

[857] Schabas, 'The Right to Life,' p. 7.

and dignity of all parties: state agents compelled to use force and, in law enforcement situations, persons facing imminent threats to their lives.[858]

Nonetheless, as described above, a tension arises in human rights law between the state imperative to protect the right to life of third parties against unlawful force, the loss of human dignity arising from constraints to freedom of thought, and the use of autonomous weapon systems. The exercise of lethal force by autonomous weapon systems is not wholly inconsistent with the obligation to protect human dignity because the use of force may be necessary to secure rights against persons intending to violate them.[859] Furthermore, the use of lethal autonomous weapons might be more effective at saving innocent lives than men and women conducting security actions for the state. If that contention is correct, then autonomous machines can protect the fundamental right to life (and the value of human dignity) more successfully.

I explained previously that, when state agents use lethal force with the aim of protecting persons from unlawful violence, deadly force must be absolutely necessary. 'Necessity' requires that (proportionate) force only be used as a last resort and, in such circumstances, states should use a graduated approach. The precondition of a graduated approach in the use of force in law enforcement or anti-terrorist environments completely vitiates one of the primary reasons to field autonomous weapons: the ability to act with exceptional speed. It would be illogical, therefore, to employ such weapons and hence

[858] 'Protection of the right to life must be implemented in a way that respects the human dignity of the protected individuals *and of those called upon to protect them*.' Benvenisti, 'Human Dignity in Combat: The Duty to Spare Enemy Civilians, 109 (emphasis added).
[859] See Benvenisti, 'Human Dignity in Combat: The Duty to Spare Enemy Civilians,' 86 (noting, similarly, that the principle of human dignity is not inconsistent with armed conflict, as conflict may be necessary to protect rights).

devalue the right to freedom of thought and the dignity of state agents, when the use of conventional weapons could achieve the same result.

That leaves two legal arguments in support of the premise that human rights law demands the employment of autonomous weapon systems in law enforcement and anti-terrorist operations. First, circumstances could arise both during armed conflict and peacetime where the use of autonomous weapon systems could reduce (at least in the short term) human rights violations. For example, in one scenario autonomous weapon systems might neutralize, more quickly and accurately than human soldiers or police, an armed group that is detaining and mistreating civilians. In such situations, concerns about law and human dignity arguably would demand their use. A similar situation might arise where the only available soldiers or police officers available to a commander have a history of disrespect for the rules of international humanitarian law and/or human rights law.

Second, as described above, in certain law enforcement situations, the presence of an autonomous weapon system should preclude the use of lethal force – which will not be absolutely necessary - unless an alleged criminal poses an immediate danger to third parties in close proximity. In these circumstances, the availability of autonomous weapons will curtail the use of 'absolutely necessary' lethal force and place fewer state agents in harm's way. If, as discussed above, state officials must plan and control activities during law enforcement and anti-terrorist operations so as to minimise, as much as possible, recourse to lethal force, human rights law (and the underlying value of human dignity) seems to require the use of autonomous weapons.

These arguments, however, actually support the claim that the *systematic* use of autonomous weapons vitiates the right to freedom of thought. If a military commander or a law enforcement officer has the ability to identify those situations where autonomous weapon systems lawfully can be used, she will do so based on her background, experience and accumulated knowledge.[860] These qualities of reason and reflection – the capacity to exercise the right to thought -- will not develop (much less be used) when the employment of autonomous weapons becomes the norm rather than the exception.

Moreover, laws are means to ends. As explained in chapter four, they help individuals and communities to adjust their rights between them. The adjustment of rights is necessary, inter alia, to preserve the moral principles of every society.[861] Often, this process presupposes a complex weighing of different interests at stake[862] and states deserve a margin of appreciation as regards the means to strike a balance between the protection of different rights.[863] Indeed, where human rights are 'pitted against each other, …' '"respect for human freedom and human dignity" may prevail.'[864] As discussed in chapters four and five, if dignity is to be a meaningful concept in international law, it should receive greater weight in some cases than the right to life. Thus, for example, a number of countries qualify the right to life by permitting terminally ill persons to receive lethal drugs and/or the assistance of

[860] W Boothby, *The Law of Targeting* (Oxford University Press, 2012), p. 409.
[861] *Case of A, B and C v. Ireland*, Judgment, ECtHR, Application, No. 25579/05, 16 December 2010, paras. 222 – 228.
[862] *Case of Haas v. Switzerland*, Judgment, ECtHR, No. 31322/07, 20 January 2011. In Haas, the ECtHR weighed a person's right (of privacy) to determine when and how her life should end versus the state's interest to protect public health and avoid abuse of vulnerable persons. *Ibid*, paras. 53 – 58. While ultimately ruling in favour of Switzerland, the Court acknowledged that the applicant enjoyed a right to choose the time and manner of his death. *Ibid*, para. 60.
[863] *Case of Lambert and Others v. France*, Judgment, ECtHR, Appliction No. 46043/14, 5 June 2015, para. 148. Margins of appreciation are not unlimited and 'must always be viewed in light of the values underpinning the Convention, chief among them the right to life.' *Ibid*, Joint Partly Dissenting Opinion of Judges Hajiyev, Šikuta, Tsotsoria, De Gaetano and Gritco, para. 7.
[864] *Ibid*, para. 3, citing Case of Pretty v. the United Kingdom*, ECtHR*, No. 2346/02, 29 April 2002, para. 65.

physicians to end their lives[865] and their 'constant and unbearable physical or mental suffering.'[866]

Indeed, the Canadian Supreme Court held that bans on 'physician-assisted dying' violated, inter alia, *the right to life* because 'the prohibition deprives some individuals of life, as it has the effect of forcing some individuals to take their own lives prematurely, *for fear that they would be incapable of doing so* when they reached the point where suffering was intolerable.'[867] In addition, the Court concluded that Canada's ban violated the rights to liberty and security of the person, which includes a person's dignity and autonomy.[868] Therefore, compliance with the law (in this case the right to protection of life) is self-defeating if compliance implies harmful consequences for the spirit and purpose of the law.

'If the burdens [of protecting life] surpass the benefits, then the state's obligation may, in appropriate cases, cease.'[869] A possible duty on states to use autonomous weapon systems, rather than human agents, to protect life in armed conflict and/or law enforcement situations,

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[865] 'Netherlands Termination of Life on Request and Assisted Suicide (Review Procedures)' (2002), <https://www.government.nl/topics/euthanasia/contents/euthanasia-assisted-suicide-and-non-resuscitation-on-request>; 'The Belgian Act on Euthanasia of 28 May 2002, <http://www.ethical-perspectives.be/viewpic.php?LAN=E&TABLE=EP&ID=59>; In Colombia, the Constitutional Court authorized the practice of assisted suicide in 1997. However, no law exists that specifies the parameters for performing the procedure. P Sierra Palencia, 'Por Quinta Vez, Se Abre el Debate de la Eutanasia en el Congreso,' El Heraldo, 9 Noviembre, 2014, <http://www.elheraldo.co/nacional/por-quinta-vez-se-abre-el-debate-de-la-eutanasia-en-el-congreso-173293>; Luxembourg Law of 16 March 2009 on Euthanasia and Assisted Suicide, <http://www.luxembourg.public.lu/en/vivre/famille/fin-vie/euthanasie-soinspalliatifs/index.html>; In South Africa, the Constitutional Court currently is reviewing a lower court order asserting a right to assisted suicide. 'South African Court to Hear Landmark Assisted Suicide Case,' BBCNEWS, 2 June 2015, <http://www.bbc.com/news/world-africa-32970801>; In Switzerland, providing assistance to another's suicide is legal, as long as the assistance is not provided for 'selfish motives.' Article 115, Swiss Criminal Code, <https://www.admin.ch/opc/en/classified-compilation/19370083/201501010000/311.0.pdf>. In Uruguay, judges will not punish persons who assist the suicide of another, if the assistance was motivated by compassion and repeated requests of the victim. Article 17, Codigo Penal de Uruguay, <https://en.wikipedia.org/wiki/Assisted_suicide#cite_note-McDougall_2008-20>.

[866] 'The Belgian Act on Euthanasia of 28 May 2002,' section 3, para. 1.

[867] *Carter v. Canada* (Attorney General), 2015 SCC 5, [2015] (emphasis added).

[868] *Ibid.*

[869] Case of Lambert and Others v. France, Joint Partly Dissenting Opinion of Judges Hajiyev, Šikuta, Tsotsoria, De Gaetano and Gritco, para. 7.

severely limits the rights to freedom of thought and expression. Reason and persuasion – thought and expression – rather than force, are the pillars of democracies.[870] The loss of human dignity and erosion of democratic skills and processes emanating from such a duty represents an intolerable burden to freedom and human rights.[871] These consequences will usually outweigh any potential benefits to the protection of human rights derived from the employment of autonomous weapon systems by state authorities during and outside of armed conflict.

VII. International Human Rights Law and the Design of Autonomous Weapon Systems

The preceding discussion demonstrates, again, the logic and advantages of a co-active design for autonomous weapons systems when employed during law enforcement and/or anti-terrorist activities, as well as during armed conflict. The 'graduated approach' for the use of force by state agents required by international human rights law usually negates the advantage of speed offered by fully autonomous weapons. A co-active design permits human-machine teamwork, which preserves the human right to freedom of thought for the complex, value-based decisions inherent to the use of lethal force by states.[872] The co-active design permits states to achieve a reasonable balance between their duty to protect human life and the rights

[870] See T Jefferson, *Letter to David Harding*, 20 April 1824, available <http://tjrs.monticello.org/letter/428> ('In a republican nation whose citizens are to be led by reason and persuasion and not by force, the art of reasoning becomes of first importance'). Thus, a 'rule-of-law state employs, to the extent possible, procedures of law and not procedures of force. Targeted Killing Case, para. 40.

[871] Human dignity 'cannot be gained or lost.' W Tadd, et. al., 'Clarifying the Concept of Human Dignity in the Care of the Elderly: A Dialogue between Empirical and Philosophical Approaches,' 17 *Ethical Perspectives* 1 (2010), 253, 255.

[872] Such teamwork also protects against dynamics where human and/or computer errors are 'locked in' to weapon system, resulting in greater violations of international law. P Margulies, 'Making Autonomous Weapons Accountable: Command Responsibility for Computer-Guided Lethal Force in Armed Conflict,' in J Ohlin (ed.) *Research Handbook on Remote Warfare* (Northampton: Edward Elgar Press, forthcoming 2016).

to freedom of thought and expression, consistent with the fundamental value of human dignity.

VIII. Conclusions

Paradoxically, the deployment of autonomous weapon systems by states outside of armed conflict potentially can reduce the frequency of the exercise of deadly force by state agents. Moreover, during wartime, should state practice and opinio juris adhere to the position expressed in chapter IX of the ICRC's Interpretive Guidance, customary international human rights law and humanitarian law will require the use of autonomous weapons to increase opportunities for the capture, rather than killing, of enemy belligerents

Conversely, the widespread use of autonomous weapons carries a serious cost to human dignity, as the delegation to machines of the decision(s) to apply lethal force, as well as determinations about whether arrest or capture is more appropriate, restricts the rights to freedom of thought and expression, and thus undermines human dignity. The burden on the enjoyment of these rights produced when autonomous weapon systems regularly make these complex, value-based decisions outweighs possible benefits to the protection of the right to life. Thus, co-active, human-machine interdependence for decisions about the use of lethal force presents the best option for effectively balancing conflicting rights enshrined in international human rights law and the value of human dignity itself.

Chapter Seven

Autonomous Weapon Systems and International Criminal Law

I. Introduction

The goal of the rules of international criminal law is to proscribe serious violations of international law and to hold those persons who participate in such conduct criminally responsible.[873] The fundamental legal principle of individual responsibility, however, stipulates that persons are only responsible for their own acts or those of their agents.[874] This chapter will discuss whether international criminal justice mechanisms provide an adequate and effective system of accountability for violations of the laws of war and gross violations of international human rights law perpetrated with autonomous weapon systems.

Preliminarily, if, as I argued previously, human dignity serves as a legal point of departure for our decision-making, we see that exclusive reliance on criminal prosecutions as a method of accountability for the use of autonomous weapon systems is a poor strategy. International criminal law (generally) looks backward.[875] Efforts to hold persons responsible for crimes occur *after* the tragic events – and their concomitant violence and human suffering -- have occurred. A more effective model would use the rules of state responsibility in international law (discussed in the following chapter) to complement efforts at accountability

[873] A Cassese, *International Criminal Law*, 2nd ed. (Oxford University Press, 2008), p. 3. 'The law is a living growing, thing. In no other sphere is it more necessary to affirm that the rights and duties of States are the rights and duties of men and that unless they bind individuals they bind no one.' H Shawcross, 'Closing Speech,' *The Trial of German Major War Criminals: Proceedings of the International Military Tribunal Sitting at Nuremburg Germany,* Part 19, 16 July 1946 – 27 July 1946, London, His Majesty's Stationery Office, 1949, p. 427.

[874] B Cheng, *General Principles of Law as Applied by International Courts and Tribunals* (London, Stevens & Sons Limited, 1953), pp. 208 and 212. 'Individual criminal responsibility reflects the particular degree of blameworthiness of an act committed by a moral agent.' H. Decoeur, 'Avoiding Strict Liability in Mixed Conflicts: A Subjectivist Approach to the Contextual Element of War Crimes,' 13 *International Criminal Law Review* (2013), 473, 480.

[875] I am grateful to Louise Arbour for this point.

and individual criminal responsibility. This more proactive approach serves the interests of human dignity by reducing the levels of criminal conduct using autonomous weapon systems.

When crimes or accidents occur during and/or due to the use of autonomous weapons systems, the actions and decisions of human commanders and operators must form part of any accountability analysis.[876] Once the speed of autonomous technology reaches levels that preclude effective human supervision and control, however, proof of the existence of the mental element of crimes, the mens rea, may be illusory and/or impossible to establish. Arguably, this could result in an 'accountability gap' as the underlying rationale for the mens rea requirement in criminal law is that a sense of personal blame is absent if the accused did not in some way intend her action or omission.[877]

But concerns about 'accountability gaps'[878] for particular crimes or modes of criminal responsibility only reflect part of the problem. If our over-arching goal is to promote and protect human dignity, then logically 'accountability' for the (mis)use of autonomous weapon systems means something more than individual punishment for violations of narrowly defined rules of treaty and customary law. The fact that a particular autonomous weapon functions within the 'black letter' prescriptions of international law is secondary because the human

[876] 'Accountability' refers to the duty to account for the exercise of power. 'Accountability of International Organisations,' International Law Association, Berlin (2004), p. 5, <file:///Users/danielsaxon/Downloads/final_report_2004.pdf>. This duty does not insist on perfection, 'as there is no such thing as a perfect decision in war, where complexity, friction, uncertainty, the interlocking effects of the actions of independent individuals, and the enemy all affect the outcome of events.' Gen. C. Campbell, 'Army Action on the Re-Investigation into the Combat Action of Wanat Village, Wygal District, Nuristan Province, Afghanistan on 13 July 2008,' Department of the Army, 13 May 2010, <http://web.archive.org/web/20110716075735/http://usarmy.vo.llnwd.net/e1/wanat/downloads/campbellWanatReportRedacted.pdf>.

[877] *R v. Finta*, [1994] (Supreme Court of Canada) 1 SCR 701, at 760. 'In all advanced legal systems liability to conviction for serious crimes is made dependent, not only on the offender having done those outward acts which the law forbids, but on his having done them in a certain frame of mind or with a certain will.' H Hart, 'Changing Conceptions of Responsibility,' in *Punishment and Responsibility: Essays in the Philosophy of Law* (Oxford: Clarendon Press, 1963), p. 187.

[878] 'Mind the Gap: The Lack of Accountability for Killer Robots,' Human Rights Watch, 9 April 2015, <https://www.hrw.org/report/2015/04/09/mind-gap/lack-accountability-killer-robots>.

designer, operator, commander, etc. can still function outside the scope of human dignity. 'Accountability' in this sense includes a commitment by states and non-state actors to ensure that humans will not abdicate their responsibility for decisions implicating complex values to autonomous weapon systems. By adopting a co-active design, for example, we better ensure that 'accountability' encompasses the full protection of human dignity, and not 'only' the important exercise of holding individuals responsible for serious violations of customary and treaty law after they occur.

I argue that the use of co-active designs for lethal autonomous weapon systems permits teamwork between humans and autonomous technologies that can result in lower levels of criminality and higher levels of accountability when crimes occur. This policy serves to preserve the human dignity of all members of society, including participants in armed conflict and law enforcement operations. Nevertheless, concerns for human dignity also compel us to accept that systems of criminal law have limits based on fairness, and that these limits should not be extended in ways that impair the dignity of accused. Given these limits to the scope of international criminal justice, rules of state responsibility also must be enforced to ensure that accountability for the (mis)use of autonomous weapon systems is as broad as possible.

This chapter begins with a brief review of the sources of international criminal law followed by an analysis of the relationship of human dignity to this body of law. It continues with a discussion of the theories of individual criminal responsibility relevant to the use of autonomous weapon systems. It reviews how the deployment of these weapons simultaneously will facilitate and complicate efforts to ensure accountability for serious violations of international law, and describes the effect of these dynamics on the preservation

of human dignity. Finally, this chapter explains why a co-active design of autonomous weapon systems provides greater opportunities to hold individuals criminally responsible for the misuse of lethal autonomous weapons, while simultaneously preserving the dignity of the operators of these machines.

II. Sources of International Criminal Law

Whilst the concept of 'international crimes' has existed for centuries,[879] sources of modern international criminal law include special agreements of states (or special agreements between states and international institutions such as the United Nations and the European Union), international treaties, the Security Council's exercise of its powers under the United Nations Charter, customary international law, and other bodies of law such as international humanitarian law and international human rights law. This section briefly reviews each of these sources of international criminal law.

A. Agreements of States

At the close of World War II, the victorious powers created the Nuremberg and Tokyo courts by the 1945 London Agreement for the International Military Tribunal, and the 1946 Special Proclamation by General MacArthur for the Tokyo Tribunal, respectively.[880] Each agreement was supplemented by a Charter which defined the constitutional powers and responsibilities of the court, such as their jurisdiction and the fair trial rights of the accused.[881]

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[879] For example, the repression of piracy, committed at sea, contained an international dimension. W Schabas, *An Introduction to the International Criminal Court*, 4th ed. (Cambridge University Press, 2011), p. 89.

[880] London Agreement of 8 August 1945, <http://www.icls.de/dokumente/imt_london_agreement.pdf; Special Proclamation by the Supreme Commander of the Allied Powers, 19 January 1946, <https://www.loc.gov/law/help/us-treaties/bevans/m-ust000004-0020.pdf>.

[881] Charter of the International Military Tribunal, http://avalon.law.yale.edu/imt/imtconst.asp; Charter of the International Military Tribunal for the Far East, 19 January 1946, <https://www.loc.gov/law/help/us-treaties/bevans/m-ust000004-0020.pdf>.

More recently, the Government of Kosovo, at the 'urging' of the European Union and the United States, established a special war crimes court that will prosecute former members of the Kosovo Liberation Army for international crimes committed in Kosovo between 1998 and 2000.[882]

B. International Treaties

International conventions are also important sources of international criminal law. For example, the 1919 Versailles Treaty stipulated that the Allied powers could prosecute persons responsible for violations of the laws and customs of war.[883] The 1948 Genocide Convention on the Prevention and Punishment of the Crime of Genocide confirms that genocide is a crime under international law, which the state parties must undertake to prevent and punish.[884] Moreover, the Convention Against Torture obliges state parties to ensure that all acts of torture (as well as attempted acts and complicity in torture) are offenses under their criminal law.[885] The Rome Statute to the International Criminal Court ('ICC') codifies a comprehensive list of crimes that are punishable under international law.[886]

C. The United Nations Security Council

Pursuant to its powers under Chapter VII of the United Nations Charter, the United Nations Security Council has established several international or 'hybrid' criminal tribunals.

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[882] Draft Law on the Specialist Chambers (English), <https://www.docdroid.net/14op8/draft-law-on-the-specialist-chambers-eng.pdf.html>.
[883] Arts. 227 – 230, Versailles Treaty of 28 June 1919. Eventually, only a small number of individuals were prosecuted pursuant to these provisions. A Cassese, International Criminal Law, pp. 317 – 319.
[884] Arts. I, IV -VI, Adopted by the General Assembly of the United Nations on 9 December 1948.
[885] Art. 4, Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment (the 'CAT'), Adopted by General Assembly Resolution 39/46 of 10 December 1984. The CAT also provides that state parties should ensure the possibility of 'universal' jurisdiction over alleged offenders present in their territories whom they do not intend to extradite. *Ibid*, Art. 5 (2).
[886] Articles 5 – 8 *bis*, Done at Rome 17 July 1998.

In 1993 and 1994 respectively, the Security Council established the International Criminal Tribunal for the Former Yugoslavia ('ICTY') and the International Criminal Tribunal for Rwanda ('ICTR').[887] Moreover, in 2005, the Security Council established an Independent International Investigation Commission ('IIIC') tasked with investigating the terrorist attack that killed former Lebanese Prime Minister Hariri in February 2005.[888] Subsequently, pursuant to its Chapter VII powers and an agreement between United Nations and the Government of Lebanon, the Security Council created the Special Tribunal for Lebanon in 2007.[889]

D. Customary International Law and Other Bodies of Law

The post-Second World War international criminal tribunals expressed a number of principles that have become part of customary international criminal law.[890] The seven 'Nuremberg Principles'[891] are reflected, for example, in the statutes of modern international

[887] The Security Council ('UNSC') established the ICTY to prosecute persons responsible for serious violations of international humanitarian law committed in the territory of the former Yugoslavia after 1 January 1991. UNSC Resolution 827, S/RES/827, 25 May 1993, <http://www.icty.org/x/file/Legal%20Library/Statute/statute_827_1993_en.pdf>. The ICTR was established to prosecute persons responsible for genocide and other serious violations of international humanitarian law committed in the territory of Rwanda and Rwandan citizens responsible for genocide and other such violations committed in the territory of neighbouring States, between 1 January 1994 and 31 December 1994. UNSC Resolution 955, S/RES/955 (1994), <https://www1.umn.edu/humanrts/peace/docs/scres955.html>.

[888] Resolution 1595 (2005), S/RES/1595 (2005), <https://www.treasury.gov/resource-center/sanctions/Programs/Documents/1595.pdf>.

[889] Security Council Resolution 1757 (2007), <http://news.specialtribunalforlebanon.com/en/component/k2/225-security-council-resolution-1757?Itemid=213>. In 2003, an agreement between the United Nations and the Government of Cambodia facilitated the creation of the Extraordinary Chambers in the Courts of Cambodia for the purpose of prosecuting senior leaders of Democratic Kampuchea and those who were most responsible for the crimes and serious violations of Cambodian penal law, international humanitarian law and custom, and international conventions recognized by Cambodia, that were committed during the period from 17 April 1975 to 6 January 1979. Agreement Between the United Nations and the Royal Government of Cambodia Concerning the Prosecution Under Cambodian Law of Crimes Committed During the Period of Democratic Kampuchea, <http://www.eccc.gov.kh/sites/default/files/legaldocuments/Agreement_between_UN_and_RGC.pdf>.

[890] G Werle, *Principles of International Criminal Law* (The Hague: T.M.C. Asser Press, 2005), p. 11.

[891] 1. Any person who commits an act which constitutes a crime under international law is responsible therefore and liable to punishment; 2. The fact that internal law does not impose a penalty for an act which constitutes a crime under international law does not relieve the person who committed the act from responsibility under international law; 3. The fact that a person who committed an act which constitutes a crime under international

criminal tribunals such as the ICTY, ICTR and the ICC. In addition to identifying specific crimes, fair trial rights of the accused, the existence (or not) of particular defences, customary law also informs the modes of individual liability for criminal behavior.[892]

As a matter of customary law, serious violations of international humanitarian law constitute war crimes.[893] Furthermore, the violation of international humanitarian law rules and principles concerning means and methods of warfare during international armed conflicts have gradually extended to civil wars.[894] Thus, customary international law criminalizes violations of the laws or customs of war whether committed in international or non-international armed conflicts.[895]

International criminal law also addresses serious violations of international human rights law. For example, international criminal law concerning crimes against humanity

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law acted as Head of State or responsible Government official does not relieve him from responsibility under international law (provided a moral choice was in fact possible); 4. The fact that a person acted pursuant to an order of his government or of a superior does not relieve him of responsibility under international law; 5. Any person charged with a crime under international law has a right to a fair trial on the facts and law; 6. Crimes Against International Law include crimes against peace (aggression), crimes against humanity and war crimes; 7. Complicity in the commission of a crime against peace, a war crime, or a crime against humanity as set forth in principle 6 is a crime under international law. International Law Commission, *Principles of International Law Recognised in the Charter of the Nürnberg Tribunal and the Judgment of the Tribunal,* International Law Commission, 1950, <http://legal.un.org/ilc/texts/instruments/english/draft_articles/7_1_1950.pdf>.

[892] *Prosecutor v. Zejnil Delalić, et. al.,* Judgment, IT-96-21-A, Appeals Chamber, 20 February 2001, para. 266 (holding that, for the purposes of determining superior responsibility, customary law specifies a standard of effective control).

[893] Rule 156, J Henckaerts & L Doswald-Beck, *Customary International Humanitarian Law*, Vol. I: Rules, International Committee of the Red Cross (Cambridge University Press, 2005)

[894] *Prosecutor v. Duško Tadić a/k/a 'Dule*, Decision on the Defence Motion for Interlocutory Appeal on Jurisdiction, IT-94-1-AR72, Appeals Chamber, 2 October 1995, para. 119.

[895] *Prosecutor v. Stanislav Galić*, Judgment, No. IT-98-29-A, 2006, Appeals Chamber, para. 120. Previously, the International Criminal Tribunal for the Former Yugoslavia held that the rules of treaty and customary international humanitarian law attempt to guarantee the 'basic human rights' of life, dignity and humane treatment of persons taking no active part in armed conflicts 'and their enforcement by criminal prosecution is an integral part of their effectiveness.' *Prosecutor v. Zejnil Delalić, et. al*., Judgment, No. IT-96-21-T, 16 November 1998, para. 200.

generally is predicated on human rights law.[896] Furthermore, at the ICC, human rights law guides the application and interpretation of law:[897] '[h]uman rights underpins the Statute; every aspect of it, including the exercise of the jurisdiction of the Court.'[898]

E. Judicial Decisions as a Subsidiary Source of International Criminal Law

Judicial decisions (as well as the teachings of highly qualified publicists) are useful to determine applicable rules of international law.[899] Jurisprudence is particularly helpful to define and clarify rules of international criminal law. In addition to defining elements of substantive crimes,[900] the case law of modern international criminal tribunals has clarified the components of different forms of individual criminal responsibility such as ordering[901] and superior responsibility.[902]

III. Human Dignity and Individual Criminal Responsibility

A central argument of this dissertation is that the use of fully autonomous weapon systems in situations that require analysis of complex (and conflicting) values will violate

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[896] Cassese, International Criminal Law, p. 99. Crimes against humanity are particular criminal acts 'committed as part of a widespread or systematic attack directed against any civilian population, with knowledge of the attack.' Art. 7, Rome Statute of the ICC. Art. 7 of the 'Elements of Crimes' contained in the ICC statute clarifies that the attack against the civilian population must be carried out pursuant to a policy or plan of a state or organization. https://www.icc-cpi.int/NR/rdonlyres/336923D8-A6AD-40EC-AD7B-45BF9DE73D56/0/ElementsOfCrimesEng.pdf.

[897] 'The application and interpretation of law [by the Court] must be consistent with internationally recognized human rights, ….' Art. 21 (3), Rome Statute of the ICC.

[898] *The Prosecutor v. Thomas Lubanga Dyilo*, Judgment on the Appeal of Mr. Thomas Lubanga Dyilo against the Decision on the Defence Challenge to the Jurisdiction of the Court pursuant to article 19 (2) (a) of the Statute of 3 October 2006, ICC-01/04-01/06 (OA4), 14 December 2006, para. 37.

[899] General Counsel of the United States Department of Defence, *Law of War Manual* 2015, section 1.9, http://www.defense.gov/Portals/1/Documents/pubs/Law-of-War-Manual-June-2015.pdf.

[900] *Prosecutor v. Anto Furundija*, Judgment, IT-95-17/1-T, 10 December 1998, paras, 174 – 186 (defining the elements of the crime of rape).

[901] *Prosecutor v. Ljube Boškoski & Johan Tarčulovski*, Judgment, IT-04-02-A, Appeals Chamber, 19 May 2010, para. 160.

[902] Prosecutor v. Zejnil Delalić, et. al, Judgment, Appeals Chamber, paras. 192 – 198, 222 – 241 and 248 – 267.

human dignity. When humans delegate responsibility for these decisions to machines, they abdicate an important part of their value as persons: their autonomy.

If, as I demonstrate in chapters three and four, human dignity is the foundation and starting point of international law, it must also be the foundation and point of departure of international criminal law.[903] From a Kantian perspective, when individuals use other persons (and/or society as a whole) merely as a means to their own ends, they violate human dignity[904] and society, consequently, is justified in imposing a penalty.[905] Thus, the use of so-called criminal 'hate speech,' for example, by self-interested politicians and other leaders is a discriminatory form of aggression that destroys the dignity of the members of the group under attack. 'It creates a lesser status not only in the eyes of the group members themselves but also in the eyes of others who perceive and treat them as less than human.'[906]

Accordingly, the Preamble to the Rome Statute of the ICC – a significant expression of the aspirations and goals of global society -- affirms 'that the most serious crimes of concern to the international community must not go unpunished ….' Punishment for such

[903] Benton Heath describes how international criminal law is an attempt to enforce the community's most basic values via the threat of sanctions against persons bearing individual responsibility. 'Human Dignity at Trial: Hard Cases and Broad Concepts in International Criminal Law,' 44 *George Washington International Law Review* (2012), 317 and 354.

[904] Every human being bears an obligation to respect 'the dignity of humanity' that must be shown to every other human being. I Kant, *The Metaphysics of Morals*, Mary Gregor, ed. (Cambridge University Press, 2005), pp. 186 and 209.

[905] D Maxwell Fyfe, 'Speech at the Close of the Case Against the Indicted Organizations' (19 August 1946), in *The Trial of German Major War Criminals: Proceedings of the International Military Tribunal Sitting at Nuremberg, Germany*, 1945 – 1946, London, 1946, p. 3. Similarly, in the Judgment of the Cour de Cassation in the case of Klaus Barbie, M. Le Gunehec observed that the crime against humanity of persecution offends 'the fundamental rights of mankind ….' and such crimes 'are aggravated by the voluntary, deliberate and gratuitous violation of the dignity of all men and women: …' *Prosecutor v. Duško Tadić a/k/a 'Dule,'* Judgment, IT-94-1-T, 7 May 1997, para. 696 (quoting A Cassese, *Violence and Law in the Modern Age* (Cambridge, Polity, 1988), p. 112).

[906] *Prosecutor v. Ferdinand Nahimana, et. al*. Judgment, ICTR-99-52-T, 3 December 2003, para. 1072. See also the Judgment on Appeal, para 986 (holding that 'hate speech targeting a population on the basis of ethnicity, or any other discriminatory ground, violates the right to respect for the dignity of the members of the targeted group as human beings').

crimes must express the international community's condemnation of the behaviour and demonstrate that it will not tolerate serious violations of international humanitarian and human rights law.[907] On a more micro level, punishment counteracts the power of the criminal over the victim and seeks to restore the dignity that predated the crime.[908] Thus, international criminal law serves to protect the dignity of society and its members by holding perpetrators *fully* accountable for their misdeeds.[909] Forms of 'civil responsibility,' therefore, limited to fines or other kinds of economic penalties, are insufficient, by themselves, to redress these particularly egregious wrongs.[910]

Conversely, a failure to address past crimes leaves open the wounds in a community[911] as 'the failure to punish implies continuity of the criminal's dominance over the victim.'[912] The existence of impunity, therefore, serves as an affirmation and renewal of this loss of dignity.[913] Indeed, the goal of reducing and/or ending impunity, often voiced as an objective of this body of law,[914] is another dimension of the protection and restoration of human dignity.[915]

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[907] *Prosecutor v. Zlatko Aleksovski*, Judgment, IT-95-14/1-A, Appeals Chamber, 24 March 2000, para. 185.
[908] G Fletcher, 'What is Punishment Imposed For?' in Russell Christopher (ed.), *Fletcher's Essays on Criminal Law* (Oxford University Press, 2013), p. 51.
[909] Prosecutor v. Zejnil Delalić, et. al, Judgment, para. 200.
[910] At the International Criminal Court, the tribunal can impose fines and or forfeiture of proceeds, property and assets derived from crimes, but only '[i]n addition to imprisonment.' Rome Statute, Art. 2 (a) and (b).
[911] S Ratner & J Abrams, *Accountability for Human Rights Atrocities in International Law: Beyond the Nuremberg Legacy*, 2nd ed. (Oxford University Press, 2001), p. 336.
[912] Fletcher, 'What is Punishment Imposed For?' p. 52.
[913] *Questions Relating to the Obligation to Prosecute or Extradite (Belgium v Senegal),* Separate Opinion of Judge Cançado Trindade, I.C.J. Reports 2012, 20 July 2012, para. 108 (re-printed in A Cançado Trindade, The *Construction of a Humanized International Law: A Collection of Individual Opinions* (1991 – 2013) (Leiden, Brill Nijhoff, 2015), p. 1568). *Case of Goiburú et. al. v. Paraguay*, Judgment, Inter-American Court of Human Rights, 22 September 2006, paras. 158 and 164 (holding that continued impunity for persons responsible for gross violations of human rights constitutes a source of additional suffering and anguish for the victim's relatives and that 'impunity fosters the chronic repetition of human rights violations and the total defenselessness of the victims and their next of kin, who have the right to know the truth about the facts').
[914] In his closing speech at the end of the trial of the leading German war criminals, Sir Hartley Shawcross referred to that 'natural justice which demands that these crimes should not go unpunished, ….' 'Speeches of

Thus, international criminal law sources often refer to the violated dignity of victims and the need to punish those responsible.[916] However, this body of law also speaks to the dignity of *perpetrators* and others allegedly responsible for crimes and/or the actions of subordinates.[917] Antony Duff argues that criminal trials should engage accused in a communicative enterprise. By calling them to account for the wrongs committed, society treats defendants as responsible agents and 'members of the normative community of humanity.'[918] In addition, mechanisms for 'restorative' criminal justice, in addition to returning some measure of dignity lost to victims of crimes and their survivors, can renew the human values of decency and respect for others that perpetrators discard when they commit

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the Chief Prosecutors at the Close of the Case Against the Individual Defendants,' *The Trial of German Major War Criminals By the International Military Tribunal Sitting at Nuremberg*, *Germany*, London, 1946, p. 34 (26 – 27 July, 1946). The preamble to the Rome Statute of the ICC emphasises the determination of the drafters 'to put an end to impunity for the perpetrators of these crimes and thus to contribute to the prevention of such crimes.' The Commission of Inquiry on Human Rights in the Democratic People's Republic of Korea concluded that the perpetrators of crimes against humanity in North Korea enjoy impunity and recommended that those most responsible be held accountable by an international tribunal. Report, A/HRC/25/63, 7 February 2014, para. 85.

[915] N Roht-Arriza, 'Introduction,' in N Roht-Arriaza (ed.), *Impunity and Human Rights in International Law and Practice* (Oxford University Press, 1995), pp. 8 – 9. ('[T]he pursuit of accountability can be highly significant to the victims of atrocities – and their relatives and friends – by giving them a sense of justice and closure.'). Ratner & Abrams, *Accountability for Human Rights Atrocities in International Law: Beyond the Nuremberg Legacy*, p. 155. C.f. Benton Heath, 'Human Dignity at Trial: Hard Cases and Broad Concepts in International Criminal Law,' 348 (arguing that international criminal law jurisprudence 'maintains a delicate balance between the fight against impunity and the need to safeguard the defendant's rights – a balance the concept of dignity threatens to destabilize').

[916] Art. 8(2)(b)(xxi), 'War Crime of Outrages Upon Personal Dignity,' *Elements of Crimes of the International Criminal Court*, p. 27, <http://www.icc-cpi.int/NR/rdonlyres/336923D8-A6AD-40EC-AD7B-45BF9DE73D56/0/ElementsOfCrimesEng.pdf>. *The Prosecutor v. Germain Katanga and Mathieu Ngudjolo Chui*, Decision on the Confirmation of Charges, ICC-01/04-01/7, 30 September 2008, paras. 371, 376, 377, and 385. *The Prosecutor v. Jean-Paul Akayesu*, Judgment, ICTR-96-4-T, 2 September 1998, para. 597; Prosecutor v. Zlatko Aleksovski, Judgment, paras. 25 and 37. *Prosecutor v. Dragoljub Kunarac*, Judgment, IT-96-23-T & IT-96-23/1-T, 22 February 2001, paras. 408, 500 – 501 and 756.

[917] *S v. Williams and Others*, Judgment, (CCT/20/94), [1995] paras. 11 and 89.

[918] 'Authority and Responsibility in International Criminal Law,' in Samantha Besson & John Tasioulas (eds.), *The Philosophy of International Law* (Oxford University Press, 2010), pp. 593 – 604. 'Traditional' forms of justice also support these kinds of engagements between perpetrators and victims. P Clark, 'The Rules and Politics of Engagement,' in Phil Clark and Zachary Kaufman (eds.), *After Genocide: Transitional Justice, Post-Conflict Reconstruction and Reconciliation in Rwanda and Beyond* (London: Hurst & Company, 2009), pp. 300 – 301 and 314 – 315.

their offences.[919] Similarly, an emphasis on rehabilitation in sentencing decisions reflects society's belief that criminals can and should rebuild their personalities – the manifestation of their human dignity.[920]

Furthermore, international criminal law arguably preserves the human dignity of both perpetrators and victims via its (aspirational) goal of the prevention and deterrence of crime.[921] Although there is a great deal of overlap between these concepts, the two terms are not synonymous. 'Deterrence' refers to the processes within criminal justice systems that result in a rational cost/benefit analysis by potential offenders who decide that the expected costs of punishment are likely to surpass the possible benefits of the crime.[922] Stated more simply, deterrence rests on the premise that the fear and pain of punishment discourages crime in potential offenders.[923] 'Prevention' is a much broader, systemic concept which, while it includes deterrence, also spans the generational processes of education, economic progress,

[919] *Prosecutor v. Dragan Obrenović*, Sentencing Judgment, IT-02-60/2-S, 10 December 2003, para. 145 - 146. *Report of the Truth and Reconciliation Commission of South Africa*, 29 October 1998, Volume 5, Chapter 5, para. 101, Chapter 9, paras. 33 – 37.
[920] Prosecutor v. Dragan Obrenović, Sentencing Judgment, paras. 145 - 146.
[921] Juan Mendez, then the Special Advisor on the Prevention of Genocide to the United Nations, observed in 2004 that the idea that criminal punishment plays a role in the prevention of crimes was 'an act of faith.' M Mennecke, 'Punishing Genocidaires: A Deterrent Effect or Not? *Human Rights Review*, July 2007, 319. In 2009, Mendez was more sanguine, remarking that 'we have the expectation, and I would say the promise, that the [prosecutorial] actions we take with difficulty today will have a preventive effect in the future.' 'Justice as Prevention of Mass Atrocities,' Presentation at the Carr Center for Human Rights, John F. Kennedy School of Government, Harvard University, 23 November 2009. <http://www.youtube.com/watch?v=yQSLeru_n8o>. No comprehensive data exists, yet, that clearly demonstrates the ability of international criminal courts to prevent and/or deter crimes. However, in very specific situations, the ICC may prevent/deter potential offenders from participating in or committing the crimes under the tribunal's jurisdiction. D Saxon, 'The International Criminal Court and the Prevention of Crimes,' in S Sharma & J Welsh (eds.), *The Responsibility to Protect: Overcoming the Challenges to Atrocity Prevention* (Oxford University Press, 2015), pp. 122 – 123 and 139 – 146.
[922] M Langer, 'The Diplomacy of Universal Jurisdiction: The Political Branches and the Transnational Prosecution of International Crimes,' 105 *American Journal of International Law,* No. 1 (2011), 1, 47-48.
[923] L Kercher, *The Kenya Penal System: Past, Present and Prospect* (Washington, D.C.: University Press of America, 1981), p. 238.

law-making and institutional development that can lead to reduction of crime.[924] If one or both processes reduce the incidence of crime, the result is the conservation of dignity.

Moreover, international criminal law supports another dimension of human dignity. As explained in chapters three and four, one facet of human dignity is the ability of persons to fulfill their responsibilities. Members of the armed forces of states, organised armed groups and law enforcement authorities must comply with the obligations of customary international humanitarian law, customary international human rights law, as well as international treaties.[925] International criminal law expresses and codifies the duty of individuals to assume their responsibilities under international law.[926] Consequently, courts can find individuals to be criminally liable should they fail to exercise their duties.

Therefore, a functioning system of international criminal law reinforces the social and professional expectations that commanders, combatants and members of state security forces will take responsibility and hold themselves accountable for their actions related to war and law enforcement actions.[927] The same principle applies to members of non-state organized

[924] Essentially, the prevention of crime requires three elements: 1) moral and legal norms for acceptable behaviour, 2) institutions that make those norms credible, and 3) a culture that permits those norms to exist. Author interview with Matias Hellman, External Relations Advisor, Office of the President, International Criminal Court, The Hague, 1 April 2011, in Saxon, 'The International Criminal Court and the Prevention of Crimes,' p. 120, nte. 4.

[925] *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda),* Judgment, I.C.J. Reports 2005, para. 211; *Prosecutor v. Dusko Tadić a/k/a 'Dule,'* Decision on the Defence Motion for Interlocutory Appeal on Jurisdiction,' 2 October 1995, paras. 79 – 142.

[926] 'The law is a living growing, thing. In no other sphere is it more necessary to affirm that the rights and duties of States are the rights and duties of men and that unless they bind individuals they bind no one.' H Shawcross, 'Closing Speech,' p. 427. Hence, art. 87 of API requires commanders who are aware that subordinates will commit or have committed grave breaches of the Protocol to prevent the occurrence of additional crimes and/or punish the perpetrators. Individual criminal responsibility for failing to fulfill this obligation is enshrined in art. 28 of the Rome Statute of the ICC.

[927] In the U.K. armed forces, 'responsibility' entails a professional obligation held by a superior who ultimately takes credit for success and blame for failure. 'Accountability' comprises a liability and an obligation to answer to a superior for the (im)proper use of authority and resources. 'Army Doctrine Publications' Operations, Ministry of Defence, 2010, para. 0619,

armed groups.[928] Conversely, by failing to perform their duties to uphold the law, law enforcement (and military) officials can legitimize criminal conduct by others.[929]

Hence, international criminal law works to preserve the human dignity of *potential* perpetrators by compelling them to fulfill the responsibilities accorded to them by their governments and international law. During his closing address to the International Military Tribunal at Nuremberg, at the end of the case against the indicted organizations, British prosecutor David Maxwell Fyfe reminded the judges that, when confronted with moral problems '[g]reat captains are not automata to be weighed against a rubber stamp.'[930] At a deeper level, Maxwell Fyfe was referring to the importance of individual autonomy. In chapter three we saw that personal autonomy is an important component of human dignity.

However, freedom 'makes us accountable for what we do'[931] and so personal autonomy would be an empty shell if it was unaccompanied by responsibility.[932] Consequently, the legal obligations of soldiers and/or members of security forces exist even in times of turmoil or armed conflict where they find themselves 'torn between different views

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<https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/33695/ADPOperationsDec10.pdf>.

[928] Rule 139, ICRC Customary International Humanitarian Law Study, <https://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter40_rule139>; Common Art. 3 to 1949 Geneva Conventions; 2016 Commentary to Art. 3, Geneva Convention I, paras. 520 – 528, <https://www.icrc.org/applic/ihl/ihl.nsf/Comment.xsp?action=openDocument&documentId=59F6CDFA490736C1C1257F7D004BA0EC>; *Prosecutor v. Thomas Lubanga Dyilo*, Judgment Pursuant to Article 74 of the Statute, ICC-01/04-01/06, 14 March 2012, paras. 1176 and 1222; *Prosecutor v. Thomas Lubanga Dyilo*, Decision on Sentence Pursuant to Art. 76 of the Statute, ICC-01/04-01/06, 10 July 2012, para. 97; See L Zegveld, *The Accountability of Armed Opposition Groups in International Law* (Cambridge University Press, 2002), pp. 111 – 132.

[929] *Prosecutor v. Miroslav Kvočka*, et. al., Judgment, IT-98-30/1-T, 2 November 2001, para. 716; *Prosecutor v. Zlatko Aleksovski*, Judgment, IT-95-14/1-T, 25 June 1999, para. 88.

[930] D Maxwell Fyfe, 'Speech at the Close of the Case Against the Indicted Organizations' (19 August 1946), in *The Trial of German Major War Criminals: Proceedings of the International Military Tribunal Sitting at Nuremberg, Germany*, 1945 – 1946, London, 1946, p. 58.

[931] A Sen, *The Idea of Justice* (London: Penguin Books, 2010), p. 19.

[932] Responsibility should not be confused with accuracy. A person acts responsibly if she accepts moral and legal integrity and makes a reasonable effort towards achieving them. The end result is secondary. R Dworkin, *Justice for Hedgehogs* (Cambridge, Massachusetts: Harvard University Press, 2011), pp. 100 and 109.

of right and wrong.'[933] It is precisely at those moments where the values of personal autonomy and responsibility combine to strengthen human dignity.

IV. Theories of Individual Criminal Responsibility for Unlawful Attacks with Autonomous Weapon Systems

This section continues with a discussion of the modes of individual criminal responsibility most relevant to holding perpetrators accountable for the misuse of autonomous weapon systems. It describes how the deployment of these weapons simultaneously facilitate and complicate efforts to ensure accountability for serious violations of international law and protect the value of human dignity.

A. Theories of Individual Criminal Responsibility for Unlawful Attacks with Autonomous Weapons

Preliminarily, two general kinds of individual criminal responsibility may arise when soldiers and/or their commanders violate international humanitarian and/or international human rights law. First, 'direct' responsibility arises from an individual's acts or omissions that contribute to the commission of crimes.[934] Second, 'superior' or 'command' responsibility emanates from the failure of military or civilian superiors to perform their duty to prevent their subordinates from committing such crimes, and/or the failure to fulfill the obligation to punish the perpetrators thereafter.[935] Thus, in the 'Čelebići' case, the ICTY

[933] *Prosecutor v. Ljube Boškoski & Johan Tarčulovski*, Judgment, IT-04-82-T, 10 July 2008, paras. 601 and 607 – 608. Similarly, when sentencing Sreten Lukić, former Minister of Interior for the Federal Republic of Yugoslavia, for his responsibility for, inter alia, crimes against humanity that occurred in Kosovo, the Trial Chamber recognized that Lukić acted 'in the midst of a complicated situation, including the defence of the country against NATO bombing and some combat operations against the KLA.' *Prosecutor v. Milan Milutinović, et. al*., Judgment, IT-05-87-T, 26 February 2009, para. 1201.
[934] *Prosecutor v. Stanislav Galić*, Judgment, IT-98-29, Trial Chamber, 3 December 2003, para. 169.
[935] *Prosecutor v. Momčilo Perisić,* Judgment, IT-04-81-A, Appeals Chamber, 28 February 2013, paras. 86 – 87.

Appeals Chamber held that the superior 'would be tried for failure to act in respect of the offences of his subordinates *in the perpetration of which he did not directly participate*.'[936]

Moreover, each theory of individual criminal liability contains objective and subjective elements:[937] the actus reus – the physical act necessary for the offence -- and the mens rea – the necessary mental element.[938] The principle of individual guilt requires that an accused can be convicted of a crime only if her mens rea comprises the actus reus of the crime.[939] A conviction absent mens rea would violate the presumption of innocence.[940] Thus, to convict an accused of a crime, she must, at a minimum, have had knowledge of the facts that made her conduct criminal.[941] Similarly, at the ICC conviction can occur 'only if the material elements are committed with intent and knowledge.'[942] This conjunctive approach requires the accused to possess a volitional element encompassing two possible situations: 1) she knows that her actions or omissions will bring about the objective elements of the crimes, and she undertakes such actions or omissions with the express intent to bring about the objective elements of the crime, or 2) although she does not have the intent to accomplish the objective elements of the crime, she is nonetheless aware that the consequence will occur in the ordinary course of events.[943]

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[936] Prosecutor v. *Zejnil Delalić*, et. al., Judgment, Appeals Chamber, para. 225 (emphasis added).
[937] *Prosecutor v. Duško Tadić*, Judgment, IT-94-1-A, Appeals Chamber, 15 July 1999, para. 194.
[938] *Prosecutor v. Zejnil Delalić, et. al*., Judgment, paras. 424 and 425.
[939] *Prosecutor v. Mladen Naletilić, a.k.a. 'Tuta'& Vinko Martinović, a.k.a. 'Štela,'* Judgment, IT-98-34-A, Appeals Chamber, 3 May 2006, para. 114.

[940] *Ibid.*
[941] *Ibid.*
[942] Art. 30 ICCSt.
[943] The Prosecutor v. Germain Katanga & Mathieu Ngudjolo Chui, Decision on the Confirmation of Charges, para. 529;, *The Prosecutor v. Abdallah Banda & Saleh Jerbo*, Corrigendum to Decision on Confirmation of Charges, ICC-02/05-03/09, Pre-Trial Chamber I, 7 March 2011, para. 153.

1. Theories of Direct Responsibility

The use of autonomous weapon systems for the perpetration of crimes can involve one of six modes of direct responsibility: commission, planning, ordering, instigation/inducement, aiding and abetting, or attempt.

Individual 'commission' of a crime entails the physical perpetration of a crime or engendering a culpable omission in violation of criminal law.[944] The actus reus of this mode of criminal liability is that the accused participated, physically or otherwise directly, in the material elements of a crime, through positive acts or omissions, whether individually or jointly with others.[945] At the ad hoc tribunals, the requisite mens rea for commission is that the perpetrator acted with the intent to commit the crime, or with an awareness of the probability, in the sense of the substantial likelihood, that the crime would occur as a consequence of his/her conduct.[946] The Rome Statute of the ICC, however, excludes the application of the dolus eventualis standard, as well as the mens rea of recklessness.[947] Instead, the criminal mens rea exists if the accused means to commit the crime, or, she is aware that by her actions or omissions, the crime will occur in the ordinary course of events.[948]

In addition, at the ICC, criminal responsibility may accrue when accused make an essential contribution to a plurality of persons acting with a common criminal purpose. The accused must be aware of her essential contribution, and must act with the intention that the

[944] *Prosecutor v. Fatmir Limaj*, Judgment, IT-03-66-T, 30 November 2005, para. 509.
[945] *Ibid.*
[946] *Ibid.*
[947] Prosecutor v. Thomas Lubanga Dyilo, Judgment Pursuant to Article 74 of the Statute, para. 1011.

[948] *Ibid*, para. 1018.

crime occur, or with the awareness that by implementing the common plan, the crime 'will occur in the ordinary course of events.'[949] At the ad-hoc tribunals, culpable participation in a common criminal purpose is referred to as 'joint criminal enterprise' and requires a significant contribution to the realization of the crime.[950]

At the ad hoc tribunals, the actus reus of 'planning' requires that one or more persons design the criminal conduct constituting one or more statutory crimes that are later perpetrated.[951] It is sufficient to demonstrate that the planning was a factor substantially contributing to such criminal conduct.[952] The mens rea for this mode of responsibility is the intent to plan the commission of a crime or, at a minimum, the awareness of a substantial likelihood that a crime will be committed in the execution of the acts or omissions planned.[953]

Responsibility under the mode of 'ordering' ensues when a person in a position of authority orders an act or omission with the awareness of the substantial likelihood that a crime will be committed in execution of that order, and, if the person receiving the order subsequently commits the crime.[954] Orders need not take a particular form and the existence

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[949] Rome Statute, art. 25 (3) (d); Prosecutor v. Thomas Lubanga Dyilo, Judgment Pursuant to Article 74 of the Statute para. 1018.

[950] *Prosecutor v. Vujadin Popović, et. al.,* Judgment, IT-85-88-T, 10 June 2010, para. 1027, citing *Prosecutor v. Momčilo Krajišnik, Judgment,* IT-00-39-A, Appeals Chamber, 17 March 2009, para. 215; Judgment, *Prosecutor v. Radoslav Brdanin,* Judgment, IT-99-37-A, Appeals Chamber, 3 April 2007, para. 430; *Prosecutor v. Miroslav Kvočka*, et. al., Judgment, IT-98-30/1-A, Appeals Chamber, 28 February 2007, para. 97.

[951] *Prosecutor v. Ferdinand Nahimana*, Judgment, ICTR-99-52-A, Appeals Chamber, 28 November 2007, para. 479.

[952] *Ibid.*

[953] *Ibid.* Article 25 of the Rome Statute does not recognize 'planning' as a mode of liability. The drafters of Article 25 wished to include modes of liability accepted by most major legal traditions and 'planning' as a mode of liability does not commonly appear in the continental legal system. Email communication with Dr. Fabricio Guariglia, Senior Appeals Counsel, Office of the Prosecutor, International Criminal Court, 29 January 2012. However, most conduct recognized as 'planning' at the ad hoc tribunals would incur liability under the broad categories of responsibility described in Art. 25 (3) (c) and (d). 'Forms of Responsibility in International Criminal Law,' in G Boas e. al., (eds.) *International Criminal Law Practitioners Library*, Vol. I (Cambridge University Press, 2007), p. 371.

[954] Prosecutor v. Ferdinand Nahimana, et. al., Judgment, Appeals Chamber, para. 481; *Prosecutor v. Boškoski & Tarčulovski*, Judgment, IT-04-02-A, Appeals Chamber, 19 May 2010, para. 160.

of orders may be established using circumstantial evidence.[955] Liability ensues if the evidence demonstrates that the order substantially contributed to the perpetrator's criminal conduct.[956]

The modes of liability of soliciting and inducing fall into the broader category of 'instigation' 'or 'prompting another to commit a crime,' in the sense that they refer to conduct by which a person influences another to commit a crime.[957] The instigating acts or omissions must clearly contribute to the conduct of the persons who subsequently commit the crimes.[958] Proof must also exist that the defendant intended to provoke or induce the commission of the crime, or was aware of the substantial likelihood that the commission of a crime would be a probable consequence of his acts.[959]

In recent years, the requirements of 'aiding and abetting' have been a contested area of international criminal law. At the ICTY, Appeals Chambers have divided over the question whether this mode of criminal responsibility requires that assistance to perpetrators be "specifically directed" to the execution of specific crimes. In *Prosecutor v. Momčilo Perisić,* one Chamber held that specific direction is an element of the actus reus of aiding and abetting.[960] Subsequently, however, a differently constituted Chamber emphatically and 'unequivocally' rejected the *Perisić* approach.[961] In *Prosecutor v. Šainović*, et. al., the majority held that, under customary international law, the actus reus of aiding and abetting is

[955] *Ibid.*
[956] *Ibid.*
[957] *The Prosecutor v. Laurent Gbagbo*, Decision on the Confirmation of Charges Against Laurent Gbagbo, ICC-02/11-01/11, 12 June 2014, para. 243.
[958] *Prosecutor v. Radoslav Brđanin*, Judgment, IT-99-36-T, 1 September 2004, para. 269.
[959] *Ibid.*
[960] *Proseutor v. Momčilo Perisić,* Judgment, IT-04-81-A, Appeals Chamber, 28 February 2013, paras. 25 – 36.
[961] *Prosecutor v. Nikola Šainović et. al*. Judgment IT-05-87-A, Appeals Chamber, 23 January 2014, paras. 1617 – 1650.

'practical assistance, encouragement, or moral support which has a substantial effect on the perpetration of the crime.'[962] The mens rea is the knowledge that the acts assist the commission of the crime.[963] Likewise, at the Special Court for Sierra Leone, the Appeals Chamber also rejected any 'specific direction' requirement as part of the actus reus of aiding and abetting.[964] Thus, it appears that (for now) the actus reus of aiding and abetting does not contain a 'specific direction' component.

The Rome Statute of the ICC includes 'attempt' as one mode of individual criminal responsibility.[965] An 'attempt' occurs with the commencement of execution of a crime within the court's jurisdiction 'by means of a substantial step.'[966] The statutory term 'substantial step' requires that the perpetrator's conduct reach a more definite and concrete stage beyond mere preparatory acts.[967] The adequacy of this conduct requires that, in the ordinary course of events, the accused's conduct would have resulted in the completion of the crime, had circumstances outside the accused's control not intervened.[968] The mens rea or dolus that embodies an attempt is the same as the mens rea that embodies the consummated act.[969]

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[962] *Ibid*, paras. 1626 and 1649. Subsequently, the ICTY Appeals Chamber affirmed the Šainović holding in *Prosecutor v. Vujadin Popović, et. al*., Judgment, IT-05-88-A, Appeals Chamber, 30 January 2015, para. 1758 and *Prosecutor v. Jovica Stanišič & Franko Simatović*, Judgment, IT-03-69/A, 9 December 2015, paras. 104 – 106.

[963] *Ibid*, para. 1649.

[964] M Milanović, 'SCSL Appeals Chamber Affirms Charles Taylor Conviction,' *EJIL: Talk!* 26 September 2013, < http://www.ejiltalk.org/scsl-appeals-chamber-affirms-charles-taylors-conviction/>.

[965] Art. 25 (3) (f). The 'attempt to commit a crime is a crime ….' The Prosecutor v. Germain Katanga & Mathieu Ngudjolo Chui, Decision on the Confirmation of Charges, para. 460.

[966] Art. 25 (3) (f).

[967] The Prosecutor v. Abdallah Banda & Saleh Jerbo, Corrigendum to Decision on Confirmation of Charges, para. 97.

[968] *Ibid,* para. 96. For example, in a case including charges of 'attempted murder,' 'the provision of medical assistance to the wounded by a person other than the one responsible for causing the injuries qualifies as circumstances outside the perpetrator's control.' *Ibid*, para. 99.

[969] The Prosecutor v. Germain Katanga & Mathieu Ngudjolo Chui, Decision on the Confirmation of Charges, para. 460.

2. The Theory of Superior Responsibility

When crimes occur due to the misuse of autonomous weapons systems, the theory of superior responsibility also may be appropriate to hold commanders accountable. The superior-subordinate relationship lies at the heart of the doctrine of a commander's liability for the crimes committed by her subordinates. The role of commanders is decisive[970] and it is the position of command over subordinates and the power to control their actions (and comply with international law) that form the legal basis for the superior's duty to act, and for her corollary liability for a failure to do so.[971] As a tenet of customary international law, the doctrine of superior responsibility applies to both international and non-international armed conflicts.[972]

In general terms, pursuant to the statute and jurisprudence of the ad-hoc tribunals, a military or civilian superior may be held accountable if the superior knew or had reason to know that her subordinates were committing or about to commit criminal acts and failed to take necessary and reasonable measures to prevent the crimes and/or punish the perpetrators.[973] The Rome Statute of the ICC alters the evidentiary thresholds for holding civilian and military commanders accountable under the theory of superior responsibility. In addition to the three elements found in the law of the ad-hoc tribunals, prosecutors at the ICC must establish that the crimes committed by subordinates occurred as a result of the superior's

[970] ICRC Commentary to Art. 87, API, para. 3550.
[971] Prosecutor v. Fatmir Limaj, Judgment, para. 76.
[972] *Prosecutor v Enver Hadžihasanović, et. al.,* Decision on Joint Challenge to Jurisdiction, IT-01-47-PT, 12 November 2002, paras. 167 – 179.
[973] Art. 7 (3), Statute of the ICTY, 25 May 1993, and Art. 6 (3), Statute of the International Criminal Tribunal for Rwanda, 8 November 1994; Prosecutor v. Momčilo Perisić, Judgment, Appeals Chamber, para. 86.

'failure to exercise control properly over such forces.'[974] In short, it is necessary to prove that the superior's omission increased the risk of the commission of the crimes charged.[975]

a. The Superior/Subordinate Relationship

A superior-subordinate relationship exists when a superior exercises effective control over her subordinates, i.e. when she has the material ability to prevent or punish their acts.[976] Factors indicative of an accused's position of authority and effective control include the official position she held, her capacity to issue orders, whether *de jure* or *de facto*, the procedure for appointment, the position of the accused within the military or political structure and the actual tasks that she performed.[977] The indicators of effective control are more a matter of evidence than of substantive law and depend on the specific circumstances of each case.[978] More than one superior may be held responsible for her failure to prevent or punish crimes committed by a subordinate, regardless of whether the subordinate is immediately answerable to the superior or more distantly under her command.[979]

b. The Superior's Knowledge of the Criminal Acts of Her Subordinates

A superior's men's rea, i.e. her knowledge that her subordinates were about to commit or had committed crimes may be actual knowledge or the availability of 'sufficiently

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[974] Art. 28(1)ICCSt.
[975] *The Prosecutor v. Jean Pierre Bemba Gombo*, Decision Pursuant to Article 61 (7) (a) and (b) of the Rome Statute on the Charges of the Prosecutor v. Jean-Pierre Bemba Gombo, ('Decision on Confirmation of Charges'), ICC 01/05-01/08, 15 June 2009, para. 425. This standard requires more of an active duty on the part of the commander to take the necessary measures *to secure knowledge* of the conduct of her troops and to inquire, regardless of the availability of information at the time on the commission of the crime. *Ibid*, para. 433.
[976] *Prosecutor v. Enver Hadžihasanović & Amir Kubura*, Judgment, IT-01-47-T, 15 March 2006, paras. 76 – 77.
[977] *Prosecutor v. Sefer Halilović*, Judgment, IT-01-48-T, 16 November 2005, para. 58.
[978] *Ibid*, and para. 63 and nte. 150.
[979] *Ibid*, para. 63. The concept of superior is broader than immediate and direct command 'and should be seen in terms of a hierarchy encompassing the concept of control.' ICRC Commentary to Art. 86, API, para. 3544, <https://www.icrc.org/applic/ihl/ihl.nsf/Comment.xsp?action=openDocument&documentId=BA2C2393DA08B951C12563CD00437A1C>.

alarming' information that would put her on notice of these events.[980] Such knowledge may be presumed if the superior had the means to obtain the knowledge but deliberately refrained from doing so.[981] An assessment of the mental element (knowledge) required for superior responsibility must be performed in the specific circumstances of each case, 'taking into account the specific situation of the superior concerned at the time in question.'[982]

At the ICC, instead of requiring proof that the superior 'had reason to know' that her forces were committing or had committed crimes, the tribunal's 'knowledge' standard for military commanders compels prosecutors to establish that she 'should have known' about such crimes.[983] This standard requires the commander 'to ha[ve] merely been negligent in failing to acquire knowledge' of her subordinates unlawful conduct.[984] The 'knowledge' requirement for demonstrating liability of civilian superiors is higher: 'the superior either knew, *or consciously disregarded* information which clearly indicated that the subordinates were committing or about to commit such crimes.'[985]

c. Necessary and Reasonable Measures to Prevent the Crimes and/or Punish the Perpetrators

'Necessary' measures are the measures appropriate for the superior to discharge her obligation (showing that she genuinely tried to prevent or punish) and 'reasonable' measures

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[980] *Prosecutor v. Pavle Strugar*, Judgment, IT-01-42-A, Appeals Chamber, 17 July 2008, paras. 297 - 304, Prosecutor v. Fatmir Limaj, Judgment, para. 525.
[981] Prosecutor v. Zejnil Delalić et. al, Judgment, Appeals Chamber, para. 226.
[982] Prosecutor v. Pavle Strugar, Judgment, para. 299 (citing *Prosecutor v. Milorad Krnojelac et. al*., Judgment, IT-97-25-A, Appeals Chamber, 17 September, 2003, para. 156, citing Prosecutor v. Zejnil Delalić Judgment, Appeals Chamber, para, 239).
[983] Art. 28(1)(a)ICCSt.
[984] The Prosecutor v. Jean Pierre Bemba Gombo, Decision on Confirmation of Charges, para. 432.
[985] Art. 28(2)(a)ICCSt (emphasis added).

are those reasonably falling within the material powers of the superior.[986] A superior will be held responsible if she failed to take such measures that are within her material ability and the superior's explicit legal capacity to do so is immaterial provided that she had the material ability to act.[987]

'The determination of what constitutes "necessary and reasonable measures" is not a matter of substantive law but of fact, to be determined on a case-by-case basis.'[988] This assessment depends upon the superior's level of effective control over her subordinate(s).[989] Depending upon the circumstances of the case, "necessary and reasonable" measures can include carrying out an investigation, providing information in a superior's possession to the proper administrative or prosecutorial authorities, issuing orders aimed at bringing unlawful conduct of subordinates in compliance with the international humanitarian law and securing the implementation of these orders, expressing criticism of criminal activity, imposing disciplinary measures against the commission of crimes, reporting the matter to the competent authorities, and/or insisting before superior authorities that immediate action be taken.[990]

3. Application of the Theories of Individual Criminal Responsibility to the Design and Use of Autonomous Weapon Systems

a. Application of Theories of Direct Responsibility

In cases involving deliberate, unlawful attacks with the use of autonomous weapon systems, proof of a commander's individual criminal responsibility under the direct modes,

[986] Prosecutor v. Sefer Halilović, Judgment, para. 63.
[987] Prosecutor v. Fatmir Limaj, Judgment, para. 526.
[988] Prosecutor v. Vujadin Popović, et. al. Judgment, para. 1044.
[989] *Ibid*.
[990] *Ibid*, para. 1045.

inter alia, of commission, planning and ordering will be relatively simple. For example, if, during armed conflict, a tactical commander[991] intentionally employs an autonomous weapon system in circumstances where the system's capabilities for compliance with international humanitarian law are inadequate (such as within a densely-populated urban area where civilians are known to be present), and death and injuries to civilians occur, that commander is culpable for the commission of a war crime.[992]

In addition, as mentioned above, at the ICC, under the mode of 'commission,' criminal responsibility may accrue when accused make an essential contribution to a plurality of persons acting with a common criminal purpose.[993] Thus, a commander can make an essential contribution to a common criminal design by, for example, by providing an autonomous weapon system for use in the perpetration of crimes.

Similarly, if a tactical commander orders or plans the use of an autonomous weapon system in similar circumstances, with knowledge that the system's capabilities for international humanitarian law compliance are inadequate, and damage to civilian objects or injuries to civilians subsequently occurs, she incurs liability under these theories of responsibility.

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[991] In modern warfare, the term 'tactical level' refers to the 'level at which activities, battles and engagements are planned and executed to accomplish military objectives assigned to tactical formations and units.' Thus, a 'tactical commander' exercises the authority 'to assign tasks to forces under his command for the accomplishment of the mission assigned by higher authority.' *NATO Glossary of Terms and Definitions*, AAP-06(2014), 2-T-1 – 2-T-2, <http://nso.nato.int/nso/ZPUBLIC/_BRANCHINFO/TERMINOLOGY_PUBLIC/NON-CLASSIFIED%20NATO%20GLOSSARIES/AAP-6.PDF>.

[992] M Schmitt, Remarks during panel discussion on 'The International Legal Context,' at 'Autonomous Military Technologies: Policy and Governance for Next Generation Defence Systems,' Chatham House, London, 25 February 2014. Permission to cite provided in electronic mail message to author, 15 March 2014.

[993] Rome Statute, art. 25 (3) (d); Prosecutor v. Thomas Lubanga Dyilo, Judgment Pursuant to Article 74 of the Statute, para. 1018.

Moreover, under the 'reasonable commander' standard enunciated in international criminal law jurisprudence,[994] individual criminal responsibility should accrue when commanders and operators of lethal autonomous weapon systems clearly fail to consider relevant elements of the targeting rules *and/or* when they disregard the necessity for human-machine interdependence for complex military tasks, and serious violations of international law consequently occur. More limited autonomous technology, for example, will signal a demand for greater input of human judgment (as well as communication and accountability) during the mission. At the same time, ignorance of a system's capabilities cannot permit the avoidance of accountability.[995] Therefore, to avoid criminal culpability, a sound understanding of the function, capabilities and limitations of the semi-autonomous and autonomous weapon technologies available to armed forces will become a prerequisite for command of modern military units that operate lethal autonomous weapon systems.[996]

These hypothetical scenarios represent relatively clear-cut examples where findings of direct criminal responsibility for employing lethal autonomous weapon systems to carry out unlawful attacks are possible. More complex issues arise, however, when the tactical commander conducts herself reasonably in the selection of potential targets, the choice of an

[994] For example, when 'determining whether an attack was proportionate, it is necessary to examine whether a reasonably well-informed person in the circumstances of the actual perpetrator, making reasonable use of the information available to him or her, could have expected excessive civilian casualties to result from the attack.' Prosecutor v. Stanislav Galić, Judgment, para. 58.

[995] This principle does not imply a new, onerous duty for professional commanders: 'As you deploy weapons as a commander, you're accountable. We are always at the forefront of new weapons technology. As we were in Iraq in 2003; but we were confident that they were consistent with international humanitarian law. There's no difference with autonomous weapon systems. So commanders won't take their reliability as a matter of trust. So there is no "accountability gap."' Air Marshal (ret.) Sir Brian Burridge, former commander of U.K. forces in Iraq, Remarks during panel on 'The International Legal Context' at 'Autonomous Military Technologies: Policy and Governance for Next Generation Defence Systems,' Chatham House, London, 24 February 2014; Permission to cite provided in electronic mail message to author, 6 March 2014.

[996] Colonel R Jackson, Special Assistant to Judge Advocate General of U.S. Army for Law of War Matters, Remarks in Panel on 'Autonomous Weaponry and Armed Conflict,' *Annual Meeting of American Society of International Law*, 10 April 2014, <https://www.youtube.com/watch?v=duq3DtFJtWg&list=PLYp0ZUypbrnevQlBfMUSDG0IanrvJ3J6z&index=4>; Electronic mail message to author, 7 May 2014.

appropriate autonomous weapon system, as well as the programming of the system, yet the weapon nevertheless attacks civilians or performs outside the confines of international humanitarian/human rights law.[997] Given the lack of any criminal intent on her part, no criminal culpability accrues to the field commander.[998] Thus, the 'close cases' involving hard moral, legal and military choices by military commanders will not easily produce the culpable mens rea required for individual criminal responsibility.

In addition, the development of 'moral remoteness' on account of increased reliance on computerised systems can create challenges to the establishment of criminal intent in military commanders. The tendency for human beings to depend on their computers at moments of (stressful) decision-making can lead to 'moral buffering' and a reduced sense of responsibility for the consequences of those decisions.[999] As artificial intelligence computer software for autonomous weapon systems improves, the risk increases that, subjectively, commanders will transfer their accountability for stressful decisions to the computer.[1000] This risk will be particularly high if states follow an 'appropriate level of human judgment' or other semantic standard for human interaction with lethal autonomous weapon systems as commanders and operators can 'hide' behind such designated 'levels' rather than taking

[997] For discussions of the 'predictability' challenges of autonomous weapon systems and the potential for 'emergent behaviour,' see H Liu, 'Refining Responsibility: Differentiating Two Types of Responsibility Issues Raised by Autonomous Weapon Systems,' in N Bhuta, et. al. (eds.) *Autonomous Weapon Systems: Law, Ethics, Policy*, Cambridge University Press, 2016), and in the same volume: N Jain, 'Autonomous Weapons Systems: New Frameworks for Individual Responsibility.'

[998] I am grateful to Professor Geoffrey Corn for his insights on this topic.

[999] M Cummings, 'Automation and Accountability in Decision Support System Interface Design,' *MIT Human and Automation Laboratory* (2006), 10 – 11 and 18 - 19, <http://web.mit.edu/aeroastro/labs/halab/papers/Cummings_JTS.pdf>. Professor Cummings uses the term 'moral buffer' to describe the sense of distance and remoteness that computer interfaces create for their users. It is this moral buffer that permits individuals 'to morally and ethically distance themselves from their actions' while 'operating' machines. *Ibid.* 'Too much trust can lead to disastrous consequences,' just as a skeptical attitude towards technology does not permit full exploitation of modern weapon systems. Electronic mail message to Author, General B.A. Fabio Giunchi, Commander of Air Cooperation School, Guidonia Airport, Italian Air Force, 27 January 2015.

[1000] Cummings, 'Automation and Accountability in Decision Support System Interface Design,' 19.

responsibility for ensuring sufficient human oversight of the weapon in specific circumstances. That moral shift confuses efforts to determine the existence of a criminal mens rea, and, consequently, a legal basis for individual responsibility.[1001]

An implied or express delegation of responsibility for complex, value-based decisions from a human superior to the artificial intelligence software of an autonomous weapon system reduces the human dignity of the superior as well as the victim of unlawful conduct. The superior forfeits her moral and professional accountability for her actions, in addition to the opportunity to fully develop her personality.[1002] The victim, of course, loses the possibility of redress for the wrong suffered. Preservation of accountability – and human dignity – therefore, require human-machine interdependence for decisions implicating complex and/or contradictory values.

As the speed of autonomous weapon technologies increases, however, opportunities for interdependence will decline while, in parallel, perceptions of how a 'reasonable commander' should perform in particular circumstances will change, and, perhaps paradoxically, may become more demanding. Computer technologies, especially those linked to virtual information resources, are reshaping legal obligations related to overall attack

[1001] This shift also undermines the ability of criminal law and the criminal justice system to supplement the moral standards acquired through education and other non-legal processes. D Saxon, 'The International Criminal Court and the Prevention of Crimes,' p. 36.

[1002] In *Bloody Constraint: War and Chivalry in Shakespeare*, Professor Meron illustrates how one form of human reflection, conscience, works as a powerful instrument for ensuring accountability, when we pay attention to it. T Meron, (New York: Oxford University Press, 1998), pp. 194 – 197. Adam Smith also described the important influence of 'the tribunal' of man's conscience,' and the power of this 'supposed impartial and well-informed spectator, […] the man within the breast, the great judge and arbiter of their conduct.' *The Theory of Moral Sentiments* (1759), K Haakonssen (ed.) (Cambridge University Press, 2004), p. 150.

planning.'[1003] The scope of what is legally feasible has been altered by what is now operationally *required*.[1004]

These scenarios will produce accountability dichotomies rather than 'accountability gaps.' The employment of 'co-active' autonomous weapon systems, however, can reduce these contradictions by permitting (if not requiring) greater human-machine teamwork. For example, when systems are co-active, it will be unreasonable for commanders to not consider whether a particular autonomous weapon system may provide a more discriminate and/or proportionate option when planning and executing attacks.

b. Application of Superior Responsibility

In certain scenarios, the theory of superior responsibility may be appropriate to hold military commanders and/or civilian superiors responsible failing to prevent and/or punish crimes perpetrated with autonomous weapon systems. For example, if a commander at the operational level becomes aware that a subordinate officer at the tactical level is using autonomous weapon systems to perpetrate unlawful attacks, the operational commander has a duty to prevent further misconduct and punish his subordinate.[1005] As long as evidence exists demonstrating the three essential elements of a commander's effective control over subordinates who commit crimes, the commander's knowledge and a failure to take necessary

[1003] J Beard, 'Law and War in the Virtual Era,' 103 *American Journal of International Law* 3 (2009), 409, 436.
[1004] *Ibid*, paras. 435 – 437. For example, during proportionality assessments, many western militaries utilize sophisticated 'collateral damage modeling algorithms' which estimate anticipated damage by incorporating data on weapon guidance systems. D Stewart, 'Maximising Compliance with IHL and the Utility of Data in an Age of Unlimited Information: Operational Issues,' in D Saxon (ed.) *International Humanitarian Law and the Changing Technology of War* (Leiden: Martinus Nijhoff, 2013), p. 185.
[1005] Art. 86 (2) and 87, API.

and reasonable measures to prevent/repress[1006] further crimes and punish the perpetrators, criminal liability should ensue.

However, the advances in technology may require reassessments of the 'knowledge' and 'reasonable measures' pillars of superior responsibility. With respect to the 'knowledge' element, at first blush, commanders of forces operating autonomous weapon systems will not easily convince a court that they were unaware that their subordinates operated autonomous weapon systems unlawfully.[1007] Any state or organized armed group with the resources and ability to field autonomous weapons systems will also have the means and the communications technology to constantly monitor how these weapons are used. Furthermore, any competent commander utilises all possible methods to observe the progress and operations of her subordinate units.[1008] Indeed, to ensure compliance with international law, this full-time and real-time monitoring capability should be an obligatory aspect of every autonomous weapon system at the design and procurement stage.[1009]

The availability of electronic records also will minimise the challenge that physical and/or temporal 'remoteness' poses to the accountability of superiors.[1010] Modern

[1006] The 'failure to punish' prong common to the law of the ad-hoc tribunals is replaced at the ICC by a 'failure to repress' element, which encompasses the two distinct duties, arising at different stages of criminal conduct, to stop ongoing crimes and to punish subordinates after the commission of crimes. The Prosecutor v. Jean Pierre Bemba Gombo, Decision on Confirmation of Charges, para. 439.

[1007] This premise should hold true regardless of whether courts apply the 'had reason to know' standard of the ad-hoc tribunals or the 'should have known' standard of the ICC.

[1008] For example, during multi-national NATO operations, the Supreme Allied Commander for Europe ('SACEUR') must '[e]stablish an intelligence architecture linking NATO Headquarters with national intelligence centres to provide the [Joint Force Commander] with a common, timely and accurate picture of the situation during all phases of the campaign.' 'AJP-01D,' *Allied Joint Doctrine*, North Atlantic Treaty Organization, 21 December 2010, at 0615 (e), <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/33694/AJP01D.pdf>.

[1009] K Trapp, 'Great Resources Mean Great Responsibility: A Framework of Analysis for Assessing Compliance with API Obligations in the Information Age,' D Saxon (ed.), International Humanitarian Law and the Changing Technology of War, pp. 156 and 170.

[1010] Physical 'remoteness' in this context refers to the geographical distance between the acts or omissions of a superior and the location of the criminal conduct. Temporal 'remoteness' refers to the time elapsed between the

communications, however, increasingly provide superiors with real-or-nearly-real-time access to circumstances and events, including combat occurring far from command centres and headquarters.[1011] Furthermore, the internet and social-media technology create virtual links between front-line areas and all parts of the world. These connections, combined with electronic records of commanders' decision-making processes, 'shorten' the physical and temporal distances between a superior and events in the battlespace and reveal much about a superior's mental state. This evidence of the superior's intent and knowledge is far more relevant to individual criminal responsibility analysis than concerns about temporal or geographic 'remoteness.'[1012]

However, the vast and overwhelming amounts of data 'available' to commanders will not guarantee a superior's actual or constructive knowledge of particular information

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accused's acts or omissions and the execution of the crimes. Trial Chambers at the ICTY and the ICC have held that: '(…) The more physically distant the superior was from the commission of the crimes, the more additional indicia are necessary to prove that he knew them.' The Prosecutor v. Jean Pierre Bemba Gombo, Decision on Confirmation of Charges, para. 484, citing *Prosecutor v. Milomir Stakić*, Judgment, IT-97-24-T, 31 July 2003, para. 460. In Bemba, the evidence established that Jean-Pierre Bemba, the President of the Mouvement de Libération du Congo ('MLC'), in his effective role as commander of MLC troops, communicated directly with his commanders in the field, had access to a regular reporting system and regularly monitored international media reports about the events in the Central African Republic. Paras. 486 and 488 – 489.

[1011] For example, in an iconic photograph taken in the White House 'Situation Room' in Washington, D.C. on 1 May 2011, U.S. President Obama and members of his staff are seen intently watching 'live updates' of 'Operation Neptune Spear,' which resulted in the death of Osama Bin Laden in Pakistan. 'Situation Room,' <http://en.wikipedia.org/wiki/Situation_Room>. Moreover, the use of 'Youtube' by all sides of the Syria conflict provides a graphic video record of events in Syria within minutes of their occurrence. <https://www.youtube.com/results?search_query=syria+bread+line+air+strike>; <https://www.youtube.com/results?search_query=syria+rebels+linked+to+al+qaeda+apologize+for+beheading+fellow+fighter>.

[1012] See *Trial of Bruno Tesch and Two Others* ('The Zyklon B Case'), Judgment, British Military Court, Hamburg, 1 – 8 March 1946 (the defendant Tesch and an employee were convicted for knowingly acting as agents – over several years - for the supply of Zyklon B gas from the German manufacturer to the Auschwitz concentration camp in Poland, where the gas was used to exterminate prisoners). <http://www.loc.gov/rr/frd/Military_Law/pdf/Law-Reports_Vol-1.pdf>. Temporal distance in another sense – the time between the alleged crimes and the commencement of prosecution – will not bar prosecutions of persons responsible for unlawful attacks employing autonomous weapon systems, as the imprescriptibility of war crimes, crimes against humanity and genocide is part of customary law. B Simma and A L Paulus, 'The Responsibility of Individuals for Human Rights Abuses in Internal Conflicts: A Positivist View,' 93 *American Journal of International Law*, (April 1999), 302, 315.

concerning the conduct of her subordinates.[1013] The ability of modern technology to acquire larger and larger amounts of data can, at times, compound the 'fog of war.'[1014] As Professor Cummings (an engineer and former fighter pilot) has observed: 'command and control technology have outpaced human reasoning capabilities and traditional command structures.'[1015] Thus, as we saw above in the section on direct theories of individual criminal responsibility, advances in technology may make it more difficult for commanders to be accountable for the misconduct of their subordinates.

The scope of 'necessary and reasonable measures' to prevent further crimes and punish the subordinates involved in misconduct may vary when autonomous weapon systems are used to carry out unlawful attacks. For example, the use of swarm technology will undoubtedly increase the tempo of military engagements.[1016] The faster pace of combat – and unlawful conduct - will reduce a superior's opportunities to prevent crimes.

However, unlike human soldiers, it is possible to design lethal autonomous weapon systems so that they can be switched off.[1017] Thus, measures available to a commander to prevent or repress unlawful attacks carried out with autonomous weapon systems should include efforts to electronically deactivate the machines. Indeed, part of the procurement

[1013] Much of this 'ceaseless flow of information' may consist of meaningless and irrelevant facts and figures. C Garraway, 'The Application of Superior Responsibility in an Era of Unlimited Information,' in D Saxon (ed.), International Humanitarian Law and the Changing Technology of War, pp. 201 – 205.
[1014] Y Dinstein, *The Conduct of Hostilities Under the Law of International Armed Conflict*, 2nd ed. (Cambridge, Cambridge University Press, 2010) p. 139.
[1015] M Cummings, 'Automation and Accountability in Decision Support System Interface Design,' 17.
[1016] P Fiddian, 'UAV Swarm Technology Trial Success,' *Armed Forces International News*, 7 August 2012, <http://www.armedforces-int.com/news/uav-swarm-technology-trial-success.html>.
[1017] One notable exception to this attribute may be certain autonomous cyber weapons which, once released into the internet, may lack a specific deactivation mechanism, or are encrypted to prevent outside deactivation. M Clayton, 'More Telltale Signs of Cyber Spying and Cyber Attacks Arise in Middle East,' *The Christian Science Monitor*, 21 August 2012, <http://www.csmonitor.com/USA/2012/0821/More-telltale-signs-of-cyber-spying-and-cyber-attacks-arise-in-Middle-East-video>. Contrast this characteristic with the infamous 'Stuxnet' malware, which was programmed to cease its operations in late June 2012. M Clayton, 'Stuxnet Cyberweapon Set to Stop Operating,' *The Christian Science Monitor*, 23 June 2012, <http://www.csmonitor.com/USA/2012/0623/Stuxnet-cyberweapon-set-to-stop-operating>.

process, including legal reviews of new weapon technologies conducted pursuant to Article 36 of API, should include a requirement for an 'override' mechanism permitting superiors to stop their subordinates' misuse of autonomous weapon systems by taking control of, and/or shutting down, the machines. Use of override systems will constitute 'necessary and reasonable' measures to repress further unlawful conduct and a commander's failure to make use of such mechanisms should result in criminal liability.

As Professor Heyns has observed, however, '[…] the power to override may in reality be limited because the decision-making processes of robots are often measured in nanoseconds and the information basis of those decisions may not be practically accessible to the superviser. In such circumstances humans are de facto out of the loop ….'[1018] Nevertheless, that scenario still will leave the commander with the duty to deactivate or override an autonomous weapon system as soon as practicable after becoming aware of its misuse.

V. Human Dignity and Individual Criminal Responsibility in the Hard Cases

As outlined in the proceeding sections, situations will arise where establishment of individual criminal responsibility for events involving autonomous weapon systems will be very difficult if not impossible. Professor Corn argues forcefully that, in situations where no fault for civilian injury or damage lies with soldiers/operators, security forces or commanders operating lethal autonomous weapon systems, the "Compliance Commander," i.e. the officer in charge of the procurement process of the new autonomous weapon system, should bear

[1018] C Heyns, 'Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions,' A/HRC23/47, 9 April 2013, para. 41, <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G13/127/76/PDF/G1312776.pdf?OpenElement>.

criminal responsibility for the 'misconduct' of the autonomous weapon system.[1019] In Corn's view, standards for validation of new autonomous weapon systems should be high enough to ensure their consistent functioning within their foreseen use and capacity. When the 'Compliance Commander' approves the new weapon system, the argument continues, she takes responsibility for ensuring that these standards have been met, and for failures that occur when the system does not operate according to these standards.[1020]

Lex ferenda criminal responsibility for 'Compliance Commanders' may be appropriate if evidence exists that she intentionally and knowingly approved the procurement of a flawed autonomous weapon system, or did so recklessly without first validating the systems capabilities, all possible failsafe mechanisms, all sub-systems, etc. Similarly, designers who deliberately create autonomous weapon systems that will fail to comply with international law should incur criminal liability.

However, if no such evidence of intentional malfeasance exists, there would appear to be no basis – absent a 'strict criminal liability'[1021] standard - for penal responsibility for the 'Compliance Commander' or the weapon designer. Some commentators argue that strict criminal liability violates international human rights norms such as the rights to a fair trial, in

[1019] G Corn, 'Autonomous Weapon Systems: Managing the Inevitability of "Taking the Man Out of the Loop,"' draft paper presented to Conference on *Autonomous Weapon Systems – Law, Ethics, Policy*, Academy of European Law, European University Institute, Florence, 24 April 2014, 9 – 10 and 13 (concerning the duties of the 'Compliance Commander' vis a vis autonomous weapon systems).

[1020] *Ibid.* The control algorithms that comprise artificial intelligence for autonomous systems are created and tested by teams of humans. 'Unmanned Systems Integrated Roadmap FY2013-2038,' United States Department of Defence, 67, <http://www.defense.gov/Portals/1/Documents/pubs/DOD-USRM-2013.pdf>. High testing and validation standards should detect negligent or intentional 'mis-programming' of component systems of autonomous weapon by computer programmers and designers of these weapon systems. Detection and correction of such mistakes before the autonomous weapon system reaches the battlespace reduce concerns about how to hold scientists, engineers, computer programmers, etc. accountable when the autonomous weapons systems that they help to design and manufacture subsequently are employed in violation of international law.

[1021] One definition of 'strict criminal liability' refers to offences where, with respect to at least one element of the actus reus, 'the offender's mental state is irrelevant.' D Prendergast, 'The Constitutionality of Strict Liability in Criminal Law,' 33 *Dublin University Law Journal* (2011), 285, 286.

particular the presumption of innocence.[1022] Indeed, the ICTY Appeals Chamber implicitly rejected the use of strict criminal liability when it observed that the principle of individual criminal responsibility 'requires that fundamental characteristics of a war crime be mirrored in the perpetrator's mind.'[1023]

Furthermore, the mens rea requirement common to criminal law makes an important contribution to the fulfillment of human dignity. Implicit in the requirement that conduct, to be 'criminal,' must be intentional is the importance that humans develop powers of self-restraint.[1024] Part of personal autonomy and the development of the human personality is the ability to make independent, moral judgments about one's own conduct. Expansion of the strict liability doctrine to include conduct during armed conflict and/or civil strife will have the perverse result of undermining the sense of personal accountability that lies at the heart of international humanitarian and human rights law. '[P]rinciples of fundamental justice,'[1025] as well as human dignity, therefore, militate against the application of a strict liability criminal standard to serious violations of international law.

[1022] S. Salako, 'Strict Criminal Liability: A Violation of the Convention?' 70 *Journal of Criminal Law*, (2006), 531 at 537 and 549.

[1023] *Judgment*, Prosecutor v. Mladen Naletilić, a.k.a. 'Tuta,' & Vinko Martinović, a.k.a. 'Štela,' No. IT-98-34-A, 3 May 2006, para. 118. The Chamber held that, consequently, in cases involving allegations of responsibility for grave breaches of the Geneva Conventions, the principle of individual guilt requires that the Prosecution prove the accused's awareness of factual circumstances establishing the armed conflict's international character. *Ibid*, para. 121. Nevertheless, as Henri Decoeur observes, the introduction to the chapter called 'Article 8, War Crimes' in the 'Elements of Crimes' of the ICC provides that 'there is no requirement for awareness by the perpetrator of the facts that established the character of the conflict as international or non-international.' <http://www.icc-cpi.int/NR/rdonlyres/336923D8-A6AD-40EC-AD7B-45BF9DE73D56/0/ElementsOfCrimesEng.pdf>. Arguably, this provision, if it supersedes Article 30 of the Rome Statute, permits conviction of accused for war crimes although she lacks this particular mens rea. Decoeur, 'Avoiding Strict Liability in Mixed Conflicts: A Subjectivist Approach to the Contextual Element of War Crimes,' 490 – 491.

[1024] H Hart, 'Punishment and the Elimination of Responsibility,' in *Punishment and Responsibility: Essays in the Philosophy of Law* (Oxford, Clarendon Press, 1963), pp. 182 – 183.

[1025] R. v. Finta [1994], 815.

Under the lex lata, therefore, cases will arise where assignment of individual criminal responsibility is impossible in the face of allegations of unlawful use of autonomous weapon systems. For the reasons described at the start of this chapter, this 'accountability gap'[1026] is an affront to the dignity of (at least) victims of serious international crimes. To determine whether this accountability gap and loss of dignity is tolerable in a modern society, we must consider the consequences for the dignity interests of potential accused, i.e. persons who design, procure, use and/or programme lethal autonomous weapon systems, if society lowers the standards for liability for crimes perpetrated with these weapons.

Preliminarily, in the face of insufficient evidence of mens rea or other elements of crimes, '… the simplest way to overcome allegations of impunity is to over-extend individual responsibility.'[1027] Nevertheless, as discussed above in the context of 'strict liability,' measures that lower the bar for criminal liability increase the risk that accused will be unable to fully exercise their rights; in particular the presumption of innocence.[1028] Due to the potential for loss of liberty upon conviction, an accused 'has at stake an interest of transcending value ….'[1029] Thus, laws and legal proceedings that do not carefully protect the

[1026] Human Rights Watch argues that significant challenges exist, under both direct and superior theories of criminal liability, to establish individual criminal responsibility for offences that occur due to the employment of lethal autonomous weapon systems. 'Mind the Gap: The Lack of Accountability for Killer Robots,' 9 April 2015, https://www.hrw.org/report/2015/04/09/mind-gap/lack-accountability-killer-robots.
[1027] H Liu, 'Refining Responsibility: Differentiating Two Types of Responsibility Issues Raised by Autonomous Weapon Systems,' p. 342.
[1028] This right is enshrined in numerous international human rights declarations and treaties. Art. 11 (1) UDHR; Art. 14 (2), ICCPR; Art. 8 (2), ACHR; Art. 7 (1), AChHPR. The presumption of innocence is a 'bedrock "axiomatic and elementary" principle whose "enforcement lies at the foundation"' of criminal law. *In re Winship*, 397 U.S. 358 (1970), 363, citing Coffin v. United States, 156 U.S. 432, (1895), 453.
[1029] *Speiser v. Randall*, 357 U.S. 513, 525 – 526 (1958).

rights of accused are, by definition, unfair and the conviction of innocents are gross violations of their dignity.[1030]

In essence, when we respect important criminal law principles, such as nullum crimen, nulla poena sine lege, we tacitly acknowledge the impossibility that criminal law today will meet every possible future contingency[1031] and accept that some individuals will not be held accountable for aberrant behavior.[1032] That helps to explain why no democratic system of justice is one hundred percent effective and well-documented *absences* of criminal responsibility inevitably arise in modern warfare.[1033] Without evidence of culpable mens rea for the field commander, the programmer, the Compliance Commander or designer, and absent a 'strict criminal liability' standard, an 'unlawful attack' perpetrated with the use of an autonomous weapon system will be analogous to other kinds of military incidents where there is no human criminal responsibility. A limited 'accountability gap' is the price society pays to avoid a substantial 'dignity gap.'

[1030] In re Winship, p. 372 (Justice Harlan concurring) (holding that 'it is far worse to convict an innocent man than to let a guilty man go free').
[1031] G Finch, 'The Nuremberg Trial and International Law,' 41 *American Journal of International Law* 1 (January 1947), 20, 36.
[1032] Finch argued, correctly, that the proposition that all criminals of a class must be punished, or none at all, is untenable. *Ibid*, p. 28.
[1033] For example, in September 2009, Colonel Georg Klein, a German commander serving in ISAF in Kunduz province in Afghanistan, ordered an airstrike on a fuel tanker that had been stolen by members of the Afghan Taliban. The strike allegedly killed over a hundred civilians. In April 2010, German prosecutors, citing Colonel Klein's lack of knowledge of the presence of civilians at the bombing site, declined to charge Colonel Klein for criminal responsibility for the civilian deaths. Susan Houlton, 'German Prosecutors Drop Case Against Kunduz Airstrike Colonel,' *DW*, 19 April 2010, <http://www.dw.de/german-prosecutors-drop-case-against-kunduz-airstrike-colonel/a-5483181-1>.

VI. The Design of Autonomous Weapon Systems, Accountability and the Function of International Criminal Law

Previously in this chapter I described how a functioning system of international criminal law protects the human dignity of persons who participate in armed conflict and/or law enforcement situations. The professional ethos of responsibility and accountability for one's actions – essential qualities of superiors in modern militaries[1034] – helps to preserve the dignity of all actors in times of war and civil strife. Concurrently, international criminal law assists society to re-affirm and re-adjust the rights of its members following violations of international law.[1035] The increasing use of autonomous weapon systems presents advantages as well as challenges to systems of criminal responsibility.

Responsibility – in the sense of accountability for errors and criminal conduct – is also a design challenge.[1036] This section explains why a co-active design strategy for lethal autonomous weapon systems will maximize the potential for accountability when these weapons are used in violation of international law.

A co-active design of lethal autonomous weapon systems advances efforts at accountability on two dimensions. First, by 'building-in' human-machine teamwork for

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[1034] D Saxon, 'A Human Touch: Autonomous Weapons, DOD Directive 3000.09 and the Interpretation of "Appropriate Levels of Human Judgment Over the Use of Force,"' in N Bhuta, et. al. (eds.), Autonomous Weapons – Law, Ethics, Policy, pp. 196 and 200 - 201.

[1035] Following World War II, the lead U.S. prosecutor told the judges at the International Military Tribunal at Nuremberg that '[t]he real complaining party at your bar is Civilisation.[1035] R Jackson, 'Presentation of the Case by the Prosecution' (21 November 1945), *The Trial of German Major War Criminals: Proceedings of the International Military Tribunal Sitting at Nuremberg, Germany*, Part I (20 November 1945 to 1 December 1945), London, 1946, p. 86.

[1036] J van den Hoven, et. al., 'Why the Future Needs Us Today: Moral Responsibility and Engineering Autonomous Weapon Systems,' Presentation to 2015 Meeting of Experts on Lethal Autonomous Weapon Systems, Convention on Certain Conventional Weapons, April 2015, p. 2, <http://www.unog.ch/80256EE600585943/(httpPages)/6CE049BE22EC75A2C1257C8D00513E26?OpenDocument>.

complex decisions, it forces human commanders and operators to conserve, rather than abdicate, their own sense of moral and legal responsibility and accountability for the results of attacks using these weapons. In doing so, it permits the development and use of 'tactical patience' so that commanders may avoid mistakes and misconduct.[1037] In addition, a co-active design provides more opportunities for soldiers and commanders to adjust the behavior of autonomous technologies, including, for example, the ability to modify artificial intelligence software.[1038]

Second, a co-active design increases the possibility that a functioning system of international criminal justice will hold accountable those commanders or operators who use autonomous weapon systems for the commission of crimes. The violent and chaotic conditions of armed conflict and civil strife often reduce the quality and effectiveness of legal reviews of the conduct of soldiers and law enforcement personnel.[1039] Situations arise, however, where judicial intervention is necessary while conflict is ongoing.[1040] Absent a co-active design, high-speed autonomous weapon systems further limit the possibility for courts and lawyers to review compliance with international humanitarian law (and international human rights law) during hostilities.

A slower, co-active design that permits human-machine teamwork will produce opportunities for more effective legal review of the use of force during conflict or civil strife

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[1037] 'Tactical patience' refers to a commander's capacity to delay engagement and/or the use of force until she has a more complete awareness of her battlespace and specific situation. See General T McHale, 'Executive Summary for AR 15-6 Investigation, 21 February 2010 CIVCAS Incident in Uruzgan Province,' Headquarters United States Forces – Afghanistan, p. 2, <http://www.rs.nato.int/images/stories/File/April2010-Dari/May2010Revised/Uruzgan%20investigation%20findings.pdf>.

[1038] P Margulies, 'Making Autonomous Weapons Accountable: Command Responsibility for Computer-Guided Lethal Force in Armed Conflict,' in J Ohlin (ed.) *Research Handbook on Remote Warfare* (Northampton, Edward Elgar Press, Forthcoming 2016).

[1039] *Physicians for Human Rights v. IDF Commander*, Separate Opinion of Justice D. Beinisch, HCJ 4764/04 [2004] IsrL 200, p. 227, <http://elyon1.court.gov.il/Files_ENG/04/640/047/A03/04047640.a03.pdf>.

[1040] *Ibid.*

and provide more opportunities for intervention when necessary. If legal interventions are effective, fewer violations of international law should occur and, when they do, international criminal law mechanisms – the adjustment of rights – will be more successful.

Regardless of whether legal reviews occur during or subsequent to events, the electronic and virtual records of activities of autonomous weapon systems should increase the accuracy and fairness of the accountability process. Although the location of proof – particularly of mens rea - always represents a challenge for prosecutors, one advantage of the sophisticated technology found in autonomous weapon systems is that the systems can be designed to leave an electronic 'footprint' of important decisions by commanders and programmers.[1041] The more interdependent the weapon system's design, the larger the 'footprint.' Thus, although a review may occur after-the-fact, a co-active design facilitates the contemporaneous documentation of decisions and events that may constitute violations of international law.

Indeed, to ensure compliance with international law, designers of autonomous weapon technology must include a sub-system of electronic recording of commanders' operational and targeting decisions such as: 1) identity of target(s), 2) anticipated location of moving targets, 3), anticipated civilian injuries, 4) anticipated damage to civilian objects, 5) description of anticipated military advantage offered by neutralization of target, 6) pre-cautionary measures (if any) taken to avoid civilian injuries and damage to civilian objects, 7) foreseeable capacities of the autonomous weapon system selected for use, etc.[1042] In addition to the evidentiary trail produced by such electronic records, the creation of an obligatory

[1041] M Sassóli, 'Autonomous Weapons and International Humanitarian Law: Advantages, Open Technical Questions and Legal Issues to Be Clarified,' 90 *International Law Studies*, 308, 316 and 338.
[1042] G Corn, 'Autonomous Weapon Systems: Managing the Inevitability of "Taking the Man Out of the Loop."'

record of human decisions and evaluations of international legal obligations – and the possibility of accountability - will focus the minds of field commanders and law enforcement officers so as to avoid criminal conduct.

Decisions about design, therefore, are directly related to future findings of individual criminal responsibility for misdeeds committed with lethal autonomous weapon systems. The preservation of human dignity is the value that runs from the design phase of the weapon systems through to criminal prosecutions and other accountability mechanisms. The use of a co-active design serves to protect and enhance the dignity of the users of these autonomous weapons as well as the victims of their misuse.

VII. Conclusions

'Combat involves both lawful and unlawful killing, injury and destruction.'[1043] When armed forces, state security forces and organized armed groups employ lethal autonomous weapon systems, an effective international criminal law structure ensures that (most) operators of these systems will fulfill their independent legal duties, and, therefore, preserve their dignity. Similarly, when crimes do occur, a functioning system of international criminal law serves to restore, to some degree, the dignity of victims and, possibly, that of the alleged perpetrators as well. Superiors and operators of lethal autonomous weapon systems, therefore, must be held accountable – to the greatest extent possible -- if they use these machines intentionally or recklessly to commit serious violations of international humanitarian law and/or international human rights law. Given the different 'dignity

[1043] W Fenrick, 'The Prosecution of Unlawful Attack Cases Before the ICTY,' 7 *Yearbook of International Humanitarian Law* (2004), 153, 156.

interests' at stake, limited situations where individual criminal responsibility is absent are tolerable, if not by public opinion, at least by international law.

Thus, the preservation of human dignity – both for potential and actual perpetrators as well as victims -- is an intrinsic part of international criminal law. The discussion in this chapter has demonstrated that the development and use of autonomous weapon systems will not result in a dramatic new 'accountability gap' for serious violations of international law. Indeed, due to the ability of advanced electronic technology to record the behaviour of humans and weapons, employment of autonomous technologies may provide new evidentiary avenues for determining the individual criminal responsibility of operators and commanders. Nevertheless, this advance in accountability can be sustained only as long as co-active designs for lethal autonomous weapon systems are the standard. As the speed of lethal autonomous weapon systems increases, however, and human-machine interdependence declines, it will be more difficult to use the value and process of accountability to protect the human dignity of combatants and victims of crimes.

Chapter Eight

Autonomous Weapon Systems and the Responsibility of States and Arms Manufacturers

I. Introduction

The introduction of AWs into modern battle space(s) creates new facts, scenarios, ideas and questions in international life. In chapters five, six and seven, we saw that, at least in theory, these new weapons can be used in compliance with the treaty and customary rules of international humanitarian and human rights law, and, at times, may improve the effectiveness of international criminal law. However, the possibility that states can use autonomous weapon systems consistently with the rules of international law does *not* answer the question whether the use of such weapons is lawful; more general legal principles have to be consulted.[1044]

In chapter three, I argued that the legal duty to protect human dignity is a foundational responsibility of states imposed by the United Nations Charter.[1045] Thus, the essential question is how nations use the concept of human dignity to guide the application of (international) legal rules to their autonomous weapons. As the Government of Ghana observed in 2015:

> Our ultimate objective as States remains the preservation of human dignity and respect for basic sanctity of humanity at all times and, most especially, during armed conflicts. The laws of war must in this regard remain at the forefront of all our efforts and ahead

[1044] *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, Dissenting Opinion of Judge Shahabuddeen, I.C.J. Reports 1996, p. 377 (observing that although no prohibition of the threat or use of nuclear weapons exists in international law, that does not conclude the question whether the threat or use of such weapons is lawful).

[1045] *Application of the Convention on the Prevention and Punishment of the Crime of Genocide*, Judgment, Preliminary Objections, Separate Opinion of Judge Weeramantry, I.C.J. Reports 1996, p. 645.

> of technological developments. Technology must not be allowed to overtake our commitment to these goals.'[1046]

Yet, in chapter 4, I explained that the inevitable velocity of autonomous military engagements will obstruct the development of sound human judgment that arises from opportunities for reflection on questions and decisions involving complex values. This dynamic, I contend, will violate human dignity as the ability of humans to fully develop their personalities – including the capacity to respect the rights of others - will inevitably diminish. Absent regulation, as national armed forces and police increasingly employ autonomous weapon systems, a new, counter-intuitive kind of 'state accountability gap' emerges.[1047] Without a co-active design that permits human involvement in complex decisions, the 'victims' over time will be the *users and operators* of the weapons, rather than their targets.[1048] This result will occur even when the artificial intelligence software directing the weapons 'follows' the rules of international law.

The responsibility of states for the development and use of autonomous weapon systems is important for another, related reason. As explained in chapter seven, judgments about individual accountability, e.g. findings of criminal responsibility for misuse of autonomous weapons, will be complex and difficult for most cases absent clear proof of the individual's

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[1046]Statement by the Delegation of Ghana at the Convention on Conventionl Weapons Meeting on 'The Way Forward on Discussions [Regarding] Lethal Autonomous Weapons,' 17 April 2015, <http://www.unog.ch/80256EE600585943/(httpPages)/6CE049BE22EC75A2C1257C8D00513E26?OpenDocument>. Also see for example, the Statement of Ecuador to Expert Meeting Concerning Lethal Autonomous Weapons, Convention on Certain Conventional Weapons, 13 – 17 April 2015, p. 2, <http://www.unog.ch/80256EE600585943/(httpPages)/6CE049BE22EC75A2C1257C8D00513E26?OpenDocument>.

[1047] I use the term 'counter-intuitive because, by definition, the state responsibility regime normally facilitates only *inter-state* accountability on the basis of positive legal rules. J Brunnée, 'International Legal Accountability Through the Lens of the Law of State Responsibility,' 36 *Netherlands Yearbook of International Law* (2005), 21, 23.

[1048] Seventy years ago Professor Jessup observed, presciently, that the 'embodiment in international law of the principle of the duty to respect the rights of man suggests new complications.' *A Modern Law of Nations* (New York: The Macmillan Company, 1948), p. 93. Jessup pondered whether 'modernized international law' requires additional rules designed for the protection of special classes of individuals. *Ibid*, p. 103.

intent (or recklessness) to commit or contribute to crimes. The easy cases will occupy the extremes, but most allegations of misconduct will fall within the gray area dominated by the fog of war, civil strife, terrorist activities and the unforeseen reactions of artificial intelligence software to changing circumstances. The clarity and power of rules of state responsibility, as well as rules for non-state actors such as arms manufacturers, therefore, are necessary to complement the processes of individual criminal responsibility, and, hopefully, to set standards for accountability[1049] that reduce the likelihood of violations of international law.

Thus, this chapter has two goals: 1) to explain how the concept of human dignity underlies the international legal responsibility of states to apply these theories to their design, development and use of autonomous weapon systems;[1050] and 2) to propose theories of legal responsibility for states and arms manufacturers for damage and injuries caused by autonomous weapon systems. I argue that three mechanisms for attributing responsibility in international environmental law, the preventive principle, the precautionary principle and the polluter pays principle, can, by analogy, serve to determine responsibility for harm resulting from autonomous weapons.

[1049] State responsibility is only one mode of international accountability to have evolved. For example, treaty-based regimes now provide procedural alternatives to the invocation of state responsibility. Brunnée, 'International Legal Accountability Through the Lens of the Law of State Responsibility,' 54.

[1050] This chapter discusses primary and secondary rules of state responsibility relevant to the development and use of autonomous weapon systems. Primary rules are those that define the content of the international obligations whose breach gives rise to responsibility. Secondary rules explain the conditions under international law where states are considered responsible for wrongful acts or omissions and the resulting legal consequences. 'Responsibility of States for Internationally Wrongful Acts,' in *Draft Articles on Responsibility of States for Internationally Wrongful Acts with Commentaries*, International Law Commission, 2001, <http://legal.un.org/ilc/texts/instruments/english/commentaries/9_6_2001.pdf>.

II. The Responsibility of States with Respect to Human Dignity and Autonomous Weapon Systems

A. The Duty of States to Protect Human Dignity

In chapter three, 'The Sources of International Law and the 'Place' of Human Dignity,' I discussed the Charter-based obligation of United Nations member states to promote and protect human dignity, as well as the duty under customary law to (at a minimum) commit themselves to this task.[1051] This section describes the three general mechanisms by which states can breach this duty: 1) through the affirmative act of violating international humanitarian law and international human rights law via the use of autonomous weapon systems, 2) by producing and employing lethal autonomous weapons systems that do not permit human involvement in decisions involving complex values, and 3) by failing to prevent the use of such autonomous weapon systems by state and non-state actors (i.e. the failure to exercise due diligence).

1. Affirmative Acts

International courts have defined the affirmative responsibility of states to protect the dignity and rights of their citizens as well as other persons. In its Judgment in the case concerning the Democratic Republic of Congo ('DRC') v. Uganda, the International Court of

[1051] The Charter was not the first major international treaty to create state responsibilities for the protection of human dignity. The Treaty of Westphalia, for example, included provisions providing for the reparation of 'any Prejudice or Damage' caused by the belligerent states and their allies during the Thirty Years War. The purpose of the reparations was to re-establish, inter alia, the 'Dignitys' of the state parties and their 'Vassals, Subjects, Citizens, [and] Inhabitants.' *Treaty of Westphalia; 24 October 1648: Peace Treaty Between the Holy Roman Emperor and the King of France and their Respective Allies*,' section 6, available online at <https://is.muni.cz/el/1423/podzim2008/MVZ430/um/Treaty-of-Westphalia.pdf>. Twenty years earlier, Hugo Grotius described circumstances – such as the burial of soldiers killed in battle – where states, as part of their mutual obligations, must consider the dignity of individuals. H Grotius, *On the Law of War and Peace* (1625), A.C. Cambell (trans.) (Kitchener: Batoche Books, 2001), pp. 177 - 178. Grotius also acknowledged the importance of the dignity of states themselves. *Ibid,* pp. 100, 136, 166, 172, 217, and 275. States lost their sovereign rights and the privileges of the law of nations when they provoked 'their people to despair and resistance by unheard of cruelties, having themselves abandoned all the laws of nature, ….' *Ibid*, p. 247.

Justice ruled that Uganda was 'internationally responsible' for violations of international human rights law and international humanitarian law committed by members of its armed forces in the DRC, including a failure to comply with its obligations as an occupying power.[1052] In addition, Uganda failed to fulfill its obligation to prosecute those responsible for grave breaches of international humanitarian law.[1053] The international conventions violated by Uganda oblige states to conduct their relations in accordance with civilized behaviour and modern values, *including respect for human dignity*.[1054] Consistent with the principles of state responsibility in international law, Uganda had a duty to make full reparations to the DRC for the injuries caused by its conduct.[1055]

Similarly, in the seminal Case of Velásquez Rodriguez v. Honduras, the Inter-American Court of Human Rights found that Honduras was responsible for the enforced disappearance of Manfredo Velásquez in 1981. The Court held that the forced disappearance of persons constituted a multiple and continuous breach of obligations of state parties to the American Convention of Human Rights.[1056] The Court noted that this practice had already received 'world attention' from the United Nations, the Organisation of American States as well as the Inter-American system of human rights.[1057] Illustrating how the duty to protect human dignity limits the prerogative of sovereignty, the Court concluded that '…the power of the State is not unlimited, nor may the State resort to any means to attain its ends. The State is

[1052] *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda),* Judgment, I.C.J. Reports 2005, paras. 220 and 245.
[1053] *Ibid*, Separate Declaration of Judge Tomka, para. 9.
[1054] *Ibid*, Separate Declaration of Judge Koroma, para. 6.
[1055] *Ibid*, Majority Opinion, para. 259.
[1056] Judgment, 29 July 1988, para. 155, < http://www.corteidh.or.cr/docs/casos/articulos/seriec_04_ing.pdf>.
[1057] *Ibid*, paras. 151 – 153.

subject to law and morality. *Disrespect for human dignity cannot serve as the basis for any State action*.'[1058]

More recently, the European Court of Human Rights concluded that the practice by the Central Intelligence Agency ('C.I.A') and European states of secret, incommunicado detention of persons violated the right to be free from arbitrary detention enshrined in the European Convention for the Protection of Human Rights and Fundamental Freedoms.[1059] In addition, the Court ruled that this practice also breached the state's duty not to interfere with the right to private and family life, which protects the right to personal development as well as the right to develop relationships with other human beings and the outside world.[1060] Thus, States should not treat persons '*in a way that causes a loss of dignity'* as 'the very essence of the Convention is respect for human dignity and human freedom.'[1061] When states violate these duties, they incur responsibility to redress their acts and/or omissions.[1062]

These judgments confirm that one of the principal concerns of the contemporary international legal system is state protection of the human rights and dignity of every individual.[1063] Accordingly, when states deliberately employ autonomous weapon systems in

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[1058] *Ibid*, para. 154 (emphasis added).
[1059] *Case of Husayn (Abu Zubaydah) v. Poland*, Judgment, EctHR, Application No. 7511/13, 24 July 2014, paras. 521 – 526; *Case of El-Masri v. Former Yugoslav Republic of Macedonia,* Judgment, Application No. 39630/09, 13 December 2012, paras. 230 – 243.
[1060] Abu Zubaydah, paras. 531 – 534; El Masri, paras. 248 - 250.
[1061] Abu Zubaydah*,* para. 532; El Masri, para. 248 (emphasis added).
[1062] The Court instructed Poland to, inter alia, conduct an effective and expeditious investigation into the applicant's detention (including his treatment by the C.I.A.), prosecute those individuals responsible, recognise its violations of the applicant's rights, and compensate him for damage caused to his physical and mental health. Paras. 563 – 568. The InterAmerican Court of Human Rights ordered similar measures and reparations in the *Case of Myrna Mack Chang v. Guatemala*, Judgment, (Merits, Reparations and Costs), Inter-Am. Ct. H.R., 25 November 2003 paras. 275 – 292, and in the *Case of Maritza Urrutia Garcia v. Guatemala*, Judgment, Inter-Am. Ct. H.R., November 27, 2003, paras. 96 – 97, 129, 161 – 170 and 177.
[1063] *Application of the Convention on the Prevention and Punishment of the Crime of Genocide, Preliminary Objections,* Judgment, Separate Opinion of Judge Weeramantry, p. 641; S Schmahl, 'An Example of Jus Cogens: The Status of Prisoners of War,' in C Tomuschat and JM Thouvenin (eds.) *The Fundamental Rules of the International Legal Order: Jus Cogens and Obligations Erga Omnes* (Leiden: Martinus Nijhoff Publishers, 2006), p. 48. During the nineteenth century, states implicitly assumed legal obligations to take positive steps in furtherance of human dignity, in particular with respect to ending the slave trade. Art. 10, *Treaty of Peace and*

the commission of serious violations of international law, they will be in affirmative breach of their international legal obligations.

2. *Failure to Exercise Due Diligence*

In addition to affirmative acts that violate human dignity, a failure to exercise due diligence in the design, procurement and use of autonomous weapon systems breaches the obligation to protect the dignity of individuals. The exercise of due diligence encompasses the reasonable preventive and precautionary measures that a well-administered government can be expected to exercise under similar circumstances.[1064] For example, in the 'Iran Hostages Case,' the International Court of Justice ruled that Iran failed to perform its obligation to protect the premises, staff and archives of the U.S. Embassy and consulates in Iran during the 1979 revolution.[1065] These failures led to, inter alia, breaches of Article 29 of the Vienna Convention on Diplomatic Relations,[1066] which prohibits the arrest or detention of diplomatic agents 'and any attack on his person, freedom *or dignity*'[1067] as well as the principles of the United Nations Charter.[1068]

The failure-to-exercise due diligence basis for state responsibility, however, provides a weaker theoretical basis for accountability than positive breaches of international rules. The objective analysis required by the due diligence doctrine creates greater intellectual space for

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Amity Between His Britannic Majesty and the United States of America (1814), <http://avalon.law.yale.edu/19th_century/ghent.asp>; Additional Article on the Slave Trade, *Treaty of Paris* (1815), <http://napoleononline.ca/wp-content/uploads/2011/03/Treaty-of-Paris-1815.pdf>.

[1064] D Shelton, 'Private Violence, Public Wrongs, and the Responsibility of States,' 13 *Fordham International Law Journal* 1 (1989-1990), 23.
[1065] United States Diplomatic and Consular Staff in Tehran, Judgment, I.C.J. Judgment 1980, paras. 63 – 68.
[1066] Done at Vienna on 18 April 1961, Entered into Force on 24 April 1964, <http://legal.un.org/ilc/texts/instruments/english/conventions/9_1_1961.pdf>.
[1067] United States Diplomatic and Consular Staff in Tehran, Judgment , para. 77 (emphasis added).
[1068] *Ibid,* para. 91.

states to test the boundaries of the legality (and illegality) of autonomous weapon systems.[1069] Nevertheless, the creation of due diligence obligations provides additional guidance for states and non-state actors who develop and use this technology. In addition, the due diligence requirement provides an interpretive framework for assessing responsibility and compensation.

Indeed, international legal decisions have (implicitly or explicitly) recognized a duty of states to exercise due diligence and prevent harm with respect to the design and manufacture and use of weapons. For example, in the 'Alabama Case,' an arbitral tribunal determined that Great Britain did not exercise due diligence in the performance of neutral obligations when it failed to prevent the construction and armament of a warship intended for use by the Confederacy against Union forces during the American Civil War.[1070] Moreover, in the Corfu Channel Case, the International Court of Justice held that Albania was responsible for the deaths of United Kingdom sailors and damage to warships because it failed to notify the shipping industry of the existence of a new minefield in Albanian waters, and to notify the warships approaching the minefields of the imminent danger.[1071] 'In fact, nothing was

[1069] For a discussion of the failure of the International Court of Justice to clarify the theory of due diligence with respect to the responsibility of states, see A Gattani, 'Breach of International Obligations,' in A Nollkaemper & I Plakokefalos (eds.), *Principles of Shared Responsibility in International Law: An Appraisal of the State of the Art* (Cambridge University Press, 2014), pp. 38 – 45.

[1070] Alabama Claims of the United States of America Against Great Britain, Award Rendered on 14 September 1872 by the Tribunal of Arbitration Established by Article I of the Treaty of Washington of 8 May 1871, <http://legal.un.org/riaa/cases/vol_XXIX/125-134.pdf>.

[1071] *Corfu Channel Case*, Judgment, 9 April, 1949, I.C.J. Reports 1949, p. 22. Albania's obligations were based 'on certain general and well-recognized principles, namely: elementary considerations of humanity, even more exacting in peace than in war; the principle of the freedom of maritime communication; and every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States.' *Ibid.*

attempted by the Albanian authorities to prevent the disaster.'[1072] This failure to prevent harm incurred the international responsibility of Albania.[1073]

Furthermore, in 1996, the United States Government agreed to pay nearly 132 million U.S. dollars to the Government of Iran as compensation for the 1988 shoot-down of an Iranian passenger plane by a U.S. warship operating in the Strait of Hormuz. The inadequate design of the ship's defense systems was an important contributing factor to the tragedy.[1074]

Based on the 'human dignity paradigm' that I have developed in this dissertation the following duties are a non-exhaustive list of the due diligence responsibilities of states vis a vis the development and use of autonomous weapon systems:

1. Ensure that autonomous weapon systems designed for armed conflict scenarios and used by state armed forces will permit human involvement in assessments of complex values concerning, inter alia, proportionality and choice of means and methods of attack;

2. Ensure that autonomous weapon systems designed for law enforcement scenarios and used by state authorities will permit human involvement in assessments of complex

[1072] *Ibid*, p. 23.
[1073] *Ibid.* The 1907 Hague Convention (VIII) Relative to the Laying of Automatic Submarine Contact Mines prescribes several preventive measures for state parties. For example, anchored contact mines must become harmless as soon as they break loose from their mooring. Belligerents must 'do their utmost' to render anchored automatic contact mines harmless within a limited time. Arts. 1 and 2, 18 October 1907, <file:///Users/danielsaxon/Downloads/IHL-23-EN.pdf>.
[1074] Settlement Agreement, on the Case Concerning the Aerial Incident of 3 July 1988 Before the International Court of Justice. The Aegis air and missile defence system on board the ship functioned as intended. However, the design of the human-machine interface did not permit certain crucial information at the time (whether the approaching plane was ascending or descending) to be displayed on the system's display console. Letter from W Crowe, Chairman, Joint Chiefs of Staff, 18 August 1988, para. 9, attached to *Investigation Report: Formal Investigation into the Circumstances Surrounding the Downing of Iran Air Flight 655* on 3 July 1988, see Part IV, A (6) and (11). Confusion about this matter contributed to the erroneous belief by the sailors on board the ship that the 'target' was a military aircraft.

values concerning, inter alia, the 'absolute necessity' and proportionality of the use of lethal force;

3. Enact legislation that criminalizes the design, manufacture, procurement, import, export and use of autonomous weapon systems which do not possess a co-active design that permits human involvement in the kinds of complex decision-making described above;

4. Enact legislation that criminalizes the intentional or reckless design, manufacturer, procurement, programming and/or use of autonomous weapon systems in violation of international law;

5. Enact legislation that requires greater transparency in the processes of design, manufacture, procurement, import, export and use of autonomous weapon systems, including comprehensive legal reviews of new weapons technology as mandated by Article 36 of API.[1075] To enforce this duty of transparency, enact legislation that requires (i) designers, developers, manufacturers and procurement officers to record fully all decisions concerning the ability of new autonomous weapon technology to

[1075] Due to legitimate confidentiality concerns, the International Committee of the Red Cross suggests that states share information on their Art. 36 procedures, but not their decisions. This level of transparency demonstrates a state's commitment to its legal obligations and helps to set standards and best practices for such legal reviews. G Giacca, Remarks to panel on 'Challenges '[of Autonomous Weapons] to International Humanitarian Law, Informal Expert Meeting on Lethal Autonomous Weapons, Convention on Conventional Weapons, Geneva, 13 April 2016, <http://www.unog.ch/80256EE600585943/(httpPages)/37D51189AC4FB6E1C1257F4D004CAFB2?OpenDocument>.

be used in compliance with international law, including the preservation of human dignity;[1076]

6. Enact legislation requiring all autonomous weapon systems to possess the technical capability to record all decisions made by commanders prior to and during the exercise of force; and

7. Enact legislation prohibiting the transfer of autonomous weapon systems to states and non-state actors who are unable or unwilling to operate this technology in accordance with international law.[1077]

The absence of these due diligence measures encourages the delegation of human responsibility to computers for the complex, value-based decisions made during armed conflict and in periods of civil unrest. It limits the capacity of the individual to develop her own capacities for judgment and autonomy. Thus, when states fail to ensure compliance with one or more of these obligations by their actors,[1078] they increase the risk that autonomous weapon systems will operate in ways that undermine the dignity of individuals, both the

[1076] This recording system can be similar to the requirement of a 'national control system' that must be established by state parties to the 2013 Arms Trade Treaty. Art 5 (2), <https://unoda-web.s3.amazonaws.com/wp-content/uploads/2013/06/English7.pdf>.

[1077] *Ibid*, arts. 6 – 11. This provision is important because there are far more states purchasing weapons than manufacturing and exporting weapons. ICRC Commentary to Art. 36, API, para. 1473. Generally, states that knowingly aid or assist another state in the commission of a breach of international law by the latter are internationally responsible. Art. 16, Draft Articles on Responsibility of States for Internationally Wrongful Acts. A causal link should exist between the aid or assistance and the violation of international law by the receiving state. *Ibid*, Chapter IV, 'Responsibility of a State in Connection with the Act of Another State,' Commentary, para. (9).

[1078] The conduct of state agents is considered an act of a state under international law. Corfu Channel Case, Judgment, p. 23; Draft Articles on Responsibility of States for Internationally Wrongful Acts, art. 3. Such 'agents' would include persons or groups of persons who act on the instructions of, or under the direction and control of that state in performing the conduct. *Ibid*. Thus, for example, a state bears responsibility for all acts contrary to international humanitarian law committed by its armed forces wherever those acts occur. *Partial Award, Central Front Ethiopia's Claim 2 Between The Federal Republic of Ethiopia and the State of Eritrea*, Eritrea Ethiopia Claims Commission, The Hague, 28 April 2004, para. 29.

victims of attacks *and* the users and operators themselves.[1079] If 'the ultimate objective' of state responsibility is the preservation of human dignity, states cannot ignore their legal responsibility to control the development and use of autonomous weapons.[1080] The next section describes several interpretive mechanisms for assessing the responsibility of states and arms manufacturers for harm caused by autonomous weapon systems.

III. Theories of Responsibility for States and Arms Manufacturers for Harm Caused by Autonomous Weapon Systems

States incur international responsibility by acts imputable to them that violate a rule or rules of international law.[1081] Today, states recognize that their responsibilities under international law extend to the use of autonomous weapon systems by their actors.[1082] As explored in more detail above in the section on state responsibility and human dignity, when state behaviour constitutes deliberate unlawful acts or omissions, determination of state responsibility should be relatively straightforward.[1083] The same should be true in situations of intentional, illegal use of autonomous weapon systems. Nevertheless, due to the

[1079] The principle of state sovereignty implies responsibility, and this responsibilty includes the duty of state authorities to protect the welfare of citizens. 'The Responsibility to Protect: Report of the International Commission on Intervention and State Sovereignty,' December 2001, para. 2.15, <http://responsibilitytoprotect.org/ICISS%20Report.pdf>.

[1080] All law depends on the fundamental principle of the dignity and worth of the human person. Legality of the Threat or Use of Nuclear Weapons, Dissenting Opinion of Judge Weeramantry, p. 433.

[1081] B Cheng, *General Principles of Law as Applied by International Courts and Tribunals* (London: Stevens & Sons Limited, 1953), p. 170. Characterisations of acts of state as internationally wrongful are governed by international law, not domestic law. <http://legal.un.org/ilc/texts/instruments/english/commentaries/9_6_2001.pdf>. Thus, an internationally wrongful act of a state consists of an act or omission that 1) is attributable to the state under international law and; 2) constitutes a breach of an international obligation of the state. *Ibid*, art. 2.

[1082] See 'Poland's Position on Continuing the Discussions on Lethal Autonomous Weapon Systems within the CCW Framework,' Convention on Certain Conventional Weapons, Annual Meeting of the States Parties, November, 2015, <http://www.unog.ch/80256EE600585943/(httpPages)/0D4B67A1E11A22BCC1257A410052DE38?OpenDocument>.

[1083] See Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda), Judgment, paras. 220 and 245 (concerning violations of international humanitarian law and international human rights law by Ugandan forces in the Democratic Republic of Congo); Case of Velásquez Rodríguez v. Honduras, Judgment, para. 155.

complexity of these systems, situations will arise where autonomous weapons cause serious damage to life and property, yet fault – or even causation -- cannot be assigned precisely.

Furthermore, harm from autonomous weapon systems may arise due to misconduct and/or negligence of the arms manufacturer who produced the system, apart from or, in addition to, the state. [1084] The status of non-state actors such as corporations varies under international law.[1085] At present, however, neither international humanitarian law, international human rights law nor international criminal law[1086] contain (primary or secondary) rules defining responsibility of private enterprises for harm caused by weapons manufactured by them.[1087] Whilst broad guidelines and other forms of 'soft law' encourage principled and conscientious behavior, these protocols and frameworks do not constitute legal rules or create legal duties.[1088]

[1084] Generally, under international law, the conduct of private enterprises is not attributable to states. Draft Articles on Responsibility of States for Internationally Wrongful Acts with Commentaries, Commentary to art. 8.

[1085] E Roucounas, Non-State Actors: Areas of International Responsibility in Need of Further Exploration,' in M Ragazzi, (ed.), *International Responsibility Today: Essays in Memory of Oscar Schachter* (Leiden: Martinus Nijhoff, 2005), p. 403. For example, 'persons,' non-governmental organisations and groups of individuals may have 'victim' status before the European Court of Human Rights ('ECtHR'). Art. 34, European Convention on Human Rights. The Court interprets the word 'person' to include legal persons such as corporations. *Case of Bosphorous Hava Yollari Turizm Ve Ticaret Anonim Şirketi v. Ireland*, Judgment, Application No. 45036/98, 30 June 2005, paras. 139 – 140.

[1086] In 2005, the Dutch Court of Appeal affirmed the conviction of Frans van Anraat for complicity in the commission of war crimes in Iraq. During the 1980's a company owned by Anraat exported precursor chemicals to the Hussein regime, which subsequently produced chemical weapons that were targeted against Iraqi-Kurd communities. However, the Netherlands prosecuted Anraat as an individual, not as a business enterprise. <http://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:GHSGR:2007:BA6734>.

[1087] Generally, under international law, the conduct of private enterprises is not attributable to states. Art. 8, Draft Articles on Responsibility of States for Internationally Wrongful Acts with Commentaries. In particular circumstances, however, secondary rules may permit the attribution of responsibility for the (mis)conduct of private enterprises to states. For example, states cannot abdicate their international responsibilities to independent corporations. Hence, nations cannot circumvent the rules of state responsibility by transferring powers, normally exercised by state officials, or by acquiescing to the assumption of such functions, to private entities. R Wolfrum, 'State Responsibility for Private Actors: An Old Problem of Renewed Relevance,' in Ragazzi, International Responsibility Today: Essays in Memory of Oscar Schachter, p. 431. Similarly, if a person or group of persons acts under the instructions or control of a state, the conduct of the individual or group is considered an act of the state. Art. 8, *Draft Articles on Responsibility of States for Internationally Wrongful Acts with Commentaries*.

[1088] For example, the United Nations 'Guiding Principles on Business and Human Rights' contains 'principles' that explain what corporations should do to respect and protect human rights, including performing 'human

To close these 'gaps' in state and corporate responsibility, this section explores possible options for holding states and weapons-manufacturers accountable in these hard cases.[1089] By analogy, I use three principles from international environmental law as potential mechanisms for holding states and corporations responsible for injury and damage caused by autonomous weapon systems: the preventive principle,[1090] the precautionary principle and the polluter pays principle.

A. The Preventive Principle

Where activity may cause significant harm to the environment,[1091] the international environmental law principle of prevention obliges parties to prevent, or at least mitigate, the damage.[1092] When activities in one state may impact the territory of others, states bear a duty

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rights due diligence.' Arts. 11 – 21 (2011), <http://www.ohchr.org/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf>. States should ensure that those affected by corporate failures to adhere to these principles have access to an effective remedy. *Ibid*, para. 25.

[1089] A (future) system of accountability for non-state actors is crucial because civilian entities play a leadership role in the development of autonomous systems. A Kasperson, Head of International Security at the World Economic Forum, Remarks to 'Private Sector Perspectives on the Development of Lethal Autonomous Systems,' Geneva, 12 April 2016. Indeed, private entities may develop autonomous technologies for very benign reasons, only to see them 'reincarnated' on the battlefield. A Fursman, Remarks to 'Private Sector Perspectives on the Development of Lethal Autonomous Systems,' Geneva, 12 April 2016.

[1090] In a recent publication, Human Rights Watch and Harvard Law School's International Human Rights Clinic make a similar argument for grounding state responsibility for the use of autonomous weapon systems in the preventive principle. *Killer Robots and the Concept of Meaningful Human Control*, Memorandum to Convention on Conventional Weapons (CCW) Delegates, April 2016, pp. 15 – 16.

[1091] 'Environment' broadly encompasses air, water, land, flora and fauna, natural ecosystems and sites, human health and safety, and climate. Award in the Arbitration Regarding the Iron Rhine ('Ijzeren Rijn') Railway Between the Kingdom of Belguim and the Kingdom of the Netherlands, Decision of 24 May 2005, para. 58, <http://legal.un.org/riaa/cases/vol_XXVII/35-125.pdf>.

[1092] *Ibid*, para. 222. The 'ultimate objective' of the 1992 United Nations Framework Convention on Climate Change is to achieve 'stabilization of greenhouse gas concentrations in the atmosphere at a level that would *prevent* dangerous anthropogenic interference with the climate system.' Art. 2 (emphasis added), <https://unfccc.int/resource/docs/convkp/conveng.pdf>. Similarly, one of the 'Commitments' in the Convention is for state parties to promote and cooperate in the development and diffusion 'of technologies, practices and processes that control, reduce or *prevent* anthropogenic emissions of greenhouse gases ….' *Ibid*, Art. 4 (c) (emphasis added). Principle 7, Declaration of the United Nations Conference on the Human Environment ('Stockholm Declaration') (1972), <http://www.unep.org/documents.multilingual/default.asp?documentid=97&articleid=1503>.

of prevention of harm to other states and not merely of reparation for the harm caused.[1093] Thus, the obligation to prevent requires vigilance and preventive action to be taken *before* damage has actually occurred,[1094] and to respond appropriately when damage does occur.[1095]

The duty to prevent environmental harm includes an obligation to act with due diligence with respect to all activities performed by a party, or which take place under its jurisdiction and control.[1096] Due diligence does not require a guarantee of no harm, but it demands the best possible efforts by states.[1097] As the risk level of activities rises, so will the expected amount of due diligence.[1098] Indeed, '*activities which may be considered ultra-hazardous* require a much higher standard of care in designing policies and a much higher

[1093] *Gabčikovo-Nagymaros Project (Hungary/Slovakia)*, Dissenting Opinion of Judge Herczegh, I.C.J. Reports 1997, p. 185.

[1094] *Ibid,* Judgment, para. 140; Dissenting Opinion of Judge Oda, para. 33; P Sands, et. al., *Principles of International Environmental Law*, 3rd ed. (Cambridge University Press, 2012), p. 201. This preference arises from the consideration that the correct objective of international environmental law is to prevent damage rather than simply provide victims with mechanisms to obtain compensation. T Scovazzi, 'Some Remarks on International Responsibility in the Field of Environmental Protection,' in Ragazzi, International Responsibility Today: Essays in Memory of Oscar Schachter, p. 212.

[1095] 'Contingency Plans,' Art. 4 to Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty: Liability Arising from Environmental Emergencies (1991), <http://www.ats.aq/documents/recatt/Att249_e.pdf>. 'Each party shall require its operators to: (a) establish contingency plans for responses to incidents with potential adverse impacts on the Antarctic environment or dependent and associated ecosystems; and (b) co-operate in the formulation and implementation of such contingency plans.'

[1096] *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, I.C.J. Reports 2010, para. 197. 'A state is … obliged to use all the means at its disposal in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing significant damage to the environment of another state.' *Ibid,* para. 101.

[1097] *Draft Articles on Prevention of Transboundary Harm from Hazardous Activities*, International Law Commission, 2001, Commentary to Art. 3, 'Prevention,' para. 7. Art. 3 provides that 'the State of origin shall take all appropriate measures to prevent significant transboundary harm or at any event to minimize the risk thereof.' <http://legal.un.org/ilc/texts/instruments/english/commentaries/9_7_2001.pdf>. Similarly, the 1992 Rio Declaration on the Environment and Development concluded that states 'should effectively cooperate to discourage or prevent the relocation and transfer to other States of any activities and substances that cause severe environmental degradation or are found to be harmful to human health.' Principle 14, <http://www.unep.org/documents.multilingual/default.asp?documentid=78&articleid=1163>.

[1098] *Responsibilities and Obligations of States with Respect to Activities in the Area*, Advisory Opinion, 1 February 2011, International Tribunal for the Law of the Sea ('ITLOS') Reports 2011, para. 117.

degree of vigour on the part of the State to enforce them. ….'[1099] Part of the risk involved in the use of autonomous weapon systems is that the technology is so new that it 'has not been given a chance to reveal its full potential for danger.'[1100] The use of new autonomous weapons, therefore, would fall within the 'ultra-hazardous' category.[1101] Moreover, due to the relentless development of new technologies, perceptions of appropriate levels of due diligence can change over time.[1102] Thus, the due diligence obligation requires states and manufacturers to keep abreast of scientific and technological advances concerning autonomous functions and to accept responsibility when they do not.[1103]

In the environmental context, the 'due diligence' of states includes the exercise of administrative control over public and private entities.[1104] This implies that domestic laws and measures must be consistent with guidelines and recommendations of international technical bodies.[1105] Should an international technical body one day determine standards for the development and use of autonomous weapon systems, compliance with such standards should form part of the due diligence practices of states and manufacturers.

[1099] Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, International Law Commission, Commentary to Art. 3, 'Prevention,' para. 11. 'The higher the degree of inadmissible harm, the greater would be the duty of care required to prevent it.' *Ibid*, para. 18.

[1100] C Perrow, *Normal Accidents: Living with High Risk Technologies* (Princeton University Press, 1999), p. 36 (referring to the dangers of nuclear power plants).

[1101] Ultra-hazardous activities require the adoption of 'ultra-prevention' measures to avoid harm. Scovazzi, 'Some Remarks on International Responsibility in the Field of Environmental Protection,' in Ragazzi, International Responsibility Today: Essays in Memory of Oscar Schachter, p. 211.

[1102] Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, Commentary to Art. 3, 'Prevention,' para. 11.

[1103] *Ibid.* Peter Margulies contends that as a matter of state responsibility, autonomous weapon systems must include mechanisms for the regular update of artificial intelligence software and the information databases on which the software relies. 'The duty to update is arguably a state obligation under human rights law, which bars the arbitrary taking of human life.' 'Making Autonomous Weapons Accountable: Command Responsibility for Computer-Guided Lethal Force in Armed Conflicts,' in J Ohlin (ed.) *Research Handbook on Remote Warfare* (Northampton: Edward Elgar Press, forthcoming 2016), <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2734900>.

[1104] Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, para. 197.

[1105] *Ibid.*

In its Advisory Opinion concerning 'The Legality of the Threat or Use of Nuclear Weapons,' the International Court of Justice concluded that '[t]he existence of the general obligation of states to ensure that activities within their jurisdiction and control respect the environment of other states or of areas beyond their national control is now part of the corpus of international law relating to the environment.'[1106] It would be absurd to not extend a similar legal duty of due diligence to states in their development and use of other sophisticated weapons, particularly those with lethal autonomous functions.[1107]

Thus, in the context of international humanitarian law,[1108] the preventive principle naturally demands a comprehensive legal review of new autonomous weapons and methods of warfare. Failure to perform an adequate legal review will be grounds for a state's responsibility in case of damage ensuing from failure of the weapon.[1109] But the duty of prevention should not stop at 'Article 36 reviews.' Due to the extraordinary complexity of these weapon systems, the obligation must also include, inter alia, constant monitoring of the system(s) to ensure that the component systems interact with each other in appropriate ways[1110] and that human machine interfaces work effectively in the field. This duty to

[1106] Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, para. 29.
[1107] Indeed, the preventive/due diligence principle already finds expression in international treaty law concerning weapons control. State parties to the Convention on Certain Conventional Weapons, for example, are 'encouraged to take generic preventive measures aimed at minimizing the occurrence of explosive remnants of war, ….' Art. 9, 'Generic Preventive Measures,' Protocol on Explosive Remnants of War (Protocol V), 21 December 2001. Moreover, art. 5 of the Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices as Amended on 3 May 1996 (Amended Protocol II), requires state parties to take all feasible measures 'to prevent the unauthorized removal, defacement, destruction or concealment of any device, system or material use to establish the perimeter' of an area where anti-personnel mines other than remotely delivered mines are stored.
[1108] Article 35(3) of API illustrates the reasonableness of applying, by analogy, principles of international environmental law to state responsibility for violations of international humanitarian law: '[i]t is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause wide-spread long-term and severe damage to the environment.'
[1109] ICRC Commentary to Art. 36, para. 1476 - 1478. States are not required to analyse or predict all possible misuses of a weapon, as nearly every weapon can be used unlawfully. *Ibid*, para. 1469.
[1110] Given that autonomous weapon systems are actually 'systems of systems,' unexpected interactions of these complex systems are inevitable, resulting in a higher probability of accidents. Perrow, Normal Accidents:

monitor is extremely important as new technologies may interact and produce results that their inventors did not predict or consider.[1111]

Finally, the preventive principle also includes a duty to prevent harm within a state's own jurisdiction.[1112] For example, Article 24 of the African Charter on Human and Peoples' Rights requires state parties to 'take reasonable and other measures to prevent pollution and ecological degradation….'[1113] Moreover, in 2004, the Inter-American Court of Human Rights found that Belize was responsible for damage to Maya lands and communities because the state failed to adopt adequate safeguards and mechanisms regarding logging activities.[1114] In addition, the state failed to ensure that the state had sufficient personnel to make certain that logging in these areas would not cause further environmental damage.[1115] Logically, then, the preventive principle should also function as a theory of state responsibility for the application of international human rights law to the use of autonomous weapon systems during law enforcement activities. Within national jurisdictions, the preventive principle, by analogy, should also impose due diligence requirements on manufacturers and exporters of autonomous weapon systems to ensure that their 'products' function as designed.

Living with High Risk Technologies, pp. 7 – 23 and 330. Furthermore, testing of the interaction between opposing autonomous weapon systems will be virtually impossible and, therefore, these interactions will be 'totally unpredictable.' Remarks of Steven Goose, Human Rights Watch, to Informal Meeting of Experts on Lethal Autonomous Weapon Systems, Convention on Conventional Weapons, Geneva, 12 April 2016.

[1111] E Barth Eide, Member of Managing Board of World Economic Forum, Remarks to 'Private Sector Perspectives on the Development of Lethal Autonomous Systems,' Geneva, 12 April 2016. Indeed, private entities may develop autonomous technologies for very benign reasons, only to see them 'reincarnated' on the battlefield. A Fursman, Remarks to 'Private Sector Perspectives on the importantly for the application of the Development of Lethal Autonomous Systems,' Geneva, 12 April 2016.

[1112] Sands, Principles of International Environmental Law, p. 201.

[1113] Social and Economic Rights Action Center (SERAC) and Center for Economic and Social Rights (CESR) / Nigeria, 155/96, African Commission on Human Rights, 27 October 2001, para. 52, <http://www.achpr.org/files/sessions/30th/comunications/155.96/achpr30_155_96_eng.pdf>.

[1114] Maya Indigenous Communities of the Toledo District v Belize Report No. 40/04, Case 12.053, 12 October 2004, para. 147.

[1115] *Ibid.*

B. The Precautionary Principle

Scientific certainty about certain activities often arrives too late to design effective environmental responses. Thus, the 'precautionary principle' creates a duty to respond to potential environmental threats, instead of waiting for certain scientific proof.[1116] The precautionary principle and the preventive principle are related and overlap.[1117] For example, in the European Union: '[c]ommunity policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Community. It shall be based on the precautionary principle and on the principles that preventive action should be taken, ….'[1118] Moreover, the state parties to the 1992 Climate Change Convention agreed to :

> '… take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.'[1119]

[1116] Environmental Principles and Concepts,' Organization for Economic Co-operation and Development, OECD/GD(95)124, Paris 1995, para. 44; Art. 2 (5) (a), United Nations Convention on the Protection and Use of Transboundary Water Courses and International Lakes, Amended 28 November 2003. Put differently, the precautionary principle requires that where scientific uncertainty exists about the impact of an activity, assess the situation 'in the light of prudence and caution.' *Southern Bluefin Tuna Cases (New Zealand v. Japan; Australia v. Japan*, Separate Opinion of Judge Treves, ITLOS, Order of 27 August 1999, para. 8.

[1117] See for example, the Preamble to the Multilateral International Convention on Oil Pollution Preparedness, Response and Cooperation, No. 32194, Concluded at London on 30 November 1990: 'MINDFUL of the importance of precautionary measures and prevention in avoiding oil pollution in the first instance, ….'

[1118] Consolidated Version of the Treaty Establishing the European Community, 25 March 1957, Art. 174 (*ex Art. 130r*), <http://www.refworld.org/docid/3ae6b39c0.html>. The Stockholm Convention on Persistent Organic Pollutants recognizes the preventive and the precautionary approach to environmental protection. Preamble and art. 1, 22 May 2001.

[1119] Art. 3 'Principles,' (3), United Nations Framework Convention on Climate Change, 1992. Furthermore, the language of the 1975 bilateral treaty between Argentina and Uruguay incorporates the spirit of the precautionary approach. Arts. 35 – 37, Statute of the River Uruguay, Signed at Salto on 26 February 1975.

In addition to extra-territorial matters, international human rights courts have recognized that the precautionary principle creates responsibilities for states within their national jurisdictions. In Tatar v. Romania, for example, a mining company used sodium cyanide to extract gold at a mine and this process allegedly contaminated the environment and damaged human health. The European Court of Human Rights held that although the existence of a causal link between exposure to sodium cyanide and certain conditions was unproven, the state still bore a duty to assess the risks and to take appropriate measures to reduce them. Romania, therefore, breached the precautionary principle, 'according to which the absence of certainty with regard to current scientific and technical knowledge could not justify any delay on the part of the State in adopting effective and proportionate measures.'[1120]

Similarly, in the Kaliña and Lokono Peoples v. Surinam, the InterAmerican Court of Human Rights ruled that before a state grants a concession to private entities to carry out activities in the territory of indigenous peoples, it must complete environmental impact statement to assess 'the possible damage or impact that a development project or investment

[1120] *Tatar v. Romania*, Judgment, Application No. 67021/01, ECtHR, 27 January 2009, Press Release available at <file:///Users/danielsaxon/Downloads/003-2615810-2848789%20(2).pdf>. Moreover, in *Giacomelli v. Italy*, the European Court of Human Rights concluded that the precautionary principle required states to perform appropriate investigations and studies 'in order to allow them to predict and evaluate in advance the effects of those activities which might damage the environment and infringe individuals' rights and to enable them to strike a fair balance between the various conflicting interests at stake.' Judgment, ECtHR, Application, No. 59909/00, 26 March 2007, para. 119. More recently, in *Di Sarno and Others v Italy*, the same court concluded that the precautionary principle obliged states to establish regulations adapted to the features of the activity in question, particularly with regard to the level of risk potentially involved. 'They must govern the licensing, setting-up, operation, security and supervision of the activity and must make it compulsory for all those concerned to take practical measures to ensure the effective protection of citizens whose lives might be endangered by the inherent risks.' *Case of Di Sarno and Others v Italy*, Application Application No. 30765/08, 10 April 2012, para. 106.

might have on the property and community in question.'[1121] This reasoning is consistent with the precautionary principle.

The seven due diligence recommendations described above in part II represent general preventive and precautionary measures relevant to the design, development and use of autonomous weapon systems. In addition to international legal obligations for states, these recommendations should be implemented in domestic legislation to ensure the exercise of due diligence on the part of arms manufacturers and exporters. The need for more specific measures would depend on the kinds of new autonomous technologies developed, their capacity, and their particular use in the field.

C. *The Polluter Pays Principle*

This concept requires states to ensure that in cases where the environment has been or will be polluted, the responsible individual or entity bears the costs resulting from the prevention or removal of the pollution.[1122] By allocating the costs of preventive or remedial actions to the polluters, they incur a substantial incentive to avoid future conduct detrimental to the environment.[1123] The polluter pays principle is reflected in multi-lateral and bilateral instruments,[1124] as well as national jurisprudence.[1125]

[1121] 25 November 2015, para. 214. In 1999, the Peruvian Ministry of Energy and Mines imposed administrative sanctions on Proaño Mining Company for 'not implementing a precautionary and control program in the Mayoc sludge dump.'[1121]

[1122] Beyerlin & Marauhn, *International Environmental Law* (Hart Publishing: Oxford, 2011), p. 59; Sands, Principles of International Environmental Law, p. 228; *Environmental Principles and Concepts*, OECD/GD(95)124, Paris,1995, p. 33.

[1123] Beyerlin & Marauhn, p. 58.

[1124] Art. 5 (b), United Nations Convention on the Protection and Use of Transboundary Water Courses and International Lakes. The Treaty on European Union stipulates that 'environmental damage should as a priority be rectified at the source and that the polluter should pay.' 7 February 1992, ("Treaty of Maastricht,') Art. 130r. The Rio Declaration on Environment and Development supports 'the approach that the polluter should, in principle, bear the cost of pollution, ….' Principle 16, June 1992, <http://www.unep.org/documents.multilingual/default.asp?documentid=78&articleid=1163>; Art. III,

Professors Beyerlin and Marauhn argue that, in a normative sense, the concept of 'polluter pays' is neither a general principle of law nor a rule of customary international law. They contend that it fulfills the functions of a legal rule rather than a general principle, binding on states within the framework of the European Union and the Organisation for Economic Cooperation and Development ('OECD').[1126] However, we saw in chapter three that when many international conventions express a particular rule, '… it can be deemed an incontestable principle of law at least among enlightened nations.'[1127] Given the multiplicity of international instruments that recognize the 'polluter pays' concept, it is more accurate to describe it normatively as a 'general principle' of international environmental law.[1128]

Nevertheless, this issue of normative qualification is essentially academic, as the concept receives widespread support.[1129] In the context of efforts to reconcile economic development with environmental protection 'new norms have to be taken into consideration, and … new standards given proper weight, not only when States contemplate new activities

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International Convention on Civil Liability for Oil Pollution Damage, 1992, <http://www.transportrecht.org/dokumente/HaftungsUe_engl.pdf.> Art. 42, Statute of the River Uruguay (Uruguay and Argentina), signed at Salto on 26 February 1975, <http://www.internationalwaterlaw.org/documents/regionaldocs/Uruguay_River_Statute_1975.pdf>.

[1125] *The Queen v. Secretary of State for the Environment, Minister of Agriculture, Fisheries and Food*, *Ex parte: H.A. Standley and Others Case* C-293/97, 29 April 1999 (holding that the polluter pays principle should be applied proportionaly, so that each polluter provides compensation only for the pollution they contribute).

[1126] Beyerlin & Marauhn, International Environmental Law, p. 59. Oddly, a number of the instruments that Beyerlin & Marauhn mention describe the 'polluter-pays' idea as a 'principle.' See, for example, 'Guiding Principles, (a) Cost Allocation: the Polluter-Pays Principle,' in 'Guiding Principles Concerning the International Economic Aspects of Environmental Policies,' Recommendation of the Council on Guiding Principles Concerning International Economic Aspects of Environmental Policies,' 26 May 1972 – C(72)128. Subsequently, however, in 1995, the OECD described the polluter-pays principle as 'a principle of economic policy rather than a legal principle, ….' Environmental Principles and Concepts, OECD/GD(95)124, para. 33.

[1127] *The Paquete Habana*, 175 U.S. 677, 707 (citing Ignacio de Megrin, *Elementary Treatise on Maritime International Law* (1873)).

[1128] Thus, the preamble to the 1990 Multilateral International Convention on Oil Pollution Preparedness, Response and Cooperation, refers to 'the "polluter pays" principle as a general principle of international environmental law,' No. 32194, Concluded at London on 30 November 1990.

[1129] Similarly, the precise legal status of the precautionary principle remains uncertain. However, the principle contributes to the interpretation of international instruments so as to protect the environment in cases of scientific uncertainty with respect to the impact of a particular activity. Sands, Principles of International Environmental Law, p. 228.

but also when continuing with activities begun in the past.'[1130] At a minimum, therefore, the polluter pays principle serves as an important guide for parties and tribunals in the resolution of claims for damages.

In cases of environmental harm, the 'polluter,' of course, is often a private company as opposed to a state agent or institution.[1131] In the context of autonomous weapon systems, the arms manufacturer assumes the role of the private 'third party' at fault for harm. Given the lack of international rules attributing responsibility to corporations for weapons malfunctions, the polluter pays principle, by analogy, can fill this gap in international law to ensure that victims of harm attributable to corporate negligence and/or malfeasance in the design, development and sale of autonomous weapons receive compensation.

The complexity of modern weapon systems (actually 'systems of systems') creates challenges for a proportionate distribution of fault under the polluter pays principle. For example, the latest generation human-piloted fighter jet, the F-35, is developed by a 'partnership of countries,' including the United States, Great Britain, Italy, the Netherlands, Turkey, Canada, Australia, Denmark and Norway.[1132] Although the 'Major Contractor' for the airplane is Lockheed Martin of the United States,[1133] more than 1400 suppliers from around the world provide the 300,000 individual parts that make up the plane.[1134] During the

[1130] Iron Rhine Railway Award in the Arbitration Regarding the Iron Rhine ('Ijzeren Rijn') Railway Between the Kingdom of Belguim and the Kingdom of the Netherlands, para. 59, (citing Gabčíkovo-Nagymaros (Hungary/Slovakia), Judgment, para. 140.

[1131] States will not incur (or accept) legal responsibility for harm caused by third parties, unless it can be established that the state had an obligation to prevent the conduct and failed to fulfill its duty. Scovazzi, 'Some Remarks on International Responsibility in the Field of Environmental Protection,' in Ragazzi, International Responsibility Today: Essays in Memory of Oscar Schachter, pp. 215 – 216.

[1132] 'F-35 Joint Strike Fighter (JSF),' Department of Defence Programs, p. 34, <http://breakingdefense.com/wp-content/uploads/sites/3/2014/01/2013DOTE_F-35_report.pdf>.

[1133] *Ibid*, p. 35.

[1134] 'Building the F-35: Combining Teamwork and Technology,' F-35 Lightning II, Lockheed Martin, <https://www.f35.com/about/life-cycle/production>.

final assemblage, robots assemble parts of the aircraft, adding another dimension of 'autonomy' to the process, as well as additional questions concerning the attribution of fault.[1135] Situations may arise, therefore, where the identification of the component of an autonomous weapon system that caused a particular failure or an 'unintended engagement'[1136] is in dispute.

To ensure compensation to injured parties, it will be most efficient to hold the Major Contractor liable for civil damages caused by their weapon system(s),[1137] and then permit the Major Contractor – through litigation -- to assign fault more specifically to one of her suppliers. This policy lies close to the problematic concept of strict liability, discussed in chapter seven with respect to international criminal law. A system of strict liability for manufacturers of dangerous weapons, however, entails financial compensation as opposed to imprisonment and the restriction of an individual's liberty. Furthermore, the corporation can pass on these compensation costs to the consumers or other entities who purchase the weapon systems. Thus, a principle or rule that the 'Major Contractor pays' for damages caused by autonomous weapon systems will be within the realm of fairness and would encourage arms manufacturers to take greater care in their design and production of these systems.[1138]

[1135] *Ibid*, 'The F-35 Factory.'

[1136] This phrase is the euphemism used in the U.S. Department of Defence Directive 3000.09 to describe incidents where autonomous weapon systems injure civilians. 'Autonomy in Weapon Systems,' 21 November 2012, 4 (a) (1) (c).

[1137] Again, making an analogy to the context of pollution in international environmental law, given the complexity of these weapon systems, it would be inequitable to require that an injured party demonstrate a causal nexus between a specific (design or manufacturing) activity and the ensuing harm. See Scovazzi, 'Some Remarks on International Responsibility in the Field of Environmental Protection,' in Ragazzi, International Responsibility Today: Essays in Memory of Oscar Schachter, p. 218.

[1138] 'A [state or non-state] operator that fails to take prompt and effective response action to environmental emergencies arising from its activities shall be liable to pay the costs of response action taken by Parties.' … *Liability shall be strict*.' 'Liability,' Art. 6 to Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty: Liability Arising from Environmental Emergencies, (emphasis added). In certain situations, the Annex sets a maximum amount of liability. *Ibid*, art. 9.

A number of states argue that the polluter pays principle applies at the domestic level but does not govern relations or responsibilities between states at the international level.[1139] This is a pragmatic approach, reflecting the concept's dual function as a lever of national economic policy, as well as a legal principle.[1140] However, when applied to damage or injury caused by autonomous weapon systems, this interpretation should not *per se* prevent a person or persons harmed by autonomous weapons in third countries from seeking compensation from the manufacturer or manufacturers of the system (in addition to a state, should fault lie with the state as well).[1141]

D. *Application of These Principles to Autonomous Weapon Systems*

Autonomous weapon systems are extraordinarily complex and it is that complexity which magnifies their hazardous nature. Thus, by analogy, the essence of the preventive/precautionary principles and the polluter pays principle, are applicable to autonomous weapon systems. In situations where state responsibility for damage and/or injury caused by autonomous weapons is alleged, several questions should lie at the core of

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[1139] Sands, Principles of International Environmental Law, p. 229.

[1140] The polluter pays principle constitutes the fundamental principle for allocting costs of pollution prevention and control efforts. 'Application of the Polluter-Pays Principle to Accidental Pollution,' in *The Polluter-Pays Principle: OECD Analyses and Recommendations,* Environment Directorate, Organisation for Economic Co-Operation and Development, Paris, 1992, para. 2, http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=OCDE/GD(92)81&docLanguage=En. >. The principle obliges operators of hazardous installations to pay for reasonable measures to prevent and control accidental pollution, whether in state-imposed fees, taxes, etc. Accordingly, the costs of these measures will be reflected in the costs of goods and services which cause pollution during production and/or consumption. Recommendations of the Council Concerning the Application of the Polluter-Pays Principle to Accidental Pollution, Organisation for Economic Cooperation and Development, C(89)88/Final, paras. 4 and 5, <http://acts.oecd.org/Instruments/ShowInstrumentView.aspx?InstrumentID=38&InstrumentPID=305&Lang=en&Book=False>.

[1141] For example, states cannot abdicate their international responsibilities to private enterprises. Hence, nations cannot circumvent the rules of state responsibility by transferring powers, normally exercised by state officials, or by acquiescing to the assumption of such functions, to private entities. R Wolfrum, 'State Responsibility for Private Actors: An Old Problem of Renewed Relevance,' in Ragazzi, International Responsibility Today: Essays in Memory of Oscar Schachter, p. 43. Similarly, if a person or group of persons acts under the instructions or control of a state, the conduct of the individual or group is considered an act of the state. Art. 8, Draft Articles on Responsibility of States for Internationally Wrongful Acts with Commentaries.

the dispute: 1) did the state or its agents intentionally violate international law in its design, development, use, or sale of the weapon systems? 2) if the state or its agents did not intentionally violate the law, did the state and/or its agents take sufficient preventive and precautionary measures in order to ensure the safe operation of the weapon system? and 3) were these measures adequate and sufficient in the circumstances at the time? Similarly, applying the 'polluter pays' principle to manufacturers and/or exporters of autonomous weapons, these enterprises can be held responsible for damage caused by a malfunctioning system.

To date, the most comprehensive state effort to define preventive and precautionary measures for autonomous weapon systems is U.S. Department of Defence Policy Directive 3000.09 ('Directive 3000.09' or 'the Directive'), entitled 'Autonomy in Weapon Systems.'[1142] Although Directive 3000.09 nominally prohibits the development and use of lethal autonomous weapons, it permits the production and employment of such weapons with the approval of three high-ranking Pentagon officials.[1143]

The individuals who prepared and drafted Directive 3000.09 considered that four principles should guide the development and use of autonomous weapon systems. First, the system must be capable of accomplishing the military mission.[1144] Second, the system must

[1142] <http://www.dtic.mil/whs/directives/corres/pdf/300009p.pdf>.

[1143] *Ibid,* Section 4 (d). The Directive 'does not establish a U.S. position on the potential future development of lethal autonomous weapons systems – it neither encourages nor prohibits the development of such future systems.' M Meier, U.S. Delegation Opening Statement to Convention on Certain Conventional Weapons Meeting of Experts on Lethal Autonomous Weapon Systems, 13 April 2015, http://www.unog.ch/80256EDD006B8954/(httpAssets)/8B33A1CDBE80EC60C1257E2800275E56/$file/2015_LAWS_MX_USA+bis.pdf.

[1144] The Directive includes a series of technical testing and training requirements to ensure that the weapons and their autonomous functions will perform as designed. For example, new autonomous systems must receive rigorous hardware and software testing in realistic conditions to ensure that they perform 'as anticipated in realistic operational environments against adaptive adversaries.' *Ibid*, 'Policy,' 4 a (1) (a) and (b). Moreover, the validation and verification process must ensure that the new system will complete engagements in a timely

be robust against failures and hacking.[1145] Third, the system must be capable of lawful use. Fourth, the system must employ the proper balance of autonomy and human supervision vis a vis other criteria such as military professionalism, ethics, and the public perception of such systems. Significantly, the authors considered that the last principle should be applied more flexibly than the first three.[1146]

One concern that led to the creation of Directive 3000.09 was that the absence of a clear United States policy concerning autonomous weapon systems might result in the development or deployment of weapon systems that are unsafe, illegal and/or unethical.[1147] For example, in any combat environment, professional and well-trained commanders are expected to

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manner 'consistent with commander and operator intentions and, if unable to do so, terminate engagements or seek additional human input before continuing the engagement.' *Ibid*, Enclosure 3, 1 a (2).

[1145] To ensure such robustness, the Directive insists that the hardware and software of autonomous weapon systems must contain 'appropriate' safety and 'anti-tamper mechanisms' and '[h]uman machine interfaces and controls.' *Ibid*, 'Policy,' 4 a (2) (a) and (b). The term 'human-machine interface' is the system of communication and distribution of functions, responsibilities and expectations between computers and their human supervisors or operators. See generally M. Cummings, 'Automation and accountability in decision support systems interface design', 32 *Journal of Technical Studies*, 1 (2006), 10, <http://dspace.mit.edu/handle/1721.1/90321>. The manner in which humans and machines interface with each other is just as important as the kinds of machines that are developed. Statement by United States representative to 2016 Informal Expert Meeting on Lethal Autonomous Weapon Systems, Convention on Conventional Weapons, 12 April 2016. Thus, the Directive provides that the human machine interface should be easily understandable to trained operators, it should provide traceable information on the status of the weapon system and it should provide clear procedures for trained operators to activate and deactivate functions of the weapons system. 'Policy,' 4 a (3) (a) (b) and (c).

[1146] Author Interview with Paul Scharre, coordinator of drafting process for Directive 3000.09, Washington, 9 April 2014; Directive 3000.09, 'Policy,' 4 a (3) (a) (b) and (c).

[1147] *Ibid.* Furthermore, a second concern within the U.S. Department of Defence that motivated the production of Directive 3000.09 was perceived constraints to the research and development of new kinds of autonomous technologies. In the absence of government policy direction addressing the development and deployment of weapon systems with greater autonomy, researchers and developers were hesitant to develop autonomous functions that might be constrained by the complex legal, moral and ethical challenges presented by these systems. Author interview with Paul Scharre. Thus, the Directive's guidelines were intended to provide clarity and encouragement so that researchers and developers could incorporate autonomous functions in weapons system within legal and ethical boundaries. *Ibid*, Electronic mail message from P Scharre, 31 October 2014, copy in author's possession. Logically, a symbiotic relationship exists between modern armed forces, industry and academic research centres. For example, in an effort to better inform future investments into robotics technology and better focus industry efforts to create robotic vehicles suitable for military missions, the U.S. Department of Defence and a consortium of eighty defence contractors, 'non-traditional contractors' and universities signed an agreement which enabled the defence industry to participate in the Department of Defence technology assessment process. *Unmanned Systems Integrated Roadmap FY2009 – 2034*, 6 April 2009, p. 3, <file:///Users/danielsaxon/Downloads/ADA522247%20(1).pdf>.

maintain and exercise control over their subordinate units in order to preserve discipline, efficiency and proper conduct. Fully autonomous weapon systems, therefore, would subvert the military need for commanders to monitor the progress of subordinates and maintain control.[1148] Accordingly, the drafters of the Directive determined that the design of new autonomous weapon systems must permit commanders to retain control over autonomous weapon systems.[1149] Therefore, it requires that autonomous weapon systems be designed with the capability to allow commanders and operators to exercise 'appropriate levels of human judgment in the use of force' and to employ systems with appropriate care and consistent with international humanitarian law, applicable treaties, weapons system safety rules and applicable rules of engagement ('ROE').[1150]

Probably the most controversial – and undefined – piece of the of the Directive is the standard requiring designs and modes of use that permit the exercise of *appropriate levels of human judgment over the use of force* by autonomous weapon systems. Absent in the Directive is a definition or explanation of this crucial guideline for the employment of lethal autonomous weapon systems. Nor does the Directive provide guidance as to how the appropriate levels of human judgment – if any - should be exercisable, and exercised, by military commanders and operators of autonomous weapon systems before, during and after the use of force by autonomous machines.

[1148] Statement of France to Informal Meeting of Experts on Lethal Autonomous Weapon Systems, Convention on Conventional Weapons, Geneva, 12 April 2016, <http://www.unog.ch/80256EE600585943/(httpPages)/37D51189AC4FB6E1C1257F4D004CAFB2?OpenDocument>.

[1149] *Ibid.* Indeed, the Directive requires that training and doctrine for autonomous weapons ensure that operators and commanders understand the functioning, capabilities and limitations of a system's autonomy. Directive 3000.09, 'Responsibilities,' section 8 (a) (6).

[1150] *Ibid*, Enclosure 3, 'Guidelines for Review of Certain Autonomous or Semi-Autonomous Weapon Systems,' (1) (b) (1). In addition, Directive 3000.09 describes who shall be responsible for, *inter alia*, the lawful design of semi-autonomous and autonomous weapons, their experimentation strategies, human-machine interfaces, operational standards, doctrine, training, hardware and software safety mechanisms and employment against adversaries. *Ibid*, enclosure 4, 'Responsibilities,' parts 1–10.

The authors of the Directive considered that this precautionary standard should be applied flexibly.[1151] The drafters decided not to include an explicit definition of 'appropriate levels of human judgment over the use of force' in the document; nor did they treat this language as a precise concept. They believed that the 'appropriate' standard for levels of human judgment over the use of force requires the balancing of multiple interests, including military necessity. Thus, what is 'appropriate' – for the U.S. Department of Defence - will vary according to the circumstances,[1152] such as the kind of weapon, the interaction between operators of weapon systems, the particular characteristics of the weapon and the environment in which it is used, and the mission objectives of the weapon system.[1153]

Even with the best training of human operators, the challenge of maintaining 'appropriate' levels of human judgment and/or human-machine collaboration and teamwork will become increasingly difficult as decision-making cycles of autonomous weapon systems shrink to micro-seconds.[1154] Indeed, it is not difficult to envision future generations of autonomous weapon systems that will communicate between each other much more quickly

[1151] Author interview with Paul Scharre.

[1152] *Ibid*, According to one of the authors of Directive 3000.09 – a leading international humanitarian law expert in the U.S. military - the drafters intended the language 'appropriate levels of human judgment' to refer to the levels of supervision required to ensure compliance with the standards prescribed by the law of armed conflict, i.e. 'distinction,' 'proportionality' and whether the autonomous weapon system is, by its nature, an indiscriminate weapon. 'We still expect military commanders employing a system with autonomous functions to engage in the decision-making process that is required by IHL.' Colonel R Jackson, Panel on 'Autonomous Weaponry and Armed Conflict,' Annual Meeting of American Society of International Law ('ASIL'), Washington D.C. April 2014.

[1153] Statement by United States representative to 2016 Informal Expert Meeting on Lethal Autonomous Weapon Systems, Convention on Conventional Weapons, 12 April 2016.

[1154] Colonel R Jackson, the Special Assistant to the U.S. Army Judge Advocate for Law of War Matters and a member of the DOD Working Group that drafted the Directive, described the challenge of balancing the speed of new autonomous technologies with the policy of maintaining appropriate levels of human supervision as 'a huge focus of our working group.' The drafters sought to alleviate risks of 'machine bias,' i.e. human over-reliance on a computer's decision-making ability, by emphasising proper training of operators as well as the strong 'validation and verification approach' during the acquisition phase of new autonomous weapon systems: 'These guidelines have been developed more broadly to make sure that we don't have the individual relying too much on the decision-making capability of the machine.' Jackson, Panel on 'Autonomous Weaponry and Armed Conflict.'

than with humans. Thus, it is important to recall that, depending on the conditions, the phrase 'appropriate levels of human judgment over the use of force' exercised by commanders and operators of autonomous weapon systems can include the exercise of no human judgment at all.[1155]

As a comprehensive national attempt to articulate preventive and precautionary standards for the development and use of autonomous weapons, and by its emphasis on compliance with international law, the Directive represents 'a demonstration of state responsibility to a degree that is unprecedented.'[1156] The Directive is a statement of policy, however, rather than an expression of legal obligation. To borrow a phrase from Jan Klabbers, it creates 'twilight norms' (such as 'appropriate levels of human judgment') which conserve flexibility for future developments and decision-making.[1157] Such unilateral state efforts to define policies concerning autonomous weapon systems, moreover, can clothe those countries with political legitimacy while simultaneously setting the agenda for legal interpretation(s).[1158] Nevertheless, these national efforts, while reflecting self-interests of states, are a positive development because they illustrate an implicit acceptance of membership in an international 'constitutional order' that demands, inter alia, deeper thinking

[1155] Indeed, Professor Cummings, an engineer and former U.S. Navy fighter pilot, bluntly observes that '[m]any controls engineers see the human as a mere disturbance in the system that can and should be designed out.' M Cummings, 'Man Versus Machine or Man + Machine?' unpublished draft, p. 12, copy in Author's possession. Thus, notwithstanding the Directive, at some point in the future, fully autonomous weapon systems will likely inhabit the battlefield (and may eventually become the predominant players) and will make decisions that we now believe require human intervention. E Jensen, 'The Future of the Law of Armed Conflict: Ostriches, Butterflies and Nanobots,' 35 *Michigan Journal of International Law* (Winter 2014), 253, 290.
[1156] Jackson, Panel on 'Autonomous Weaponry and Armed Conflict.'
[1157] *International Law* (Cambridge University Press, 2013), p. 45.
[1158] The experience of the United States Government at the multilateral negotiations leading to the adoption of the Rome Statute of the IC, the Landmines Convention, the Convention on Climate Change and the Kyoto Protocol demonstrate that a dissident state – even the strongest – cannot assume it can dictate the outcome against the wishes of the majority. A Boyle & C Chinkin, *The Making of International Law* (Oxford University Press, 2007), p. 30. Consequently, the United States decided to be more proactive vis a vis the development and control of autonomous weapon systems so that it could control the narrative and outcome. Author Interview with Thomas Nash, 29 January 2016.

and effective constraints on the development of new weapon systems.[1159] And, more importantly, they place the issue of the legality and morality of autonomous weapon systems squarely within this constitutional order.

In a legal sense, as an effort to develop preventive and precautionary measures and as an acknowledgment of state responsibility, Directive 3000.09 is a 'glass that is half full.' Whilst it emphasises that autonomous weapon systems must have the capability to comply with international law, the Directive does not mention the phrase 'human dignity.' Nor (crucially) does this instruction address whether it is (legally and morally) acceptable to delegate (previously) human decisions about complex values and warfighting to computers. In that sense, Directive 3000.09 leaves to another day important discussions about the impact of lethal autonomous weapon systems on human dignity, and how the legal compass of human dignity influences the responsibility of states for the design and use of these weapons.

IV. Conclusions

If, as I argue, human dignity is a Charter-based conceptual starting point of international law, then logically United Nations member states bear a responsibility to use human dignity as a guide to their application of international and national legal rules. The fact that states may differ as to the meaning and scope of the notion of human dignity does not alter their broader responsibility to assimilate the concept in their legal systems and decisions.[1160] If my

[1159] 'Constitutionalism … signifies not so much a social or political process , but rather an attitude, a frame of mind. Constitutionalism is the philosophy of striving towards some form of political legitimacy typified by respect for, … a constitution.' J Klabbers, 'Setting the Scene,' in J Klabbers, et. al. (eds.), *The Constitutionalization of International Law* (Oxford University Press, 2009), p. 10. For an argument that, due to its fragmented characteristics, international law lacks an identifiable constitutional structure, see Boyle & Chinkin, The Making of International Law, p. 100.

[1160] 'The right to self-determination, human dignity and protection of human rights are issues that concern the international community as a whole and constitute an international responsibility and an international obligation, they cannot be reduced to any bilateral *diferenda*.' J Sampiano, President of Portugal, Address at the

chosen definition of human dignity (respect for human rights and the realization of personal autonomy) is accurate, then the design and use of autonomous weapon systems that restrict this development is inconsistent with the concept of dignity.' This reality, consequently, obliges states and non-state actors to ensure that their designs and use of autonomous weapon systems permit the exercise of human judgment in circumstances calling for assessments of complex values. Furthermore, in cases where harm caused by autonomous weapons may not have been deliberate, three principles common to international environmental law, the preventive, precautionary measures and polluter pays principles, provide a framework for attribution of responsibility to states and arms manufacturers.

International Court of Justice, 30 October 1997, <http://www.icj-cij.org/presscom/index.php?pr=142&pt=1&p1=6&p2=1&PHPSESSID=5c407>.

Chapter Nine

Conclusions

The pursuit of values 'is part of what it is to be a human being'[1161] and the basic value and dominant purpose of international law is the promotion of human welfare, dignity and freedom.[1162] Therefore, humans must, to preserve their value and autonomy as persons and hence their dignity, retain their responsibility to think, reason and express judgment in essential realms of life. Compliance with responsibility in international and domestic affairs, however, can be literally a 'double-edged sword.'[1163] All autonomous technologies, including weapons technology, raise important questions about where humans should exercise their reason, judgment and values. In this dissertation, I have demonstrated that the delegation of human responsibility for complex, value-based judgments to autonomous weapon systems erodes human dignity and, consequently, international law. Indeed, this problem permeates each of the bodies of international law discussed in the preceding chapters.

Nevertheless, as the speed of 'swarm' technologies and other autonomous machine actions and reactions inevitably increases in the future,[1164] the role of autonomy – and the

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[1161] I Berlin, 'My Intellectual Path,' *in The Power of Ideas,* H Hardy (ed.) (Princeton University Press, 2000), p. 23.

[1162] L Henkin, *How Nations Behave: Law and Foreign Policy* (New York: Frederick A. Praeger, 1968), p. 35.

[1163] B Mitchell (ed.), *The Battle of Maldon and Other Old English Poems*, K Crossley-Holland (trans.) (London: MacMillan, 1965), pp. 28 – 29, and 32. The Battle of Maldon took place in Essex, U.K. in August 901. A party of invading Danish Vikings defeated English warriors led by Byrhtnoth, who, under a duty to destroy the invaders, imprudently permitted the Danes to cross the Maldon river and engage the English in battle.

[1164] Reflecting on his operations against the Wermacht in France, U.S. Army General George Patton distilled his vision of the art of war to an excerpt from Rudyard Kipling's poem, 'If':

> '…If you can fill the unforgiving minute
> With sixty seconds' worth of distance run, …'

In other take words, quickly take advantage of brief lapses in your enemy's strength, knowledge and/or preparedness. Letter, *George Patton Jr. to his son George IV,* 21 August 1944, in B Patton & J Scruby, *Growing Up Patton: Reflections on Heroes, History and Family Wisdom* (New York: Berkeley Publishing Group, 2012), p. 56.

artificial intelligence that drives it -- will expand as the space for human reasoning declines. These conditions increasingly will violate human dignity, as the ability of humans to fully develop their personalities progressively will diminish. Attempts to ameliorate this problem with semantic standards for human involvement such as 'meaningful human control' or 'appropriate levels of human judgment over the exercise of force' will be ineffective.

Fortunately, the use of an interdependent, 'co-active design' of autonomous weapon systems can serve as an effective buffer against risks to the development and preservation of human dignity. The co-active design permits human-machine teamwork at crucial moments of the application of, inter alia, international humanitarian law and international human rights law to facilitate development and expression of personal autonomy. This design thereby serves to protect the value of human dignity, and, on a more practical level, it also ensures the exercise of human reasoning and judgment for cognitive functions better suited for persons than machines.

Accordingly, in the context of international humanitarian law, humans should make decisions in situations, such as the application of the proportionality rule, where a balance must be struck between the foundational values of the law of armed conflict: military necessity and humanity. Similarly, humans should retain greater degrees of responsibility for decisions in other situations where multiple, conflicting values are constantly tested, such as urban combat or the control of security within facilities for prisoners of war. Conversely, the need for human involvement is reduced in scenarios that require automatic and instinctive behaviour, such as close-quarters combat distant from civilian populations, or during the location and fusion of intelligence information.

With respect to international human rights law, the use of autonomous weapon systems in exceptional law enforcement situations warranting the exercise of lethal force constitutes a relinquishment of human thought and expression in exchange for greater speed in the application of force. The former qualities are fundamental to the development of personal autonomy and thus, human dignity. Human beings, therefore, should participate in decisions concerning the exercise of lethal force by these weapon systems outside of armed conflict and in situations where both international humanitarian law and international human rights law apply. Greater deference to autonomous technologies and artificial intelligence will be reasonable during tasks that are less value-based, such as distribution of food in detention centres.

By maintaining human-machine corroboration at such crucial moments, co-active designs of autonomous weapon systems help to strengthen accountability and thereby, the effectiveness of international criminal law. Greater accountability means greater dignity for all parties. Co-active designs also, by preserving opportunities for humans to apply law, protect the function of law to adjust the rights between citizens, between individuals and states, and between states. With each increment in the speed of lethal autonomous weapon systems, however, the underlying benefits of co-active designs begin to recede.

Even the most sophisticated and 'flawless technology of man'[1165] can produce unforeseen injury to humankind. In the case of lethal autonomous weapon systems, however, we can *perceive* the damage that will be done to human dignity by the use of these weapons. Yet, as weapons technology rapidly becomes more automated and autonomous, the evolution of law concerning the proper design and use of these weapon systems lags behind. The

[1165] P. Mahon, *Royal Commission of Inquiry into and Report Upon the Crash on Mount Erebus, Antarctica, of a DC10 Aircraft Operated by Air New Zealand Limited* (Wellington, P.D. Hasselberg, 1981), para. 398, <http://www.erebus.co.nz/LinkClick.aspx?fileticket=PUWvCWDoUoE%3D&tabid=159>.

resulting 'legal lacunae' presents a significant threat to human dignity and, therefore, the integrity of our system of international law.[1166]

In international law, the well-being of individuals takes priority over the well-being and freedom of states.[1167] Accordingly, states bear a responsibility to ensure that their employment of lethal autonomous weapons complies with international obligations to promote and protect human dignity. Furthermore, in cases where the attribution of fault for harm caused by autonomous weapon systems is problematic, international courts and arbiters should use the international environmental law principles of prevention, precautionary measures and polluter pays by analogy to determine the responsibility of states and arms manufacturers. Concurrently, the development of due diligence measures designed to reduce the likelihood of accidental harm caused by autonomous weapons, and to minimize that harm when it occurs, will make the application of these principles more uniform.

Autonomous weapon systems will transform warfare and law enforcement operations.[1168] To preserve and promote human dignity – the cornerstone and starting point of international law -- this transformation compels reflection about what it means to be human and the significance of humanity.[1169] These concepts evolve when technology changes the

[1166] See *Barcelona Traction, Light and Power Company, Limited*, Judgment, I.C.J. Reports 1970, Separate Opinion of President Bustamente y Rivero, para. 4 (concluding that where the evolution of international economic law does not keep pace with the practicalities of transnational business, harm may occur to the 'proper working of justice').

[1167] J Waldron, 'The Rule of International Law,' 30 *Harvard Journal of Law & Public Policy* (2006), 15, 24 - 25. Hersch Lauterpacht observed that 'no legal order … is true to its essential function if it fails to protect effectively the ultimate unit of all law – the individual human being.' *An International Bill of the Rights of Man* (1945) (Oxford University Press, 2013), p. 7.

[1168] S Russell, 'A Brave New World? How Will Advances in Artificial Intelligence, Smart Sensors and Social Technology Changer Our Lives?' Panel Discussion at World Economic Forum, 22 January 2015, <http://www.weforum.org/videos/brave-new-world>.

[1169] Law is most relevant precisely in the face of shifting political, social, economic and military conditions that call for 'fundamental assessments of human values and the purposes of society.' *Shaw v. Director of Public Prosecutions*, House of Lords, Opinion of Viscount Simonds, 4 May 1961, p. 7.

way wars are fought and as societal understandings of acceptable human suffering change.[1170] As autonomous functions develop and dominate aspects of warfighting and crime control, men and women lose their personal autonomy, including the ability to apply judgment and law. This sacrifice of human development and personality to machine autonomy and efficiency reduces 'human' to a simple delegate or conduit, rather than a source, of responsibility for moral and legal decisions.

As the meaning of 'human' narrows, however, the introduction of autonomous weapon systems, paradoxically, can alter perceptions of humanity to allow for less use of violence during conflict and civil strife, rather than more. If 'humanity,' in the context of war and civil disturbances, refers to the reduction of suffering, then 'humanity' (and human dignity) requires (at least in certain situations) the use of autonomous technologies.[1171] The paradox, and the challenge, is to operationalize this perception of humanity without altering, and constraining, human dignity.

Two essential questions emerge from this challenge: first, as the role of lethal autonomous weapon systems increases, can our current, dignity-based interpretation of international law co-exist with this changing conception of 'humanity'? If not, are we willing to accept the legal and existential cost of transferring our responsibilities for complex, value-based reasoning and judgment to machines?[1172] In this dissertation I have tried to

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[1170] H Nasu, 'Nanotechnology and the Future of the Law of Weaponry,' 91 *International Law Studies* (2015), 486, 501 – 502; H Eggen Røislien, 'Thoughts on Autonomous Weapon Systems and Meaningful Human Control of Cyber,' *Open Democracy: Free Thinking for the World*, 7 November 2014, <available online at https://www.opendemocracy.net/hanne-eggen-r%c3%b8islien/thoughts-on-autonomous-weapons-systems-and-meaningful-human-control-of-cyber>.

[1171] Potentially, autonomous weapons technology can give persons more options to act legally and morally. J Lanier, 'The First Church of Robotics,' *International Herald Tribune*, 9 August 2010, p. 6. However, it should not reduce the human *ability* to do the same.

[1172] The Government of the Republic of Croatia contends that permitting 'automated technical systems' to make fundamental moral judgments about the taking of life 'would mark the end of humanity as such.' 'Opening Statement of the Republic of Croatia,' Convention on Conventional Weapons, Informal Meeting of Experts on

demonstrate that the answer to both questions is 'no.' In his treatise on the history of the idea of human dignity, Herschel Baker concluded that '[t]he history of thought teaches us that if we lose one prop for human dignity we can always construct another.'[1173] Baker does not, however, explain what new 'prop' humans may devise when they outsource their processes of reasoning and judgment. The damage to human dignity wrought from the use of fully autonomous lethal weapons when complex values are at stake represents a regression in human evolution and thus, is too high a price to pay for greater efficiency in the use of violence.[1174]

The obligation to protect human dignity is the starting point for the interpretation and application of international law. International law then creates normative frameworks and rules for resolving the moral issues subsumed by concerns about human dignity.[1175] In light of its moral, social, political, military and economic role, law should serve these broader normative purposes rather than be a slave to scientific or technological inevitability.[1176] It may be true that international life constantly evolves and international law, to remain relevant,

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Lethal Autonomous Weapons, 13 April 1015, <http://www.unog.ch/80256EE600585943/(httpPages)/6CE049BE22EC75A2C1257C8D00513E26?OpenDocument>.

[1173] *The Image of Man: A Study of the Idea of Human Dignity in Classical Antiquity, the Middle Ages and the Renaissance* (New York: Harper & Row, 1961), p. 333.

[1174] 'Liberty and equality, spontaneity and security, happiness and knowledge, mercy and justice – all these are ultimate human values, sought for themselves alone; yet when they are incompatible, they cannot all be attained, choices must be made, sometimes tragic losses accepted in the pursuit of some preferred ultimate end.' Berlin, 'My Intellectual Path,' in The Power of Ideas, p. 23.

[1175] 'Only by being normative can law preserve a balance between its transformative force, which does not accept reality as it is, and its roots in social reality.' B Simma, 'The Responsibility of Individuals for Human Rights Abuses in Internal Conflicts: A Positivist View,' 93 *American Journal of International Law*, (1999), 302, 307.

[1176] *Prosecutor v. Dražen Erdemović*, Joint Separate Opinion of Judge McDonald and Judge Vohrah, IT-96-22-A, Appeals Chamber, 7 October 1997, para. 75 (observing that '… the law should not be the product or slave of logic or intellectual hair-splitting, but must serve broader normative purposes in light of its social, political and economic role).' 'Moral and political considerations are not alien to law but part of it.' Simma, 'The Responsibility of Individuals for Human Rights Abuses in Internal Conflicts: A Positivist View,' 308. For a different view, see J Goldsmith & E Posner, *The Limits of International Law* (Oxford University Press, 2005), p. 185 (arguing that states have no moral obligation to follow international law).

must be a reflection of that life.[1177] But it is also true that international law, to preserve its capacity to adjust rights and responsibilities between states, and between states and individuals, must ensure the pre-eminence of the principle of human dignity.

In the Introduction to this dissertation, I described this work as a 'predictive history' of the influence of autonomous weapon systems on international law and vice-versa.[1178] 'But history,' as Grotius observed, 'is sometimes nothing more than a catalogue of actions marked with injustice, and ungovernable fury.'[1179] International law can and should play a determinative role so that the use of autonomous weapons does not result in avoidable injustices and unnecessary violence. If and when individual, state and civil responsibility exist for the design, development and use of autonomous weapons, then this 'predictive' legal history becomes a present where autonomous weapon technologies can be employed without vitiating human dignity.

In the foregoing chapters, I have attempted to prove several propositions. First, as autonomous weapon systems operate at increasingly greater speeds, their use will undermine the opportunities for, and the value of, human reasoning and thinking. Second, when the value of human reasoning and thinking is diminished, the killing of human beings by autonomous weapon systems will violate human dignity, and, therefore, international law. Third, the use of autonomous weapons systems will undermine the function of law and the application of law. Fourth, co-active designs of these weapon systems are necessary to ensure that humans and autonomous weapon systems can operate interdependently so that

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[1177] *Corfu Channel Case*, Judgment of 9 April 1949, Separate Opinion of Judge Alvarez, I.C.J. Reports 1949, p. 41.

[1178] One function of law is to establish 'possible futures for society, in accordance with society's theories, values and purposes.' P Allott, 'The Concept of International Law,' 10 *European Journal of International Law* (1999), 31.

[1179] H Grotius, *On the Law of War and Peace* (1625), A.C. Campbell (trans.) (Kitchener: Batoche Books, 2001, p. 172.

individuals can: 1) fulfil their obligations under international law – including the preservation of their dignity -- and 2) ensure that human reasoning and judgment are available for cognitive functions better suited for humans than machines.

Thus, this dissertation explains (if not resolves) several of the legal and moral problems raised by the use of autonomous weapon systems. Some readers, naturally, may disagree with my proposed solutions. Nevertheless, the debate must include not only the impact of autonomous technology on warfare and security, but also its consequences for the preservation of human dignity and international law, and, ultimately, what it means to be human.

Autonome wapensystemen, menselijke waardigheid en internationaal recht

Samenvatting (Dutch Summary)

Dit proefschrift wijdt zich aan de verhouding tussen autonome wapensystemen, menselijke waardigheid en internationaal recht. Na het beschrijven van het concept "autonomie" en de soorten technieken die autonome wapensystemen omvatten, zet ik een theoretisch kader uiteen dat illustreert hoe de verplichting om menselijke waardigheid te beschermen het beginpunt is voor de interpretatie en toepassing van internationaal recht. Op deze manier hebben staten en individuen een verantwoordelijkheid om zeker te stellen dat hun gebruik van autonome wapens binnen de internationale verplichtingen valt om menselijke waardigheid te promoten en te beschermen.

Internationaal recht biedt een aantal specifieke normatieve kaders en regels voor het oplossen van de morele problemen ondergebracht door zorgen over menselijke waardigheid. Dit proefschrift bestudeert vier van deze normatieve kaders: internationaal oorlogsrecht, internationale mensenrechten, internationaal strafrecht en het recht betreffende de verantwoordelijkheid van de staat, om te achterhalen of zij de toepassing van geweld door autonome wapens toestaan.

In de context van internationaal oorlogsrecht concludeer ik dat mensen beslissingen zouden moeten maken in situaties waar een balans gevonden moet worden tussen de fundamentele waarden van dit recht: militaire noodzaak en menslievendheid. Op eenzelfde manier moeten mensen een grote mate van verantwoordelijkheid dragen voor beslissingen in andere situaties waar meerdere, conflicterende waarden constant getest worden, zoals stedelijke oorlogvoering of controle van de veiligheid binnen detentiecentra voor krijgsgevangenen. Omgekeerd is de nood voor menselijke betrokkenheid minder in scenario's

die automatisch en instinctief gedrag vereisen, zoals korteafstand gevechten ver bij de burgerbevolking vandaan, of de samensmelting van inlichtingengegevens.

Internationaal mensenrecht is van toepassing wanneer mensen in contexten van rechtshandhaving hun beslissingen om dodelijk geweld toe te passen delegeren aan autonome wapensystemen. In deze omstandigheden staan individuen gedachten en meningsuiting af in ruil voor een grotere snelheid in de toepassing van geweld. De eerstgenoemde kwaliteiten zijn fundamenteel voor de ontwikkeling of persoonlijke autonomie en dus van menselijke waardigheid. Mensen zouden daarom moeten deelnemen in beslissingen omtrent de uitvoering van dodelijk geweld door deze wapensystemen buiten gewapend conflict en in situaties waar zowel internationaal oorlogsrecht als internationale mensenrechten van toepassing zijn. Door het behoud van de verbinding tussen mens en machine helpen "co-actieve" ontwerpen van autonome wapensystemen op zulke cruciale momenten om toerekenbaarheid en, als gevolg daarvan, de effectiviteit van internationaal strafrecht te versterken.

Het recht inzake de verantwoordelijkheid van staten reflecteert het principe dat het welzijn van individuen prioriteit heeft ten opzichte van het welzijn en de vrijheid van staten. Overeenkomstig dit rechtsgebied hebben staten een verantwoordelijkheid om te verzekeren dat hun gebruik van autonome wapensystemen voldoet aan de internationale verplichtingen om menselijke waardigheid te beschermen en promoten. Internationale gerechtshoven en arbiters zouden principes uit internationaal milieurecht naar analogie moeten toepassen. Met behulp van de principes "preventie," "voorzorg," en "vervuiler betaalt" dienen zij de verantwoordelijkheid van staten en wapenproducenten vast te stellen voor schade veroorzaakt door autonome wapensystemen. Tegelijkertijd zal de ontwikkeling van zorgvuldigheidsmaatregelen de toepassing van deze principes meer constant maken. Deze zijn

ontworpen om de kans op onbedoelde schade veroorzaakt door autonome wapens te verminderen en om schade te minimaliseren wanneer dit plaatsvindt.

Aangezien autonome wapensystemen desalniettemin op een steeds grotere snelheid functioneren, zal hun gebruik de mogelijkheid voor, en de waarde van, menselijk denken en redeneren verminderen. Wanneer de waarde van menselijk denken en redeneren wordt gereduceerd, zal het doden van mensen door autonome wapens menselijke waardigheid schenden, en daarmee internationaal recht. Bovendien zal het gebruik van autonome wapensystemen het functioneren en de toepassing van het recht ondermijnen. “Co-actieve” ontwerpen van deze wapensystemen zijn daarom nodig om te verzekeren dat mensen en autonome wapensystemen onafhankelijk kunnen opereren. Zo kunnen individuen hun verplichtingen onder internationaal recht vervullen en kunnen menselijke redenatie en oordeel gegarandeerd beschikbaar zijn voor cognitieve functies die beter geschikt zijn voor mensen van voor machines.

Curriculum Vitae

Dan Saxon is Assistant Professor of International Law at Leiden University College in The Hague. He received his Bachelor of Arts degree from Colgate University in 1981, his Juris Doctorate degree from the University of California, Davis School of Law in 1988, and his LLM in international human rights law from the University of Notre Dame Law School in 1995. For more than 25 years, Saxon has investigated and prosecuted serious international crimes and trained students and practitioners in the theory and practice of international criminal law and international humanitarian law. Saxon was a senior prosector at the United Nations International Criminal Tribunal for the Former Yugoslavia where he led investigations and prosecutions of persons accused of crimes against humanity and violations of the laws of war. Saxon served as the legal advisor to the United Nations Commission of Inquiry for Syria during 2011 and 2012. During 2010 – 2012, Saxon was the Leverhulme Visiting Professor and Yorke Distinguished Visiting Fellow at the Law Faculty of the University of Cambridge, where he taught undergraduate and graduate seminars in international criminal law and international humanitarian law. Saxon has trained judges, prosecutors and investigators from Colombia, Guatemala, the U.K., Italy and the former Yugoslavia in these fields of law and has lectured at numerous institutions in Europe and North America. He is the author of To Save Her Life: Disappearance, Deliverance and the United States in Guatemala (University of California, 2007) and the editor of International Humanitarian Law and the Changing Technology of War (Martinus Nijhoff, 2013).

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