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THE DEVELOPMENT OF UNMANNED WEAPONS AND THE CHALLENGES FOR INTERNATIONAL LAW

Masterproef van de opleiding
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A FEW WORDS OF GRATITUDE

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Sanne Verschuren,
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1. INTRODUCTION

Unmanned vehicles start to play an increasingly prominent role in modern warfare. On July 2, 2013 one of the news headlines concerned an American drone strike that had hit a suspected militant compound in a remote tribal region of northwestern Pakistan. According to the Pakistani government and intelligence officials, this attack resulted in sixteen people killed and five others wounded. Amongst those killed were allegedly members of the Haqqani network, a group responsible for orchestrating and executing attacks against American and Afghan forces across the border in Afghanistan.[1] The use of unmanned vehicles invokes several questions with regard to international law. Can these vehicles be considered lawful weapons? Are there certain legal limits and boundaries to their use? Can a country conduct an attack with an unmanned vehicle outside of an armed conflict? How about the question of accountability when these weapons are abused, considering that they do not have a pilot present in the vehicle? This master thesis examines the influences of unmanned vehicles on international law. It thus investigates the different legal challenges caused by the development of this technology. However, this thesis also researches the impact of international law on the legality and the use of unmanned vehicles and will thus zoom in on the different rules and limitations, as confined by international regulation.

This thesis will only concern armed unmanned vehicles and the military applications of the unmanned technology. Different types of lethal unmanned vehicles will be discussed including aerial, ground and naval vehicles. This thesis aims at investigating the relationship between unmanned weapons and international law within several interesting domains of both international humanitarian law and international human rights law: The ius ad bellum, the typology of armed conflicts, the legality of new weapons, the legality of the use of weapons, human rights law and accountability for wrongful acts. Finally, this master thesis will briefly discuss some ethical and political considerations.

The methodology of this master thesis is primarily a comprehensive literature study of both general sources of law and specific legal doctrine regarding unmanned technology. Some of those legal sources were provided by the Belgian Research Center on military law and the law of armed conflict and by the department of ballistics and weapons systems of the Belgian Royal Military Academy. After the extensive research the different sources were critically analyzed and brought together into the current structure of the thesis. With regard to the scientific papers and books used, some problems were encountered. Sometimes, the sources were politically influenced and biased, which hampered an objective approach to the subject. Furthermore, the majority of the used references only considered unmanned aerial vehicles, whereas my thesis attempts to make a more general investigation with regard to all the types of unmanned vehicles. Within these sources, they often referred to each other. Besides gaining elaborate knowledge on the subject of my thesis, writing this work has taught me to critically use legal doctrine, search for adequate and clear structures and use creativity for solving for difficult legal issues.

[1] S. Masood and I.T. Mehsud, *U.S. Drone Strike in Pakistan Kills at Least 16*, New York Times, July 3, 2013, http://www.nytimes.com/2013/07/04/world/asia/drone-attack-pakistan.html?_r=0 [Consulted on August 12, 2013].

Lastly, throughout this thesis a similar approach to the selected topics will be used. First, a general legal introduction to the subject will be explained. Then, the influence of the use of unmanned vehicles will be discussed, both from a current and future perspective. Every chapter will then conclude with some recommendations that reflect my opinion concerning the issues at stake.

2. SETTING THE SCENE

2.1 INTRODUCTION

Before turning to the legal implications of the use of unmanned vehicles, the more technical part will be tackled. First, a short introduction of the history of unmanned vehicles will be given. After that introduction, a classification of the vehicles will be made according to various variables: The technology behind the unmanned vehicles, the purpose of these vehicles and the difference in the level of autonomy. Finally, some facts and statistics, surrounding the use of unmanned vehicles will be discussed.

2.2 HISTORY OF UNMANNED VEHICLES

Unmanned vehicles were often deployed throughout history, even in ancient society. They provide the user with certain advantages, such as maximizing the influence over the area of combat and minimizing the damage to the troops. The industrialization caused the resort to machines during warfare. Consequently, there was some technological progress in the development of unmanned vehicles. For example, the unmanned surveillance balloons,[2] [3]capable of dropping bombs, and the aerial torpedo[4] [5] were some of the newly created unmanned vehicles. Despite these changes, the impact of armed unmanned vehicles in warfare was rather minimal.[6]

After World War II unmanned aircrafts were increasingly employed. In the beginning, for instance, they were used for scientific research. Starting from the 1950's, unmanned vehicles were deployed for surveillance.[7] However, they were not yet used for combat purposes, because of the lack of support by some operational planners and military commanders, induced by the fact that the technology was unproven, untested and initially unreliable. These vehicles proved to be successful for aerospace reconnaissance, decoy and target reconnaissance ends. This made them popular amongst the intelligence community. As a result, research, development and use of these unmanned vehicles was usually classified.[8]

[2] Patented in 1863.
[3]
Figure 1.
[4] Developed by the United States Navy in 1918.
[5] Figure 2.
[6] B. Gogarty and I. Robinson, *Unmanned Vehicles: A (Rebooted) History, Background and Current State of the Art*, 21 Journal of Law, Information and Science 1, 2011, p. 3 – 4.
[7] M. Arjomandi, *Classification of unmanned aerial vehicles*, the University of Adelaide, Australia, 2006, p. 5 – 6.
[8] B. Gogarty and I. Robinson, *Unmanned Vehicles: A (Rebooted) History, Background and Current State of the Art*, 21 Journal of Law, Information and Science 1, p. 5.

At the end of the 20th century, the digital revolution drastically changed the unmanned vehicles and their use. It stimulated progress in computing processing power, sensor technology and satellite communications. All these improvements were indispensable for the major evolution in the independence and employability of the unmanned vehicles.[9] Furthermore, several private companies are very active in the research and development of unmanned vehicles.[10] During the same period, other important technological innovations were realized. For instance, in 1998, an unmanned vehicle crossed the Atlantic Ocean and in 2001, the vehicles were capable of crossing the Pacific Ocean.[11]

Yet, the proliferation of the use of unmanned vehicles was caused by the terrorist attacks of September 2001 in the United States and the subsequent 'global war on terror'. Some of the repeatedly cited reasons for the use of such weapons by operating states, such as the United States are the exclusion of risk for military personnel, access to otherwise inaccessible areas, the effectiveness to target high-profile members of non-state actors and a decreased risk for civilian losses and damage to civilian objects.[12]

2.3 CLASSIFICATION OF UNMANNED VEHICLES ACCORDING TO DIFFERENT VARIABLES

2.3.1 TYPE OF UNMANNED VEHICLES

a. UNMANNED AERIAL VEHICLES

An unmanned Aerial Vehicle (UAV) can be defined as:

"An aircraft or balloon that does not carry a human operator and is capable of flight under remote control or autonomous programming."[13]

Furthermore, UAV's are characterized by their use of aerodynamic forces to provide lift. They can be either expendable, either recoverable and carry a non-lethal or lethal payload. Consequently, UAV's differ from ballistic or semi-ballistic vehicles, cruise missiles and artillery projectiles.[14]

Nowadays, there is a wide variety of unmanned aerial vehicles. UAV's can be classified according to their main performance characteristics, such as weight, endurance and range, maximum altitude, wing loading, engine type and power or thrust loading.

The current models of UAV's can be divided in several categories. First, there are the micro and small UAV's. These unmanned aerial vehicles weigh less than 5 kilograms (micro) and between 5 – 50 kilograms (small) , have a low altitude, fly around 1.000 meters and tend to use an electric motor.

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[9] B. Gogarty and I. Robinson, *Unmanned Vehicles: A (Rebooted) History, Background and Current State of the Art*, 21 Journal of Law, Information and Science 1, p. 6 – 7.

[10] Private companies such as General Atomics Aeronautical Systems http://www.ga-asi.com/ [Consulted on June 29, 2013].

[11] Richard K. Barnhart, 'Introduction to unmanned aircraft systems', Taylor & Francis Group, United States, 2012.
M. Arjomandi, *Classification of unmanned aerial vehicles*, the University of Adelaide, Australia, 2006, p. 5 – 6.

[12] B. Gogarty and I. Robinson, *Unmanned Vehicles: A (Rebooted) History, Background and Current State of the Art*, 21 Journal of Law, Information and Science 1, p. 7 – 9.

[13] Department of Defense of the United States of America, Department of Defense Dictionary of Military and Associated Terms, 8 November 2012, as amended through 15 august 2012, p. 327.

[14] Office of the Secretary of Defense of the United States of America, Unmanned Aircraft Systems Roadmap 2005-2030, 4 August 2005, p. 1.

Furthermore, medium altitude UAV's fly at an altitude between 1.000 meters and 10.000 meters. They also include the medium altitude and long endurance UAV's (MALE). Most UAV's can be categorized as a medium altitude UAV. Finally, the high altitude and long endurance UAV's (HALE) are able to fly for more than 24 hours and have a range of more than 1.500 kilometers or more.[15]

UAV's can also be qualified according to their mission purpose: Intelligence, surveillance, target acquisition and reconnaissance (ISTAR), combat (UCAV), multi-purpose, vertical take-off and landing (VTOL), radar and communication relay and aerial delivery and resupply.

Unmanned combat aerial vehicles and armed multi-purpose vehicles are mostly actively used in an armed conflict. UCAV's are highly maneuverable aircrafts, that can engage in an air to air combat and are provided with precision weapons for surface targets. These aircrafts have a higher cruise speed and a shorter endurance. Most of the UCAV's are currently in an experimental stage.[1617] Multi-purpose UAV's with a combat purpose are usually modified reconnaissance UAVs, that contain weapons. Their primary mission is usually conducting armed reconnaissance against critical, perishable targets. These UAV's can comprise self-guided weapons.[18] [19]

Most of the currently deployed unmanned aerial vehicles do not only consist of an aircraft. There are unmanned aerial systems (UAS), for instance to check the UAV and to provide the necessary technical assistance. A system consists among others of the unmanned or remotely piloted aircraft, its payloads, one or more control elements, aircraft launch and recovery systems, data link communication architecture and transport systems. Communication systems include a camera for input, sending the images through a satellite connection and being analyzed by a human operator in the ground control station.[20]

Currently the Predator[21] and the Hunter[22] are frequently deployed in combat situations. The Predator carries AGM-114 Hellfire missiles. It has armed reconnaissance against critical and perishable targets. The Hunter variant can operate from altitudes higher than 6.100 meter. It carries the Viper Strike. This is a high precision laser guided bomb, suitable for urban combat.[23]

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[15] S. A. Kaiser, *Legal Aspects of Unmanned Aerial Vehicles*, 55 Zeitschrift für Luft- und Weltraumrecht 344, 2006, p. 345 – 346;
M. Arjomandi, *Classification of unmanned aerial vehicles*, the University of Adelaide, Australia, 2006, p. 7 – 23.
[16]

Figure 3.
[17] R.K. Barnhart, *The future of Unmanned Aircraft Systems*, R. K. Barnhart, S. B. Hottman, D. M. Marshall and E. Shappee, "Introduction to Unmanned Aircraft Systems", Taylor & Francis Group, Suite, 2012, p. 188 – 189.
[18] Figure 4.
[19] M. Arjomandi, *Classification of unmanned aerial vehicles*, the University of Adelaide, Australia, p. 30-36.
[20] P. G. Fahlstrom and T. J. Gleason, "Introduction to UAV Systems", 4th edition, John Wiley & Sons, Sussex, 2012;
R. Austin, "Unmanned Aircraft Systems: UAV's design, development and deployment", John Wiley & Sons, Sussex, 2010, p. 15 -20;
J. Brungardt, *Unmanned Aircraft System Elements*, in R. K. Barnhart, S. B. Hottman, D. M. Marshall and E. Shappee, "Introduction to Unmanned Aircraft Systems", Taylor & Francis Group, Suite, 2012, p. 17 – 28.
[21] Figure 4
[22] Figure 5
[23] M. Arjomandi, *Classification of unmanned aerial vehicles*, the University of Adelaide, Australia, 2006, p. 34 – 35.

b. UNMANNED GROUND VEHICLES

An Unmanned Ground Vehicles (UGV) can be defined as :

"*A vehicle that operates while in contact with the ground and without an onboard human presence*".[24]

There are different kinds of UGV's with different functions, for instance soldier UGV's, mule UGV's armed reconnaissance vehicles, tele-operated ground vehicles, semiautonomous precede-followers, platform-centric autonomous ground vehicles and network-centric autonomous ground vehicles. UGV's can be used for instance to access places, which are too difficult, impossible, inconvenient or dangerous for humans to reach, such as safely removing mines or improvised explosive devises and entering hostile territory.

Current UGV technology consists of the following elements: Autonomous navigation, communication, power, vision, architecture, soldier machine interface, manipulator, terrain mobility and payloads.[25]

c. UNMANNED NAVAL VEHICLES

The Unmanned Naval Vehicles can be divided in two categories: Unmanned Surface Vehicles (USV) and Unmanned Underwater Vehicles (UUV).

An Unmanned Surface Vehicle[26] can be defined as:

"Vehicles, capable of unmanned operation that operate with near continuous contact with the surface of the water".[27]

The Unmanned Surface Vehicles can be further divided in several classes: The X-class (small, non-standard class of systems capable of supporting SOF requirements and MIO missions), the harbor class (focusing on the MS Mission, with or without lethal payload), the snorkeler class (semi-submersible vehicle, mainly employed for MCM towing missions, ASW and special missions) and the fleet class (Purpose-built USV).[28]

USV's can be deployed for several purposes, within the academic, commercial or governmental field, such as mine countermeasures (MCM), anti-submarine warfare (ASW), maritime security (MS), surface warfare (SUW), special operations forces (SOF) support, electronic warfare (EW) and maritime interdiction operations (MIO) support.

[24] Committee on Army Unmanned Ground Vehicle Technology of National Research Council, *Technology Development for Army Unmanned Ground Vehicles*, Washington D.C., 2002, p. 13.
[25] Robotic Systems Joint Project Office, *Unmanned Ground Systems Roadmap*, July 2011, p. 20 – 41.
[26] Figure 7.
[27] United States Department of Navy, *The Navy Unmanned Surface Vehicle (USV) Master Plan*, 23 July 2007, p. 6 – 7.
[28] United States Department of Navy, *The Navy Unmanned Surface Vehicle (USV) Master Plan*, 23 July 2007, p. 59 – 63.

USV's can also be categorized according to craft type, for instance a semi-submersible craft, conventional planing hull craft, semi-planing hull craft and hydrofoils. Even though the proliferation of new types of USV's, there are only a limited amount of such vehicles on the market.[29]

An Unmanned Underwater Vehicle[30] can be defined as:

"A self-propelled submersible whose operation is either fully autonomous (pre-programmed or real-time adaptive mission control) or under minimal supervisory control and is untethered except, possibly, for data links such as a fiber optic cable".[31]

Unmanned Underwater Vehicles can be further divided in further categories: Man portable (11 – 45 kilograms displacement), light weight (227 kilograms displacement), heavy weight (1.361 kilograms displacement) and large UUV (9.072 kilograms displacement).[32]

UUV's can be deployed for various reasons, both for military and civilian purposes, such as intelligence surveillance and reconnaissance (ISR), mine countermeasures, anti-submarine warfare, inspection and identification, oceanography, communication and navigation on network nodes (CN3), payload delivery, information operations (IO) and time critical strike (TCS).

Unmanned underwater vehicles have already been successfully used in military context, although extensive research and experiments are still being conducted. In 2003 for instance, a remote environmental measurement units support UUV covered 2.5 million square meters in mine clearing operations, during the early stages of Operation Iraqi Freedom.[33]

d. UNMANNED SPACE VEHICLES

Unmanned Space Vehicles are called unmanned space missions, when remotely controlled. Yet, when humans are not present in the vehicle, making it autonomous, it is often referred to as robotic spacecraft. The first spacecraft was Sputnik 1[34], launched in October 1957. Currently, more than 1.000 unmanned space vehicles, often satellites have been send into space, mostly for the purposes of scientific research, commercial use and certain military applications, such as earth observation, meteorology, planetary exploration, communication, navigation and espionage. [35] This thesis will not elaborate on this type of unmanned weapons, since a whole different set of rules apply and is subject to different legal challenges.

[29] J. M. Manley, *Unmanned Surface Vehicles, 15 Years of Development*, Battelle Applied Coastal and Environmental Services, 2008, p. 1 – 4.
[30] Figure 8.
[31] United States Department of Navy, *The Navy Unmanned Undersea Vehicle (UUV) Master Plan*, 9 November 2004, p. 4.
[32] United States Department of Navy, *The Navy Unmanned Undersea Vehicle (UUV) Master Plan*, 9 November 2004, p. 67 – 69.
[33] A. H. Henderson, *Murky Waters: The legal status of Unmanned Undersea Vehicles*, 53 Naval Law Review 55, 2006, p. 56 – 58.
[34] Figure 9.
[35] B. E. Paton, "Space Technologies, Materials and Structures", CRC Press London, 2003, p. 3 – 31.

2.3.2 PURPOSE OF UNMANNED VEHICLES

Unmanned vehicles are being deployed for various reasons.

There are several civilian applications for these technology. Unmanned vehicles have proven to be useful for all sorts of scientific research. Unmanned vehicles can be used for governmental purposes, such as overseeing road traffic, delivering support in natural disasters, providing assistance during search and rescue operations, demonstration and contributing to effective border control. Furthermore, unlimited commercial applications can be derived, for instance the inspection of pipelines.[36]

These vehicles play an increasingly important role in the military context. Unmanned vehicles are used for various tasks, either in a combatant or non-combatant situation, such as removing mines, conducting surveillance and exercising combat functions. Armed unmanned vehicles can play both be used for offense and defense objectives.

Currently, armed unmanned vehicles are intensively deployed in the war on terror. There, armed unmanned aerial vehicles conduct targeted killing missions against members of Al-Qaeda, other terrorist organizations and insurgency groups. There is no legal definition of targeted killing. Yet, some elements can be distinguished: The intentional and deliberate use of lethal force, with a degree of pre-meditation against one or more individuals, who are identified by the perpetrator in advance. Targeted killing thus differs from unintentional or accidental killings, without a conscious choice.[37]

Especially the United States conduct two types of strikes with their unmanned aerial vehicles: Personality strikes and signature strikes. The first one constitutes the targeting of named allegedly high-value leaders of armed, non-state groups. The second one, meanwhile is based on a 'pattern of life'-analysis. Such an analysis consists of groups of individuals, who bear certain signatures or defining characteristics associated with terrorist activity. However, their identities are not known. An example of a signature strike is an attack against training camps and suspicious compounds, based on patterns of activity, such as packing a vehicle with explosives. Such strikes were introduced under the Obama Administration.[38]

To conclude, this thesis will only consider the implications for international law of unmanned vehicles, which are actively used for combat and thus contain weapons. Several concepts will throughout these thesis to indicate such vehicles: Armed unmanned vehicle, lethal unmanned vehicle and unmanned weapon.

[36] S. A. Kaiser, *Legal Aspects of Unmanned Aerial Vehicles*, 55 Zeitschrift für Luft- und Weltraumrecht 344, 2006, p. 346.
[37] P. Alston, *Study on targeted killings*, Human Rights Council, Fourteenth Session, Agenda Point 3, 28 May 2010, A/HRC/14/24/Add.6, p. 4-5.
[38] X, *Living under drones: Death, Injury, and Trauma to Civilians From US Drone Practices in Pakistan*, Stanford Law School and NYU School of Law, http://livingunderdrones.org, 2012, p. 12 – 13.

2.3.3 LEVEL OF AUTONOMY

Three levels of autonomy of an unmanned vehicle can be distinguished: Remotely piloted, semi-autonomous and autonomous.

A remotely piloted vehicle is tele-operated by humans through various communication systems. Most unmanned vehicles can be placed in this category. For example, the Predator[39] is remotely operated by a pilot and a sensor operator, who are located in the ground station.

A semi-autonomous vehicle is able to operate without the requirement for a command from a human within the programmed parameters. Yet, in this type of autonomy, the human operator still monitors the actions of the unmanned vehicle. The operator has to authorize the operations, and is thus responsible for certain decisions concerning the actions of the unmanned vehicle. For instance, decisions concerning an attack have to be supervised by a human operator. Many of these systems possess the capability to act completely autonomous. An example constitutes the intelligence, surveillance and reconnaissance unmanned aerial vehicle, the Global Hawk[40], which flight commands are controlled by an onboard system without interference of a human operator.

A fully autonomous unmanned vehicle is capable of making decisions, concerning their mission and independently report about it.[41] Moreover, the vehicle can assimilate new information and adapt to it. The vehicle is thus self-governing.[42] There is a strong linkage between the intelligence of the system and the autonomy with which it can operate. Autonomous lethal unmanned vehicles often contain automatic target recognition (ATR) capabilities that allow the unmanned vehicles to select targets, when they enter a designated area of interest.

The Aegis Combat System[43], for instance normally needs a human operator to veto the decisions. However, when it is switched into casualty mode, these vehicles are capable of operating fully autonomy. Another interesting example is swarming, whereby a target is attacked from different directions simultaneously. Therefore, a coordination of multiple independent systems in a relatively small amount of airspace is needed. Consequently, these systems require a high degree of interoperability and autonomy. This technique enables the target to be overwhelmed and subdued quickly. Yet, this type of vehicle still needs to be further developed. Currently, unmanned underwater vehicles have reached the highest stage of autonomy.[44]

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[39] Figure 4.
[40] Figure 10.
[41] Definition: "A weapon system that, once activated, can select and engage targets without further intervention by a human operator. This 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." From: United States *Department of Defense, Autonomy in Weapon Systems*, Directive 3000.09, November 2, 2012, http://www.dtic.mil/whs/directives/corres/pdf/300009p.pdf [Consulted July 7, 2013].
[42] X, 'Oxford English Dictionary', Oxford, 2002, p. 63.
[43] Figure 11
[44] B. Kastan, *Autonomous weapons systems: A coming legal "Singularity"?,* University of Illinois Journal of Law, Technology and Policy 45, Spring 2013, p. 49 – 51;
T. Coughlin, *The future of robotic weaponry and the law of armed conflict: irreconcilable differences*?, 17 University College London Jurisprudence Review, 67, 2011, p. 68 – 70;

Currently, the majority of research and innovation projects focus on the increase of autonomy for unmanned vehicles. Advocates of more autonomy often claim to eliminate human error by removing the human operator and to be more efficient. Yet, more responsibility lies with the designers, who can also make human mistakes. Furthermore, other issues have to be taken into account: Trust in the system, situation awareness of the system, workload for the system, system communication with an operator, for instance during failure, and sufficient skills of the system itself.[45]

Still, it needs to be remarked that such a categorization is rather artificial. For instance, semi-autonomous vehicles for the purpose of this thesis will be considered to not be able to make independent decisions, with regard to exercising an attack. However, in reality the differences between these categories is a bit more blurry. The distinction of semi-autonomous and autonomous depends among others on the frequency of the interaction of the operator, the tolerance of the vehicle for environmental uncertainty and its level of assertiveness. [46]

2.4 Facts and Statistics

Gathering trustworthy information concerning the manufacturing, developing, buying and deploying of unmanned vehicles by states is difficult. Yet, it is believed that about thirty-two nations are manufacturing and developing unmanned technology. The users of unarmed unmanned vehicles, is estimated at around fifty countries. Such countries are, for instance Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, China, Columbia, Croatia, Czech Republic, Ecuador, Finland, France, Germany, Greece, Hungary, India, Indonesia, Iran, Israel, Italy, Japan, Jordan, Lebanon, Malaysia, Mexico, Netherlands, New Zealand, Norway, Pakistan, Peru, Philippines, Poland, Romania, Russia, Serbia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Tunisia, Turkey, United Arab Emirates, United Kingdom, United States, Vietnam.[47] At present, however, principally Israel and the United States have deployed armed unmanned vehicles.[48] Lastly, also non-state groups, such as Hezbollah[49] have expressed interest in purchasing unmanned technology.[50]

R.K. Barnhart, *The future of Unmanned Aircraft Systems* in R. K. Barnhart, S. B. Hottman, D. M. Marshall and E. Shappee, "Introduction to Unmanned Aircraft Systems", Taylor & Francis Group, Suite, 2012, p. 190 – 191.

[45] L. J. Elliott and B. Stewart, *Automation and Autonomy in Unmanned Aircraft Systems* in R. K. Barnhart, S. B. Hottman, D. M. Marshall and E. Shappee, "Introduction to Unmanned Aircraft Systems", Taylor & Francis Group, Suite, 2012, p. 99 – 116.

[46] W. C. Marra and S. K. McNeil, *Understanding 'the loop': Regulating the next generation of war machines*, 36 Harvard Journal of Law & Public Policy 1139, Summer 2013, p. 1144 – 1160.

[47] N. Sharkey, *The Automation and Proliferation of Military Drones and the Protection of Civilians*, 3(2) Law, Innovation and Technology 229, 2011, p. 231.

[48] An example: N. Khan, *Russian 6th generation MiG Skat UCAV - Beyond 5th gen Sukhoi T-50 PAK FA*, Asian Defense, January 18, 2012, http://www.asian-defence.com/2012/02/russian-6th-generation-mig-skat-ucav.html [Consulted on July 11, 2013];
Figure 14.

[49] I. Kershner, *Israel Shoots Down Drone Possibly Sent by Hezbollah*, The New York Times, April 25, 2013, http://www.nytimes.com/2013/04/26/world/middleeast/israel-downs-drone-possibly-sent-by-hezbollah.html [Consulted on July 11, 2013].

[50] L. R. Blank, *After "Top Gun": How drone strikes impact the law of war*, 33 University of Pennsylvania Journal of International Law 675, 2011-2012, p. 678;
M. E. O'Connell, *Remarks: The resort to drones under international law*, 39 Denver Journal of International Law and Policy 585, 2010-2011, p. 586;
P. Alston, Study on targeted killings, Human Rights Council, Fourteenth Session, Agenda Point 3, 28 May 2010, A/HRC/14/24/Add.6, p. 9.

Israel has exercised several strikes with armed unmanned vehicles during the war with Gaza from December 27, 2008 until January 18, 2009. The number of casualties varies according to the source. Israeli and Palestinian human rights organizations together reported 42 drone attacks, which killed 87 people.[51] Amnesty International documented 48 deaths.[5253] Furthermore, Israel is the second largest producer of unmanned vehicles. Israel invests in enhancing the military capabilities and range of the vehicles.[54]

The first known strike of an armed unmanned aerial vehicle by the United States occurred in Afghanistan in November 2001. The vehicle launched a Hellfire missile to kill Mohamed Atef, a leader of Al-Qaeda in his house, near Kabul.[55] This strike occurred in the context of an armed conflict. The United States soon started to use armed unmanned aerial vehicles in Iraq.[56] The first drone strike outside a combat area was conducted by the Central Intelligence Agency (CIA) in Yemen on November 3, 2002. The strike was aimed at a vehicle and killed all six passengers, including an Al-Qaeda member and a United States citizen.[57] This strike received a lot of criticism. In January 2003, the United Nations Human Rights commission decided, after receiving a report from its special reporter on extrajudicial summary or extrajudicial killing, that the strike in Yemen was a clear case of extrajudicial killing.[58] The use of armed unmanned aerial vehicles in Pakistan began in 2004. In Somalia, it is believed that strikes were conducted since 2006.[59] Lastly, the United States deployed armed unmanned vehicles in Libya, during the Libyan Revolution in 2011.[60]

In the beginning of the United States military operations in Iraq and Afghanistan, unmanned technology was only sporadically used. In 2001, the United States army possessed about ten Predator Unmanned Aerial Vehicles, which were mostly used for reconnaissance and surveillance missions. Yet, by 2007, the number of Predators had augmented until more than 180. In addition, the army started to deploy various types of unmanned vehicles in the current conflicts, such as the Global Hawk[61], the Shadow[62], the Hunter[63] and the Raven[64]. The larger unmanned aerial vehicles

[51] Human Rights Watch, *Precisely Wrong: Gaza Civilians Killed by Israeli Drone-Launched Missiles*, June 2009, http:// www.hrw.org/sites/default/files/reports/iopt0609web_0.pdf, p. 3 [Consulted on July 11, 2013].
[52] Amnesty International Livewire, *Faulty Intelligence, Wanton Recklessness, or a Combination of the Two*, February 1, 2009, http://livewire.amnesty.org/2009/02/02/faulty-intelligence-wanton-recklessness-or-a-combination-of-the-two [Consulted on July 11, 2013].
[53] N. Erakat, *Operation Cast Lead: The exclusive quest for self-defense under international law*, 36 Rutgers Law Record 164, 2009, p. 172 – 173.
[54] N. Sharkey, *The Automation and Proliferation of Military Drones and the Protection of Civilians*, 3(2) Law, Innovation and Technology 229, 2011, p. 230.
[55] M. Boettcher and D. Ensor, *Reports suggest al Qaeda military chief killed*, CNN, November 17, 2011, http://archives.cnn.com/2001/WORLD/asiapcf/central/11/17/ret.atef.reports/ [Consulted on July 11, 2013].
[56] X, *US admits using drones over Iraq,* BBC, October 25, 2002, http://news.bbc.co.uk/2/hi/world/middle_east/2361745.stm [Consulted on July 11, 2013].
[57] X, *Assassination by remote control*, The Economist, November 5, 2002, http://www.economist.com/node/1427862 [Consulted on July 11, 2013].
[58] Special Rapporteur on Extrajudicial, Summary, or Arbitrary Executions, United Nations Commission on Human Rights, Civil and Political Rights, Including the Questions of Disappearances and Summary Executions, IT 37-39, U.N. Doc. E/CN.4/2003/3, Jan. 13, 2003.
[59] M. E. O'Connell, *Remarks: The resort to drones under international law*, 39 Denver Journal of International Law and Policy 585, 2010-2011, p. 587 – 588.
[60] M. Raddatz, *Pentagon Confirms First Predator Drone Strike in Libya*, ABC News, April 23, 2011, http://abcnews.go.com/International/pentagon-confirms-predator-drone-strike-libya/story?id=13442570#.UeAHbG3_TE0 [Consulted on July 11, 2013].
[61] Figure 10.

were armed with Hellfire missiles. They are used to conduct strikes. Moreover, producing and stimulating technological development of all aspects of the unmanned vehicles fleet of the army remains a strategic priority for the next years.[65] Consequently, this is considered a top budgetary post. There is a continuing increase in the spending on unmanned technology. For instance, in 2010 the Air Force aimed to spend $2.13 billion dollars on unmanned technology, the United States Army wanted to spend $2.13 billion dollars and the United States Navy and Marine Corps were planning on spending $1.05 billion dollars on unmanned vehicles.[66]

The number of casualties, caused by the attacks of armed unmanned vehicles is difficult to estimate. The operating states, such as the United States underreports the number of casualties, especially the number of civilians killed or injured. Civilians are frequently recorded as combatants. Moreover, a lot of these numbers and statistics are kept a secret for the public eye. Governments argue that such decision is based on national security exceptions. Militant groups, such as Al-Qaeda often exaggerate the number of wounded or killed individuals. Moreover, news agencies and independent organizations, attempting to cover the number of victims are faced with several obstacles, when conducting their investigation They do not have access to the actual place of the attack. Consequently, they have to rely on the opaque reports of the government, military or intelligence leaks and unreliable local sources.[67] In order to give an indication of the number of victims, the statistics of The Bureau of Investigative Journalism will be used. Based in London, this independent non-profit organization for investigative journalism estimates that there have been 371 strikes of unmanned aerial vehicles in Pakistan, in the period from 2004 until 2013. These attacks allegedly killed 2.564 – 3.567 people, of which 411 – 890 were reported as civilians. Furthermore, 1.179 – 1.485 people were reported injured. In Yemen, the United States conducted 46 – 56 drone strikes, between 2002 and 2013. Moreover, there are believed to be 80 – 99 unreported attacks in Yemen. The reported strikes caused the death of 240 – 349 people and 62 – 144 individuals suffered injuries. The unreported strikes, meanwhile have most likely killed 282 – 455 people, of which 23 – 50 were civilians and injured 81 – 106 individuals. Lastly, in Somalia 3 – 9 air strikes by unmanned weapons were conducted in the period from 2007 until 2013. This probably killed 7 -27 individuals, of which the number of civilians is estimated to be between 0 – 15 and wounded 2 – 24 persons.[68]

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[62] Figure 12.
[63] Figure 5.
[64] Figure 13.
[65] C. Crandall, *Ready… Fire… Aim! A case for applying American due process principles before engaging in drone strikes*, 24 Florida Journal of International Law 55, p. 59 – 60;
X, *Unmanned Aerial Warfare: Flight of the drones: Why the future of air power belongs to unmanned systems?*, The Economist, October 8, 2011.
[66] N. Sharkey, *The Automation and Proliferation of Military Drones and the Protection of Civilians*, 3(2) Law, Innovation and Technology 229, 2011, p. 230.
[67] X, *Living under drones: Death, Injury, and Trauma to Civilians From US Drone Practices in Pakistan*, Stanford Law School and NYU School of Law, http://livingunderdrones.org, 2012, p. 29 – 42.
[68] The Bureau of Investigative Journalism, *Covert Drone War: Casualty estimates*, http://www.thebureauinvestigates.com/category/projects/drones/ [Consulted on July 11, 2013].

3. IUS AD BELLUM

3.1 LEGAL INTRODUCTION

Article 2.4 of the Charter of the United Nations requires States to,

'Refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the purposes of the United Nations.' [69]

This article, the prohibition of the use of force against another state, has been described as the corner stone article of the Charter. It is considered ius cogens. However, the resort to the use of force can be justified in certain situations.[70] These rules concerning the legality of an armed operation constitute the ius ad bellum.

First, an armed attack is justified, when the host state gives its consent for the use of force. This consent can be through invitation or a formalized agreement.[71]

Second, an armed attack can also be considered legal, when a state is acting in self-defense.[72] Self-defense is an inherent right of every state. Consequently, it can be exercised without prior authorization. It is regarded as a pre-existing rule of customary international law.[73] In order to invoke the right of self-defense, the victim state has to suffer an armed attack, the attack must be attributable to another state and the place where the use force in response to the armed attack will be exercised, has to be determined. Yet, these conditions are subject to an extensive legal debate.[74] The Charter of the United Nations recognizes both an individual and a collective right of self-defense.[75] The Charter allows regional defense organizations, such as the North Atlantic Treaty Organization or NATO as a means of collective self-defense. To exercise collective self-defense, two requirements must to be fulfilled. Firstly, the wrongful act, triggering self-defense must be an armed attack. Secondly, the victim state has to declare its status as a victim and request assistance.[76]

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[69] Article 2.4, Charter of the United Nations, 26 June 1945, Can TS 1945 No 7;
Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v Uganda), [2005] ICJ Rep 168 at para 148;
Case concerning Military and Paramilitary Activities in and against Nicaragua (Nicaragua v United States of America), [1986] ICJ Rep 14 at para 188 – 190;
Declaration on Principles of International Law Concerning Friendly Relations and Cooperation Among States in Accordance with the Charter of the United Nations, GA Res 2625, UNGAOR, 25th Session, Supp. No 28, UN Doc A/8082, (1970);
C. Gray, 'International law and the Use of Force', 3th edition, Oxford University Press, 2008, p. 6 – 25.
[70] I. Brownlie, 'The Principles of International Law', 7th edition, Oxford University Press, 2008, p. 731 – 733.
[71] O. Schachter, 'International Law in Theory and in Practice', Martinus Nijhoff Publishers, Boston, 1991, p. 114 – 115.
[72] Article 51, Charter of the United Nations, 26 June 1945, Can TS 1945 No 7.
[73] Case concerning Military and Paramilitary Activities in and against Nicaragua (Nicaragua v United States of America), [1986] ICJ Rep 14 at para 176.
[74] I. Brownlie, 'The Principles of International Law', 7th edition, Oxford University Press, 2008, p. 732 – 734.
[75] Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, [1996] ICJ Rep 226 at para 38.
[76] Article 52, Charter of the United Nations, 26 June 1945, Can TS 1945 No 7;

The entitlement to resort to self-defense is subject to certain constraints. Customary international law dictates the submission of the exercise of this right to two conditions: Necessity and proportionality. Finally, a state has to report the exercise of self-defense immediately to the Security Council of the United Nations.[77]

Third, the United Nations Security Council can authorize an armed operation that is deemed necessary for the maintenance or the restoration of peace, in conformity with Chapter VII of the Charter of the United Nations. Such measures can also be taken for an internal conflict. Yet, such authorization is only meaningful, if the states are willing and able to assemble a multilateral force, to tackle the armed attack.[78]

Last, some legal scholars argue that customary international law allows an urgent humanitarian intervention for the protection of the population, or a part of it, which is under threat. The Charter of the United Nations does not contain any relevant provisions concerning a humanitarian intervention. Moreover, there is often no unanimity amongst the five permanent members of the United Nations Security Council concerning these topics. They will veto proposed resolutions, with no authorization as result. As a result, the interference in a humanitarian catastrophe depends on the actions of states. In order to be able to intervene, this rule has to reach the status of customary international law. This is subject to a heated debate amongst legal writers. In state practice, states have been very reluctant to apply this theory, but some argue that change might be coming, such as in the Kosovo Case. The application of humanitarian intervention is regulated by some conditions, for instance the existence and imminence of a serious humanitarian situation, failure of the United Nations Security Council to act and the purpose of the intervention is to be limited to the humanitarian situation.[79]

If there is no ground for legal use of force under the ius ad bellum, a state will have to rely on the rules on the use of force, as determined in law enforcement and human rights law, when attempting to act on the territory of another state.

This chapter will investigate the legitimacy of the current use of armed unmanned vehicles, during the ius ad bellum. Furthermore, the influence of the future use of unmanned weapons, such as a more intense use of the wider spectrum of unmanned technology and the consequences of increasing autonomy of the technology will be examined. Conclusively, some recommendations will be made.

This chapter will not discuss the situation of the drone strikes in Afghanistan or any other current situation, where the parties are involved in an armed conflict or war with each other. The deployment of unmanned weapons in these situations is part of an armed conflict. If an armed conflict has been established, the use of armed unmanned vehicles is regulated by the ius in bello, which will be explained hereafter.

Case concerning Military and Paramilitary Activities in and against Nicaragua (Nicaragua v United States of America), [1986] ICJ Rep 14 at paras 102.4, 103.5 and 110, 127 and 195.

[77] Case concerning Military and Paramilitary Activities in and against Nicaragua (Nicaragua v United States of America), [1986] ICJ Rep 14 at para 194;
Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, [1996] ICJ Rep 226 at paras 40 and 41.

[78] Article 42, Charter of the United Nations, 26 June 1945, Can TS 1945 No 7.
Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, [1996] ICJ Rep 226 at para 38.

[79] A.P.V. Rogers, *Humanitarian Intervention and International Law,* 27 Harvard Journal of Law & Public Policy 725, 2004, p. 725 – 736.

3.2 IMPLICATIONS OF THE CURRENT USE OF UNMANNED VEHICLES

3.2.1 FRAMING THE ISSUES

The attacks of armed unmanned aerial vehicles, as they are currently deployed in countries such as Pakistan, Somalia and Yemen ask serious questions concerning the ius ad bellum. Does a strike of an unmanned vehicle constitute an attack, as stated in article 51 of the Charter of the United Nations? Consequently, is such a strike sufficient to invoke self-defense? Does the often heard argument of self-defense, for instance for certain operations of unmanned aerial vehicles in Pakistan fall within the rules and limitations, set out in article 51 of the Charter of the United Nations, additional customary international law and case law? For example, can the United States, when conducting drone strikes in Pakistan, invoke self-defense against a non-state actor, such as Al-Qaeda? Furthermore, if the non-state actor crosses a border, can self-defense still be claimed when targeting them in that other state? How realistic is consent, given by countries, such as Somalia to the United States drone program? What are the legal consequences? In other words, what should be the nature and content of a state's consent to such operation?

As one can observe, these questions are not confined to the current use of unmanned vehicles. Rather, some of these issues can be raised in the challenges of contemporary warfare, caused by the proliferation of conflicts between states and non-state actors, terrorism and the subsequent war on terror. However, the current use of unmanned vehicles illustrates a lot of the issues concerning the ius ad bellum.[80]

3.2.2 SELF-DEFENSE

Article 51 of the Charter of the United Nations:

"*Nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security. Measures taken by Members in the exercise of this right of self-defence shall be immediately reported to the Security Council and shall not in any way affect the authority and responsibility of the Security Council under the present Charter to take at any time such action as it deems necessary in order to maintain or restore international peace and security.*"

a. IS A STRIKE OF AN UNMANNED VEHICLE SUFFICIENT TO INVOKE SELF-DEFENSE?

In order for a state to invoke self-defense as a legitimate use of force, the majority of legal scholars believe that the state has to suffer an armed attack.[81] A minority of legal scholars, on the other hand, argue that a state may use its right of self-defense as a reaction to any threat, even if it does not constitute an armed attack.[82]

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[80] L. R. Blank, *After "Top Gun": How drone strikes impact the law of war*, 33 University of Pennsylvania Journal of International Law 675, 2011-2012, p. 679 – 680.

[81] Y. Dinstein, 'War Aggression and Self-Defence', 4th edition, Cambridge University Press, 2005, p. 48 – 49; A. Randelzhofer, *Article 51* in B. Simma and others, 'The Charter of the United Nations: A Commentary', 2nd edition, Oxford University Press, 2002, p. 803.

[82] O. Schachter, *The Right of States to Use Armed Force*, 82 Michigan Law Review 1620, 1984, p. 163;

Consequently, these scholars plead in favor of a pre-emptive or anticipatory right of self-defense. They argue that waiting until an armed attack really occurs, would render the right to self-defense meaningless, since the nationals or territory of the state would not be protected against the initial attack in that situation.[83] They invigorate that argument with the reasoning that the article 51 lacks conditional language, since the article does not state that self-defense can be invoked, 'if and only if' an armed conflict occurs.[84]

A subsequent question is how to define an armed attack and whether an attack with an unmanned vehicle constitutes an armed attack. However, there is an extensive debate going on concerning the definition of an armed attack and the consequences.

The International Court of Justice has loosely defined an armed attack in the Nicaragua Case and the Case concerning the Oil Platforms.[85] Moreover, the definition of an armed attack is composed of multiple sub-definitions, rather than a cohesive single definition. According to the case law of the International Court of Justice, only the gravest forms of the use of force constitute an armed attack. An armed attack must thus reach a certain significant scale of violence, above mere frontier incidents.[86] Consequently, it has to be determined what this definition implies for the use of unmanned vehicles.

Firstly, does one attack by an armed unmanned vehicle constitute an armed attack? In other words, how should a certain significant scale of violence be interpreted? Some argue that small scale attacks constitute an armed attack, triggering a State's right to self-defense, unless the scale and effects are trifling, below the de-minimis threshold, which was vaguely defined by some court case, as explained in the previous paragraph.[87] The International Court of Justice, however, determined that even a solitary attack on a ship rises to the level of an armed attack.[88] Another argument in favor adopting this approach can be found in the definition of aggression. According to UN General Assembly Resolution 3314 (XXIX) an act of aggression shall be constituted, among others, by 'Bombardment by the armed forces of a State against the territory of another State or the use of any weapons by a State against the territory of another State'. [89]

L. Van den Hole, *Anticipatory self-defense under international law*, 19 American University International Law Review 69, 2003, p. 70 – 105;
S. M. Schwebel, *Aggression, Intervention and Self-Defense in Modern International Law*, in 'Justice in International Law: Selected Writing of Judge Stephen M. Schwebel', Cambridge University Press, 1994, p. 580 – 587.

[83] I. Brownlie, 'The Principles of International Law', 7th edition, Oxford University Press, 2008, p. 733 – 734.

[84] M. McNab and M. Matthews, *Clarifying the law relating to unmanned drones and the use of force: The relationship between Human Rights, Self-Defense, Armed Conflict and International Humanitarian Law*, 39 Denver Journal of International Law and Policy 661, Fall 2011, p. 675.

[85] Case concerning Military and Paramilitary Activities in and against Nicaragua (Nicaragua v United States of America), [1986] ICJ Rep 14 at paras 191 and 195;
Oil Platforms (Islamic Republic of Iran v United States of America), [2003] ICJ Rep 16 2003, paras 64 and 72.

[86] M. McNab and M. Matthews, *Clarifying the law relating to unmanned drones and the use of force: The relationship between Human Rights, Self-Defense, Armed Conflict and International Humanitarian Law*, 39 Denver Journal of International Law and Policy 661, Fall 2011, p. 675 – 676.

[87] S. Casey-Maslen, *Pandora's box? Drone strikes under jus ad bellum, jus in bello, and international human rights law*, 94 International Review of the Red Cross, Volume 94 Number 886, Summer 2012, p. 602.

[88] Oil Platforms (Islamic Republic of Iran v United States of America), [2003] ICJ Rep 16 2003, para 72.

[89] Article 3 (b), UN General Assembly Resolution 3314 (XXIX), 14 December 1974, Annex.

Other legal thinkers, meanwhile argue that a small scale attack of an unmanned weapon could not constitute an attack, in the sense of the Charter of the United Nations or customary international law. Consequently, when the victim state reacts, in absence of lawful self-defense or another legal method of justification, such reaction would be a breach of the general prohibition on the use or the threat of force and a violation of international law.[90]

Yet, when the threshold for an armed attack is overly demanding, it risks restricting the right of self-defense of a state too much, in a way that it would limit the state's ability to legally respond to a threat or low intensity violence to its sovereignty and consequently fails to protect its population and territory adequately.[91]

Secondly, if a small-scale attack itself would not be considered an armed attack, does a string of small-scale attacks by armed unmanned vehicles constitute an armed attack? The answer in this case depends whether all these limited strikes can be accumulated. Some legal writers maintain that strings of attacks must be evaluated on a case-by-case basis and cannot be accumulated to produce an armed attack, rendering the use of force as a reaction to these small-scale attacks illegal.[92] However, others contend that the accumulation of attacks is justified when violence is carried out as a coordinated campaign, allowing the victim state to deploy its right of self-defense.[93]

To conclude, in order to legally invoke self-defense, the majority of legal scholars state that a country has to suffer an attack. Subsequently, the question whether a drone strike can constitute an armed attack, depends on the interpretation of the threshold of an armed attack. This is currently unclear. Moreover, the determination of the level of violence is a case-by-case approach. For instance, the significant scale of violence depends on the lethal payload used in the unmanned vehicles. The second question, concerning the accumulation of strikes with unmanned vehicles will be determined whether a string of attacks can be accumulated. A consensus has not yet been reached. These questions are also highly relevant in the 'war on terror'. The current striking campaign of unmanned aerial vehicles, when not being the result of consent, is often justified by invoking self-defense. The combination of several terrorist attacks, such as the attacks on 11 September 2001 in the United States constitutes the string of attacks to reach the threshold of an armed attack and invoke self-defense. Yet, the question remains whether this is possible.

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[90] S. Casey-Maslen, *Pandora's box? Drone strikes under jus ad bellum, jus in bello, and international human rights law*, 94 International Review of the Red Cross, Volume 94 Number 886, Summer 2012, p. 602.

[91] Case concerning Military and Paramilitary Activities in and against Nicaragua (Nicaragua v United States of America), [1986] ICJ Rep 14, Dissenting opinion of Judge Jennings, p. 543 – 544;
R. D. Sloane, *The Cost of Conflation: Preserving the Dualism of Jus ad Bellum and Jus in Bello in the Contemporary Law of War,* 34 Yale Journal of International Law 47, 2010, p. 82 – 83.

[92] Mary Ellen O'Connell, *Lawful Self-Defense to Terrorism*, 63 University of Pittsburgh Law Review 889, 2002, p. 898.

[93] M. N. Schmitt, *Responding to Transnational Terrorism Under the Jus as Bellum: A Normative Framework*, in M. Schmitt and J. Pejic, 'International law and armed conflict: Exploring the faultlines: Essays in honour of Yoram Dinstein', Martinus Nijhoff Publishers, 2007, p. 169 – 170;
M. McNab and M. Matthews, *Clarifying the law relating to unmanned drones and the use of force: The relationship between Human Rights, Self-Defense, Armed Conflict and International Humanitarian Law*, 39 Denver Journal of International Law and Policy 661, Fall 2011, p. 676.

b. What is the Framework to Deploy Unmanned Vehicles as a Means of Self-Defense?

First, in order to deploy armed unmanned vehicles as a means of self-defense, as stated in the previous part, the victim state has to suffer an armed attack.

Second, the armed attack has to be attributable to another state. There is a discussion on the legal need to designate the attacker. Moreover, as shown by the 'war on terror' against Al-Qaeda and other terrorist organizations, the ones responsible for the attack are often non-state actors. Can self-defense vis-à-vis these attackers be invoked? These controversies are not directly influenced by the use of unmanned weapons. Yet, they set out limitations to the current use of unmanned vehicles, such as with regard to certain attacks in Pakistan. Therefore, these issues will be addressed briefly.

Some legal writers state that attribution to a state is an absolute requirement.[94] This is supported by case law of the International Court of Justice, stating that the attribution to a state actor is a necessary condition to invoke self-defense.[95] Meanwhile, these court cases leave the door open for an armed attack that is carried out by a non-state actor, on behalf of the offensive state, which has established effective[96] or overall[97] control over the non-state actor. Consequently, the attack is attributed to the state, exercising such influence over the non-state actor. Moreover, this is confirmed by the definition of aggression, which includes acts of aggression such the sending of armed bands, groups, irregulars or mercenaries, which carry out armed acts against another State, by or on behalf of a state.[98]

Other legal scholars argue that the attribution to a state is not required.[99] Subsequently a non-state actor can be the subject of self-defense, exercised by the victim state, regardless of the involvement of another state. This argument is supported by the content of article 51 of the Charter of the United Nations, which does not mention the necessity to attribute the armed attack to a specific state. Moreover, in reality, there is an increased threat of non-state actors, which are often transnational organizations. Consequently, these scholars claim that, there is a need to be able to attribute an armed attack to such actors.[100] Moreover, in state practice, self-defense has been increasingly exercised vis-à-vis non-state actors.[101]

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[94] M. E. O'Connell, *Remarks: The resort to drones under international law*, 39 Denver Journal of International Law and Policy 585, 2010-2011, p. 590 – 591.

[95] Case concerning Military and Paramilitary Activities in and against Nicaragua (Nicaragua v United States of America), [1986] ICJ Rep 14, para 195;
Oil Platforms (Islamic Republic of Iran v United States of America), [2003] ICJ Rep 16 2003, para 72;
Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory, Advisory Opinion, [2004] ICJ Rep 136, para 139.

[96] Case concerning Military and Paramilitary Activities in and against Nicaragua (Nicaragua v United States of America), [1986] ICJ Rep 14, para 115.

[97] Prosecutor v Duško Tadic, IT-94-1-A, Judgment (15 July 1999) (International Criminal Tribunal for the Former Yugoslavia), para 120 – 121.

[98] Article 3 (g), UN General Assembly Resolution 3314 (XXIX), 14 December 1974, Annex.

[99] A. Cassese, 'International Law', 2nd edition, Oxford University Press, 2005, p. 355;
Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory, Advisory Opinion, [2004] ICJ Rep 136 (separate opinion of Judge Higgins, para 33) and (declaration of Judge Buergenthal, para 6).

[100] Armed Activities on the territory of the Congo (Democratic Republic of the Congo v Uganda), [2005] ICJ Rep 168 , (separate opinion of Judge Kooijmans, para 30).

[101] Example: The use of force by the United States in Afghanistan, starting on August 20, 1998 against Al-Qaeda was based on a claim of Self-Defense for the 1998 embassy bombings.

Lastly, the biggest argument in favor of this opinion is the United Nations Security Council Resolution 1368[102] and 1373[103] after the attacks of 11 September 2001, which recognized the inherent right of self-defense of the Charter in response to any act of international terrorism, regardless of attribution to a state.[104]

Third, one of the most controversial issues is probably the location, on which the victim state can legally use force, by exercising its right of self-defense. However, also this debate is not directly affected through the use of armed unmanned vehicles. It is an example of it. This topic will thus be tackled shortly.

Some legal writers adhere to the point of view that the territorial integrity of a state is absolute.[105] They claim that the use of force by the victim state on the territory of another state, which is not attributable for the armed attack, is unlawful. This is thus a traditional notion of a battlefield. It is based on the principle of territorial integrity, as described in article 2.4 of the Charter of the United Nations. It prohibits the use of force on the territory of another country. This is then combined with the strict interpretation of the concept of attribution, as explained throughout the previous paragraphs. As a result, a state can only rightfully use self-defense against another state, attributable for the attack.[106] The use of force in that case is limited to the territory of the attributable state.

In contrast, other legal thinkers argue that a state's right to territorial integrity is not absolute.[107] Consequently, according to them, under certain circumstances a state may exercise its right to self-defense on the territory of a state not responsible for the armed attack. The right to self-defense can thus supersede the right of territorial integrity.[108] Moreover, this argument is supported by the right for a state, when exercising self-defense, to target non-state actors, who directly participate in the armed attack. This is thus conducted regardless of the location of these actors. Yet, the use of force is limited to these fighting non-state actors. Other elements on the territory of the state cannot be targeted by the victim state. The reason for the infringement of the territory of another state than the attributable state, is based upon the state's failure, to meet the obligation to deny these non-state groups a safe haven. In such case, the state is either unwilling, either unable to act against the non-state groups within its territory.[109]

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[102] Security Council Resolution 1368, UNSC, UN Doc S/RES/1368 (12 September 2001).
[103] Security Council Resolution 1373, UNSC, UN Doc S/RES/1373 (28 September 2001).
[104] M. McNab and M. Matthews, *Clarifying the law relating to unmanned drones and the use of force: The relationship between Human Rights, Self-Defense, Armed Conflict and International Humanitarian Law*, 39 Denver Journal of International Law and Policy 661, Fall 2011, p. 677 – 678.
[105] M. E. O'Connell, *Remarks: The resort to drones under international law*, 39 Denver Journal of International Law and Policy 585, 2010-2011, p. 590 – 591 and 594.
[106] Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory, Advisory Opinion, [2004] ICJ Rep 136, para 139.
[107] J. J. Paust, *Permissible Self-Defense Targeting and the Death of Bin Laden*, 39 Denver Journal of International Law and Policy 569, 2011, p. 572 – 573.
[108] The Corfu Channel Case, [1949] ICJ Rep 4, p. 55;
M. N. Schmitt, *Responding to Transnational Terrorism Under the Jus as Bellum: A Normative Framework*, in M. Schmitt and J. Pejic, 'International law and armed conflict: Exploring the faultlines: Essays in honour of Yoram Dinstein', Martinus Nijhoff Publishers, 2007, p. 179.
[109] Y. Dinstein, 'War Aggression and Self-Defence', 4th edition, Cambridge University Press, 2005, p. 242 – 244.

This obligation was first articulated in the Corfu Chanel Case. Finally, resolution 1373 of the United Nations Security Council[110] states that the territorial integrity of a state can be waived, when it fails to comply with its international obligations.[111]

Fourth, if a state has the right to exercise self-defense, the victim state has certain requirements to meet. The state has to act out of necessity. The use of force must be proportional to the armed attack. Moreover, the state is obligated to act immediately. Necessity demands the victim state to only use force when there is no other option to eliminate the threat of the armed attack. Proportionality in this context means that the state has to use as much force necessary to repel the threat. Consequently, if small scale use of force would suffice to react to a massive armed attack of the aggressor state, the victim state has to act in that manner. Finally, the victim state has to conduct the use of force in a reasonable amount of time. However, this does not mean that the state has to react immediate.[112] For instance, if the victim state first tries to solve the dispute by diplomatic means, it can still use force, when these negotiations fail. When these criteria are not met, the use of force of the victim state can constitute an unlawful reprisal.[113] Yet, these criteria are not substantially pressured by the use of unmanned vehicles. However, when an unmanned vehicle is used to exercise the use of force, in the context of legitimate self-defense, the attack has to meet these criteria.[114]

In order to see the implications of these theories in practice, the situation of the drone strikes in Pakistan will be discussed. The basis for the drone strikes in Pakistan mostly relies on consent. However, this consent is not a public and express consent. Furthermore, some of the United States air strikes are conducted without acquiescence of Pakistan. Pakistan has objected, for instance, to certain of them on the basis that it did not grant prior consent.[115] So, in that case the United States has to use another method for the justification of the use of force: The inherent right to self-defense.[116] The United States bases its legality on United Nations Security Council Resolution 1368 and 1373.[117] A plain reading of this resolution indeed gives the United States the authority to pursue those responsible for 9/11, members of Al-Qaeda, in Pakistan in accordance with the United Nations Charter. It could be argued that they can also seek out Taliban in Pakistan, under these resolutions, because of their alleged intertwine with Al-Qaeda. There seems to be no territorial limitations of the use of force. Yet, the use of force has to be necessary and proportional.

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[110] Security Council Resolution 1373, UNSC, UN Doc S/RES/1373 (28 September 2001).

[111] M. McNab and M. Matthews, *Clarifying the law relating to unmanned drones and the use of force: The relationship between Human Rights, Self-Defense, Armed Conflict and International Humanitarian Law*, 39 Denver Journal of International Law and Policy 661, Fall 2011, p. 678 – 680.

[112] Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, [1996] ICJ Rep 226 at para 41.

[113] S. M. Norton, *The United Nations Charter's collective security framework in the twenty-first century: A case study of the United States' use of force in Pakistan*, 57 Loyola Law Review 157, Spring 2011, p. 180 – 181;
M. E. O'Connell, *Remarks: The resort to drones under international law*, 39 Denver Journal of International Law and Policy 585, 2010-2011, p. 591 – 592.

[114] M. N. Shaw, 'International Law', 5th edition, Cambridge University Press, 2003, p. 1024 – 1032.

[115] Press Release, Ministry of Foreign Affairs Pakistan, Drone Attacks Are a Violation of Pakistan's Sovereignty, PR No. 128/2009 (Mar. 27, 2009);
M. N. Schmitt, *Drone Attacks under the Jus ad Bellum And Jus in Bello: Clearing the 'Fog of Law* in M.N. Schmitt, L. Arimatsu and T. McCormack, 'Yearbook of International Humanitarian Law' Volume 13, 1st edition, TMC Asser Press, 2010, p. 315.

[116] H. Koh, Legal Adviser, U.S. Dep't of State, Address at Annual Meeting of American Society of International Law (Mar. 25, 2010), http://www.state.gov/s/l/releases/remarks/139119.htm [Consulted on July 14, 2013].

[117] Security Council Resolution 1368, UNSC, UN Doc S/RES/1368 (12 September 2001);
Security Council Resolution 1373, UNSC, UN Doc S/RES/1373 (28 September 2001).

The United States government has argued that the operations with unmanned aerial vehicles were conducted within these limits. However, a stricter interpretation of the theory of self-defense indicates that the United States can only use force against Al-Qaeda in Afghanistan. Especially with regard to the territorial condition, it seems very controversial to lawfully invoke self-defense in Pakistan. Moreover, no more resolutions concerning self-defense against Al-Qaeda in Pakistan followed. Consequently, self-defense, based upon article 51 of the Charter of the United Nations would not likely be accepted, for instance before the International Court of Justice. Lastly, anticipatory self-defense cannot be invoked, since it is too controversial, within the international community. It can be argued that there is no threat of an imminent armed attack by the members of the Taliban or Al-Qaeda, hiding in porous and mountainous border between Afghanistan and Pakistan vis-à-vis the United States.[118]

To conclude, while most agree that one state may use force in self-defense against another state, after having suffered an armed attack by the latter state, there is less agreement regarding whether and where these use of force can be exercised by the victim state, especially when the right of self-defense is triggered by an armed attack of a non-state actor. As a remark, it can be observed that the International Court of Justice adheres to a rather conservative point of view concerning these two issues, which does not necessarily coincide with contemporary irregular warfare and the main state practice, after 11 September 2001.[119] Furthermore, when states are operating on the outer reaches of accepted theories of self-defense, which lack consensus concerning the legality, they will be tempted to use consent instead, as a justification for their use of force. As a result, it is important to understand whether and when consent may be justified. The parts of the drone program of the United States, which do not rely on consent, operate in these vague lines of self-defense. However, the use of armed unmanned vehicles is merely another symptom of a concept, self-defense, which is not clearly agreed upon.

[118] K. Larson and Z. Malamud, *The United States, Pakistan, the law of war and the legality of the drone strikes*, 10 The Journal of International Business and Law 1 , 2011, p. 13 – 16.
[119] T. Reinold*, State weakness, irregular warfare, and the right to self-defense post-9/11*, 105 American Journal of International Law 244, April 2011, p. 267 – 269.

3.2.3 CONSENT

There is only a limited scholarly discussion concerning consent to the use of force. It has produced disagreement and imprecision. This controversy, however, is not caused by the current deployment of drones. The use of unmanned aerial vehicles is merely an example of the problems within this legal concept.

Most legal scholars agree that consent is one of the legal reasons for the justification of the use of force.[120] They thus state that consent can be a validation for an otherwise unlawful use of force in the host state. These statements seem defensible in traditional cases of consent, where the host state asks for assistance from an acting state, in order to stop an internal uprising or to encounter the use of force by a third state. Moreover, it is supported by the fact that international law currently does not prohibit states from invoking consent as a partial or complete justification for the use of force on the territory of another state.[121]

However, scholars disagree regarding the role of consent in a contemporary context, such as the involvement of a non-state actor in the conflict. Some writers argue that consent may stand as an independent basis for a state's use of force in the territory of another state, regardless of the contemporary context.[122] Meanwhile, other legal thinkers do not accept consent, as a justification in these particular circumstances, such as the targeting of non-state actors.[123] Alternatively, some scholars suggest that consent can be invoked in that context, as a way to address sovereignty concerns. However, it has to be in concurrence with another legal basis, such as self-defense or United Nations Security Council authorization.[124]

Moreover, states have been imprecise or silent on their views. The main reason for the limitedness of the debate among states can be found in the fact that some see advantages in leaving the concept of consent vague. It gives states more flexibility for action and makes it harder for other states or scholars to analyze and criticize those activities. Indeed, when states opt for consent, they will not have to operate within the boundaries of other legal constellations, such as self-defense. Furthermore, it is stated that the domestic law of the consenting state does not bind the acting state.[125] Lastly, the issue of consent is also subject to political relations. Weaker states are for instance not capable of refusing a request to consent of a powerful nation. However, states will often invoke a combination of reasons to use force on the territory of another state.

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[120] M. Hakimi, *To Condone or Condemn? Regional Enforcement Actions in the Absence of Security Council Authorization*, 40 Vanderbilt Journal of Transnational Law 643, 2007, p. 645.

[121] A. S. Deeks, *Consent to the use of force and International Law Supremacy*, 54 Harvard International Law Journal 1, Winter 2013, p. 26 – 27.

[122] M. Bahar, *Power Through Clarity: How Clarifying the Old State-Based Laws Can Reveal the Strategic Power of Law*, 30 University of Pennsylvania Journal of International Law 1295, 2009, p. 1299.

[123] M. E. O'Connell, *Unlawful Killing with Combat Drones: A Case Study of Pakistan, 2004-2009*, Notre Dame Law School Legal Studies Research Paper Number 09-43, July 2010, p. 16 – 18.

[124] G. Blum & P. Heymann, *Law and Policy of Targeted Killing*, 1 Harvard National Security Journal 145, June 2010, p. 163 – 164.

[125] Reconciled Consent in A. S. Deeks, *Consent to the use of force and International Law Supremacy*, 54 Harvard International Law Journal 1, Winter 2013, p. 20 – 26.

There is also some discussion about the form in which the consent should be given. Sometimes consent is formalized in a written international agreement. In other cases, it remains unclear in which form the consent is given, because states regularly do not make such a document available for the public. However, a conventional written document, with the formal obligations may constitute an international agreement. The binding character of such an agreement still depends on the state's intention. Yet, in practice most of such accords will have legal binding consequences.[126]

An example of the challenges of contemporary conflicts and consent constitutes the use of force of the United States in Somalia. There, the nominal government, which controls little territory, has welcomed United States strikes, conducted by unmanned weapons against militants, such as Al-Shabab.

However, there is a certain legal vacuum in which the United States operates its drone program. For instance, the national law of Somalia does not bind the United States. Consequently, it does not set out limits for the deployment of unmanned vehicles in Somalia. Moreover, it can be argued that Somalia would not be in a position to refuse the invitation to consent of the United States.[127]

To conclude, there is a need for clarify the law and practices concerning consent, especially in the contemporary context. Both the content and the form of content should be addressed in order to avoid legal and factual ambiguity.

[126] A. S. Deeks, *Consent to the use of force and International Law Supremacy*, 54 Harvard International Law Journal 1, Winter 2013, p. 15 – 20.

[127] X, *US flies drones from Ethiopia to fight Somali militants*, BBC, October 28, 2011, http://www.bbc.co.uk/news/world-africa-15488804 [Consulted on July 14, 2013].

3.3 Possible Implications of the Future Use of Unmanned Vehicles

3.3.1 Involvement of Other Unmanned Vehicles

Currently, unmanned aerial vehicles have been frequently used, as a means of the use of force. Yet, unmanned vehicles can also be deployed in water, on the ground and in space. This will add an extra dimension to the rules of the ius ad bellum. For example, when unmanned naval vehicles would be deployed, it depends on the rules concerning the right of passage, as set out in the law of the sea, whether the passage of an unmanned vehicles is allowed or constitutes a violation of that state's right of territorial integrity. The right of passage meanwhile differs between the zone of the sea.[128]

3.3.2 Non-State Actors and the Use of Unmanned Vehicles

Non-state actors have been and will be subject to many of the attacks of unmanned vehicles, due to the role they play in contemporary conflicts. However, a certain legal protection seems appropriate.

Non-state actors have shown interest in purchasing and using their own armed unmanned vehicles. With regard to the ius ad bellum, this will stress the need to resolve the issues concerning the level of violence needed for unmanned vehicles to constitute an armed attack and the attributability.[129]

3.3.3 Increasing Autonomy

Scientific innovation paves the way for more autonomy for unmanned vehicles. This can lead to increased anonymity of the vehicles. If this is applied to the ius ad bellum, it challenges the concept of attributability. It can make it hard to determine who is behind the infringement of the territory of a certain state or an armed attack. Another problem can occur when an autonomous vehicle accidently attacks the territory of another country. This could lead to that state invoking its right to self-defense, if self-defense would be too loosely defined. Consequently, violence could augment.

This problem can also arise nowadays with remotely piloted or semi-autonomous armed unmanned vehicles, when they are not properly registered. Indeed, the number of countries owning and using such technology will augment. Consequently, it will be harder to detect the owner of the unmanned vehicle, state or non-state actor, that conducted the use of force or caused the armed attack.[130]

[128] I. Brownlie, 'Principles of Public International Law', 7th edition, Oxford University Press, 2008, p. 173 – 191.
[129] A. Finn and S. Scheding, 'Development and Challenges for Autonomous Unmanned Vehicles: A compedium', ISRL 3, Springer, 2010, p. 171 – 177.
[130] X, *Israel 'shoots down Lebanon drone'*, BBC, April 25, 2013, http://www.bbc.co.uk/news/world-middle-east-22298359 [Consulted on July 14, 2013].

3.4 RECOMMENDATIONS

According to the writer's opinion, the following recommendations can be made.

First, in order to invoke self-defense, an armed attack needs to occur on the territory of the victim state. Anticipatory or pre-emptive self-defense should not be accepted. Consequently, the International Court of Justice and the international community have to define an armed attack in a clear way and reach a compromise regarding the threshold of violence, necessary to constitute an armed attack. Yet, this bar should not be put too low, since it would ease to respond to cross-border use of force legally and consequently, possibly generate more inter-state violence or violence between a state and a non-state actor. For instance, to avoid that an unarmed reconnaissance vehicle, crossing the border of another territory would trigger self-defense. On the other hand, an overly demanding threshold causes states to endure certain amounts of violence. Such a threshold risks that states are unable to adequately protect their territory and inhabitants. For example, if targeted killing of certain individuals by unmanned vehicles of another country would not constitute an armed attack, the victim state would not have means to legally react. In addition, the aspect of attribution and location of the use of force should be subject to clarification. In the contemporary context, it seems more logical that non-state actors, such as terrorist groups should be held attributable for their armed violence. However, a state, when invoking its inherent right to self-defense vis-à-vis a non-state actor, should still be bound by the territorial integrity of the state, in which the non-state actor is located. Consequently, it seems reasonable that in order to enter the territory of the host state, the victim state of the armed attack has to prove, either that the host state exercise effective control over the non-state group, either the presence of one of the other methods for the justification of its use of force, such as consent. This should definitely be applied to the use of unmanned weapons.

Second, consent can constitute a legal basis for the use of force. Preferably, it should be invoked in combination with another source of justification. Furthermore, when relying on consent, the acting state should be bound, not only by his own laws, but also by the rules and regulations of the domestic law of the host state. In that way, there are clear legal boundaries, in order to avoid that consent would be used inappropriately. Furthermore, the use of force, even with consent is bound by the general rules and limitations of International Law. As a result, it would set some clear confinements for the use of unmanned vehicles, as a means of the use of force. Lastly, a public and clear statement concerning the consent should be preferred. Consent should be given prior to the strike of an armed unmanned vehicle. [131]

[131] A. S. Deeks, *Consent to the use of force and International Law Supremacy*, 54 Harvard International Law Journal 1, Winter 2013, p. 32 – 42.

Third, in order to avoid confusion over the property of an unmanned vehicle, a system of registry is recommendable. Currently, for instance, markings on aircrafts are an important indicator of the status of the aircraft. There is a difference between a civil and a state aircraft, in peacetime and a military and other aircraft, in wartime. An aircraft is allowed to have the nationality of only one state. Furthermore, there is no concept of marking for non-state actors. Yet, it can display markings showing the relationship to an organization, for instance the United Nations.[132] Moreover, if a unmanned naval vehicle would be considered a warship, it needs to be marked according its nationality.[133] The system of marking should be extended to all unmanned vehicles, especially when they contain lethal force. Furthermore, a system of registry of unmanned vehicles produced and purchased by private enterprises or governments of states should be installed. This would be enhance the transparency of the use of unmanned vehicles.

[132] I. Henderson, *International law concerning the status and marking of remotely piloted aircraft*, 39 Denver Journal of International Law and Policy 615, Fall 2011, p. 621.
[133] A. H. Henderson, *Murky Waters: The legal status of Unmanned Undersea Vehicles*, 53 Naval Law Review 55, 2006, p. 67 – 68.

4. TYPOLOGY OF ARMED CONFLICTS

4.1 LEGAL INTRODUCTION

The Geneva Conventions and the Additional Protocols to the Geneva Conventions make a distinction between conflicts of an international character and conflicts not of an international character. Consequently, a different set of rules applies in these situations. These rules constitute the ius in bello. First, there will be a legal introduction to the subject. Then, it will be investigated whether and how the current use and possible future use of unmanned vehicles influences the typology of armed conflicts. Finally, some recommendations will be made.

4.1.1 INTERNATIONAL ARMED CONFLICT

a. COMMON ARTICLE 2 OF THE GENEVA CONVENTIONS

According to common article 2, paragraph 1 of the Geneva Conventions an international armed conflict occurs when an armed conflict arises between two or more of the High Contracting Parties, even if the state of war is not recognized by one of them.[134] This is a direct conflict between states.

The commentary on the Geneva Conventions clarifies that the intensity and duration of the conflict do not matter.[135] The Tadic Case states that an international armed conflict occurs, whenever there is a resort to violence between states.[136] Other international bodies use this definition. Consequently, the threshold for an international armed conflict is rather low.[137]

Pursuant article 2, paragraph 2 of the Geneva Convention,[138] an international armed conflict also occurs, when there is partial or total occupation of the territory of a High Contracting Party. A territory is considered occupied, according to the Hague Regulations, when it is actually placed under the authority of a hostile army.[139] Complementary, two conditions must be fulfilled. Firstly, the occupier has to exercise effective control over the territory.[140] Secondly, the intervention may not be approved by the legitimate sovereign.[141] The absence of consent has to be broadly interpreted. As such, even if the occupation is not met with armed resistance, the conflict constitutes an international armed conflict.[142]

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[134] Article 2, Paragraph 1, The Geneva Conventions of 12 August 1949.
[135] J. S. Pictet et al., 'Geneva Convention I for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field: Commentary', Geneva, International Committee of the Red Cross, 1952, p. 32 – 33.
[136] Prosecutor v. Tadic, Case No. IT-94-1, Decision on the Defence Motion for Interlocutory Appeal on Jurisdiction (2 October 1995) (International Criminal Tribunal for the Former Yugoslavia), para 70.
[137] E. Holland, *The qualification framework of international humanitarian law: Too rigid to accommodate contemporary armed conflicts*?, Winter 2011, 34 Suffolk Transnational Law Review 145, p. 152 -156.
[138] Article 2, Paragraph 2 of The Geneva Conventions of 12 August 1949.
[139] Article 42, Paragraph 1 of Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, The Hague, 18 October 1907.
[140] Western Sahara Case, Advisory Opinion, [1975] ICJ Rep 12, para 93;
Case concerning Military and Paramilitary Activities in and against Nicaragua (Nicaragua v United States of America), [1986] ICJ Rep 14, para 173.
[141] E. Benvenisti, 'The International Law of Occupation', Princeton University Press, 1993, p. 1 – 7.
[142] Article 2, Paragraph 2 of The Geneva Conventions of 12 August 1949.

b. ARTICLE 1 OF THE ADDITIONAL PROTOCOL I TO THE GENEVA CONVENTIONS

The Additional Protocol to the Geneva Conventions is subject to the same field of application, as referred to in common article 2 of the Geneva Convention.[143] In addition, it classifies situations of fighting against colonial domination and alien occupation and against racist regimes in the exercise of their right of self-determination, as enshrined in the Charter of the United Nations and the Declaration on Principles of International Law concerning Friendly Relations and Co-operations among states in accordance with the Charter of the United Nations as international armed conflicts. However, this rule has never been used.[144]

4.1.2 NON-INTERNATIONAL ARMED CONFLICT

a. COMMON ARTICLE 3 OF THE GENEVA CONVENTIONS

Common article 3 of the Geneva Conventions states that each party to the conflict is bound by this article in the case of an armed conflict not of an international character, occurring on the territory of one of the High Contracting Parties.[145] Jurisprudence and legal writing distinguish different elements in the definition of a non-international armed conflict.[146]

First, the Tadic Case states that the hostilities need to take place between one or more armed groups and government forces or solely between armed groups.[147] However, all parties to the conflict must have a minimum level of organisation. This is determined by a case-by-case approach, analysing the command structure, the necessary logistic ability and other indicators.[148]

Secondly, according to the Tadic Case, an armed conflict exists, whenever there is protracted armed violence between the parties to the conflict.[149] It has to be distinguished from internal disturbances and tensions, such as riots, isolated and sporadic acts of violence and other acts of a similar nature, which are not covered by international humanitarian law.[150] Consequently, the conflict has to reach a certain intensity. This is based on a case-by-case evaluation. Several indicative data are taken into account, such as the frequency of the acts of violence, the duration of the conflict and the number of

[143] Article 1, Paragraph 3, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.
[144] Article 1, Paragraph 4, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977;
K. O. Buhl, *Legalization of Civil Wars: The Legal Institutionalization of Non-international Armed Conflicts*, 8 Journal on Ethnopolitics and Minority Issues in Europe 1, 2009, p. 11-13.
[145] Article 3 of The Geneva Conventions of 12 August 1949.
[146] J. Pejick, *The protective scope of Common Article 3: More than meets the eye*, International Review of the Red Cross, Volume 93 Number 881, March 2011, p 3 – 5.
X, *How is the Term "Armed Conflict" Defined in International Humanitarian Law*?, Opinion Paper of the International Committee of the Red Cross, March 2008, p. 3-5;
S. Sivakumaran, *Re-envisaging the international law of internal armed conflict*, 2011, 22 European Journal of International Law 1, p. 219 – 264.
[147] Prosecutor v. Tadic, Case No. IT-94-1, Decision on the Defence Motion for Interlocutory Appeal on Jurisdiction (2 October 1995) (International Criminal Tribunal for the Former Yugoslavia), para 70.
[148] Prosecutor v. Boskoski, Case No. IT- 04-82, Judgment (Trial Chamber) (10 July 2008) (International Criminal Tribunal for the Former Yugoslavia), paras 199–203.
[149] Prosecutor v. Tadic, Case No. IT-94-1, Decision on the Defence Motion for Interlocutory Appeal on Jurisdiction (2 October 1995) (International Criminal Tribunal for the Former Yugoslavia), para 70.
[150] Prosecutor v. Limaj, Case No. IT-03-66-T, Judgment (Trial Chamber) (30 November 2005) (International Criminal Tribunal for the Former Yugoslavia), para 84.

victims.[151] As a result, the threshold of armed violence in the case of a non-international armed conflict is much higher, in comparison to the standard of resort to violence in the case of an international armed conflict.[152]

Thirdly, the article states that the conflict must occur within the territory of one of the High Contracting Parties. Scholars interpret this in two different ways. A minority of writers is convinced that this territorial obligation should be literally understood. According to them, it is obligated that the conflict occurs on the territory of one of the High Contracting Parties. Yet, the majority of legal writers agrees that this refers to the limitation of the scope of the Geneva Conventions to the sovereign states, who have actually signed the treaties. Consequently, the treaty becomes relevant for all aspects of law within their jurisdiction.[153] Non-state actors are thus implicitly bound by rules of international law that are applicable on the territory from which they operate. Furthermore, most countries have ratified the Geneva Conventions.[154] Common article 3 is considered customary international law, whether the conflict has an international of a non-international character.[155] These rules reflect elementary considerations of humanity.[156] As a result of the latter interpretation of common article 3 and the customary nature of the rules, all states are obliged to follow these rules.

Fourthly, some observers argue that an extra condition should be added. The incentive of the non-governmental groups has to have a political objective. This would provoke many practical problems. Consequently, this is not generally accepted.[157]

b. ARTICLE 1, ADDITIONAL PROTOCOL II TO THE GENEVA CONVENTIONS

Article 1, paragraph 1 of the Second Additional Protocol to the Geneva Conventions is similar to Common Article 3 of the Geneva Conventions.[158] However, there is a restriction concerning the parties involved in the conflict. The conflict has to be between a state and a non-state actor.

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[151] Prosecutor v. Haradinaj, Case No. IT-04-84-T, Judgment (Trial Chamber) (3 April 2008) (International Criminal Tribunal for the Former Yugoslavia), para 60;
Prosecutor v. Rutaganda, Case No. ICTR-96-3, Judgment (Trial Chamber I) (6 December 1999) (International Criminal Tribunal for Rwanda), para 93.

[152] X, *How is the Term "Armed Conflict" Defined in International Humanitarian Law*?, Opinion Paper of the International Committee of the Red Cross, March 2008, p. 5;
E. Holland, *The qualification framework of international humanitarian law: Too rigid to accommodate contemporary conflicts?*, 34 Suffolk Transnational Law Review 145, p. 154-161.

[153] K. O. Buhl, *Legalization of Civil Wars: The Legal Institutionalization of Non-international Armed Conflicts*, 8 Journal on Ethnopolitics and Minority Issues in Europe 1, 2009, p. 14 – 15;
L. Zegveld, 'The Accountability of Armed Opposition Groups', Cambridge University Press, 2002, p. 11 – 12.

[154] Ratification of the Geneva Conventions, http://www.icrc.org/ihl.nsf/WebSign?ReadForm&id=375&ps=P [July 17, 2013].

[155] Prosecutor v. Tadic, Case No. IT-94-1, Decision on the Defence Motion for Interlocutory Appeal on Jurisdiction (2 October 1995) (International Criminal Tribunal for the Former Yugoslavia), para 102;
Prosecutor v. Akayesu, Case No. ICTR-96-4, Judgement (2 September 1998) (International Criminal Tribunal for the Former Yugoslavia), para. 608;
A. Cullen, Key *developments affecting the scope of internal conflicts in International humanitarian law*, 183 Military Law Review 66, p. 81-84.

[156] Case concerning Military and Paramilitary Activities in and against Nicaragua (Nicaragua v United States of America), [1986] ICJ Rep 14, para 218.

[157] S. Vité, *Typology of armed conflicts in international humanitarian law: legal concepts and actual situations, March 2009,* International Review of the Red Cross, Volume 91 Number 873, p. 78.

Furthermore, the law requires a higher level of organisation for the non-governmental party. They must be placed under responsible command and exercise territorial control, allowing them to carry out sustained and concerted military operations and to implement the protocol. Yet, how the territorial control has to be exercised is subject to a debate amongst scholars. Some authors believe that it interpreted broadly, since it is just a reminder of the link with common article 3.[159] Others suggest a more literal interpretation where the non-governmental group has to exercise territorial control similar to that of a state.[160] Yet, most scholars agree that an intermediate position has to be followed. Consequently, there has to be some stability in the control of a modest part of the land.[161]

As a result, the field of application of article 1 of the Second Additional Protocol is stricter than Common article 3 of the Geneva Conventions. Nevertheless, article 1 of the Second Additional Protocol does not change the field of application of Common article 3. Lastly, there is a debate whether the Second Protocol has reached the status of Customary International Law.[162]

c. ARTICLE 8 OF THE ROME STATUTE

The Rome Statute of the International Criminal Court states that a non-international armed conflict takes place in the territory of a State, when there is protracted armed conflict between governmental and organized armed groups or between such groups.[163] According to the Lubanga Case, the threshold of article 8 is characterized by two conditions. First, the violence must reach a certain intensity and duration. Second, the non-state actor has to have a level of organisation, particularly the ability to plan and carry out military operations for a prolonged period of time.[164] Lastly, article 8 (c) – (d) recognises the definition of a non-international armed conflict, as provided in common article 3, by making a grave breach of it, punishable for the International Criminal Court.

4.1.3 CONCLUSION

When a conflict is classified as an international armed conflict, the 1907 Hague Regulations, the Geneva Conventions, the First Protocol to the Geneva Conventions and the most rules of customary international law. On the other hand, if the conflict is considered a non-international armed conflict, the rules of common article 3 of the Geneva Conventions, the Second Protocol to the Geneva Conventions and a growing number of customary international rules have to be applied. Moreover, other conventions and international agreements will apply to one or both types of conflict. If the threshold of an armed conflict is not reached, the rules of law enforcement and international human rights law need to be exerted.[165]

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[158] Article 1, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II), 8 June 1977.
[159] D. Momtaz, 'Le droit international humanitaire applicable aux conflits arme´s non internationaux', The Hague Academy Collected Courses, No. 292, 2002, p. 50.
[160] L. Moir, 'The Law of Internal Armed Conflict', Cambridge University Press, 2002, p. 106.
[161] S. Vité, *Typology of armed conflicts in international humanitarian law: legal concepts and actual situations,* International Review of the Red Cross, Volume 91 Number 873, March 2009, p. 80-81.
[162] State Parties to the Second Protocol of the Geneva Conventions, http://www.icrc.org/ihl.nsf/WebSign?ReadForm&id=475&ps=P [Consulted on July 17, 2013]
[163] Article 8 (e) - (f), The statute of Rome of the International Criminal Court, 17 Juli 1998, Rome, U.N.T.S., 2187.
[164] Prosecutor v. Lubanga Dyilo, Case No. ICC-01/04-01/06-803, Decision on the confirmation of charges (Pre-Trial Chamber I) (29 January 2007) (International Criminal Court), paras 229–237.
[165] L. R. Blank and B. R. Farley, *Characterizing US Operations in Pakistan: Is the United States engaged in an armed conflict*?, 34 Fordham International Law Journal 151, 2010-2011, p. 160 – 162.

4.2 IMPLICATIONS OF THE CURRENT USE OF UNMANNED VEHICLES

4.2.1 A CONTEMPORARY CONTEXT

When operations with unmanned vehicles occur as a part of an ongoing conflict, the legal regime applicable will govern them. Consequently, it is important to identify the applicable law. Therefore, one has to classify the hostilities.[166] Nowadays, however, conflicts are more intricate than the twofold structure of international and non-international armed conflicts. Inter-state conflicts, such as before and during the Second World War are a rarity. Intra-state or internal conflict, on the other hand, are booming. Yet, these are becoming increasingly complicated. Now, the main complications will be explained.

In some cases occupation occurs without military presence, for instance in Gaza. Then, it is debatable whether this situation qualifies as occupation and can be considered an international armed conflict.[167]

The field of application of internal conflicts, meanwhile, is challenged by foreign interventions, conducted by a third state or by multilateral forces. A state can also intervene in an internal conflict by proxy, through effectively controlled non-state actors. An example constitutes the intervention in Libya, in which unmanned vehicles were deployed.[168]

Furthermore, a non-international armed conflict can take place on the territory of several states. Governmental armed forces can pursue an armed group in the territory of other, mostly neighbouring states, for instance the fighting between the Rwandese Army and Hutu rebels in the Democratic Republic of Congo, in the aftermath of the Rwandese Genocide of 1994.[169] This is called extraterritorial non-international armed conflicts. The possibility to qualify it as a non-international armed conflict depends on the interpretation of the territorial aspect of common article 3 of the Geneva Conventions and article 1 of the Second Additional Protocol to the Geneva Conventions. Others suggest a new type of conflict: Internationalised non-international armed conflicts.[170] Governmental forces can also enter into conflict with a non-governmental group, which is located on the territory of another, mostly neighbouring conflict. There is no spill-over effect of a pre-existing conflict. This is considered a cross-border conflict.

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[166] M. W. Lewis, *Drones and the Boundaries of the Battlefield*, 47 Texas International Law Journal 293, 2012, p. 299 – 301.

[167] Article 42, Paragraph 1 of Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, The Hague, 18 October 1907;
C. Bruderlein, *Legal Aspects of Israel's Disengagement Plan Under International Humanitarian Law*, Legal and Policy Brief, Harvard University Program on Humanitarian Policy and Conflict Research, November 2004, p. 10–11;
Situation of human rights in the Palestinian territories occupied since 1967, UN Document A/61/470, 27 September 2006, para 7;
S. Vité, *Typology of armed conflicts in international humanitarian law: legal concepts and actual situations*, International Review of the Red Cross, Volume 91 Number 873, March 2009, p. 83 – 85.

[168] T. Shanker, *Obama Sends Armed Drones to Help NATO in Libya War, New York Times,* April 21, 2011, http://www.nytimes.com/2011/04/22/world/africa/22military.html?_r=0 [Consulted on July 18, 2013].

[169] X, *War Crimes in Kinsingani: The Response of Rwandan-Backed Rebels to the May 2002 Mutiny,* Human Rights Watch, August 2002, http://www.hrw.org/sites/default/files/reports/DRC0802.pdf [Consulted on July 18, 2013], p. 4 – 7.

[170] R.S. Schöndorf, *Extra-State Armed Conflicts: Is there a Need for a New Legal Regime*?, 37 New York University Journal of International Law and Politics 1, 2004, p. 19 – 33 and p. 34 – 48.

Most writers agree that if the armed group is under the effective control of a State Party the conflict has to be regarded as an international armed conflict. This is thus an indirect conflict between states. Yet, if the non-governmental party acts on its own, then the situation is more difficult to assess. Consequently, it depends on the interpretation of the territorial scope on a non-international armed conflict, similar to a exterritorial non-international armed conflict. A recent cross-border conflict is the confrontation of Israel and Hezbollah on the territory of Lebanon in the summer of 2006.[171]

4.2.2 THE WAR ON TERROR

The war on terror, in which unmanned vehicles are frequently deployed, remains a matter of disagreement among international law experts.

Firstly, some authors state that this conflict is international, since it transcends borders, such as between Afghanistan and Pakistan. International, in this case should be understood a geographical meaning. The Israeli Supreme Court supports this point of view in the 2006 Targeted Killings case.[172] Here, the Court stated that in addition to inter-state conflicts, an international armed conflict exists across borders of states, regardless of the involvement of non-state actors, such as Al-Qaeda and Al-Shabab.[173]

Secondly, a majority of legal scholars argue that these should be classified as non-international armed conflicts, since it involves not only states, but also non-state actors. They state that the war on terror does not fit the definition of an international armed conflict.[174] This argument is bolstered by the United States Supreme Court in the case Hamdan versus Rumsfeld of 2006. Here, the Court ruled that there exists a non-international armed conflict, within the framework of common article 3 of the Geneva Conventions between the United States and Al-Qaeda.[175] The parties to the conflict thus determine the classification of the conflict. Such interpretation is not without debate. There is discussion concerning the interpretation of the territorial condition in common article 3 of the Geneva Conventions. Advocates of a strict geographical interpretation argue, for instance that the concept of a global battlefield, in context of the war on terror contradicts international law.[176] Furthermore, it can be questioned whether Al-Qaeda possesses the required level of organisation, since some argue that a they are loosely connected and clandestine network of cells.[177]

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[171] G. S. Corn, *Hamdan, Lebanon and the regulation of hostilities: The need to recognize a hybrid category of armed conflict*, 40 Vanderbilt Journal of Transnational Law 295, March 2007, p. 298-300;
S. Vité, *Typology of armed conflicts in international humanitarian law: legal concepts and actual situations*, International Review of the Red Cross, Volume 91 Number 873, March 2009, p. 85 – 92.

[172] Public Committee Against Torture in Israel et al. v. Government of Israel et al., HCJ 796/02 (High Court of Justice, Israel) (December 13, 2006), para. 18.

[173] M. N. Schmitt, *Unmanned Combat Aircraft Systems and International Humanitarian Law: Simplifying the oft benighted debate*, 30 Boston University International Law Journal 595, 2012, p. 602 – 603.

[174] M. N. Schmitt, *Unmanned Combat Aircraft Systems and International Humanitarian Law: Simplifying the oft benighted debate*, 30 Boston University International Law Journal 595, 2012, p. 602 – 603 and 608 – 609.

[175] Hamdan v. Rumsfeld, 548 U.S. 557 (United States Supreme Court) (June 29, 2006), p. 628–631;
See also: Al-Aulaqi v. Obama, 727 F. Supp. 2d 1 (D.D.C. 2010) (No. 10 Civ. 1469), Opposition to Plaintiff's Motion for Preliminary Injunction and Memorandum in Support of Defendant's Motion to Dismiss, p. 32-34.

[176] J. C. Dehn and K. J. Heller, *Debate: Targeted Killing: The Case of Anwar Al-Aulaqi*, 159 University of Pennsylvania Law Review 175, 2011, p. 190.

[177] G. H. Aldrich, *The Taliban, al Qaeda, and the Determination of Illegal Combatants,* Humanitäres Völkerrecht, No 4/2002, 2002, p. 202 -206;

Thirdly, some suggest that this is a new type of conflict. They regard it as a transnational conflict, in which certain rules of customary international law, such as military necessity, targeting and human treatment should be applied.[178]

Fourthly, another group of legal scholars maintains that the war on terror is not an armed conflict, throughout the whole period of hostilities or during certain periods in time. For instance, in the beginning of the war between the United States and Afghanistan, the United States argued, that the hostilities were not an armed conflict, since it did not meet the conditions of the dual typology. It is thus neither an international armed conflict, nor a non-international armed conflict.[179] Consequently, the use of force in that context is subject to a law enforcement regime and international human rights law.

Lastly, others say that this is a multifaceted fight against terrorism. Consequently, a case-by-case approach should be adopted. The various conflicts that originated from the fight against terrorism need to be legally analysed and classified, for instance in Afghanistan, Iraq and Pakistan. Some situations should be classified as an international armed conflict. Others should constitute a non-international armed conflict, according to the proponents of this theory.[180]

To conclude, the classification of the war on terror is crucial for topics like the legality of the operations of unmanned vehicles. There are key differences regarding the rules regulating the use of armed unmanned vehicles between the rules for international or non-international armed conflicts, international human rights law and law enforcement.

J. Burke, *Think again: Al Qaeda*, Foreign Policy, No. 142, May 1, 2011, http://www.foreignpolicy.com/articles/2004/05/01/think_again_al_qaeda [Consulted on July 18, 2013].

[178] G. S. Corn and E. T. Jensen, *Transnational Armed Conflict: A "Principled" Approach to the Regulation of Counter-Terror Combat Operations*, 42 Israel Law Review 46, January 2009, p. 65 – 66.

[179] *Humane treatment of Taliban and Al Qaeda detainees*, White House Memorandum, February 7, 2002 http://www.pegc.us/archive/White_House/bush_memo_20020207_ed.pdf, para 2 [consulted on July 18 2013]; K. J. Heller, *Military Commissions to Resume Work (But Still Won't Apply Real Law)*, Opinio Juris, January 21, 2011, http://opiniojuris.org/2011/01/21/military-commissions-to-resume-work-but-still-doesnt-use-real-law/ [Consulted on July 19, 2013].

[180] X, *International humanitarian law and the challenges of contemporary armed conflicts*, ICRC Report 31IC/11/5.1.2, 31th International Conference of the Red Cross and Red Crescent, 28 November – 1 December 2011, p. 10 – 11;
J. Pejik, *The protective scope of Common Article 3: More than meets the eye*, International Review of the Red Cross, Volume 93 Number 881, March 2011, p. 7-8.

4.2.3 AFGHANISTAN

After elaborating on the general rules concerning the typology of conflicts, the specific challenges of contemporary context and the theoretical discussion concerning the classification of the war on terror, this paper will now apply that theory to the situation in Afghanistan. In this conflict, unmanned vehicles have been and are currently being deployed.

After the attacks of 11 September 2001, the United States and its allies, such as United Kingdom and Australia began with conducting airstrikes in Afghanistan, on the 7th of October 2001.[181] Most legal scholars agree that in the beginning of the hostilities, it constituted an international armed conflict between the United States and Afghanistan, with a government dominated by the Taliban. The Taliban was considered the de facto government of Afghanistan during that period, because they controlled the majority of the territory, passed and enforced decrees and provided for a certain degree of security in the controlled areas. The fall of Mazar-i-Sharif on 9 November 2011 marked the decline of the Taliban rule. The threshold for the application of armed conflict, resort to violence is reached. Consequently, the attacks of unmanned vehicles are governed by the rules of international armed conflict.[182]

On June 19, 2002, the new Afghani government, with Karzai as president was established and recognized. However, the fighting still went on. The conflict continued between the Afghani government, supported by multilateral forces and the ousted Taliban and other armed opposition. The majority of legal scholars agrees that this constitutes a non-international armed conflict.[183] Consequently, the treaty rules and customary rules of a non-international armed conflict apply to the whole territory of Afghanistan and to all the parties operating in the territory. Most legal scholars agree that the conditions are met. Yet, some remarks should be kept in mind. Firstly, the non-state actors involved in the conflict must reach the minimum level of organization. This is highly debatable, since some argue that Al-Qaeda is loosely organized, with clandestine cells of operation. The organizational structure of the Taliban seems to be more likely to suffice the criterion.[184] Secondly, in order to constitute an armed conflict, protracted armed violence has to occur between the parties. This is definitely the case in Afghanistan. Thirdly, the territorial condition seems to be fulfilled in Afghanistan. However, the conflicts in other countries, such as Pakistan do raise concern with regard to this issue. The theory that the war in Afghanistan currently constitutes a non-international armed conflict is adhered by the United States.[185] A minority of legal scholars argue that this is an international armed conflict, since this theory considers the United States to be the occupying power in Afghanistan. However, this point of view is highly controversial.

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[181] X, *7 October 2001: US launches air strikes against Taliban*, in BBC, On this day, 7 October 2001, http://news.bbc.co.uk/onthisday/hi/dates/stories/october/7/newsid_2519000/2519353.stm [Consulted on July 19, 2013];
X, *The Taliban are forced out of Afghanistan*, BBC, http://www.bbc.co.uk/history/events/the_taliban_are_forced_out_of_afghanistan [Consulted on August 16, 2013].

[182] R. Geiß and M. Siegris, *Has the armed conflict in Afghanistan affected the rules on the conduct of hostilities?*, International Review of the Red Cross, Volume 93 Number 881, March 2011, p. 14 – 15.

[183] R. Geiß and M. Siegris, *Has the armed conflict in Afghanistan affected the rules on the conduct of hostilities?*, International Review of the Red Cross, Volume 93 Number 881, March 2011, p. 15 – 16.

[184] J. Bajoria, and Z. Laub, *The Taliban in Afghanistan*, Council on Foreign Relations, August 6, 2013, http://www.cfr.org/afghanistan/taliban-afghanistan/p10551 [Consulted on August 16, 2013]

[185] Hamdan v. Rumsfeld, 548 U.S. 557 (United States Supreme Court) (June 29, 2006), p. 628–631.

4.3 Possible Implications of the Future Use of Unmanned Vehicles

Foreseeable future development, in the unmanned technology will not bring radical changes to the typology of armed conflicts. There are some minor challenges though. For instance, is an attack or a string of attacks with an unmanned vehicle sufficient to invoke a non-international armed conflict between a state and an armed group, or between armed groups? There is thus the question whether such violence would meet the threshold of protracted armed violence. This issue does not exist in an international armed conflict, since the threshold there is the resort to violence between states. Furthermore, when using unmanned vehicles, it is easier for states to get involved in a conflict. There is, for instance only a minimal risk for the military personnel and the state is not as involved in the conflict. This could be observed with the deployment of unmanned vehicles in the civil war in Libya.[186] This could possibly lead to an increase of hostilities, in which the determination of the typology of conflicts is difficult. Lastly, the deployment of these unmanned vehicles and the future unmanned vehicles with increased autonomy cause more anonymity. It can thus be harder to determine the parties, involved in the conflict.

4.4 Recommendations

According to the writer's opinion, the following recommendations can be made.

The classification of armed conflicts is of the utmost importance for the use of armed unmanned vehicles during conflicts, since it determines the applicable law. However, the divergence between an international and non-international armed conflict does not fit the current context of contemporary conflicts.

Therefore, an unified system with a clear set of rules should apply to belligerents in all types of conflicts. Non-state actors would need to have a minimum level of organization. Furthermore, in order to constitute an armed conflict, the threshold should be moderate. It should not be too low, since it would trigger an armed conflict and the consequent application of international humanitarian law too quickly. The application of international humanitarian law leads to a more flexible system on certain topics, such as the killing of combatants, which is allowed in wartime. The threshold should, on the other hand not be too high either. For instance, international humanitarian law does provide special protection for certain groups of individuals in the case of an armed conflict, such as civilians. The territorial limits of the conflict, the battlefield, should be interpreted rather restrictive. A global war on terror does not seem to be a valid argument.

Within the current legal framework of the typology of armed conflict, the war on terror and subsequent conflicts should be understood as separate conflicts, for which a case-by-case approach has to be adopted in order to determine the applicable type of conflict.

Lastly, all strikes of unmanned vehicles should be conducted within the framework of an actual armed conflict.

[186] M. Raddatz, *Pentagon Confirms First Predator Drone Strike in Libya*, ABC News, April 23, 2011, http://abcnews.go.com/International/pentagon-confirms-predator-drone-strike-libya/story?id=13442570#.UeAHbG3_TE0 [Consulted on August 16, 2013].

5. THE LEGALITY OF UNMANNED WEAPONS

5.1 LEGAL INTRODUCTION

The combatant has the right to choose the weapons, the means and the methods of warfare in a conflict, such as the deployment of armed unmanned vehicles. However, this right is confined by international humanitarian law or the rules of armed conflicts. In this chapter, the legality of armed unmanned vehicles will be investigated. In the next chapter, the legality of the use of an unmanned vehicle will be tested to the rules of international humanitarian law. However, the rules, regulating the weapons and the use of these weapons are often closely intertwined.[187]

Furthermore, there is some debate on the understanding of weapons and the means and methods of warfare. According to the International Committee of the Red Cross, for instance, this term designates the tools of war and the ways in which they are used.[188]

The development and deployment of new weapons is limited by the rules of international humanitarian law. The main sources for international humanitarian law are treaties, conventions and customary international law. The most important treaties during an armed conflict are the Hague Regulations and the Geneva Conventions. An example is article 35 of the First Additional Protocol.[189] The second paragraph states that it is prohibited to employ weapons, which cause superfluous injury or unnecessary suffering, such as fragmentation projectiles of which the fragments cannot be traced by X-rays.[190] Furthermore, there are a number of conventions regulating specific issues concerning new and existing weapons, for instance the convention on the prohibition of the use, stockpiling, production and transfer of anti-personnel mines and on their destruction.[191] Lastly, customary international law imposes certain limitations on the choice of weapons, means and methods of warfare, such as the use of incendiary weapons against combatants.[192]

Furthermore, states are obliged to review the legality of new weapons. This is stated in article 36 of the First Additional Protocol to the Geneva Conventions.[193] The aim of this article is to prevent the weapons, means and methods of warfare that violate international law in all circumstances.

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[187] K. Lawand, *A guide to the legal review of new weapons, means and methods of warfare: Measures to implement article 36 of the Additional Protocol I of 1977*, International Committee of the Red Cross, January 2006, p. 3 – 4.

[188] International Committee of the Red Cross Geneva, *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*, in International Review of the Red Cross, Vol. 88, No. 864, 2006, p. 932.

[189] Article 35, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

[190] J. Pictet, 'Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949', International Committee of the Red Cross / Martinus Nijhoff Publishers, 1986, para 1435.

[191] Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, Ottawa, 18 September 1997.

[192] Customary International Law Database, *Rule 85. The Use of Incendiary Weapons against Combatants*, International Committee of the Red Cross, http://www.icrc.org/customary-ihl/eng/docs/v1_rul_rule85 [Consulted July 22, 2013].

[193] Article 36, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

The article thus tries to impose restrictions on such weapons, by determining their lawfulness before they are developed, acquired or otherwise incorporated into a state's arsenal. This can be of particular importance for emerging technologies, such as unmanned vehicles.[194] However, most weapons are not unlawful as such. The unlawfulness often depends on the use of the weapons and surrounding circumstances, that affect the legality.

The article, however, does not specify how such a determination should be carried out. According to the Commentary of the International Committee of the Red Cross, article 36 implies the obligation for states to establish internal procedures to elucidate the issue of legality. Other states can request to be informed concerning these internal procedures. Yet, there are only a limited number of countries that are known to have established mechanisms or procedures to conduct legal reviews of weapons.[195] [196]

Furthermore, the number of countries that have ratified the First Additional Protocol to the Geneva Conventions is limited. Thus, in order to be binding for every country, this article has to reach the status of customary international law. The question whether this article has reached that status is debatable. Some argue that this obligation flows logically from the truism that states are prohibited to use illegal weapons, means and methods of warfare. Consequently, a state has to ensure that the new weapons, means and methods of warfare, it develops or acquires do not violate this obligation. Others, on the other hand, do not agree and point out the lack of opinio iuris and state practice.[197]

Lastly, with regard to the enforceability, article 36 is complemented by article 82 of the Protocol, which states that legal advisers must advise commanders on international humanitarian law and the appropriate instructions for the armed forces.[198]

This chapter will first discuss the legality of the currently used unmanned vehicles. Then, it will investigate the consequences of the increasing autonomy of these vehicles, as one of the most pressing future developments. Finally, some recommendations will be made.

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[194] K. Lawand, *A guide to the legal review of new weapons, means and methods of warfare: Measures to implement article 36 of the Additional Protocol I of 1977*, International Committee of the Red Cross, January 2006, p. 4 – 5.

[195] The United States: Review of Legality of Weapons under International Law, US Department of Defense Instruction 5500.15, 16 October 1974; Weapons Review, US Department of Air Force Instruction 51-402, 13 May 1994; Legal Services: Review of Legality of Weapons under International Law, US Department of Army Regulation 27-53, 1 January 1979; Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System, US Department of Navy, Secretary of the Navy Instruction 5000.2C, 19 November 2004; Policy for Non-Lethal Weapons, US Department of Defense Directive 3000.3, 9 July 1996; The Defense Acquisition System, US Department of Defense Directive 5000.1, 12 May 2003.

[196] K. Lawand, *A guide to the legal review of new weapons, means and methods of warfare: Measures to implement article 36 of the Additional Protocol I of 1977*, International Committee of the Red Cross, January 2006, p. 5 – 6.

[197] N. Weizmann, *Remotely Piloted Aircraft and International Law*, in M. Aaronson and A. Johnson 'Hitting the target? How new capabilities are shaping international intervention', The Royal United Services Institute for Defence and Security Studies, March 2013, p. 36.
K. Lawand, *A guide to the legal review of new weapons, means and methods of warfare: Measures to implement article 36 of the Additional Protocol I of 1977*, International Committee of the Red Cross, January 2006, p. 4 – 5.

[198] Article 82, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

5.2 Implications of the Current Use of Armed Unmanned vehicles

5.2.1 Framing the Issues

Currently, armed unmanned vehicles of all types are being developed and deployed, including aerial, ground and naval vehicles. These vehicles have in common that there is mostly still a 'human in the loop'. There is still human involvement. Such vehicles are remotely controlled or semi-automated. The operator takes the decision concerning the attack.

However, are these weapons or some of these weapons illegal, regardless of their use? Are there conventions or treaties that ban or limit certain armed unmanned vehicles? Are some of these vehicles banned or restricted under the Geneva Conventions? How about the payload that these weapons carry? The lethal payload can go from a cruise missile to a biological weapon. Yet, this induces diverse legal consequences. What are the exact legal differences with regard to the payload, that an unmanned vehicle carries? Furthermore, how should a review of these weapons be carried out? Have these vehicles been reviewed? This section of the chapter will attempt to answer these questions.

5.2.2 The Review of Unmanned Vehicles

In order to be subject to the review as referred to by article 36 of the First Additional Protocol to the Geneva Conventions, the material scope needs to be examined.

First, it has to be determined whether the review has to be exercised for armed unmanned vehicles. In other words, are unmanned vehicles a type of weapon subject to legal review? According to the Commentary of the International Committee of the Red Cross, the weapons, means and methods of warfare include weapons in the widest sense, as well as the way in which they are used.[199] Therefore, the scope is very broad. Consequently, it has to be assumed that armed unmanned vehicles are subject to such a review.[200]

Second, the rules that must be applied to the unmanned weapons during the legal review must be determined. In article 36 of the First Additional Protocol, it is stated that it applies to 'any other rule of international law applicable'. Consequently, this implicates both the relevant general rules of international humanitarian law and international rules prohibiting the use of specific weapons, means and methods of warfare. However, the reviewing authority must only apply the legislation, which it is bound by, through a treaty or on the basis of customary international law. Thus, it has to be established whether there are specific treaties that prohibit or restrict certain types of unmanned weapons. Then, it has to be examined whether the employment of unmanned weapons is in accordance with the general rules, applicable to all weapons, means and methods of warfare. After that, in absence of both types of regulation, unmanned vehicles should be considered in light of the principles of humanity and the dictates of public conscience. With regard to armed unmanned vehicles, this paper will first discuss the legality of unmanned weapons, as an entity. This will be

[199] J. Pictet, 'Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949', International Committee of the Red Cross / Martinus Nijhoff Publishers, 1986, para 1402.
[200] K. Lawand, *A guide to the legal review of new weapons, means and methods of warfare: Measures to implement article 36 of the Additional Protocol I of 1977*, International Committee of the Red Cross, January 2006, p. 9 – 10.

followed by a discussion of the weapons that the unmanned vehicle carries, since it can be very different, ranging from cruise missiles to biological weapons.[201]

Third, when actually conducting the review, different kinds of scientific factors and empirical data should be taken into account. These elements are, among others, the technical description of the weapon, technical performance of the weapon, health-related considerations and environmental considerations.[202]

Furthermore, there are also formal issues relating to the review of the legality of weapons that have to be taken into account. These are the establishment of a review mechanism, the structure and composition of that mechanism, the review process, the decision making and the record keeping. A relevant part of this formal process is the stage at which the review of a new weapon, such as unmanned vehicles, should take place. According to article 36 of the First Additional Protocol, the assessment can be made at the stage of study, development, acquisition or adoption. In more practical terms, this means that a state producing unmanned vehicles, for its own use or for export should review the weapons at the stage of design and technological development, at latest before entering into a production contract. States, who are purchasing weapons from another state or from the commercial market, should conduct its own review before entering into the purchasing agreement. Moreover, if a state adopts a technical modification or field modification, for instance adding a lethal payload to a multi-purpose unmanned aerial vehicle, a review should take place at the earliest stage. Consequently, several states such as the United States and Israel should have conducted these legality reviews. The reviewing state, however, is not obligated to keep records of the decisions. Furthermore, each state decides whether they allow access to the review records, partly or as whole, for citizens and other states. This poses serious questions concerning the transparency and reliability of the conducted reviews. In total, only six states have made their review procedures accessible.[203] Of these six countries, at least four have announced that the reviewing decisions are subject to legislation governing public access to information.[204] However, in this case, states can still choose to withhold information from the public, due to the non-disclosure of sensitive information affecting national security. For many weapons, especially weapons programs involving unmanned vehicles, this exception will be invoked.[205]

[201] K. Lawand, *A guide to the legal review of new weapons, means and methods of warfare: Measures to implement article 36 of the Additional Protocol I of 1977*, International Committee of the Red Cross, January 2006, p. 10 – 17.
J. McClelland, *The review of weapons in accordance with Article 36 of Additional Protocol I*, International Review for the Red Cross, Volume 85 Number 850, June 2003, p. 406 – 410.
[202] K. Lawand, *A guide to the legal review of new weapons, means and methods of warfare: Measures to implement article 36 of the Additional Protocol I of 1977*, International Committee of the Red Cross, January 2006, p. 17 – 19.
[203] Australia, Belgium, Norway, Sweden, the Netherlands and the United States.
[204] Australia, Belgium, Sweden and the United States.
[205] K. Lawand, *A guide to the legal review of new weapons, means and methods of warfare: Measures to implement article 36 of the Additional Protocol I of 1977*, International Committee of the Red Cross, January 2006, p. 19 – 28.

Finally, a weapon, such as unmanned vehicles cannot be assessed in isolation from the way it is used. The legality is not solely based on the concept, design or intended purpose of the vehicle. It will also depend on the use of these weapons on the battlefield. Consequently, a state will need to analyze the unmanned vehicles according to their normal and expected use.[206] Although both are thus closely related, the legality of the unmanned vehicles, considering their concept, design and intended purpose, will be explained in this chapter. The legality of the actual use of unmanned vehicles will be considered in the following chapter.[207]

5.2.3 Prohibitions or Restrictions on Specific Weapons under International Treaty Law

The regulation for new weapons, means and methods of warfare has developed along two tracks. The first track consists of international agreements, which ban or limit the use of specific weapons. However, there are no weapon treaties covering all types of unmanned vehicles and, moreover, there is no real debate going on in the international community with regard to the legality of unmanned vehicles. Nevertheless, some of the categories of unmanned weapons are subject to certain specific conventional and customary limitations. The second section concerns the general principles and rules that apply to all weapons, means and methods of warfare. This sets certain limitations on the legality of unmanned weapons.

a. Armed Unmanned Vehicles as an Entity

First, the legality of unmanned aerial vehicles, as an entity will be discussed. This thus considers the whole weapon system, as explained in the second chapter. This section will determine the legal status of the different types of unmanned vehicles and then investigate whether there are certain rules that affect them. The status needs to be determined, in order to establish which regulation exactly applies.

The first instrument mentioning unmanned aerial vehicles is the Chicago Convention.[208] It determines the status of these vehicles. Military unmanned aerial vehicles are considered state aircrafts. This is regardless of the fact that they carry weapons. This convention poses certain restrictions concerning the use of airspace. Yet, it does not contain any limitations on the unmanned aerial vehicle itself.

The Missile Technology Control Regime (MTCR) was established in 1987.[209] It is a network of thirty-four countries, for example the United Kingdom and the United States. The objectives of the network are to restrict proliferation of missiles, complete rocket systems, unmanned air vehicles and related technology and to establish a regime of export control among its members. Moreover, systems intended for the delivery of weapons of mass destruction are subject to this regime. The arrangement divides these weapons in two categories.

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[206] J. Pictet, 'Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949', International Committee of the Red Cross / Martinus Nijhoff Publishers, 1986, para 1469.

[207] K. Lawand, *A guide to the legal review of new weapons, means and methods of warfare: Measures to implement article 36 of the Additional Protocol I of 1977*, International Committee of the Red Cross, January 2006, p. 10.

[208] Chicago Convention on International Civil Aviation, Chicago, 7 December 1944.

[209] This was developed within the context of the Wassenaar Arrangement. The Wassenaar Arrangement on Export Controls Conventional Arms and Dual-Use Goods and Technologies, http://www.wassenaar.org/introduction/index.html [Consulted on July 23, 2013].

It thus covers both unmanned aerial vehicles as weapons carriers and reconnaissance tools. With regard to unmanned vehicles, Category I covers complete unmanned aerial vehicle systems, including cruise missiles and target drones with a payload of 500 kilograms and a maximum range of at least 300 kilometers. The items of Category I can only be transferred in rare occasions. As such, unmanned vehicles of this Category can only be exported if there is governmental assurance that the vehicle will only be used for governmental purposes. Additionally, re-transfer is only permitted with prior consent of the supplier state. Category II consists of, in the case of unmanned vehicles, all unmanned aerial vehicles which are not covered by Category I and are capable of a maximum range equal to or greater than 300 kilometers. This category anticipates technological improvements concerning the payload of such a vehicle. Here, constraint is exercised with regard to the transfers, however, it is decided on a case-by-case basis. The regime also tries to achieve its objectives through meetings, dialogue, and outreach. Lastly, the partners of the MTCR have initiated the development of the Hague Code of Conduct, which was agreed upon in Ottawa and has 130 signature states.[210]

However, some remarks can be made. The regime is voluntary and informal. There are only a limited number of countries member to this informal group. Thirdly, the MTCR does not restrict the deployment of unmanned aerial vehicles. Furthermore, this informal agreement only restricts export of certain types of unmanned aerial vehicles. Small and micro unmanned aerial vehicles are not subject to this arrangement. Moreover, in the United States, military contractors have successfully lobbied to loosen export restrictions towards foreign markets. Lastly, it is debatable whether the 300 kilometer range requirement was a good standard, since shorter range unmanned aerial vehicles have been successfully deployed during military missions.[211]

Second, there are no specific international treaties or conventions regulating the status and the legality of unmanned ground vehicles. Tele-operated vehicles can be considered merely an extension of their operators. However, for autonomous ground vehicles, they could surely be viewed as a separate legal entity. Consequently, the general rules of international humanitarian law should be taken into account, when assessing the legality of these types of unmanned weapons.[212]

[210] X, *Objectives of the MTCR*, Missile Technology Control Regime, http://www.mtcr.info/english/objectives.html [Consulted on July 23, 2013];
S. A. Kaiser, *Legal Aspects of Unmanned Aerial Vehicles*, 55 Zeitschrift für Luft- und Weltraumrecht 344, 2006, p. 361.
[211] N. E. Sharkey, *The evitability of autonomous robot warfare*, International Review of the Red Cross, Volume 94 Number 886, Summer 2012, p. 798.
[212] A. Finn and S. Scheding, 'Development and Challenges for Autonomous Unmanned Vehicles: A compedium', ISRL 3, Springer, 2010, p. 164 – 165.

Third, unmanned naval vehicles, surface or underwater, could be subject to, in addition to the general rules of international humanitarian law, more specific treaties like United Nations Convention on the Law of the Sea (UNCLOS).[213] This important treaty has not been signed by the United States. Yet, many of its provisions are considered customary international law.

Firstly, the legal status of a unmanned naval vehicle needs to be established, in order to determine the applicable legislation. Yet, this is subject to a lot of controversy.

The question arises whether an unmanned vehicle can be regarded as a warship. The definition of a warship can be found in UNCLOS. A warship is explained as, 'a ship belonging to the armed forces of a state bearing external marks distinguishing such ships of its nationality, under the command of an officer duly commissioned by the government of the state and whose name appears in the appropriate service list or its equivalent, and manned by a crew which is under regular armed forces discipline.'[214] As a remark, vehicles should not be armed in order to constitute a warship. It does not thus depend on the payload of the unmanned maritime vehicle. Meanwhile, the presence of a commander and crew seems to be indispensable. Therefore, an autonomous unmanned naval vehicle will most likely not qualify as a warship. It can be argued that remotely controlled or semi-autonomous vehicles should be regarded as an extension of the controlling warship. As such, they should be governed by the same rules that apply to the main ship. This is called the component theory.[215] [216]

If the unmanned naval vehicle is not understood as a warship, it can constitute as a vessel. There is, however, no generally accepted legal definition of a vessel. Consequently, there are various interpretations. The UNCLOS treaty itself does not contain an explanation of a vessel. In the International Regulation for Avoiding Collisions at Sea (COLREGS), one can find an interpretation: 'Every description of watercraft, including non-displacement craft and seaplanes, used or capable of being used as a means of transportation on water'.[217] The ensuing issue is the interpretation of transportation. The interpretation in accordance with COLREGS would mean that all unmanned underwater vehicles and the majority of unmanned surface vehicles would not constitute a vessel. Yet, there are also less formal definitions. The International Maritime Dictionary states that a vessel should be understood as 'all craft capable of floating on water and larger than a rowboat'.[218] But, this definition is very broad. It includes every description of a water craft or other artificial contrivance used or capable of being used as a means of transportation on water. Furthermore, this rowboat rule would exclude small unmanned vehicles. Finally, the 2004 proposals of the Law of the Sea Committee of the American Branch of the International Law Association argues that a vessel should be understood as 'a human-made device, including submersible vessels, capable of traversing the sea'.[219] This definition is broader. It would embrace most of the unmanned naval vehicles. Yet, this

[213] United Nations Convention on the Law of the Sea, Montego Bay, 10 December 1982.
[214] Article 29, United Nations Convention on the Law of the Sea, Montego Bay, 10 December 1982.
[215] J. G. Dalton, *Future Navies – Present Issues*, 59 United States Naval War College Review 17, 2006, p. 24.
[216] A. Finn and S. Scheding, 'Development and Challenges for Autonomous Unmanned Vehicles: A compedium', ISRL 3, Springer, 2010, p. 158.
[217] International Regulations for Preventing Collisions at Sea, 20 October 1972.
International Navigational Rules Act of 1977, Public Law 95–75, §2, July 27, 1977, 91 Statute 308., United States Codes and Statutes, title 33, section 1601.
[218] R. d. Kerchove, 'International Maritime Dictionary', 2nd edition, New York, 1961, p. 890.
[219] X, *Final Report on Definition of Terms in the 1982 LOS Convention*, Proceedings of the American Branch of

definition is not legally binding.[220] Lastly, if the unmanned vehicle is considered a vessel, but not a warship, it can be viewed as an auxiliary, which is a vessel other than a warship owned or operated by or under the exclusive control of the armed forces.

When the vehicle cannot be classified as a warship or as a vessel, it can sometimes be considered a weapon, for instance a weapons delivery platform.[221]

As states before, the status of the unmanned naval vehicle determines the applicable legislation. Yet, none of the legislation contains any provisions explicitly prohibiting or limiting unmanned naval vehicles.

To conclude, there are many definitions that will trigger a different classification of unmanned vehicles, which are actually alike. Consequently, a different set of rules will apply to this weapons. This causes legal inaccuracy and indistinctness. Within these various applicable regulations, there seem to be no significant limitations on the legality of an unmanned naval vehicle. Yet, the use of these unmanned vehicles can experience different altered legal limitations and boundaries concerning their use.

b. The Payload of Unmanned Vehicles

Various items of weapons can be integrated into unmanned systems. Currently, unmanned aerial vehicles frequently contain hellfire missiles. Yet, these vehicles can transport other lethal weapons, depending on the payload capacity of the vehicle. This is determined by the size of the unmanned vehicle, the weight the vehicle can carry and the type and number of weapons integrated in the vehicle.

Consequently, the type of weapon that the unmanned vehicle carries, can be subject to prohibitions and limitations, as set out in specific international treaties and specific rules of customary international law. Possible prohibitions are the use of poisoned,[222] biological[223] and chemical weapons.[224]

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the International Law Association, Vol. 2009-2010, p. 501 – 502;
G. K. Walker, *Defining Terms in the 1982 Law of the Sea Convention III: The International Hydrographic Organization ECDIS Glossary*, 34 Californian Western International Law Journal 211, 2004, p. 238.

[220] A. H. Henderson, *Murky Waters: The legal status of unmanned undersea vehicles*, 53 Naval Law Review 55, 2006, p. 59 – 60.

[221] A. Finn and S. Scheding, 'Development and Challenges for Autonomous Unmanned Vehicles: A compedium', ISRL 3, Springer, 2010, p. 158.

[222] Rule 72: 'Poison and Poisoned Weapons', in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_rul [Consulted on July 24, 2013].

[223] Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, Moscow and Washington, 10 April 1972;
Rule 72: 'Biological Weapons, in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_rul [Consulted on July 24, 2013].

[224] Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, Paris, 13 January 1993;
Rule 73: 'Chemical Weapons, in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_rul [Consulted on July 24, 2013].

There are also restrictions on weapons that cause excessively injury or have indiscriminate effects,[225] for instance unmanned vehicles can carry a bomb containing fragments that are designed to be difficult to locate when treating the wounded combatants. Finally, with regard to the hellfire missile, they are not prohibited or restricted by any specific regulation.[226]

5.2.4 General Prohibitions or Restrictions on Weapons, Means and Methods of Warfare

Armed unmanned vehicles will now be assessed in the light of the general prohibitions and restrictions, provided by treaties and customary international law, which apply to all weapons, means and methods of warfare.

These rules include the prohibition to employ weapons, projectiles and materials and methods of warfare of a nature that cause superfluous injury or unnecessary suffering.[227] It also prohibits employing a weapon, method or means of warfare, which cannot be directed at a specific military objective and is consequently unable, by its nature, to conduct a strike that makes distinction between military objective and civilians or civilian objects.[228] Furthermore, employing weapons, methods or means of warfare which are intended, or may be expected to cause widespread, long-term and severe damage to the natural environment is prohibited.[229] These rules are all considered customary international law and thus applicable to all states.[230] Some of these rules are context-dependent. However, when these rules are applied to the new weapons, they should be considered as operating in a normal and foreseeable way. Finally, the assessment of this rules should not be mixed up with the legality of the weapons, in practice, by their use.

First, the rule that a weapon, which of its nature causes superfluous injury or unnecessary suffering, cannot be used is well-established. A level of inflicted suffering and injury is inevitable in a conflict. However, the level of suffering and injury cannot exceed the level necessary to achieve a military objective. The qualitative and the quantitative aspect of the level of the inflicted suffering and injury needs to be analyzed. For the qualitative aspect, one has to take into account the nature of the suffering itself. The quantitative component relates to the scale of the suffering. This is then weighed against the military advantage, accomplished by the attack. Then, the question arises whether armed unmanned systems, by their nature can cause such suffering.[231]

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[225] 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), Geneva, 10 October 1980.

[226] S. Casey-Maslen, *Pandora's box? Drone strikes under jus ad bellum, jus in bello, and international human rights law*, 94 International Review of the Red Cross, Volume 94 Number 886, Summer 2012, p. 602.

[227] Article 35, Paragraph 2, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

[228] Article 51, Paragraph 4 (b), Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

[229] Article 35, Paragraph 3 and article 55, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

[230] Rule 70: 'Weapons of a Nature to Cause Superfluous Injury or Unnecessary Suffering';
Rule 71: 'Weapons That Are by Nature Indiscriminate';
Rule 45: 'Causing Serious Damage to the Natural Environment', in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_rul [Consulted on July 24, 2013];
Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, [1996] ICJ Rep 226 at para 78.

[231] J. McClelland, *The review of weapons in accordance with Article 36 of Additional Protocol I*, International Review for the Red Cross, Volume 85 Number 850, June 2003, p. 407.

An armed unmanned system will not cause superfluous injury or unnecessary suffering, by its nature and thus will not challenge this legal principle. They are precisely designed to minimize unnecessary suffering to both military actors and civilians. Moreover, the payload currently used, Hellfire missiles, do not appear to violate this criterion. The radius of impact of a Hellfire missile of an unmanned vehicle is smaller compared to the radius of a traditional bombardment. Yet, a violation can occur if a different payload is used. For instance, an unmanned weapon system could be equipped with fragmentation weapons, whose fragments are not detectable by x-ray . That would be a violation of international humanitarian law.[232]

Second, a new weapon, such as an armed unmanned vehicle needs to be able to make a distinction between a military and a civilian object. The weapons cannot be indiscriminate by its nature. It needs to be able to be directed against military objectives. Moreover, the civilian population must be protected during an armed conflict, by obligating the combatants to take all the necessary precautions to avoid or minimize loss of civilian life or damage to civilian objects. Therefore, several elements have to be taken into account, when conducting the legal review, such as the purpose and the accuracy of the weapon and the availability of suitable alternative weapons.[233] Unmanned vehicles possess high-tech observation and communication tools, in order for the operator to make the final call concerning the attack. Consequently, unmanned vehicles are capable of making distinction between civilians and combatants and civilian objects and military objects.

Third, the prohibition to use weapons, that would destroy or could have disastrous effects on the environment is mostly accepted among states. The prohibitions applies to both deliberate and reasonably foreseeable damage. Article 35 of the First Additional Protocol concerns the damage to the intrinsic value of the environment. Article 55 of the First Additional Protocol tackles the damage caused to the natural environment in relation to human health and the survival of the population.[234] Although these provisions seem quite extensive, the threshold of damage necessary to declare them 'widespread, severe and long-term' is very high. Moreover, these provisions have not been defined, except 'long-term', which is interpreted as a matter of decades.[235] This results in an imprecise and uncertain threshold. Moreover, these requirements are cumulative and are thus difficult to meet.[236]

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[232] H.-Y. Liu, *Categorization and legality of autonomous and remote weapons system*, International Review for the Red Cross, Volume 94 Number 886, Summer 2012, p. 640 – 641.

[233] J. McClelland, *The review of weapons in accordance with Article 36 of Additional Protocol I*, International Review for the Red Cross, Volume 85 Number 850, June 2003, p. 408.

[234] J. A. Cohan, *Modes of warfare and evolving standards of environmental protection under the international law of war,* 15 Florida Journal of International Law 481, Summer 2003, p. 503 – 505.

[235] X, *Commentary to the Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I)*, 8 June 1977, p. 414, http://www.icrc.org/ihl.nsf/COM/470-750044?OpenDocument.

[236] L. R. Hourcle, *Environmental Law and War*, 25 Vermont Law Review 653, Spring 2001, p. 672 – 675;
M. Bothe, C. Brunch, J. Diamond and D. Jensen, International law protecting the environment during armed conflict: Gaps and opportunities, 92 International Review of the Red Cross 879, September 2010, p. 7- 8;
Rule 45: 'Causing Serious Damage to the Natural Environment', in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_rul_rule45 [Consulted on July 24, 2013].

When applying these rules to the current status of armed unmanned systems, it is clear that these weapons by nature will not cause widespread, severe and long-term damage to the environment. These lethal systems are designed to conduct high-precision attacks. However, the damage inflicted depends on the payload used in the unmanned vehicles. As states before, mostly hellfire missiles are being used. They are not intended to cause severe environmental damage and thus do not violate this customary rule. Yet, when the payload consists of other types of weapons, it may cause widespread, severe and long-term harm to the environment. For instance, if a nuclear weapon would be launched from an unmanned vehicle, this customary rule would be violated.

The rules of the Geneva Conventions only apply to international armed conflicts. Yet, if it is explicitly determined these rules can, when they have reached the status of customary international law be applied to non-international armed conflicts. This is the case for rule 13, 14, 70, 71 and arguably rule 45 of the customary international law database of the International Committee of the Red Cross.

5.2.5 Prohibitions or Restrictions based on the Principle of Humanity and the Dedicates to Public Conscience

The principles of humanity and the dictates of public conscience refer to the Martens Clause. This principle is mentioned in several legal documents.[237] Article 1.2 of the First Additional Protocol to the Geneva Conventions states: 'In 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 dictates of public conscience.' This customary rule[238] governs the gaps in the international legal framework. It thus established a minimum standard, to which all parties in the conflict should be obliged.[239] Moreover, the International Court of Justice, in the case of the Legality of the Threat or Use of Nuclear Weapons, has stressed the importance of the Martens Clause, especially for the rapidly changing military technology. This includes armed unmanned vehicles that often fall outside of the current legal framework.[240] Consequently, when conducting a review of a new weapon, and no other applicable legislation can be found, the new weapons are bound by the Martens Clause. This is the case for some of the types of unmanned vehicles.[241] However, some argue that the current legal framework is sufficient, and that unmanned vehicles should not be assessed in the light of the Martens clause.[242]

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[237] Article 1, Paragraph 2, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977;
Preamble, Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, The Hague, 18 October 1907;
Preamble, 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.

[238] Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, [1996] ICJ Rep 226 at para 84.

[239] B. Baker, *Legal Protections for the environment in times of armed conflict*, 33 Virginia Journal of International Law 351, Winter 1993, p. 351 – 352.

[240] Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, [1996] ICJ Rep 226 at para 78 and 87.

[241] K. Lawand, *A guide to the legal review of new weapons, means and methods of warfare: Measures to implement article 36 of the Additional Protocol I of 1977*, International Committee of the Red Cross, January 2006, p. 17.

[242] M. N. Schmitt, *Autonomous Weapon Systems and International Humanitarian Law: A Reply to the Critics, Harvard National Security Journal Features*, 2013, p. 31 – 32, http://harvardnsj.org/2013/02/autonomous-weapon-systems-and-international-humanitarian-law-a-reply-to-the-critics/ [Consulted on July 24, 2013].

5.3 Possible Implications of the Future Use of Unmanned Vehicles

5.3.1 Increasing Autonomy

One of the biggest challenges, concerning the legality of armed unmanned vehicles is the increasing autonomy. In this section, the legality of autonomous armed unmanned vehicles will be assessed, in accordance with article 36 of the First Additional Protocol to the Geneva Convention. Consequently, the subject of autonomy concerning these vehicles will be analyzed with regard to treaty and customary rules, which are specific to some types of weapons, treaty and customary rules, which are applicable to all types of weapons and the Martens Clause.

a. Prohibitions or Restrictions on Specific Weapons under International Treaty Law

It is clear that there are no international treaties or conventions, nor any rules of customary law specifically prohibiting or limiting the use of autonomous unmanned weapons of any type. The Missile Technology Control Regime applies to types of unmanned aerial vehicles that can be classified within the two categories, regardless of their autonomy. However, this regime only tackles the export control, not the deployment. With regard to autonomous ground vehicles, there is no specific legislation, targeting status or legality. As a result, the autonomous ground vehicles, by nature are not prohibit, nor limited, as a result from specific legislation. Concerning unmanned naval vehicles, an autonomous surface or underwater vehicle does not constitute a warship. Moreover, it is very debatable, whether an autonomous vehicle could be regarded as a vessel. The differences in legal status of the naval vehicles causes discrepancy in the applicable legislation. However, within this legal framework, there are no prohibitions, nor limitations to the legality of autonomous naval vehicles.

b. General Prohibitions or Restrictions on Weapons, Means and Methods of Warfare

First, the influence of autonomy on the prohibition to employ weapons, that cause, by their nature superfluous injury or unnecessary suffering is well-established. The nature of suffering, the qualitative aspect, nor the scale of suffering, the quantitative part will not change due to the increasing autonomy. The reason is that this rule is not influenced by the manner of engagement. It depends rather on the payload, that the autonomous vehicle uses.[243]

Second, an armed autonomous vehicle, by its nature needs to be able to make a distinction between a military and a civilian object. When dealing with autonomous aerial, ground and naval vehicles, the topic of distinction is subject to a great amount of scholarly controversy. Some scholars state that, even when the manner of engagement is autonomous, these weapons will not contravene the rule of distinction. Unmanned vehicles will have sufficient observation and artificial intelligence capability to distinguish between civilians and combatants. Moreover, even when armed autonomous vehicles are unable to distinguish between combatants and civilians, but used in a place where civilians are not present, they should still be regarded as lawful.[244]

[243] M. N. Schmitt & J. S. Thurnher, *"Out of the Loop": Autonomous Weapon Systems and the Law of Armed Conflict*, 4 Harvard National Security Journal 231, 2013, p. 245.
[244] M. N. Schmitt, *Autonomous Weapon Systems and International Humanitarian Law: A Reply to the Critics, Harvard National Security Journal Features*, 2013, p. 13 – 14, http://harvardnsj.org/2013/02/autonomous-weapon-systems-and-international-humanitarian-law-a-reply-to-the-critics/ [Consulted on July 25, 2013].

Others argue that, because of the autonomy of these vehicles, they, by nature violate the principle of discrimination. They do not possess the ability to distinguish between combatants and non-combatants, especially in a contemporary combat zone, where non-state groups operate within the civilian communities and without wearing recognizable uniforms or other external characteristics. Moreover, a fully autonomous weapon does not possess the human qualities necessary to assess an individual's intention, which is a key feature for distinguishing targets.[245]

Third, the prohibition of using weapons that by their nature, could cause widespread, severe and long-term damage to the natural environment is also applicable to autonomous weapons. However, the factor of autonomy does not specifically challenge this principle. It depends rather on the weapons used on the autonomous vehicle.

c. PROHIBITIONS OR RESTRICTIONS BASED ON THE PRINCIPLE OF HUMANITY AND THE DEDICATES TO PUBLIC CONSCIENCE

The principles of humanity and the dictates of public conscience are applicable to autonomous unmanned vehicles when there is a gap in the legal framework. As explained in the previous section, there are definitely some gaps in the legal framework concerning the review of a weapon. Some argue that the Marten's Clause would not be applicable, since there is a sufficient treaty law that governs the legality of weapon systems.[246] Others argue that the Marten's Clause is applicable to autonomous vehicles. Moreover, some of them say that the use of these vehicles would violate the Marten's Clause per se.[247]

[245] X, *Losing Humanity: The Case against Killer Robots*, Human Rights Watch, 2012, p. 31 – 32, http://www.hrw.org/sites/default/files/reports/arms1112ForUpload_0_0.pdf [Consulted on July 25, 2013].
[246] M. N. Schmitt, *Autonomous Weapon Systems and International Humanitarian Law: A Reply to the Critics, Harvard National Security Journal Features*, 2013, p. 31 – 32, http://harvardnsj.org/2013/02/autonomous-weapon-systems-and-international-humanitarian-law-a-reply-to-the-critics/ [Consulted on July 25, 2013].
[247] X, *Losing Humanity: The Case against Killer Robots*, Human Rights Watch, 2012, p. 35 – 36, http://www.hrw.org/sites/default/files/reports/arms1112ForUpload_0_0.pdf [Consulted on July 25, 2013].

5.4 RECOMMENDATIONS

Assessing the legality of armed unmanned vehicles is indispensable. Yet, the current legal framework is very limited. There are no specific treaties, conventions or customary rules tackling a possible prohibition or limitation of unmanned armed vehicles. The legal framework, common to all types of weapons, has proven to be insufficient, although it was designed to be flexible enough to adapt to technological developments, including those that could not have been anticipated at the time that the legal framework was created. In addition, the use of armed unmanned vehicles will augment and will no longer be limited to countries such as the United States and Israel. Lastly, the increasing autonomy and other technological innovation will challenge these rules even more. As a result, according to the writer's opinion, the following recommendations can be made.

First, there is clearly a need to conduct weapon reviews in the process of developing and fielding new weaponry. In the wake of all the technological alterations, which are arising from the increasing complexity of the unmanned systems an interdisciplinary approach to conduct weapon reviews, in accordance of article 36 of the First Additional Protocol to the Geneva Conventions is necessary. Moreover, new weapons are highly classified. Therefore, an enhanced cooperation between lawyers, engineers and operators is recommendable. Finally, clear legal parameters for meaningful testing of these systems should be set out. Only then can the review of new weaponry be useful by defining clear limits, as in the case of lethal autonomous vehicles. This can be accomplished by either redefining some of the existing limits of the legality of weapons, which recreate an understandable legal framework, applicable to all weapons, or by adopting a new convention, which sets clear limits for unmanned vehicles.[248]

Second, the debate concerning the legality of unmanned weapon systems, either controlled remotely, semi-autonomous or autonomous, must urgently begin in the international community.[249] Moreover, non-governmental organizations need to form an opinion and influence the debate. Consequently, this has to result in measures that set certain boundaries, which prevent an imposing proliferation of unmanned vehicles by states and non-state actors and that avert abuse amongst its users. Firstly, several soft law approaches could be introduced at the international level, such as a code of conduct, transgovernmental dialogue and information sharing and confidence-building measures. However, such initiatives will be discussed later in this thesis.[250] Secondly, negotiations between states should lead to the adaptation of a legally binding international agreement, with an advisory role for non-governmental organizations. This more formal or hard law approach meets the lack of specific treaty law concerning unmanned vehicles. However, negotiating an arms control treaty has proven to be a very difficult and long process.

[248] A. Backstrom and I. Henderson, *New capabilities in warfare: An overview of contemporary technological developments and the associated legal and engineering issues in Article 36 weapons reviews*, International Review for the Red Cross, Volume 94 Number 886, Summer 2012, p. 513 – 514.
[249] X, *UN inquiry into US drone strikes prompts cautious optimism*, The Guardian, January 24, 2013, http://www.theguardian.com/world/2013/jan/24/un-announces-drone-inquiry-human-rights [Consulted on July 25, 2013].
[250] Chapter 9, 'Beyond the law: Political and Ethical Considerations'.

There are many different ways to create a legally binding treaty. Existing legally binding arms control agreements and other instruments include a wide variety of prohibitions and limitations on weapons, that concern acquisition, research and development, testing, deployment, transfer, proliferation and use. The choice for one or more of these types depends on the issues at stake and the goals and the parameters of political support for such prohibitions and restrictions. Furthermore, other elements should be taken into account in such agreements, namely monitoring, verification, dispute-resolutions and enforcement mechanisms. With regard to the format, the negotiating states can decide to initiate the creation of a legally binding multilateral treaty. The agreement can constitute a protocol or an annex to an existing instrument, for instance the 1980 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. Bilateral treaties are an option too. Finally, measures could also be adopted through legally binding resolutions of the United Nations Security Council restricting or prohibited measures for the armed unmanned vehicles. Yet, even the most effective arms control treaty will suffer weaknesses. Firstly, a state can refuse to sign or ratify the treaty or withdraw. Consequently the treaty will not be effectively implemented and its influence will be limited. Secondly, the impact of non-state actors is at best indirect. Yet, they will play an increasingly important role in warfare with unmanned weapons.[251]

In the following section, the types of prohibitions and restrictions will be discussed in more detail.

First, several international legal arms control instruments have a complete or partial prohibition on the acquisition. For instance, the Biological Weapon Convention (BWC) prohibits all state parties from acquiring, producing, developing, stockpiling or retaining biological weapons.[252] Similar restrictions can be found in the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction.[253] Yet, it can be questioned whether such a far-reaching agreement would be desirable for unmanned vehicles. Such a treaty would not be necessary and countries would never accept such a proposal. Another interesting idea can be found in the Inter-American Convention on Transparency in Conventional Weapons Acquisitions.[254] This agreement focusses on transparency, rather than the prohibition of acquisitions. It demands that state parties annually report on imports of certain specified heavy weapons and submit notifications within 90 days of their incorporation.

Second, one can also establish prohibitions and limitations on research and development. This has only been done for a limited number of legal arms control instruments. The CWC, for example prohibits the development of chemical-weapon ammunition and devices. Yet, these type of prohibitions and restrictions are difficult to verify without intrusive inspections. Moreover, a large proportion of the research and development is actually conducted in private enterprises and private research centers.

[251] G. E. Marchant and others, *International Governance of Autonomous Military Robots*, 12 Columbia Science and Technology Law Review 272, June 2011, p. 284 – 285.
[252] The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, Moscow, April 10, 1972.
[253] Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, Paris, 13 January 1993.
[254] Inter-American Convention on Transparency in Conventional Weapons Acquisitions, Guatemala City, June 7, 1999.

Third, the prohibitions and limitations on testing can be mostly observed in the context of nuclear weapons, for example the Comprehensive Test Ban Treaty (CTBT), which prohibits any nuclear weapon test explosion or any other nuclear explosion.[255] Concerning unmanned vehicles, such a prohibition or limitation would be futile. Conducting tests with lethal unmanned vehicles does not have any serious consequences, compared to conducting tests with nuclear weapons.

Fourth, some legal instruments focus on prohibiting and limiting deployment of certain weapons, such as the Strategic Offensive Reductions Treaty.[256] This bilateral treaty, between the United States and Russia demands reductions of operationally deployed, strategic nuclear forces. The Armed Forces in Europe Treaty contains blockages and regional limits on the deployment of certain weapons. Such a goal would be beneficiary for international agreements concerning armed unmanned vehicles, especially with regard to the autonomous vehicles.

Fifth, a prohibition or limitation on transfer and proliferation could be enacted. The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) forbids parties that possess nuclear weapons from transferring, the weapons to any recipient.[257] Provisions in an international agreement concerning unmanned weapons would contribute to the prevention of an arms race among states and block access to the weapons for non-state actors. However, one has to bear in mind that it would be negative for the relationships between states if only a handful of countries have access to the technology of unmanned weapons.

Sixth, several international arms control instruments contain prohibitions and limitations concerning their use, for instance the 1925 Geneva Protocol, that bans the use of biological and toxic weapons.[258] In the next chapter, the legality of the use of unmanned vehicles will be assessed. Subsequently, the necessity of such provisions will be investigated in that chapter.[259]

[255] Comprehensive Nuclear-Test-Ban Treaty (CTBT), United Nations General Assembly, September 10, 1996.
[256] Treaty Between the United States of America and the Russian Federation on Strategic Offensive Reductions (SORT), Moscow, May 24, 2002.
[257] The Treaty on the Non-Proliferation of Nuclear Weapons, New York, July 1, 1968.
[258] Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, Geneva, 17 June 1925.
[259] G. E. Marchant and others, *International Governance of Autonomous Military Robots*, 12 Columbia Science and Technology Law Review 272, June 2011, p. 285 – 287.

There are thus several options in which to regulate the legality of armed unmanned vehicles. The subject of an international agreement should be the whole armed unmanned system, including the vehicle and the payload. Concerning the content, some legal mandates can be proposed.

The acquisition of lethal unmanned vehicles should be limited to military operations only. Private partners can contribute to research and development of unmanned weapons. Yet, the exercising of armed unmanned vehicles should be only allowed for military users.

Furthermore, human involvement in unmanned vehicles is essential. Humans should remain 'in the loop'. As a result, lethal autonomous vehicles should be banned. Yet, it should be taken into account that the current trajectory of the development in military vehicles is evolving to increased remoteness between operator. This results in a redefinition of 'humans in the loop' and thus risks to render a ban on autonomous vehicles close to useless. Moreover, given the current policy of countries with regard to autonomous vehicles, it is highly unlikely that such a provision would be accepted in an international agreement. Therefore, a more feasible intention would be constraints on the deployment of autonomous weapon systems. Yet, it is still unlikely that a prohibition of the deployment would be accepted by states. Lastly, instead of seeking to replace combatants with unmanned weapons, such vehicles should be regarded as a tool of assistance in the human decision-making process and the executer of the order of the operator.

Moreover, unmanned vehicles seems to be very popular among states and non-state actors. Several countries already possess the technology or have interested a keen interest in acquiring it. Consequently, some rules to limit proliferation and stop a new arms race, would be appropriate.

In addition, the content of the payload of unmanned vehicles should always be in conformity with international regulation. There has to be an explicit prohibition to use such weapons on an unmanned vehicle.

Lastly, transparency should be a key issue in an international legal agreement. The acquisition of armed unmanned vehicles should be subject to annual reports and notification systems. Moreover, it has to be made sure that these unmanned weapons do not end up in the hands of non-state actors or regimes, that will not comply with these rules and the general rules of international humanitarian law. Consequently, some rules concerning transfer and export are desirable.

6. THE LEGALITY OF THE USE OF UNMANNED WEAPONS

6.1 LEGAL INTRODUCTION

The combatant has the right to choose how his weapons, means and methods of warfare will be used. However, that right is confined by the legal framework of international humanitarian law. The legality of the use is regulated by both specific treaties and customary law rules and treaties and rules of customary law, applicable to all weapons. Finally, assessing the legality of an attack is often done at a case-by-case basis.

There are several general principles in international humanitarian law, which regulate an attack by an unmanned vehicles, such as the principle of distinction, the principle of proportionality, the principle of humanity and military necessity, as well as the Martens Clause and the obligation to take the necessary precautions before an attack.

First, the principle of distinction obligates the parties in the conflict to distinguish between a civilian object and a military object. Attacks can only be directed at military objectives and not against civilian objects.[260] To apply this rule, one has to define a military objective. Military objectives are those objects, which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, is considered a definite military action.[261] Moreover, the civilian population and individuals enjoy protection against the dangers arising from military operations.[262] Finally, indiscriminate attacks are forbidden. Indiscriminate attacks are those that are not directed at a military object, or employ a method or means of combat, of which the effect cannot not be directed at a military object or cannot be limited as required.[263] These rules apply both in an international and a non-international armed conflict.

Second, in addition to the obligation to choose a target that is aimed at a lawful military objective, military decision makers must also respect the rule on proportionality. An attack is considered to be not proportional when the collateral damage is excessive in relation to the anticipated direct military advantage gained by the attack.[264]

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[260] Rule 7: 'The Principle of Distinction between Civilian Objects and Military Objectives',
in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_rul [Consulted on July 26, 2013];
Article 48, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

[261] Article 52, Paragraph 2, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

[262] Article 51, Paragraph 1, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

[263] Article 51, Paragraph 4, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

[264] Rule 14: 'Proportionality in Attack', in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_rul [Consulted on July 26, 2013];

This begs the question of the interpretation of excessiveness. The law of armed conflict does not contain a definition of excessiveness. However, the International Committee of the Red Cross points out that the disproportion between losses and damage caused and the military advantages anticipated requires a case-by-case assessment.[265] The concept extends to both collateral damage suffered by civilians and civilian objects and the destruction of otherwise legitimate targets. This principle applies to both conflicts of an international character and not of international character.

Third, the principle of military necessity recognizes that the state has the right to use any weapon, means and method of warfare not forbidden by the laws of war and indispensable for securing the complete submission of the enemy at the earliest time. However, this principle is governed by several constraints.[266] An attack must be intended to help in the military defeat of the enemy. It permits a state to employ a degree and type of force that is required to achieve a concrete military objective at the earliest possible moment with at minimum expenditure of life and resources. Military necessity is thus a subjective analysis of a situation, both in an international and a non-international armed conflict.[267]

Fourth, the principle of humanity prohibits methods and means of warfare that are inhumane and cause unnecessary suffering, injury and destruction. The Martens Clause is the clearest statement of the principle of humanity.[268] The principle should be understood as a benchmark of other constraining principles, such as unnecessary suffering. This principle aims to minimize suffering in an armed conflict. This is applicable in both an international and a non-international context.

Fifth, in order to meet these criteria the conductor of a strike is forced to take the necessary precautions. There is thus a direct link between the respect for the rules on precautions when conducting an attack and the respect for other customary rules, applicable to the conduct of hostilities, such as distinction and proportionality. Most of these rules, originally codified in the First Additional Protocol to the Geneva Convention, are of a customary nature.[269] Moreover, they are applicable in both international armed conflicts and non-international armed conflicts. One of the central obligations is to take constant care to spare the civilian populations and civilian objects during the conduct of a military operation. As such all the feasible precautions must be taken to minimize incidental loss of civilian life, injury to civilians, and damage to civilian objects.[270]

Article 51(5)(b)and Article 57, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

[265] Y. Sandoz, C. Swinarski and B. Zimmermann, 'Commentary on the Additional Protocols', International Committee of the Red Cross, Geneva, 1987, paras 1979–1980.

[266] Article 23 (g), Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, The Hague, 18 October 1907.

[267] X, *Losing Humanity: The Case against Killer Robots, Human Rights Watch*, 2012, p. 34 – 35, http://www.hrw.org/sites/default/files/reports/arms1112ForUpload_0_0.pdf [Consulted on July 26, 2013].

[268] Article 1, Paragraph 2, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

[269] Article 57 and 58, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977;
Chapter 5: 'Precautions in Attack', in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter5 [Consulted on July 26, 2013].

[270] S. Casey-Maslen, *Pandora's box? Drone strikes under jus ad bellum, jus in bello, and international human rights law*, 94 International Review of the Red Cross, Volume 94 Number 886, Summer 2012, p. 606 – 608.

In this chapter, the legality of the use of remotely controlled and semi-autonomous vehicles will be discussed, which originates from a specific legal framework and general legislation. Subsequently, the influence of increasing autonomy will be discussed and lastly, some recommendations will be made.

6.2 Implications of the Current Use of Armed Unmanned Vehicles

6.2.1 Prohibitions or Restrictions on the Use of Unmanned Weapons under Specific International Treaty Law and Customary International law

a. Unmanned Aerial Vehicles

There is only limited legislation that mentions unmanned aerial vehicles, such as the Missile Technology Control Regime and the Chicago Convention. The first one only imposes restrictions on the export of these vehicles and the latter determines the status. Yet, it states that an aircraft without a pilot needs special authorization to fly over the territory of a state.[271]

Moreover, the legislation concerning air strikes is applicable to the strikes of unmanned aerial vehicles. As such, The Hague Regulation prohibits the aerial attack or bombardment of towns, villages, dwelling or building, which are undefended. This is independent of the means that will be employed.[272] The officer in command also has to warn the authorities, before an aerial attack.[273]

In addition, some specific rules concerning aerial warfare, which are applicable to unmanned aerial vehicles can be found in the 1923 Hague Rules concerning the control of wireless telegraphy in time of war and air warfare. Although the convention never became legally binding, it is of importance as an authoritative attempt to clarify and formulate provisions governing the use of aircrafts in war.[274] Moreover, to a great extent, they correspond to the customary rules and general principles.[275] The convention forbids any air bombardment for the purpose of terrorizing civilian population, destroying and damaging civilian property or injuring non-combatants.[276] The convention also states that an air bombardment is only legitimate when it is aimed at a military objective. Lastly, indiscriminate attacks are forbidden.[277] These rules are closely related to the principle of distinction.

[271] Article 8, Convention on international civil aviation, Chicago, 7 December 1944.
[272] Article 25, Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, The Hague, 18 October 1907.
[273] Article 26, Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, The Hague, 18 October 1907.
[274] L. Oppenheim and H. Lauterpacht, 'International Law: A treatise', Volume 2, 7th edition, London, 1963, p. 519.
[275] X, International Committee of the Red Cross, http://www.icrc.org/applic/ihl/ihl.nsf/Treaty.xsp?action=openDocument&documentId=B9CA3866276E91CFC12563CD002D691C [Consulted on July 26, 2013].
[276] Article 22, Rules concerning the Control of Wireless Telegraphy in Time of War and Air Warfare, The Hague, December 1922 - February 1923.
[277] Article 24, Paragraph 1 and 3, Rules concerning the Control of Wireless Telegraphy in Time of War and Air Warfare, The Hague, December 1922 - February 1923.

b. Unmanned Ground Vehicles

There are no treaties that regulate and deal with unmanned ground vehicles. Consequently, the use of these vehicles is restrained by the general principles of the law of war.

c. Unmanned Naval Vehicles

As discussed in the previous chapter, determining the legal status of unmanned naval vehicles is very difficult. The classification of unmanned surface vehicles and unmanned underwater vehicles, as a warship, vessel or weapon is subject to debate among legal scholars.

There is no legislation available, that specifically deals with the use of unmanned naval vehicles. Yet, depending on the classification of the unmanned vehicle as a vessel or a warship, there are some rules for instance, concerning the operation of the vehicle, navigation, the right of passage and immunity. Furthermore, the law governing vessels and warships depends on the legal classification of the seas, including high seas, exclusive economic zones, international straits and archipelagic sea lanes and territorial seas. This is especially the case when determining the degree of control that a coastal nation is able to exercise over foreign vessels operating in those areas.[278] If the unmanned naval vehicle constituted a weapon, it would fall between the legal cracks and would not be subject to the rules mentioned. As a result, the legality of the attacks of both unmanned surface and underwater vehicles will rely heavily on the general principles of the law of armed conflict.

6.2.2 General Prohibitions or Restrictions to the Use of Weapons, Means and Methods of Warfare

a. The Principle of Distinction

In this section, the question whether unmanned vehicles actually make a distinction between military and civilian objectives, when conducting a strike will be investigated. In order to examine this query, the theory behind the principle of distinction will be applied to a current situation. Drones have often targeted members of terrorist groups, such as the Taliban in Afghanistan and Pakistan.[279] However, being perfectly capable of distinction in theory can have other results in practice. For instance, such groups routinely use civilians and civilian objects as a shield.[280] Moreover, they mostly do not have recognizable uniforms.[281] This makes it thus harder to tell apart the combatants from the normal civilians.

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[278] I. Brownlie, 'Principles of Public International Law', 7th edition, Oxford University Press, 2008, p. 188 – 189 and 232 – 239;
A. H. Henderson, *Murky Waters: The legal status of Unmanned Undersea Vehicles*, 53 Naval Law Review 55, 2006, p. 68 – 72;
A. Finn and S. Scheding, 'Development and Challenges for Autonomous Unmanned Vehicles: A compedium', ISRL 3, Springer, 2010, p. 159 .

[279] T. Atlas, *Pakistan Taliban's No. 2 Commander Targeted by U.S. Drone*, Bloomberg, May 30, 2013, http://www.bloomberg.com/news/2013-05-29/pakistan-taliban-s-no-2-commander-targeted-by-u-s-drone.html [Consulted on July 26, 2013].

[280] X, *Afghanistan Taliban 'using human shields' – general*, BBC February 17, 2010, http://news.bbc.co.uk/2/hi/south_asia/8519507.stm [Consulted on July 26, 2013].

[281] L. R. Blank, *After "Top Gun": How drone strikes impact the law of war*, 33 University of Pennsylvania Journal of International Law 675, 2011-2012, p. 692 – 693.

An attack has to be directed at a military object and cannot be aimed at a civilian or a civilian object. Only combatants or civilians, who directly participate in hostilities, may be lawfully targeted in an armed conflict. The target thus has to be identified. In a traditional international armed conflict, this is not that difficult. One can observe the uniforms. In the contemporary context, however, it is much harder to distinguish between belligerents and civilians. As such, intelligence-gathering and extensive surveillance play an increasing role. Subsequently, the status of the members of the targeted non-state actors, such as the Taliban, Al-Qaeda and Al-Shabab must be determined, in order to lawfully target them. However, this is subject to a large debate among governments, international organizations and legal scholars. Additionally, extensive investigation, before the attack can still be incorrect, due to misleading intelligence or difficulties with establishing the identity of the person in sight. This can lead to civilians being targeted mistakenly.

Some argue that these terrorist organizations, especially the Taliban due to the fact that they were the de facto armed forces in the beginning of the war in Afghanistan,[282]should be regarded as combatants.[283] Combatants are all members of the armed forces of a party to the conflict, except medical and religious personnel and members to other designated groups.[284] The latter needs to fulfill certain requirements, in order for its members to be considered combatants. According to these requirements, combatants consist of all organized armed forces, groups and units which are under a command responsible to that party for the conduct of its subordinates. Such armed forces shall be subject to an internal disciplinary system, which, inter alia shall enforce compliance with rules of international applicable in an armed conflict.[285] Moreover, some experts also believe that there is an implicit requirement that armed forces wear distinguishing uniforms and carry their weapons openly. Combatants qualify as a permissible military object and can be subject to the conduct of an attack.

Yet, it can be questioned whether groups like Al-Qaeda, the Taliban and Al-Shabab fulfill these requirements. It can be argued that they do not reach the necessary level of organization, that they do not have a chain of command, that there is no internal disciplinary system present and that they do not comply with the law of armed conflict.[286] This was the point of view of the Bush administration after the invasion in Afghanistan. They said neither Al-Qaeda, nor the Taliban met the criteria for the status of combatant. Consequently, arguing that they were unlawful combatants.[287]

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[282] X, Who are the Taliban?, BBC, http://www.bbc.co.uk/news/world-south-asia-11451718 [Consulted on July 27, 2013].

[283] H. W. Elliott, *Prisoners of War*, Crimes of War, http://www.crimesofwar.org/a-z-guide/prisoners-of-war/ [Consulted on July 27, 2013].

[284] Rule 3: 'Definition of Combatants', in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_rul_rule3 [Consulted on July 27, 2013].

[285] Article 43, Paragraph 1, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977;
Rule 4: 'Definition of Armed Forces' in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_rul_rule4 [Consulted on July 27, 2013].

[286] R. J. Vogel, *Drone Warfare and the Law of Armed Conflict*, 39 Denver Journal of International Law and Policy 101, 2010-2011, p. 119.

[287] H. W. Elliott, *Prisoners of War*, Crimes of War, http://www.crimesofwar.org/a-z-guide/prisoners-of-war/ [Consulted on July 27, 2013].

According to some legal scholars unlawful combatants are those that take direct part in the hostilities. They are not combatants, since they do not meet the criteria. They could not be classified civilians, since they take part in the hostilities. According to the interpretive guidelines of the International Committee of the Red Cross, taking direct part in hostilities leads to civilians losing their protected status, and means that a person must perform a continuous combat function. Direct participation in hostilities should be interpreted as specific acts carried out by individuals as part of the conduct of hostilities between parties to an armed conflict.[288] Consequently, the International Committee of the Red Cross distinguishes between civilians, engaged in a continuous combat function who make up the organized fighting forces of, for instance a non-state actor, from civilians who directly participate in hostilities on a merely spontaneous, sporadic, or unorganized basis, or who assume exclusively political, administrative or other non-combat functions. Civilians, who engage in temporary or non-combat conduct, may only be targeted for the time they were engaged in the hostile conduct.[289] However, others suggest another interpretation. Some argue that an individual, that engages in military activity and nevertheless purports to be a civilian should be considered an unlawful combatants.[290] Others reason for this point of view are that members of terrorist organizations, such as Al-Qaeda, use violent means in order to achieve their ideological objectives. Every member of Al-Qaeda and its affiliates supports that mission. Therefore, they constitute unlawful combatants and can be lawfully targeted by unmanned vehicles.[291] The Obama administration adheres to a similar position. They state that individuals, who are merely part of an armed group are belligerents and, therefore, lawful targets under international law. This is thus a much broader interpretation. This definition should be seen in the context of the current drone program of the Obama Administration. An unlawful combatant cannot claim the privileges of lawful combatants, nor the protection of civilians. Consequently, unlawful combatants may be targeted by an unmanned vehicle.

It could be argued, in the line of the definition of the International Committee for the Red Cross that some of the members of these terrorist groups should be classified as civilians. Civilians, are those not belonging to armed forces, militias, volunteer corps, inhabitants of a non-occupied territory, that carry arms openly and respect the laws and customs of war.[292] In a situation of doubt, the person will be considered a civilian. As stated before, civilians enjoy general protection against the dangers arising from military operations. Subsequently, they cannot be targeted by unmanned vehicles.

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[288] N. Melzer, *Interpretive guidance on the notion of direct participation in hostilities under international humanitarian law*, International Committee of the Red Cross, 2009, p. 16 http://www.icrc.org/eng/assets/files/other/icrc-002-0990.pdf [Consulted on July 27, 2013].

[289] N. Melzer, *Interpretive guidance on the notion of direct participation in hostilities under international humanitarian law*, International Committee of the Red Cross, 2009, p. 33 – 35 http://www.icrc.org/eng/assets/files/other/icrc-002-0990.pdf [Consulted on July 27, 2013].

[290] Y. Dinstein, 'The Conduct of Hostilities under the Law of International Armed Conflict', Cambridge University Press, 2004, p. 29.

[291] R. J. Vogel, *Drone Warfare and the Law of Armed Conflict*, 39 Denver Journal of International Law and Policy 101, 2010-2011, p. 119 – 122.

[292] Article 50, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977;
Article 4, Paragraph 1, 2, 3 and 6, Convention (III) relative to the Treatment of Prisoners of War, Geneva, 12 August 1949;
Rule 5: 'Definition of Civilians', in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_rul_rule4 [Consulted on July 27, 2013].

Furthermore, individuals, that are near military objectives are still entitled to the protections. While they are not the objective of an attack, civilians can still be killed in an attack from an unmanned vehicles, targeted at a lawful military objective. The principle of proportionality assesses whether the injuries and deaths of the civilians have to be considered indiscriminate.[293]

In addition, an attack with unmanned weapons is mostly deployed in places other than the actual battlefield. Often individuals are targeted in their home, at their work or in their community. Civilian objects are all objects which are not military objectives. A civilian object cannot be the object of an attack by unmanned vehicles. Military objects are, as defined in the introduction, limited to those objects which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offer a definite military advantage. To illustrate this with an example, a house is a protected civilian object. Yet, when that house is used to store weapons and plan attacks, it can be legally attacked.[294]

To conclude, in current contemporary warfare it is often hard to determine the status of individuals. However, this has severe consequences, such as the possibility of being targeted by an unmanned vehicle. Therefore, in order to make such a distinction, all necessary precautions must be taken. Moreover, the legality of the current United States drone program depends on the interpretation of the status of these non-state groups, such as Al-Qaeda, Al-Shabab and the Taliban. The definition of an unlawful combatant, currently used as stamp for terrorist groups, should not be interpreted too broadly, preferably it should interpreted as the definition of the International Committee of the Red Cross. Furthermore, the use of so-called signature strikes by the United States in their drone program definitely violates the principle of distinction. In that case, individuals are targeted on the basis of certain behavior, a pattern of life activity. This kind of targeting violates the rules concerning directing at military objectives, as explained in the previous paragraphs. Moreover, when the target is a lawful military objective, the strike can still be conducted discriminately. Therefore, the commander must take all reasonable precautions to spare the civilian population and avoid damage to civilian objects.

b. THE PRINCIPLE OF PROPORTIONALITY

The rule of proportionality investigates the collateral damage vis-à-vis the direct anticipated military advantage. This principle thus reflects the balance between humanitarian concerns and military necessity. The analysis of this rule can only be performed on a context specific basis. The assessment varies in every case, depending on various factors such as the value of the target, the location of the attack, the timing of the attack, the number of anticipated civilian casualties and the amount of damage anticipated to civilian objects. In addition, foreseeable risks and potential mistakes must be taken into account. Yet, unintended and unforeseeable deaths or injuries to civilians or damage to civilian objects will not render the attack disproportional per se. It would be thus impossible to conduct empirical analysis comparing the numbers of civilians wounded or killed in relation to the military advantage and the insurgents, wounded or killed.

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[293] C. Jenks, *Law from above: Unmanned Aerial Systems, Use of Force, and the Law of Armed Conflict*, 85 North Dakota Law Review 649, 2009, p. 656 – 657.

[294] R. J. Vogel, *Drone Warfare and the Law of Armed Conflict*, 39 Denver Journal of International Law and Policy 101, 2010-2011, p. 121 – 122.

Furthermore, proportionality is measured in terms of the expected results or the anticipated military advantage.[295] The military advantage is a subjective determination that a military commander makes, based on his experience and evaluation of the target with the information available at that time.[296] However, there is disagreement among scholars on how to interpret the military advantage. Several scholars state that the proportionality of the individual attacks needs to be weighed against the specific military objective that can be achieved during that individual attack.[297] Others argue that the anticipated military advantage needs to be considered for the entire military campaign.[298] In addition, the anticipated military advantage must be weighed against the prospectively determined collateral damage. This cannot be excessive. Yet, there is no clear legal interpretation of the term excessive. Proportionality must be deliberated before every intended attack.[299]

This theory will now be illustrated through an example. Yet, the secret nature of the current strikes of unmanned aerial vehicles and the inaccessibility of the regions where these vehicles are deployed, make it hard to receive information of the attacks.[300] On 23 June 2009, an attack by an American unmanned aerial vehicle killed Khwaz Wali Mehsud, a mid-ranking Pakistan Taliban commander. At the funeral of Khwaz Wali Mehsud, the United States intended to target Baitullah Mehsud, an important Taliban leader. The strike of the drone killed several individuals, many of whom were reported as civilians. The target, Baitullah Mehsud, escaped unharmed.[301] The collateral damage, consisting of civilian injuries and deaths and destruction of civilian objects has to be examined in relation to the value of killing Baitullah Mehsud, who was a leader of the Taliban and thus a high profile military target. Moreover, there is also a difference whether the collateral damage would be regarded in relation to the military value of this specific target, Baitullah Mehsud or of the entire campaign, eliminate the power of the Taliban in Afghanistan and Pakistan. However, only the foreseeable collateral damage, available to the commander at the time of the attack should be taken into account. Individuals present beyond the information of the intelligence gathering will not be withhold. As a result, states have a great amount of leeway to justify the use of unmanned vehicles vis-à-vis the collateral damage, that is caused by it.[302]

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[295] C. Jenks, *Law from above: Unmanned Aerial Systems, Use of Force, and the Law of Armed Conflict*, 85 North Dakota Law Review 649, 2009, p. 666 – 667.

[296] R. Jackson, *Panel Discussion: Empirical Approaches to the International Law of War*, 16 Willamette Journal of International Law & Dispute Resolution 386, 2008, p. 396.

[297] H. Duffy, 'The 'War on Terror' and the Framework of International Law', Cambridge University Press, 2005, p. 232 – 235.

[298] N. Neuman, *Applying the Rule of Proportionality: Force Protection and Cumulative Assessment in International Law and Morality*, 7 Yearbook of International Law 79, December 2004, p. 98 – 90.

[299] M. McNab and M. Matthews, *Clarifying the law relating to unmanned drones and the use of force: The relationship between Human Rights, Self-Defense, Armed Conflict and International Humanitarian Law*, 39 Denver Journal of International Law and Policy 661, Fall 2011, p. 689 – 690;
S. Casey-Maslen, *Pandora's box? Drone strikes under jus ad bellum, jus in bello, and international human rights law*, 94 International Review of the Red Cross, Volume 94 Number 886, Summer 2012, p. 612 – 613.

[300] P. Bergen and K. Tiedemann, The Year of the Drone: An Analysis of U.S. Drone Strikes in Pakistan, 2004 - 2010, New American Foundation, February 24, 2010
http://www.newamerica.net/sites/newamerica.net/files/policydocs/bergentiedemann2.pdf [Consulted July 28, 2013]

[301] S. Casey-Maslen, *Pandora's box? Drone strikes under jus ad bellum, jus in bello, and international human rights law*, 94 International Review of the Red Cross, Volume 94 Number 886, Summer 2012, p. 613.

[302] M. McNab and M. Matthews, *Clarifying the law relating to unmanned drones and the use of force: The relationship between Human Rights, Self-Defense, Armed Conflict and International Humanitarian Law*, 39 Denver Journal of International Law and Policy 661, Fall 2011, p. 689 – 690.

Additionally, states often have no other means available to attack members of non-state actors than unmanned vehicles. These individuals hide out in places populated with civilians and in areas difficult to reach such as the mountains at the border of Afghanistan and Pakistan.[303]

To conclude, the principle of proportionality is an important rule of international law. However, it is difficult to assess to make general assumptions of principle in practice, since it is very case-related. Therefore, it is hard to establish a position on the precise influence of the use of armed unmanned vehicles. One can only stress the necessity of taking precaution, valuing the anticipated collateral damage properly and taking a more restrained position when determining of the military advantage.

c. THE PRINCIPLE OF MILITARY NECESSITY

In order to investigate the principle of military necessity, one has to make a subjective analysis of the situation. Military necessity determines the degree and the type of force which can be used, in relation to a military advantage and a minimum of expenditure of life and resources.

It will now be determined whether the current use of unmanned weapons meets the criterion of military necessity. Firstly, the United States government has stated that in the past few years unmanned aerial vehicles have been an invaluable tool against terrorist organizations, such as Al-Qaeda and the Taliban.[304] This is due to the ability of these unmanned aerial vehicles to find and identify targeted individuals and reach into territory that ground forces cannot enter because of military or political reasons. Moreover, unmanned aerial vehicles have become a central part in the United States strategy. Yet, the assessment of the principle of necessity still remains a case-by-case basis. Before each attack, the commander or operator needs to determine whether, in that particular attack, the use of an unmanned vehicle offers a distinct military advantage for the accomplishment of the military goal.[305] Secondly, one can question the military objective of targeting high ranking members of Taliban and other non-state actors. Some say, such as the American government that these kinds of military objectives strategically disrupt the organization and ends the further planning of attacks by these groups.[306] Others, such as O'Connell state that targeting high-level terrorists is counterproductive, since it only incites the animosity in these regions. Moreover, it does not really weaken the terrorist organisation, as the targeted leaders are easily and quickly replaced.[307] [308]

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[303] C. Jenks, *Law from above: Unmanned Aerial Systems, Use of Force, and the Law of Armed Conflict*, 85 North Dakota Law Review 649, 2009, p. 666 – 667.

[304] X, *U.S. Air Strikes in Pakistan Called 'Very Effective'*, CCN, May 18, 2009, http://edition.cnn.com/2009/POLITICS/05/18/cia.pakistan.airstrikes/ [Consulted on July 28, 2013]

[305] R. J. Vogel, *Drone Warfare and the Law of Armed Conflict*, 39 Denver Journal of International Law and Policy 101, 2010-2011, p. 115 – 116.

[306] L. Panetta, *Director's Remarks at the Pacific Council on International Policy*, May 18, 2009, https://www.cia.gov/news-information/speeches-testimony/directors-remarks-at-pacific-council.html.

[307] M. E. O'Connell, *Rise of the Drones II: Examining the Legality of Unmanned Targeting: Hearing Before the Subcommittee on National Security and Foreign Affairs, United States Congress*, April 28, 2010, p. 25, http://www.fas.org/irp/congress/2010_hr/drones2.pdf [Consulted on July 28, 2013].

[308] M. McNab and M. Matthews, *Clarifying the law relating to unmanned drones and the use of force: The relationship between Human Rights, Self-Defense, Armed Conflict and International Humanitarian Law*, 39 Denver Journal of International Law and Policy 661, Fall 2011, p. 688 – 689.

To conclude, the use of unmanned vehicles seems often justified by the principle of military necessity. Yet, it has to be kept in mind that the assessment of the principle is based solely on a case-by-case approach. Moreover, when determining the military advantage of unmanned vehicles in the current contemporary war with non-state actors, such as Al-Qaeda, the Taliban and Al-Shabab, it should be conducted in a critical manner, taking into account the effects of the strategy.

d. THE PRINCIPLE OF HUMANITY

The principle of humanity tries to minimize suffering in an armed conflict. The principle requires the parties in the conflict to exercise restraint, when an act could cause superfluous injury or unnecessary suffering, even when the criteria of distinction, proportionality and military necessity are met. Moreover, during an attack, once the military purpose has been achieved, the infliction of further suffering is considered unnecessary.[309]

Using unmanned vehicles demands more scrutiny. Before an attack, information needs to be gathered through intelligence and local informants. Just before deploying the attack, the targeted person or the targeted suspicious behavior will be investigated with the camera and communication tools of the unmanned vehicle. However, mistakes can still be made and unnecessary suffering can be caused.

Furthermore, it can be argued that nowadays unmanned weapons are being increasingly used, in comparison to other more humanitarian options, such as capture and detention.[310] Such a determination violates the principle of humanity.

Another assertion is the inability for unmanned vehicles to accept surrender or call back strikes at a late stage of the deployment. Yet, this issue is more pressing when the vehicles have greater autonomy and are thus more independent. For example, just before launching the attack, the target surrenders in accordance with the law of armed conflict. Consequently, the target has to be considered hors de combat. This reveals several issues. Firstly, the majority of the attacks with unmanned vehicles are conducted by surprise and without warning. Moreover, targets and accidental bystanders do not notice these vehicles, for instance because of the altitude that unmanned aerial vehicles reach. In comparison, during a traditional aerial bombing, one can spot the airplane. Yet, is it appropriate to warn the civilian population about the intended attack? As such, a commander is required to do all in his power to warn the authorities before a bombardment, except in cases of assault.[311] Since the concepts in this article are not defined, it is difficult to interpret the way the goal of this article should be achieved.

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[309] L. R. Blank, *After "Top Gun": How drone strikes impact the law of war*, 33 University of Pennsylvania Journal of International Law 675, 2011-2012, p. 682 – 683.

[310] A. Qureshi, *The 'Obama doctrine': kill, don't detain*, The Guardian, April 11, 2010, http://www.theguardian.com/commentisfree/cifamerica/2010/apr/11/obama-national-security-drone-guantanamo [Consulted on July 28, 2013];
K. DeYoung and J. Warrick, *Under Obama, more targeted killings than captures in counterterrorism efforts*, The Washington Post, February 14, 2010, http://www.washingtonpost.com/wp-dyn/content/article/2010/02/13/AR2010021303748.html?nav%20=emailpage [Consulted on July 28, 2013].

[311] Article 26, Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, The Hague, 18 October 1907.

Suggestions include dropping leaflets or broadcasting warnings.[312] On the other hand, when taking these precautions, one risks to lose the actual target. Secondly, the question remains whether the technology of the unmanned vehicles is capable of detecting such a last minute surrender. Thirdly, if a surrender is detected, the problem would be exercising the consequences of a surrender, such as removing the targets from the battlefield. This is especially the case when the unmanned vehicles are regularly deployed deep in hostile territory and are without nearby ground support.[313]

It can thus be concluded that the use of unmanned vehicles raises serious issues concerning the principle of humanity.

e. PRECAUTIONS IN AN ATTACK

A regularly returning comment in this discussion, is the necessity to take precautions before the attack. These precautions are very divergent, and include target selection and verification, choice of means and methods of warfare, assessment of the effects of an attack, advanced warning, control during the execution of an attack, and all feasible precautions to avoid and, in any event, to minimize incidental loss of civilian life, injury to civilians and damage to civilian objects.[314]

In practice, the current use of unmanned vehicles tries to meet the precautionary requirements. Unmanned vehicles are equipped with camera and communication system. This contributes to the selection and the verification of targets. Furthermore, in some cases the vehicle, luggage or equipment of the target is provided with a tracking device, in order to follow and verify the target. In addition, in some cases as in Afghanistan, nearby military forces have to monitor the target. On top of that, the Hellfire missiles have a smaller blast radius than other conventional weapons. This could add to limiting the risk of civilian casualties. However, in reality strikes with unmanned aerial vehicles have significantly failed in several situations.[315] In Afghanistan in 2010, for instance a drone strike killed twenty three Afghan civilians and wounded twelve others, due to inaccurate and unprofessional reporting by the operator of the vehicle.[316]

[312] Rule 37 in C. Bruderlein, *Manual on International Law Applicable to Air and Missile Warfare*, Bern, May 15, 2009, p. 18 http://ihlresearch.org/amw/HPCR%20Manual.pdf [Consulted on July 28, 2013].
[313] R. Murphy and J. Radsan, *Due Process and Targeted Killing of Terrorists*, 31 Cardozo Law Review, 405, 2009, p. 406 – 412;
R. J. Vogel, *Drone Warfare and the Law of Armed Conflict*, 39 Denver Journal of International Law and Policy 101, 2010-2011, p. 127 – 129.
[314] Article 57 and 58, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977;
Chapter 5: 'Precautions in Attack', in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter5 [Consulted on July 28, 2013].
[315] S. Casey-Maslen, *Pandora's box? Drone strikes under jus ad bellum, jus in bello, and international human rights law*, 94 International Review of the Red Cross, Volume 94 Number 886, Summer 2012, p. 606 – 608.
[316] D. Filkins, *Operators of drones are faulted in Afghan deaths*, The New York Times, May 29, 2010, http://www.nytimes.com/2010/05/30/world/asia/30drone.html?_r=0 [Consulted on July 28, 2013].

6.3 POSSIBLE IMPLICATIONS OF THE FUTURE USE OF UNMANNED VEHICLES

One of the biggest challenges concerning the use of unmanned vehicles is the impact of the increasing autonomy, in other words the lack of human involvement. This section will only discuss the relevant legislation, with regard to autonomy. There are no treaties concerning the legality of the use of one of the types of these unmanned vehicles, that specifically deal with the issue of increasing autonomy. Yet, some of the principles and rules of customary international law are influenced by the introduction of autonomous unmanned vehicles in the battlefield.

6.3.1 THE PRINCIPLE OF DISTINCTION

The principle of distinction is the greatest hurdle for lethal autonomous vehicles to comply with international humanitarian law. Moreover, the characteristics of armed conflicts have changed over the past decades towards asymmetric conflicts, fought in urban battles among the civilian population. Fighters are no longer easily recognizable. Consequently distinguishing between legitimate targets and non-combatants has become increasingly difficult.[317]

Intelligence information and the reliability of local sources has its limits. Therefore, a thorough assessment of the situation needs to be made. Yet, if there is no human involvement, that assessment depends on the technical abilities of the autonomous vehicle to conduct the target detection, identification, recognition and the execution of the attack.[318] The algorithms, which attribute values to the data of the sensors of the autonomous vehicle and that enable that vehicle to determine the likelihood of the target being lawful, are theoretically available. For instance, an autonomous weapon can ascertain the difference between a child and an adult. On the other hand, determining the difference between a walking stick and a rifle can be challenging. Many of these determinations are highly contextual. For example, an individual that is actually engaging in hostilities by firing a weapon increases the likelihood of that individual, being a combatant. Until now, the key for assessing these contextual determinations has been human interaction with the unmanned system. Thus, in theory, human operators could program these determinations and other factors in the autonomous system. Yet, in practice no suite of sensors has been up to the challenge of discrimination.[319]

It remains thus extremely difficult to correctly identify the targets on the battlefield. Consequently, scholars have made several suggestions. Arkin suggests 'reconnaissance by fire', in which the autonomous vehicle would fire near, but not at the potential target. This attempts to elicit a hostile response and increase the certainty of the potential target being a combatant. Consequently, it is with certainty that it is lawful to target that individual.[320]

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[317] X, *Losing Humanity: The Case against Killer Robots,* Human Rights Watch, 2012, p. 31 - 32, http://www.hrw.org/sites/default/files/reports/arms1112ForUpload_0_0.pdf [Consulted on July 29, 2013].

[318] J. McClelland, *The review of weapons in accordance with Article 36 of Additional Protocol*, International Review of the Red Cross, Volume 85 Number 850, 2003, p. 397–415.

[319] M. N. Schmitt, *Autonomous Weapon Systems and International Humanitarian Law: A Reply to the Critics, Harvard National Security Journal Features*, 2013, p. 14 – 18, http://harvardnsj.org/2013/02/autonomous-weapon-systems-and-international-humanitarian-law-a-reply-to-the-critics/ [Consulted on July 29, 2013].

[320] R. C. Arkin, *Governing Lethal Behavior: Embedding Ethics in a Hybrid Deliberative/Reactive Robot Architecture*, Technical Report GIT-GVU-07-11, p. 16 and 22, http://www.cc.gatech.edu/ai/robot-lab/online-publications/formalizationv35.pdf [Consulted on July 29, 2013];

Yet, this suggestion seems rather difficult to work with in practice, since the likelihood of the target reacting to the attack is unpredictable. Moreover, he argues in favor of including geographical limitations into the mission parameters.[321] Canning proposes another solution. He states that autonomous systems should target enemy weapons, rather than the enemies themselves.[322] This proposal might work for weapons with a distinct signature, which are solely operated by combatants, such as tanks. Yet, for smaller weapons, such as rifles this does not seem feasible. Another method constitutes predicate target identification on conduct-based targetability. The individual is then targeted because he demonstrates hostile intent or commits a hostile act. For instance, autonomous vehicles can be made able to determine the origin of a shot or a missile based on projecting its trajectory back to the source.[323]

6.3.2 The Principle of Proportionality

Applying the principle of proportionality to lethal autonomous vehicles faces complicated practical and legal issues. Moreover, without the ability to estimate the number of combatants and civilians affected by the attack in advance, it is impossible to determine whether the attack would be proportionate.[324]

Regardless of the ability of lethal autonomous vehicles to distinguish between civilians and combatants, the question remains whether such vehicles are capable of performing the proportionality test. This fundamental rule of international humanitarian law is one of the most difficult rules to assess. The requirement of proportionality is considered abstract, not easily quantified, and highly relative to specific contexts and subjective estimates of value.[325] The proportionality test consists of two parts: The expected collateral damage and the anticipated military advantage. The latter must be greater than the first. Will a lethal autonomous vehicle be capable of performing proportionality calculations?

First, there already exists a system to determine the likelihood of collateral damage to persons and objects near the target, called the Collateral Damage Estimate Methodology (CDEM). This procedure, conducted by the attacking force, considers factors, such as the precision of a weapons, its blast effect, attack tactics, probability of civilian presence near the target and the composition of structures to estimate the number of civilian casualties. Currently, this is a policy-related instrument, which determines the level of command that must authorize the attack, such as the greater likelihood of harm to civilians according to these calculations, the higher the required approval authority.

R. C. Arkin, 'Governing Lethal Behavior in Autonomous Robots', Taylor & Francis, 2009, p. 60.

[321] R. C. Arkin, 'Governing Lethal Behavior in Autonomous Robots', Taylor & Francis, 2009, p. 47.

[322] J. S. Canning, *A Concept of Operations for Armed Autonomous Systems: The difference between "Winning the War" and "Winning the Peace"*, Power Point, p. 14, http://www.dtic.mil/ndia/2006disruptive_tech/canning.pdf.

[323] B. Kastan, *Autonomous Weapons Systems: A coming legal 'singularity'?*, University of Illinois Journal of Law, Technology and Policy 45, Spring 2013, p. 59 – 61.

[324] B. Kastan, *Autonomous Weapons Systems: A coming legal 'singularity'?*, University of Illinois Journal of Law, Technology and Policy 45, Spring 2013, p. 61 – 62.

[325] P. M. Asaro, *Modeling the Moral User*, IEEE Technology and Society Magazine, Volume 28 Issue 1, Spring 2009, p. 21.

Such a methodology could be applied with autonomous weapon systems, to determine the likelihood of harming civilians in the target area by using objective data and scientific algorithms.[326]

Second, ascertaining the anticipated military advantage is extremely challenging to convert to a usable scientific model.[327] The military advantage is always contextual. For example, employing an attack on a command-and-control facility, with five expected civilian deaths in the early stages of the conflict would be more acceptable than the same attack at the final stage of the conflict. This is thus truly a case-by-case assessment. In theory, it would be possible to develop such an instrument, for instance with unacceptable collateral damage thresholds for particle target situations. Yet, choosing an appropriate threshold or any other measurement for such a determination would be very subjective, since it still remains an issue of common sense and good faith of military commanders.[328]

As a result, since military advantage is such a context specific issue, compliance with the principle of proportionality for an autonomous vehicle would entail that the maximum collateral damage threshold, should be either interpreted very conservatively or be adjustable to the engagement context. For the latter, if the threshold can be adapted before the launch of an autonomous vehicle or remotely reprogrammed during an attack, it would provide greater flexibility. Moreover, self-adjusting systems could be developed. On the other hand, given the complexity of modern warfare, it is unlikely that such systems would be developed or deployed, despite the advances in artificial intelligence. Consequently, humans will remain 'in the loop' and make the proportionality decision by launching an autonomous system, which is programmed in a certain way in a specific environment and by controlling the operation.[329] Autonomous vehicles as such would clearly violate the principle of proportionality. Applying this principle is based too much on a case-by-case approach. Developing models that could make the same assessment of a complex combat situation and take into account all the necessary considerations, seem to be very difficult to nearly impossible.[330]

6.3.3 The Principle of Military Necessity

Military necessity is a delicate and judgment-based decision, that is undertaken by a military commander. If autonomous vehicles are deployed, they must be able to identify military targets and assess whether the destruction of the target offers a definite military advantage. As such the type and degree of force, that can be employed in that situation, could be established. Consequently, the requirement of military necessity is very dependable of the subject analysis of the situation of the attack.[331]

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[326] M. N. Schmitt & J. S. Thurnher, *"Out of the Loop": Autonomous Weapon Systems and the Law of Armed Conflict*, 4 Harvard National Security Journal 231, 2013, p. 254 – 255.

[327] N. Sharkey, Grounds for discrimination: autonomous robot weapons, RUSI Defence Systems, Volume 11, October 2008, p. 87.

[328] M. N. Schmitt & J. S. Thurnher, *"Out of the Loop": Autonomous Weapon Systems and the Law of Armed Conflict*, 4 Harvard National Security Journal 231, 2013, p. 255 – 256.

[329] H.-Y. Liu, *Categorization and legality of autonomous and remote weapons system*, International Review for the Red Cross, Volume 94 Number 886, Summer 2012, p. 642 – 643.

[330] X, *Losing Humanity: The Case against Killer Robots, Human Rights Watch*, 2012, p. 32 – 34, http://www.hrw.org/sites/default/files/reports/arms1112ForUpload_0_0.pdf [Consulted on July 29, 2013].

[331] B. Kastan, *Autonomous Weapons Systems: A coming legal 'singularity'?*, University of Illinois Journal of Law, Technology and Policy 45, Spring 2013, p. 58 – 59.

Similar to the previous problems that autonomous vehicles face when attempting to assess context-based concept, it seems unlikely that these vehicles would be capable of determining all the components to fulfill the principle of military necessity.[332] Since the lethal autonomous vehicle will not be able to determine its military necessity in a certain operation independently, a commander will need to remain in control to determine what type and degree of force, and consequently which weapon could be employed. Therefore, the autonomous unmanned vehicle will not be able to operate in a vacuum, but as a part of an overall military campaign with military staff in command. In order for the autonomous vehicle to comply with its role as a part of a military campaign, it would have to be capable of following different levels of Rules of Engagement as decided by the commander, such as the use of non-lethal techniques before using direct lethal force.[333]

6.3.4 The Principle of Humanity

The principle of humanity is not influenced by the introduction of autonomous vehicles in the battlefield. Of course, if autonomous vehicles become equipped with weapons, that cause unnecessary suffering, the principle would be violated.[334]

6.3.5 Precautions in an Attack

The obligation to take precautions before an attack influences the increasing autonomy of autonomous vehicles. These requirements demand human involvement. When deploying an autonomous vehicle a human operator will be obliged to constrain the timing, location, objective and means of an attack in order for the autonomous vehicle to target only the legitimate military targets. The human operator does exercise the necessary precautions. He will consequently only interfere during the initial stages of an attack, except when the initial set of constrains is the same throughout the entire operation.

Moreover, autonomous vehicles do have a problem concerning the requirement to exercise control during the execution of the attack.[335] Each party to the conflict must do everything feasible to cancel or suspend an attack if it becomes apparent that the target is not a military objective or if the attack may be expected to cause incidental loss of civilian life, injury to civilians or damage to civilian objects. This would be excessive in relation to the concrete and direct anticipated military advantage. Thus, if it becomes clear throughout the exercise of the attack, that the attack will not meet the principle of distinction and the principle of proportionality, the attack should be ended, if possible. Yet, it can be questioned whether an autonomous weapon would be capable of making such a decision fully independent. Therefore, control by a human operator would be necessary.[336]

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[332] X, *Losing Humanity: The Case against Killer Robots, Human Rights Watch*, 2012, p. 34 – 35, http://www.hrw.org/sites/default/files/reports/arms1112ForUpload_0_0.pdf [Consulted on July 29, 2013].
[333] R. C. Arkin, 'Governing Lethal Behavior in Autonomous Robots', Taylor & Francis, 2009, p. 81.
[334] B. Kastan, *Autonomous Weapons Systems: A coming legal 'singularity'?*, University of Illinois Journal of Law, Technology and Policy 45, Spring 2013, p. 62.
[335] Rule 19: 'Control during the Execution of Attacks, in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter5_rule19 [Consulted on July 29, 2013].
[336] W. Boothby, 'Weapons and the Law of Armed Conflict', Oxford University Press, 2009, p. 233.

6.4 RECOMMENDATIONS

There is a large deficit in specific legal instruments or customary rules, that regulate the use of unmanned vehicles. Furthermore, the use of lethal remotely controlled and semi-automatous vehicles imposes some difficulties to the general legal framework. Armed autonomous vehicles, meanwhile, violate and challenge several of the general rules and principles of international humanitarian law. In addition, the application of the principle of military necessity will lead to an increased use of unmanned vehicles, due to the distinct military advantages for the attacker, such as not risking the life of military personnel.

Based the research conducted in this chapter, the following recommendations can be made, in accordance with the opinion of the writer.

As explained in the previous chapter, an international agreement should be adopted to impose certain prohibitions and restrictions to the use of unmanned vehicles.

As a result of the clear violations of fully autonomous vehicles of the general framework of international humanitarian law, a ban on the use of such vehicles seems necessary. There is thus an indispensable requirement for human involvement throughout the process of an attack with an unmanned vehicle.

Yet, the attack of a remotely controlled or semi-autonomous should still be subject to additional conditions. An unmanned vehicle can only be directed at lawful targets. This comprise the lawful combatants and unlawful combatants, as defined by the International Committee of the Red Cross. Civilians cannot be targeted. When conducting a strike with an unmanned vehicle, only a human military commander can authorize the operation after assessing the proportionality of the situation. Unmanned vehicles can only be used, when they are necessary for the accomplishment of an actual military objective. Moreover, the effects of that military objective within the whole operation should be interpreted realistically. A strike that risks to cause excessive collateral damage to civilians and civilians object cannot be deployed. Human suffering must be minimal. Furthermore, the necessary precautions must be adopted. Special attention should be given to the verification of the target. Consequently, a signature strike or any other attack, that is based on a suspicious situation and not on a reasonable verification of the target, is excluded. Lastly, more attention should be given to the possibility of non-lethal action with regard to the targeted individual.

7. HUMAN RIGHTS LAW

7.1 INTRODUCTION

This chapter will investigate the influence of international human rights law on the use of unmanned vehicles. These vehicle are currently designed and used to exercise targeted killing. The deployment of such vehicles, with the purpose of targeted killing challenges several fundamental of international human rights law, such as the right to life.

Unmanned vehicles are employed both in peacetime and during an armed conflict. In times of peace, the law regulating the use of unmanned vehicles consists of law enforcement and international human rights. In time of war, international humanitarian law applies. Yet, the influence of international human rights law during times of war needs to be established. This will be discussed in the first chapter. The discussion is followed by an introduction to the extraterritorial applicability of human rights treaties. This plays an important role in the current policy of the use of unmanned vehicles. For instance, does the law of the operating state apply to the victims of that operation in another country?

After discussing the formal parts of international human rights, the concrete influence of the content of international human rights to the operations, conducted by unmanned vehicles, with the aim of targeted killing will be examined. This is followed by a brief discussion of the influence of increasing autonomy of unmanned vehicles to the application of human rights.

Finally, based on this research, some recommendations will be made.

7.2 FORMAL ASPECTS OF INTERNATIONAL HUMAN RIGHTS LAW

7.2.1 THE RELATIONSHIP BETWEEN INTERNATIONAL HUMANITARIAN LAW AND INTERNATIONAL HUMAN RIGHTS LAW

The relationship between international humanitarian law and international human rights law is subject to different opinions. However, it is important to establish the legal framework, in which the unmanned vehicle can operated during wartime.

Some argue that international human rights law is applicable both in peace time and in wartime. Consequently, they argue that human rights law is designed to apply at all times. Individual human rights are inherent to human nature. They should be considered as a common standard of achievement for all peoples and all nations. Human rights must be universally respected. Moreover, the Universal Declaration of Human Rights of 1948[337] expressly excludes any act to destruct any of the rights and freedoms. Although this instrument is not legally binding, it is a strong indicator of the opinion of the international community.[338]

[337] UN General Assembly, Universal Declaration of Human Rights, 10 December 1948, Resolution 217 A (III).
[338] N. Melzer, *Human Rights implications of the usage of drones and unmanned robots in warfare,* Dictorate-General for external policies of the union, Directorate B, Policy Department, EXPO/B/DROI/2012/12, May 2013, p. 14 – 16.

In this case, international human rights law adds additional requirements to the rules of international humanitarian law, with regard to the question of legality of certain acts during an armed conflict. However, the application of some of the rules of international human rights law will be less stringent during wartime. As a result, human rights can contribute in terms of limiting violence and promoting humanity. This legal position is supported by the Nuclear Weapons Advisory Opinion[339], the Wall Opinion[340] and the Activities on the Territory of the Congo case[341], in which the court stated, every time in a stronger way, that the applicable law during an armed conflict was not limited to international humanitarian law. Yet, according to some legal scholars international human rights law also has its limits. For instance, a weapon, that is considered lawful under international humanitarian law could not be rendered unlawful by human rights law.[342] Consequently, some parts of international humanitarian law are without interference of human rights.[343]

Others, such as the United States are convinced that international human rights cease to be applicable during times of war. They are convinced that the application of this system of rules would subject military operations to an unrealistically strict legal regime. However, one has to bear in mind that human rights treaties allow a wide margin of interpretation for military and security operations. It is generally accepted that a state can derogate from certain human rights obligations, during times of war or other public emergencies, that threaten the security or independence. However, this is limited to the extent and for the period, required by the situation.[344]

Some legal scholars argue in favor of a more moderate position. They argue that during an armed conflict both legal systems exist. Yet, both systems do not apply at the same time. Whether an act is judged under international humanitarian law or international human rights law depends on the applicable lex specialis. Consequently, these scholars suggest that, during an armed conflict, international human rights law applies, to the extent that international humanitarian law does not provide sufficient rules or if the rule of international humanitarian law is unclear.[345]

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[339] Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, [1996] ICJ Rep 226 at para 42.

[340] Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory, Advisory Opinion, [2004] ICJ Rep 136, para 106.

[341] Armed Activities on the territory of the Congo (Democratic Republic of the Congo v Uganda), [2005] ICJ Rep 168, para 216.

[342] N. Lubell, *Extraterritorial Use of Force against Non-State Actors*, Oxford Monographs in 'International Law', Oxford University Press, 2011, p. 242.

[343] S. Casey-Maslen, *Pandora's box? Drone strikes under jus ad bellum, jus in bello, and international human rights law*, 94 International Review of the Red Cross, Volume 94 Number 886, Summer 2012, p. 621 – 623.

[344] K. Anderson*, Targeted Killing in the U.S. Counterterrorism Strategy and Law*, American University Washington College of Law, May 2009, p. 13 – 14, http://digitalcommons.wcl.american.edu/cgi/viewcontent.cgi?article=1007&context=fac_works_papers [Consulted on July 30, 2013];
N. Melzer, *Human Rights implications of the usage of drones and unmanned robots in warfare*, Dictorate-General for external policies of the union, Directorate B, Policy Department, EXPO/B/DROI/2012/12, May 2013, p. 14.

[345] P. Alston, *Study on targeted killings*, Human Rights Council, Fourteenth Session, Agenda Point 3, 28 May 2010, A/HRC/14/24/Add.6, p. 10;
S. Casey-Maslen, *Pandora's box? Drone strikes under jus ad bellum, jus in bello, and international human rights law*, 94 International Review of the Red Cross, Volume 94 Number 886, Summer 2012, p. 621 – 623.

To conclude, according to the debate, international human rights law plays an increasing role during an armed conflict, which was traditionally reserved for humanitarian law. There is thus more awareness of human rights law. However, in practice, during an armed conflict human rights will not always be complied with, such as during the deployment of unmanned vehicles. Moreover, the application of human rights law in times of conflict invokes other difficulties. One has to be aware of the linguistic differences between the terms and concepts, used in international humanitarian law and human rights law. Furthermore, there are also some challenges with regard to the content of human rights law. For instance, what is the role of social, economic and cultural rights during an armed conflict?[346]

7.2.2 Extraterritorial Application of International Human Rights Law

Besides the relationship between international humanitarian law and international human rights law, human rights instruments also contain an issue of extraterritorial applicability. Most human rights treaties are limited to the jurisdiction of the State Parties. Meanwhile, the current practices with unmanned vehicles are mostly extraterritorial. Can the victims of human rights violation, by unmanned weapons seek justice within the jurisdiction of the operating state? The extraterritorial applicability of human rights treaties can thus be considered a safeguard of the rules and principles of human rights law. According to case law, the notion of jurisdiction has two dimensions: A territorial and a personal dimension.

Territorial jurisdiction is the primary establishment of jurisdiction for a state. Individuals within the national borders of a state are covered by the territorial jurisdiction of human rights.[347] This establishment of jurisdiction can be partly or fully disproved in exceptional circumstances, in which the state is unable to exercise its territory over all or parts of its territory. This can be because of occupation or internal strife.[348] For instance, in Somalia large parts of the country are controlled by Al-Shabab.[349] A cessation of jurisdiction can also occur, due to local self-governance arrangements, such as those applicable in the Federally Administered Tribal Areas of North-Western Pakistan. On the other hand, the territorial jurisdiction extends beyond national borders, if effective control is exercised, as a consequence of occupation, consent, invitation or acquiescence.[350] As a result, the use of force of the operating state within the territory under effective control, establishes the jurisdiction and the human rights protection of the operating state, regardless of the origin of that effective control.

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[346] N. Lubell, *Challenges in applying human rights law to armed conflict*, International Review of the Red Cross, Volume 87 Number 860, December 2005, p. 753 – 754.

[347] Case of Al-Skeini and Others versus the United Kingdom, European Court of Human Rights, Grand Chamber, Application number 55721/07, July 7, 2011, paras 131 – 132;
Case of Ilascu and others versus Moldova and Russia, European Court of Human Rights, Judgment, Application no. 48787/99, July 8, 2004, para 312;
Article 2, International Covenant on Civil and Political Rights, 19 December 1966, 999 UNTS 171.

[348] Case of Ilascu and others versus Moldova and Russia, European Court of Human Rights, Judgment, Application no. 48787/99, July 8, 2004, para 312.

[349] X, *Somalia's al-Shabab leader Aweys 'not surrendering'*, BBC, June 28, 2013, http://www.bbc.co.uk/news/world-africa-23095129 [Consulted on July 30, 2013].

[350] Case of Al-Skeini and Others versus the United Kingdom, European Court of Human Rights, Grand Chamber, Application number 55721/07, July 7, 2011, paras 138 – 140.

If a state invites, tolerates or consents to the use of force by the operating state within its territory, the human rights obligations of the territorial state applies.[351] Yet, it should be noted that the content of the territorial jurisdiction is variously interpreted by state practice and human rights courts.[352]

Under the dimension of personal jurisdiction, states remain bound by human rights law with regard to their agents, to the extent that they exercise physical power, authority or control over these individuals.[353] For instance, persons held in physical custody, such as prisoners are subject to the jurisdiction of the detaining state, regardless of territorial considerations.[354]

As a result, the use of military force, which does not involve territorial control, nor personal custody, such as during extraterritorial operations of unmanned vehicles does mostly not invoke the jurisdiction of the operating state. With regard to accountability for human rights violations, this cannot be interpreted in order to allow a State party to perpetrate violations of the Convention on the territory of another State, which it could not perpetrate on its own territory. Yet, there exists no generally recognized human rights doctrine, concerning territorial and personal application of jurisdiction. Consequently, different human rights systems have developed different views and interpretations.[355] [356]

[351] N. Melzer, *Human Rights implications of the usage of drones and unmanned robots in warfare,* Dictorate-General for external policies of the union, Directorate B, Policy Department, EXPO/B/DROI/2012/12, May 2013, p. 16

[352] N. Lubell, *Challenges in applying human rights law to armed conflict*, International Review of the Red Cross, Volume 87 Number 860, December 2005, p. 739 – 741.

[353] Case of Al-Skeini and Others versus the United Kingdom, European Court of Human Rights, Grand Chamber, Application number 55721/07, July 7, 2011, paras 133 – 137;
Ligia de Carmen Cruz-Burgos v. Immigration and Naturalization Service, United States Court of Appeals for the Ninth Circuit R. 34-4, 13 May 1994, para 12.3;
Coard et al. versus United States, Inter-American Commission on Human Rights, Case 10.951, Report number 109/99, September 29, 1999, para 37.

[354] N. Melzer, *Human Rights implications of the usage of drones and unmanned robots in warfare,* Dictorate-General for external policies of the union, Directorate B, Policy Department, EXPO/B/DROI/2012/12, May 2013, p. 16.

[355] Armando Alejandre Jr., Carlos Costa, Mario De La Pena and Pablo Morales versus Cuba, Inter-American Commission on Human Rights, Case 11.589, Report Number 86/99, September 29, 1999, para 39;
Vlastimir and Borka Banjovic, Živana Stojanovic, Mirjana Stoimenoviski, Dragana Joksimovic and Dragan Sukovic versus Belgium, the Czech Republic, Denmark, France, Germany, Greece, Hungary, Iceland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Spain, Turkey and the United Kingdom, European Court of Human Rights, Grand Chamber, Application no. 52207/99, December 12, 2001, paras 74 – 76.

[356] N. Melzer, *Human Rights implications of the usage of drones and unmanned robots in warfare,* Dictorate-General for external policies of the union, Directorate B, Policy Department, EXPO/B/DROI/2012/12, May 2013, p. 17 – 18.

7.3 THE RELEVANT MATERIAL ASPECTS OF INTERNATIONAL HUMAN RIGHTS LAW

7.3.1 IMPLICATIONS OF THE CURRENT USE OF ARMED UNMANNED VEHICLES

This section of the chapter will discuss the use of armed remotely controlled and semi-autonomous weapons, with regard to international human rights law and some rules of law enforcement. Employing targeted killing, through unmanned vehicles possibly violates the right to life. Therefore, the interpretation of this fundamental rule of international human rights law will be discussed. Furthermore, the boundaries to targeted killing will be examined. In addition, adopting some due process considerations, when employing unmanned vehicles can be valuable with regard to the current use of unmanned vehicles. During wartime, the obligation to take all necessary precautions and the general principles of humanitarian law already set certain limits. Yet, due process considerations are different from the latter and can thus be recommendable. Lastly, some other human rights principles will be discussed.

a. THE RIGHT TO LIFE

The right to life is codified in various international legal documents. The Universal Declaration of Human Rights of 1948 states that everyone has the right to life, liberty and security of person.[357] This document is not legally binding. The International Covenant on Civil and Political Rights says that every human being has an inherent right to life. This right shall be protected by law.[358] Moreover, there are some relevant regional human rights instruments. The European Convention ensures that everyone's right to life will be protected by law.[359] The American Convention states that everyone has the right to have his life respected.[360] The United States has signed this Convention in 1977, but has never proceeded with its ratification.

Yet, a derogation from the right to life is possible in certain circumstances. These circumstances are different in the cited legal documents. The European Convention protects the right to life by a prohibition of intentional deprivations of life. A derogation from the prohibition of intentional killing is limited to lawful acts of war.[361] The International Convention on Civil and Political Rights prohibits arbitrary deprivations of life.[362] The American Convention states the same.[363] A derogation from the right to life in a time of national emergency is not possible.[364] The permissibility of the use of lethal force thus depends on the interpretation of arbitrary.

[357] Article 3, UN General Assembly, Universal Declaration of Human Rights, 10 December 1948, Resolution 217 A (III).
[358] Article 6, Paragraph 1, International Covenant on Civil and Political Rights, 19 December 1966, 999 UNTS 171.
[359] Article 2, Paragraph 1, Council of Europe, European Convention for the Protection of Human Rights and Fundamental Freedoms, as amended by Protocols Nos. 11 and 14, 4 November 1950.
[360] Article 4, Paragraph 1, Organization of American States, American Convention on Human Rights, 'Pact of San Jose', Costa Rica, 22 November 1969.
[361] Article 2, Paragraph 2, Council of Europe, European Convention for the Protection of Human Rights and Fundamental Freedoms, as amended by Protocols Nos. 11 and 14, 4 November 1950.
[362] Article 6, Paragraph 1, International Covenant on Civil and Political Rights, 19 December 1966, 999 UNTS 171.
[363] Article 4, Paragraph 1, Organization of American States, American Convention on Human Rights, 'Pact of San Jose', Costa Rica, 22 November 1969.
[364] Article 4, Paragraph 1 and 2, UN General Assembly, Universal Declaration of Human Rights, 10 December 1948, Resolution 217 A (III).

According to the International Court of Justice, the principle that someone cannot be arbitrarily deprived of his life applies in times of war. Subsequently, the understanding of arbitrarily has to be determined by the applicable lex specialis, namely the law of armed conflicts. Thus, whether a particular loss of life, through the use of a certain weapon in warfare, is to be considered an arbitrary deprivation of life, can only be decided by reference to the law applicable in armed conflict and not deduced from the terms of the Covenant itself.[365] As a result, for all these human rights instruments the question whether the use of unmanned vehicles as a means of warfare violates the right to life must be determined by reference to the lex specialis of international humanitarian law. However, armed unmanned vehicles are not only used in armed conflict, and sometimes they are deployed outside the legal framework of international humanitarian law. Consequently, the resort to force is governed by law enforcement standards, human rights law and human rights case law.[366]

Now, the precise content of the right to life in the context of law enforcement will be investigated. The use of force, governed by law enforcement and human rights law, is subject to the principles of necessity and proportionality. Yet, in this context, these principles have a different meaning, than during the ius ad bellum or the ius in bello.

A state can only use lethal force, if it is required to protect life. The use of force has to be strictly necessary. Firstly, there cannot be a less harmful means available. Concretely, in order to use force, one cannot have the possibility to deploy a non-lethal option. Secondly, there needs to be an imminent threat to life. However, the meaning of imminence is subject to endless controversy. Interpreted in a strict way, imminence encompasses an individual in the process of using deadly force. Consequently, evidence of a concrete and specific future attack needs to be found. The threat has to be visible. Yet, a too strict interpretation of imminence risks to violate the prohibition of arbitrary deprivation of life. On the other hand, a non-imminent threat can probably be addressed by non-lethal methods. Moreover, a future threat also risks to never be materialized. Others argue in favor of a broader interpretation. Imminence can be regarded differently, depending on the gravity of the threat posed. As such, states have a greater margin of appreciation.[367] This could risk possible abuse. Yet, arbitrariness is forbidden under several human rights documents.[368] Furthermore, the decision needs to be proportional. This means lethal force can only be used to serve a strictly preventative purpose of saving lives and cannot be a retribution for past acts. Moreover, in order to deploy lethal force, no non-lethal option may be available.[369] However, it should be noted that the interpretation of these criteria can differentiate between the various legal instruments applicable, due to the prominent role of case law in human rights law.

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[365] Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, [1996] ICJ Rep 226 at para 25.

[366] N. Melzer, *Human Rights implications of the usage of drones and unmanned robots in warfare,* Dictorate-General for external policies of the union, Directorate B, Policy Department, EXPO/B/DROI/2012/12, May 2013, p. 15 – 16.

[367] Article 9, Basic Principles on the Use of Force and Firearms by Law Enforcement Officials, Eighth United Nations Congress on the Prevention of Crime and the Treatment of Offenders, Havana, U.N. Doc. A/CONF.144/28/Rev.1 at 112, 27 Augustus to 7 September 1990;
Article 3, Code of Conduct for Law Enforcement Officials, General Assembly resolution 34/169, 17 December 1979.

[368] M. Ramsden, *Targeted Killings and International Human Rights Law: The Case of Anwar Al-Awlaki*, 16 Journal of Conflict & Security Law 385, July 2011, p. 392 – 393.

[369] P. Alston, *Study on targeted killings*, Human Rights Council, Fourteenth Session, Agenda Point 3, 28 May 2010, A/HRC/14/24/Add.6, p. 11.

According to current practice, unmanned vehicles are often deployed to target individuals based on a special list. The individuals on the list have to constitute an imminent threat and the use of force against these individuals must be proportional and necessary. However, due to the lack of transparency and the risk of subjectivity with regard to that list, it is difficult to assess whether these standards were met in the individual cases.[370]

Moreover, some authors conclude that outside of the context of an armed conflict, the use of armed unmanned vehicles, to conduct targeted killings will almost never be considered legal and will be unlikely to meet the human rights law limitations of the use of force. The killing of anyone other than the target, by an unmanned vehicle would be viewed as an arbitrary deprivation of life under human rights law. Violations of human right law entails state responsibility and individual criminal responsibility.[371] This legal position is strengthened by the following arguments. The International Court of Justice determined that common article 3 to the Geneva Conventions reflects the elementary considerations of humanity and that such provisions are even more exacting in peace than in war.[372] Common article 3 contains a prohibition to kill persons not actively taking part in the hostilities.[373] As a result, some authors consider that common article 3 constitutes a general principle of law, recognized by civilian nations.[374] Moreover, these provision can be applied in peacetime and wartime. Consequently, the prohibition of murder reflects a universal standard applicable whenever and wherever States resort to lethal force outside the conduct of hostilities.[375]

b. Due Process Considerations

The next issue, that will be addressed, is, whether the principle of due process imposes procedural controls on the current of unmanned vehicles, which are used as a tool for targeted killing. Conducting targeted strikes with unmanned vehicles should not give a blank check to the executive branch, in the name of security. Due process is normally considered by courts during a trial or with regard to detention.[376] However, it can be argued that two claims can be extended to targeted killing: a minimum level of judicial control and executive self-control. Yet, organizing effective control with regard to the executive's power is challenging.

A minimum level of judicial control could increase the accuracy of target selection. A judicial check-up could reduce mistakes and illegal decisions by the executive officials. Moreover, it could contribute to balance the interests of the targets, the non-targets and the operating state.

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[370] S. Casey-Maslen, *Pandora's box? Drone strikes under jus ad bellum, jus in bello, and international human rights law*, 94 International Review of the Red Cross, Volume 94 Number 886, Summer 2012, p. 617 – 620.

[371] P. Alston, *Study on targeted killings*, Human Rights Council, Fourteenth Session, Agenda Point 3, 28 May 2010, A/HRC/14/24/Add.6, p. 24 – 25.
N. Lubell, Extraterritorial Use of Force against Non-State Actors, Oxford Monographs in 'International Law', Oxford University Press, 2011, p. 254 – 255.

[372] Case concerning Military and Paramilitary Activities in and against Nicaragua (Merits)(Nicaragua v United States of America), [1986] ICJ Rep 14 at para 218;
The Corfu Channel Case, [1949] ICJ Rep 4, p. 22.

[373] Article 3 of The Geneva Conventions of 12 August 1949.

[374] Article 38, Paragraph 1 (c), United Nations, *Statute of the International Court of Justice*, 18 April 1946.

[375] N. Melzer, *Human Rights implications of the usage of drones and unmanned robots in warfare,* Dictorate-General for external policies of the union, Directorate B, Policy Department, EXPO/B/DROI/2012/12, May 2013, p. 18 – 19.

[376] Hamdi versus Rumsfeld, 542 U.S. 507 (United States Supreme Court) (June 28,2004);
Boumediene versus Bush, 553 U.S. 723 (United States Supreme Court)(June 12, 2008).

However, judicial control could hinder national security.[377] As a result, some argue in favor of the conservation of the current hands-off policy.[378] Yet, reality has shown that such an approach easily entails abuse. Others suggest that targets should be given notice and the opportunity to be heard, before the attack. Yet, this would be practically impossible and an exaggeration. For instance, the right to life can be derogated in the event of an imminent serious threat, if the killing would not be arbitrary. Other legal scholars state that the best guarantee consists of assuring survivors, victims or relatives to have standing in a court of the operating country and establishing an effective post-factum legality test, based on the principles of due process. Yet, this is subject to many practical and legal challenges, as will be explained in the next chapter. As a result, courts currently have a very limited role, with regard to the current use of unmanned vehicles.[379]

With regard to the second claim, the establishment of executive self-control, the executive branch should develop internal procedures, to ensure accuracy of targeted killing and the accountability of the officials, responsible for the strikes. Due to the small role of courts, the establishment of executive self-control is even more important. The Supreme Court in Israel and the European Court of Human Rights have both ruled that targeted killings conducted in counter-terrorism operations must receive close, independent review within the executive branch.

Yet, what kind of rational and fair procedures can be established in order to control targeted killing by unmanned vehicles? The Israeli Supreme Court has stated that the checks and balances need to include thorough verification of the identity and activity of the target, a prohibition of deadly attacks if other means, such as an arrest, can be used without imposing too great a risk on security forces and others and the follow-up of an attack, when the target was a civilian, by an independent, intra-executive investigation regarding the precision of the identification of the target and the circumstances of the attack.[380] The European Court of Human Rights suggest that the following elements should be taken into account: The state must initiate an investigation promptly and cannot rely on the next-of-kin to initiate action. The individuals responsible for and carrying out the investigation should be independent from those implicated in the events. The investigation should be designed to determine whether the use of deadly force was justified and should lead to identification and punishment of those responsible for the use of force, if it was illegal. In addition, there must be a sufficient element of public scrutiny of the investigation or its results to secure accountability in practice as well as in theory. Internal investigations do not pose a plausible threat to national security and ensures proper handling of classified information.[381] Yet, it still risks cover-ups. Judicial control post-factum seems thus a requirement, to ensure the interests of all the parties involved in the operation and the accountability for a possible wrongful act after the operation.[382]

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[377] Hamdi versus Rumsfeld, 542 U.S. 507 (United States Supreme Court) (June 28,2004), paras 530, 583 and 592.

[378] Justice Thomas in Hamdi versus Rumsfeld, 542 U.S. 507 (United States Supreme Court) (June 28,2004).

[379] R. Murphy and A. J. Radsan, *Due Process and Targeted Killing of Terrorists*, 31 Cardozo Law Review 405, November 2009, p. 418 – 421.

[380] Public Committee Against Torture in Israel versus the Government of Israel, HCJ 769/02 (The Supreme Court sitting as High Court of Justice)(December 11, 2005), para 40.

[381] McKerr versus United Kingdom, European Court of Human Rights, Application number 28883/95, May 4, 2001, para 111 – 115.

[382] R. Murphy and A. J. Radsan, *Due Process and Targeted Killing of Terrorists*, 31 Cardozo Law Review 405, November 2009, p. 421 – 424.

Finally, targeted killing is often conducted on the basis of a black list. The list consists of high profiling targets. Both self-control within the executive branch and judicial control should be exercised on that list.

c. Other Relevant Human Rights

There are other human rights, which can be violated through the use of armed unmanned vehicles. The right to privacy is pressured by the observation abilities of these vehicles.[383] Furthermore, especially the so-called signature strikes challenge the freedom of movement and the freedom of assembly.[384]

Yet, these rights and freedoms can be derogated from to the extent and for the period of time strictly required by the exigencies of the situation and provided that such measures are not inconsistent with its other obligations under international law. Consequently, these rules will not apply during armed conflicts and are subject to the restraints posed by international humanitarian law.[385]

7.3.2 Possible Implications of the Future Use of Unmanned Vehicles

The aspect of increasing autonomy of unmanned vehicles challenges the same fundamental human rights, as the currently employed unmanned vehicles: The right to life, the right of privacy, the freedom of movement and the freedom of assembly. Moreover, due process consideration would be very welcome for the use of these weapons too. However, the autonomy of these vehicles adds an additional dimension to the discussion.

With regard to the right to life, one can wonder whether autonomous vehicles are capable of understanding the imminence of a situation. Furthermore, it is questionable whether those vehicles can assess the necessity and proportionality, with regard of the use of force. Similar to the previous chapter, this depends on the technological innovation and the artificial intelligence, that these weapons possess. However, can an autonomous vehicle ever have enough capacity to understand these contextual and subjective legal terms and conditions? If not, autonomous vehicles cannot be lawfully deployed under international human rights law.

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[383] Article 12, UN General Assembly, Universal Declaration of Human Rights, 10 December 1948, Resolution 217 A (III);
Article 17, Paragraph 1, International Covenant on Civil and Political Rights, 19 December 1966, 999 UNTS 171;
Article 8, Paragraph 1, Council of Europe, European Convention for the Protection of Human Rights and Fundamental Freedoms, as amended by Protocols Nos. 11 and 14, 4 November 1950;
Article 11, Paragraph 1, , Organization of American States, American Convention on Human Rights, 'Pact of San Jose', Costa Rica, 22 November 1969.

[384] Article 13 and 20, UN General Assembly, Universal Declaration of Human Rights, 10 December 1948, Resolution 217 A (III);
Article 12 and 21, International Covenant on Civil and Political Rights, 19 December 1966, 999 UNTS 171;
Article 11, Council of Europe, European Convention for the Protection of Human Rights and Fundamental Freedoms, as amended by Protocols Nos. 11 and 14, 4 November 1950;
Article 15 and 22, , Organization of American States, American Convention on Human Rights, 'Pact of San Jose', Costa Rica, 22 November 1969.

[385] N. Melzer, *Human Rights implications of the usage of drones and unmanned robots in warfare,* Dictorate-General for external policies of the union, Directorate B, Policy Department, EXPO/B/DROI/2012/12, May 2013, p. 15.

7.4 RECOMMENDATIONS

According to the writer's opinion, the following recommendations can be made.

The framework of human rights law adds an interesting and valuable dimension to the legality of the use of unmanned vehicles. Human rights apply during peacetime and during wartime. However, during wartime, they should be interpreted under the lex specialis of international humanitarian law. Consequently, human right law should apply, when there are gaps in the legal framework of humanitarian law. Moreover, human rights law can also contribute to the interpretation of unclear terms and definitions of international humanitarian. With regard to the territorial applicability, it would be recommendable to promote the application of the jurisdiction of the operation state, for the individuals, who suffered from an extraterritorial attack by unmanned vehicles of that state.[386] This could limit the perception of certain operating states that they can conduct an attack with an unmanned vehicles, without taking into account fundamental human rights. Extraterritorial applicability of human rights treaties thus serves as a safeguard of the rights, enshrined in these legal documents.

The right to life renders targeted killing, outside the context of an armed conflict almost always illegal. Such an interpretation is appropriate, since strikes with unmanned vehicles should be conducted within the framework of international humanitarian law.

With regard to due process considerations, executive self-control and judicial control post factum are indispensable to prevent abuse by the government, deploying the unmanned vehicles and to protect the rights of the individuals involved. Especially, with regard to the establishment of a list with potential targets such control is important. Therefore, a special committee for judicial review of this list should be established. This protects both the interests of the individuals on the list and the secrecy surrounding the list, due to considerations of national security.

Finally, armed autonomous vehicles will not be considered legal under the framework of human rights law, in combination with the law enforcement regime in peacetime or with international humanitarian law in wartime, since it is unlikely that increasing artificial intelligence and technological innovation could rise to a sufficient level.

[386] N. Melzer, 'Targeted Killing in International Law', Oxford University Press, 2008, p. 135-139.

8. THE CONSEQUENCES OF AN UNLAWFUL USE OF ARMED UNMANNED VEHICLES

8.1 LEGAL INTRODUCTION

This chapter will tackle the questions relating to a breach of international humanitarian law and international human rights law with unmanned vehicles, either remotely controlled or semi-autonomous, either fully autonomous. If a breach is attributable to a state, that state can be held responsible. Moreover, an individual can be held responsible before national or international courts.

State responsibility can be defined as the legal consequences of the internationally wrongful act of a state and is considered a general principle of law.[387] In order to entail state responsibility, the wrongful act needs to be attributable to a state. However, sometimes, the conduct of states is precluded from state responsibility. Lastly, if state responsibility is established, a state is needs to provide reparation for the injury.[388]

A wrongful act exists of a breach of the treaties and customary law rules, that bind the state. It can also concern claims of sovereignty or title, an action for a declaration of the validity of a state measure in general international law, a violation of the sovereignty of a state by specified acts, an infringement of the freedom of the high seas or outer space, an abuse of rights, usurpation of jurisdiction, a denial of justice, a breach of human rights standards, an unlawful confiscation or expropriation of property and an unlawful seizure of vessels. The rules, concerning responsibility can be found in the Draft Articles on Responsibility of States for Internationally Wrongful Acts of the International Law Commission, which sets out certain general principles for the responsibility of states and concerning the breach of an international obligation.[389] A wrongful act can thus be a violation of international humanitarian law.[390] This applies to both conflicts of an international character and of a non-international character.

These breaches of the international obligations must be attributable to that state, in order to entail state responsibility. Those rules on attributability can be found in the Draft Articles on Responsibility of States for Internationally Wrongful Acts.[391] These include, among other the conduct of the organs of a state, such as the military forces. As such, the Hague Regulations state that a belligerent party that violates the provision of the Hague Regulations will be responsible for all acts committed by

[387] I. Brownlie, 'Principles of Public International Law', 7th edition, Oxford University Press, 2008, p. 434 – 435.
[388] S. Breau, M. Aronsson, R. Joyce, Discussion Paper 2 : Drone Attacks, International Law, and the Recording of Civilian Casulties of Armed Conflict, Oxford Research Group, June 2011, p. 21 – 23, http://www.oxfordresearchgroup.org.uk/sites/default/files/ORG%20Drone%20Attacks%20and%20International%20Law%20Report.pdf [Consulted on August 4, 2013].
[389] Article 1 – 3 and article 12 – 15, Responsibility of States for Internationally Wrongful Acts, GA Res 56/83, UNGAOR, 56th Session, Annex, Agenda Item 162, UN Doc A/RES/56/83, 2001.
[390] Rule 149: 'Responsibility for violations of International Humanitarian Law', in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter42_rule149 [Consulted on August 4, 2013].
[391] Article 4 – article 11, Responsibility of States for Internationally Wrongful Acts, GA Res 56/83, UNGAOR, 56th Session, Annex, Agenda Item 162, UN Doc A/RES/56/83, 2001.

persons forming part of its armed forces.[392] In addition, the First Additional Protocol states that a party to the conflict is responsible for all acts, committed by persons being part of its armed forces, that violate the provision of the Four Geneva Conventions and the Additional Protocols to the Geneva Conventions.[393] These rules are considered customary international law.[394] Some scholars argue that, with regard to the armed forces, there is a higher standard of prudence in their discipline and effective control is required.[395] Moreover, a state is responsible for the conduct of an organ of the state, if the organ, a person or an entity acts in that capacity, even if it exceeds its authority or contravenes instructions.

However, some circumstances preclude the wrongfulness of an act conducted by a state.[396] Such circumstances are an act conducted with valid consent by a state, an act of self-defense, an act as a countermeasure within the limits of international law against a state that conducted a wrongful act, an act under force majeure that is the occurrence of an irresistible force or of an unforeseen event, beyond the control of the State, making it materially impossible in the circumstances to perform the obligation, an act conducted in distress, an act performed out of necessity and an act that is in conformity with a peremptory norm. For instance, the use of force in Pakistan by the United States through deploying drones for a certain operation would be a breach of the prohibition of the use of force on the territory of another sovereign state. Yet, since Pakistan consented to that operation, that would preclude the wrongfulness of the breach of international law.

Lastly, if state responsibility is established, the state will suffer certain consequences.[397] The state has to cease the wrongful act, if it is continuing and has to offer guarantees of non-repetition, if the situation required so. Moreover, the state is obligated to provide full reparation for the injury caused by the wrongful act. This includes any damage, whether material or moral. Such principle is confirmed in other legislation. For instance, the Hague Regulations state that the belligerent party, that violates the rules of the Regulations, is liable to pay compensation, if requested.[398] The First Additional Protocol to the Geneva Convention also says that the state that breaches the rules of the Geneva Conventions and its Additional Protocols is liable for the damage, if asked for.[399] The latter is considered customary law, applicable in both international and non-international contexts.[400]

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[392] Article 3, Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, The Hague, 18 October 1907.

[393] Article 91, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

[394] Rule 149: 'Responsibility for violations of International Humanitarian Law', in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter42_rule149 [Consulted on August 4, 2013].

[395] I. Brownlie, 'Principles of Public International Law', 7th edition, Oxford University Press, 2008, p. 450 – 451.

[396] Article 20 – 27, Responsibility of States for Internationally Wrongful Acts, GA Res 56/83, UNGAOR, 56th Session, Annex, Agenda Item 162, UN Doc A/RES/56/83, 2001.

[397] Article 28 – 39, Responsibility of States for Internationally Wrongful Acts, GA Res 56/83, UNGAOR, 56th Session, Annex, Agenda Item 162, UN Doc A/RES/56/83, 2001.

[398] Article 3, Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, The Hague, 18 October 1907.

[399] Article 91, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

[400] Rule 150: 'Reparation', in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter42_rule150 [Consulted on August 4, 2013].

In addition to the principle of state responsibility, certain breaches of international law entail individual criminal responsibility.

The International Military Tribunals at Nürnberg and Tokyo pursued the punishment of individuals for war crimes, crimes against humanity and crimes against peace, as described in their charter.[401] Moreover, the United Nations General Assembly affirmed these principles of international law.[402] In 1950, the International Law Commission formulated the crimes under international law.[403] Nowadays, parts of these rules are considered customary international law.[404] This was affirmed by the creation of the Rome Statute, establishing the International Criminal Court.[405] This Court has jurisdiction over the following crimes: The crime genocide, crimes against humanity, war crimes and the crime of aggression. Moreover, war crimes are grave breaches of the Geneva Conventions and other serious violations of laws and customs applicable in international armed conflicts and non-international armed conflicts.[406]

National courts can prosecute international crimes. However, several ad hoc tribunals have been established throughout modern history, such as the International Criminal Tribunal for the Former Yugoslavia and the International Criminal Tribunal for Rwanda. In 2002, the International Criminal Court was created, as a permanent court to judge international crimes.

An important principle with regard to individual criminal responsibility is command responsibility or the Yamashita Standard. This doctrine determines hierarchical accountability in cases of international crimes. Commanders and other superiors are criminally responsible for war crimes committed pursuant to their orders. On the other hand, a combatant cannot rely on command responsibility when he has been given a manifestly unlawful order or an order of which the combatant knew or should have known that it was unlawful. Then, the combatant has the duty to disobey the order. Moreover, commanders and other superiors are accountable if they knew or should have known that their subordinates were about to commit or were committing such crimes and did not take all necessary and reasonable measures in their power to prevent it or punish the responsible. These rules can be found in several international legal documents.[407] Furthermore, they are considered customary international law, applicable in international and non-international armed conflicts.[408]

This chapter will first tackle the challenges posed concerning state and individual responsibility, by the use of armed unmanned vehicles. Then, the consequences of the increased autonomy will be investigated. Finally, some recommendations will be made.

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[401] London Charter of the International Military Tribunal, 8 August 1945.

[402] Affirmation of the Principles of International Law Recognized by the Charter of the Nürnberg Tribunal, UNGAGOR, 1st Session, Resolution 95, Supplement Number 1, 11 December 1946.

[403] Report of the International Law Commission to the General Assembly on the work of its second session, 5 June – 29 July 1950, Official Records of the General Assembly, Fifth session, Supplement Number 12 (A/1316, reproduced in Yearbook of the International Law Commission, 1950, vol. II, p. 374 – 378).

[404] I. Brownlie, 'Principles of Public International Law', 7th edition, Oxford University Press, 2008, p. 587 – 589.

[405] The Rome Statute of the International Criminal Court, Rome, 17 July 1998, A/CONF.183/9.

[406] Article 5 – 8, The Rome Statute of the International Criminal Court, Rome, 17 July 1998, A/CONF.183/9.

[407] Article 86, Paragraph 1 and Article 87, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.

[408] Chapter 43: 'Individual Responsibility' in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter43 [Consulted on August 4, 2013].

8.2 Implications of the Current Use of Armed Unmanned Vehicles

8.2.1 Responsibility of the Operator

a. Analysis of the Responsibility for a Remotely Controlled or Semi-Autonomous Vehicle

An operation with an unmanned vehicle, remotely controlled or semi-autonomous, that violates the principles of international humanitarian law and thus constitutes an international crime, is subject to the rules of responsibility. An unmanned vehicle is considered either a weapon, or a part of a weapon system. It is employed by commanders or by operators at the direction of commanders. Consequently, both can be held accountable. The individual can be held individually criminal responsible, on the basis of his actions with the unmanned vehicle. The commander can be considered responsible, for the action of its subordinates, as a consequence of the rules of command responsibility. In addition, international humanitarian law does not contain any rules regarding the distance between the location of the strike and the operator. This has thus no influence on the establishment of responsibility.[409] Moreover, the state can also be held responsible and be obligated to pay for the damage. On the other hand, no legal or military regimes exist that place accountability on the unmanned vehicles themselves.[410]

This can be illustrated with an example. In February 2010, a United States operation with an unmanned aerial vehicle in Afghanistan caused the death of 23 civilians. The reason behind the failure of the operation, was incomplete and inaccurate reports, given by the crew in the United States to the ground commander in Afghanistan. Based on these reports, that ignored the presence of civilians, the ground commander authorized and assisted in a missile strike from a nearby attack helicopter. These unlawful actions resulted in formal letters of reprimand to the high-ranking officers and letters of admonishment to the junior officers.[411]

b. Influence of the Status of the Operator

Currently armed unmanned vehicles are not only deployed by military personal. Contractors have also been the operators of certain unmanned vehicles.[412] Contractors should be understood as those individuals or employees of an organization, under contract with a government. Some argue that contractors will take an even more prominent role in unmanned vehicle operations, due to the increasing complexity of these technologies.[413]

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[409] M. Sterio, *The United States' use of drone in the War on Terror: The Illegality of Targeted Killings under International Law*, 45 Case Western Reserve Journal of International Law 197, 2012, p. 213.

[410] A. M. Drake*, Current U.S. Air Force Drone Operations and their conduct in compliance with international humanitarian law – An Overview*, 39 Denver Journal of International Law and Policy 629, Fall 2011, p. 654 – 659.

[411] D. Filkins, *Operators of Drones Are Faulted in Afghan Deaths*, New York Times, May 29, 2010, http:// www.nytimes.com/2010/05/30/world/asia/30drone.html.

[412] C. D. Clanahan*, Drone-Sourcing? The United States Air Force Unmanned Aircraft Systems, inherently governmental functions and the role of contractors*, 22 Federal Circuit Bar Journal 135, 2012, p. 163 – 164.
D. S. Cloud, *Civilian contractors playing key roles in U.S. drone operations*, Los Angeles Times, December 29, 2011, http://articles.latimes.com/2011/dec/29/world/la-fg-drones-civilians-20111230 [Consulted on August 5, 2013]

[413] M. Guidry & G. Wills, *Future UAV Pilots: Are Contractors the Solution?,* A.F. J. LOGISTICS, Winter 2004, p. 7-9.

Moreover, in the United States the Central Intelligence Agency (CIA) is known to have employed unmanned combat aerial vehicles.[414] However, these operations lack transparency.

International humanitarian law does not contain any rules that directly address who may conduct military operations. Consequently, a contractor or a member of the CIA can conduct operations with armed unmanned vehicles. They are then considered unlawful combatants.

Such a categorization does have certain implications regarding the responsibility. A lawful combatant enjoys belligerent immunity in an international armed conflict, from being prosecuted for any actions violating domestic legal norms.[415] Others operating an unmanned vehicle could be susceptible to domestic prosecution.[416] Unlawful combatants are not part of the chain of command. They have no knowledge of the rules of international humanitarian law and the rules of engagement. Furthermore, they did not have a special training.[417] This could cause difficulties during the conduct of an operation.

8.2.2 Practical Issues concerning Responsibility

States are under a duty to investigate the lethal force, used by their agents and the failure of those agents to comply with the legal regulations. An investigation has to be conducted immediately and has to be exhaustive, impartial and independent in hierarchical, institutional and practical terms. At the same time, it has to be subject to sufficient public scrutiny. These rules are derived from human rights law and relevant case law.[418] The duty to investigate applies in peacetime, and according to some, in wartime as well. Moreover, international humanitarian law also contains the duty to investigate. In the context of an international armed conflict an investigation is necessary for an attack directed at unlawful combatants or civilians and for attacks of which the lawfulness can be questioned. With regard to a non-international armed conflict, states are bound by a duty to investigate for alleged war crimes, such as murder within the meaning of common article 3 of the Geneva Conventions.[419] [420]

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[414] A. J. Radsan and R. Murphy, *Measure Twice, Shoot Once: Higher care for CIA-Targeted Killing*, 4 University of Illinois Law Review 1201, 2011, p. 1213 – 1214.
M. Mazzetti, *Rise of the Predators: A Secret Deal on Drones, Sealed in Blood*, The New York Times, April 6, 2013, http://www.nytimes.com/2013/04/07/world/asia/origins-of-cias-not-so-secret-drone-war-in-pakistan.html?pagewanted=all&_r=0 [Consulted on August 5, 2013].

[415] M. N. Schmitt, *Unmanned Combat Aircraft Systems and International Humanitarian Law: Simplifying the oft benighted debate*, 30 Boston University International Law Journal 596, 2012, p. 617 – 618.

[416] N. Melzer, *Interpretive guidance on the notion of direct participation in hostilities under international humanitarian law*, International Committee of the Red Cross, 2009, p. 41 – 68 http://www.icrc.org/eng/assets/files/other/icrc-002-0990.pdf [Consulted on August 5, 2013].

[417] T. Rock, *Yesterday's laws, tomorrow's technology: The laws of war and unmanned warfare*, 34 New York International Law Review 39, Summer 2011, p. 61 – 62.

[418] Juan Carlos Abella versus Argentina, Inter-American Commission on Human Rights, Case 11.137, Report number OEA/Ser.L/V/II.98, November 18, 1997, para 412;
Hugh Jordan v. The United Kingdom, European Court of Human Rights, Judgment, Application number 24746/94, May 4, 2001, para 109.

[419] Chapter 44: 'War Crimes' in International Committee of the Red Cross, Database Customary International Humanitarian Law, http://www.icrc.org/customary-ihl/eng/docs/v1_cha_chapter44[Consulted on August 5, 2013].

There is no existing treaty law that contains a comprehensive obligation to systematically record all casualties resulting from the use of lethal force by armed unmanned vehicles.[421] Yet, the precautionary principles of international humanitarian law require states to search for and identify killed or missing individuals. Still, the question remains how states would be able to comply with their duty to investigate potentially unlawful killings, without having a record of killed or injured civilians and combatant, as a result of a certain operation. Moreover, the operations of unmanned vehicles are often shrouded in secrecy.[422]

If a serious violation of international humanitarian law or international human rights law is found as a consequence of an operation with an unmanned vehicle, the responsible state has the obligation of reparation. This principle is applicable both in wartime and in peacetime. The obligation of reparation can consist of restitution, compensation, rehabilitation, satisfaction and guarantees of non-repetition. Finally, financial compensation, in particular, should be provided for economically assessable damage, such as physical, material or moral harm, and loss of earnings or of earning potential.[423]

Another issue at stake is that the family members of casualties or the wounded of an attack with an unmanned vehicle do not have access to proper courts. For instance, victims from United States drone programs have no standing in American courts. Furthermore, the United States government enjoys immunity from damage claims. In order to derogate from that immunity, the United States Congress needs to waive the government's immunity. Two statutes constitute the principal waivers of the United States' sovereign immunity from monetary claims, the Federal Tort Claims Act (FTCA) and the Tucker Act.[424] Neither affords a basis for money damages for the victims of drone attacks. A victim could also sue the officials, responsible for the damage suffered, on the basis of common tort law, a violation of international law or a violation of the American Constitution. Yet, none is likely to succeed, due to personal immunity. As stated before, operations with unmanned vehicles are being kept secret. Consequently, such information will not be accessible for court cases. Finally, states are often not that keen on prosecuting their own military personnel.[425]

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[420] N. Melzer, *Human Rights implications of the usage of drones and unmanned robots in warfare,* Dictorate-General for external policies of the union, Directorate B, Policy Department, EXPO/B/DROI/2012/12, May 2013, p. 40 – 41.

[421] J. Beswick and E. Minor, *Casualty Recording as an Evaluative Capability: Libya and the Protection of Civilians*, in M. Aaronson and A. Johnson 'Hitting the target? How new capabilities are shaping international intervention', The Royal United Services Institute for Defence and Security Studies, March 2013, p. 70 – 74.

[422] S. Breau, M. Aronsson, R. Joyce, *Discussion Paper 2 : Drone Attacks, International Law, and the Recording of Civilian Casulties of Armed Conflict*, Oxford Research Group, June 2011, p. 16 – 21, http://www.oxfordresearchgroup.org.uk/sites/default/files/ORG%20Drone%20Attacks%20and%20International%20Law%20Report.pdf [Consulted on August 5, 2013].

[423] N. Melzer, *Human Rights implications of the usage of drones and unmanned robots in warfare,* Dictorate-General for external policies of the union, Directorate B, Policy Department, EXPO/B/DROI/2012/12, May 2013, p. 41 – 42.

[424] Federal Tort Claims Act, 28 United States Code, § 1346(b), 2671-80, 2006;
Tucker Act, 28 United States Code, § 1346(a)(2), 1491, 2006 and Supplement 2008.

[425] R. D. Rosen, *Drones and the U.S. Courts*, 37 William Mitchell Law Review 5280, 2011, p. 5280 – 5293.

8.3 POSSIBLE IMPLICATIONS OF THE FUTURE USE OF UNMANNED VEHICLES

The development of autonomous weapons puts pressure on the legal system of responsibility. Who is responsible for an international crime conducted by an autonomous vehicle? Is it the commander, the programmer, the manufacturer or the robot itself? What is the pattern of legal thinking for the establishment of such a responsibility?

An autonomous vehicle, even when it is highly advanced, does not have a criminal state of mind. The unmanned vehicle is regarded as merely an instrument. This can be called the perpetration-by-another liability model, which considers the autonomous vehicle as an innocent agent, without any human attributes.[426] Yet, this model has its limits. Firstly, autonomous vehicles can make their own decisions and operate independent. Secondly, this model assumes responsibility for the one responsible for the autonomous vehicles.

Some say that the commander should be held accountable, within the limits of command responsibility. Yet, the application of that principle to autonomous vehicles is not that easy. Command responsibility would likely apply if a commander was aware in advance of the potential for unlawful actions and still deployed a fully autonomous weapon. However, a commander cannot identify a threat or a problem of the autonomous vehicle in advance that could indicate that the vehicle will violate a rule of international law, since he did not program the robot. Furthermore, the commander cannot change the operation of the autonomous vehicle if it is about to commit a crime, due to the independence of the vehicle. As a result, command responsibility is unlikely to hold a commander accountable for the violations of international law by an autonomous vehicle.[427]

Furthermore, an unlawful act, committed by an autonomous vehicle could also be characterized as the result of a failure of the design or the programming. Consequently, the programmer or manufacturer are held accountable. The programmer installs the foundation for the decision of the unmanned vehicle. Yet, the autonomous vehicle makes its own decision on the battlefield. Consequently, the programmer could only be held accountable for violations, as a result of negligence of the programmer. In addition, to be held accountable for a criminal act one has to have caused the unlawful act intentionally.[428] With regard to the manufacturer, some argue to ascertain responsibility on the basis of product liability, for violations of international law by fully autonomous vehicles, caused by problems in the design.[429] Yet, private weapons manufacturers are normally not punished for the way the weapons are being deployed. Moreover, a claim on the basis of product liability is a civil suit, that will take place in courts, outside the state of the victims. This will entail a lack of standing and other practical issues, as discussed above. Holding programmers and manufacturers accountable for the unlawful acts of fully autonomous vehicles is not effective, nor is it fair.[430]

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[426] G. Hallevy, *Unmanned Vehicles: Subordination to Criminal Law under the Modern Concept of Criminal Liability,* 21 Journal of Law, Information and Science 200 2011, p. 201 – 204.

[427] X, Losing Humanity: The Case against Killer Robots, Human Rights Watch, 2012, p. 42 – 43, http://www.hrw.org/sites/default/files/reports/arms1112ForUpload_0_0.pdf [Consulted on August 5, 2013].

[428] R. Sparrow, *Killer Robots*, Journal of Applied Philosophy, Volume 24 Number 1, 2007, p. 69-70.

[429] P. Lin, G. Bekey, and K. Abney*, Autonomous Military Robotics: Risk, Ethics, and Design*, December 20, 2008, p. 55 – 56, http://ethics.calpoly.edu/ONR_report.pdf [Consulted on August 5, 2013].

[430] X, Losing Humanity: The Case against Killer Robots, Human Rights Watch, 2012, p. 44, http://www.hrw.org/sites/default/files/reports/arms1112ForUpload_0_0.pdf [Consulted on August 5, 2013].

In addition, the autonomous vehicle itself could be held accountable. This can be called the model of direct liability. In order to establish criminal responsibility for an autonomous vehicle, a factual element of committing a crime and the intent of conducting the crime, the mental element need to be observed. Yet, it is unlikely that an autonomous vehicle will ever be capable of the mental element. [431]

To conclude, the increased autonomy of future unmanned vehicles creates a gap in responsibility. People could not be held accountable, since they do not have sufficient control. The vehicle itself could not be responsible, because it lacks the element of intention for committing the unlawful act. Accountability is a tool to ensure enforcement of international norms. If there is no accountability possible, international rules and regulations will be easily violated, without any consequences.

8.4 RECOMMENDATIONS

According to the writer's opinion, the following recommendations can be made.

Accountability for violations of international humanitarian law and international human rights law is crucial to ensure a certain enforceability of these regulations.

The responsibility for unlawful acts, conducted with unmanned vehicles, remotely controlled or semi-autonomous, lies with the operator. However, in the circumstances determined by command responsibility, the commander of the operator can be held accountable. Moreover, states are responsible for the conduct of their agents, such as the military personnel. Unmanned vehicles should only be operated by military personnel, which are lawful combatants. Yet, they can be assisted by private contractors in order to overcome some of the complexities of the system.

With regard to unlawful acts, conducted by autonomous vehicles, it is clear that the vehicle itself cannot be held accountable. As a result, some sort of artificial chain of responsibility should be developed. As such, the commander of the autonomous vehicle should be held accountable for the actions of the vehicle. The commander can escape the responsibility by proving that the cause of the unlawful act is attributable to the manufacturer or the programmer. Moreover, states are responsible for the unlawful acts of autonomous vehicle, which belong to the state, for instance through the indication of the nationality of the vehicle.

Finally, in order for an individual to be able to exercise its claim for the reparation of the damage, caused by the unlawful act, the individual has to have access to a court and the evidence.

[431] G. Hallevy, *Unmanned Vehicles: Subordination to Criminal Law under the Modern Concept of Criminal Liability,* 21 Journal of Law, Information and Science 200 2011, p. 207 – 210.

9. BEYOND THE LAW: ETHICAL AND POLITICAL CONSIDERATIONS

9.1 INTRODUCTION

This last chapter will give an overview of certain ethical and political considerations.

What is the influence of the distance between the target and the operator? Do the distance and the extensive use of scopic regimes turn the use of unmanned vehicles into a videogame? Is it easier for the operator to pull the trigger? Moreover, are autonomous vehicles capable and will they ever be capable of taking into account all the appropriate ethical deliberations, when conducting a strike?

How effective is the use of unmanned vehicles? What are the costs of deploying armed unmanned vehicles, as part of a political strategy? Is it the best strategy to conduct combat in the current contemporary warfare?

In the following part, these questions will be addressed. This chapter will end with the discussion of the possible creation of soft law instruments by the international community, in an attempt to set some boundaries to the use of unmanned vehicles.

9.2 FRAMING THE ISSUES

9.2.1 ETHICAL LIMITS TO THE USE OF UNMANNED VEHICLES

a. REMOTELY CONTROLLED OR SEMI-AUTONOMOUS VEHICLES

One of the most obvious ethical concerns is the existence of psychological distance between the operator of the unmanned vehicle and the target on the actual battlefield. The geographical distance can result in a facilitation of killing at a distance. The psychological distance then can make it easier for the target to make the decision to conduct a strike. This could possibly lead to an undercut of the respect for human life. Yet, dropping a bomb with a plain entails a similar distance between the operator of the plain and the possible victims on the ground. Consequently, the creation of psychological distance, when using armed unmanned vehicles does not seem sufficient for a possible limitation of these weapons.[432]

The increased reliance on these technologies and subsequent the killing at distance is often said to render a war virtual. Consequently, the parties do no longer 'experience war'. There is no risk to the life of the pilot. However, this applies only for the operating party in the conflict. For the civilians and combatants on the ground, the war remains real, with risk of getting injured or killed and suffering damage to belongings. Yet, it can be argued that warfare with unmanned vehicles is a real experience for the operator and should not be considered a videogame.[433]

[432] R. Sparrow, *Predators or Plowshares? Arms Control of Robotic Weapons*, IEEE Technology and Society Magazine, Spring 2009, p. 26.
[433] Figure 15.

For instance, there are different types of scopic regimes available for the operator, such as macro-field vision or micro-vision. These different scopic regimes should not merely be considered technical feats, since they are conditional and conditioning the decision of the operator.[434] Furthermore, research has confirmed that operators of unmanned aerial vehicles suffer similar rates of post-traumatic stress disorder, compared to soldiers engaged in battle. This can be explained as a result of exposure to high-resolution images of killings. Moreover, they also experience a sense of proximity to the ground troops, inculcated by the video feeds from the aerial platforms.[435] It can be concluded that automated war is virtual, yet humanly experienced by the operators.[436] This could influence the way in which remotely controlled vehicles are deployed.

b. AUTONOMOUS VEHICLES

The increasing autonomy of armed unmanned vehicles provokes some ethical issues. The main question, meanwhile, is whether autonomous vehicle can operate in an ethically acceptable way. Will an autonomous vehicle be able to weigh the costs and benefits, understand the right and wrong, experience mercy? This is called the functional morality. Yet, debates about ethics and autonomous vehicles are characterizes by profound disagreement concerning the nature of morality and the extent to which an act sounding in moral judgment can be disaggregated into component parts and into an algorithmic rational choice process. Moreover, there is extensive disagreement whether the ethical standards of an autonomous vehicle need to be the same as the ones for a human.[437]

Translating ethics into artificial intelligence programs can be really challenging. To illustrate the ethical decision-making program, that humans use when engaging in a conflict situation, the four-step process for soldiers, as laid out in the United States Army Soldier's Guide will be explained.[438] Step one directs the service member to define the problem. Step 2 states that the combatant has to know the relevant rules and values at stake, such as the law, administrative rules, the rules of engagement, command policies and army values. According to step 3, the soldier has to develop the possible course of action and evaluate it, using the following criteria. Firstly, are there possible violation of rules, laws or regulations? Secondly, are the foreseeable positive effects of the action outweighing the foreseeable negative effects? Thirdly, do the circumstances of the situation favor one of the values or rules in the conflict? Lastly, does the course of action feel like it is the right thing to do? Moreover, does it uphold Army values and develop your character or virtue? The final part of the process, step 4, obligates the combatant to assess, if there are more than one courses of action according to the previous steps, which course of action is the best aligned with the criteria in step 3.

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[434] D. Gregory, *From a View to a Kill: Drones and Late Modern War* , 28 Theory Culture Society 188, 2011, p. 197 – 199.

[435] I. G. R. Shaw and M. Akhter, *The Unbearable Humanness of Drone Warfare in FATA, Pakistan*, Antipode 44, number 4, 2012, p. 1493.

[436] C. Holmqvist, *Undoing War: War Ontologies and the Materiality of Drone Warfare,* 41 Millennium - Journal of International Studies 535, 2013, p. 541 – 543.

[437] N. E. Sharkey, *The Evitability of Autonomous Robot Warfare*, International Review of the Red Cross, Volume 94 Number 886, Summer 2012, p. 792 – 796.

[438] United States Army Field Manual Number 7-21.13, The Soldier's Guide, February 2004, http://armypubs.army.mil/doctrine/DR_pubs/DR_a/pdf/fm7_21x13.pdf [Consulted on August 8, 2013].

It may be possible in the future to develop computer programs for the different steps. However, the last criterion of step 3 remains clearly outside the scope of autonomous systems. Consequently, some argue that an autonomous vehicle could never possess sufficient artificial intelligence and other technical assets to operate fully autonomous.[439]

Other scholars and technical experts are convinced that autonomous systems can be designed and constructed in a way, which can integrate moral judgments at the level of the programming of an unmanned vehicle. The goal is to develop autonomous vehicles, capable of applying international humanitarian law on the battlefield and of adopting all the necessary ethical considerations, when conducting an operation. Moreover, they argue that autonomous vehicles are potentially capable of performing more ethically than human soldiers, under comparable circumstances. This could result in a better protection of the civilians and the civilian objects in the warzone. Yet, several hurdles need to be conquered. According to them, regulation and battlefields ethics, on one hand and the capabilities of autonomous vehicles, on the other hand should evolve more towards each other.[440]

9.2.2 Policy Demurs

Unmanned vehicles play an increasing role in military and political strategy. First, the efficiency and some of the consequences of the use of unmanned vehicles in counterterrorism and counterinsurgency will be discussed. Then, the possibility of an arms race with regard to unmanned technology and some possible outcomes will be assessed briefly.

Strikes of unmanned aerial vehicles are especially prominent in counterterrorism and counterinsurgency. Using unmanned vehicles is considered an effective way to kill high-profile members of terrorist groups or insurgents by operating states. Subsequently, the operating state hopes to weaken the organizational capacity and the ability to conduct attacks of such groups. Other advantages, which are often cited include a decreased risk of civilian losses, a minimal danger for the operating party and access to places and individuals, normally inapproachable for foreign troops.[441]

However, deploying armed unmanned vehicles, as a significant part of a military and political strategy can have downsides.

It can be questioned whether unmanned vehicles are that effective at killing targeted of individuals, without causing civilian casualties. Yet, data on the conduct of the operations and the number of deaths and injured are of questionable reliability, as explained in the first chapter. Attacks with unmanned aerial vehicles are mostly classified. Other sources are often not trustworthy, since they minimize or exaggerate the number of victims, according to their own agenda. Yet, some of the estimations of the number of casualties, meanwhile are rather high, suggesting that the use of unmanned aerial vehicles is not that efficient in preventing civilian losses. Moreover, lower-ranked operatives have been increasingly the subject of operations.[442]

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[439] W. C. Marra and S. K. McNeil, *Understanding "The Loop": Regulating the Next Generation of War Machines*, 36 Harvard Journal of Law & Public Policy 1139, Summer 2013, p. 1181 – 1185.
[440] R. C. Arkin, *The Case for Ethical Autonomy in Unmanned Systems*, Journal of Military Ethics, Volume 9 Number 4, 2010, p. 332 – 341.
[441] J. O. Brennan, *The Efficacy and Ethics of U.S. Counterterrorism Strategy*, Wilson Center, April 30, 2012, http://www.wilsoncenter.org/event/the-efficacy-and-ethics-us-counterterrorism-strategy [Consulted on August 8, 2013].
[442] M. J. Boyle, *The Costs and Consequences of Drone Warfare*, 89 International Affairs 1, 2013, p. 3 – 14.

As a result, tensions among the local communities, feelings of hatred vis-à-vis the operating state and political resistance against such strikes have deepened. The latter threatens the perceived competence and legitimacy of the governments on which the operating state is dependable for counterterrorism cooperation. In addition, the attacks of unmanned vehicles have been forcing non-state actors to move around constantly. It has made it harder for them to train fighters and plan attacks. Yet, these fighters have not given up. The drone attacks have scattered these non-state actors, but did not neutralize them. They often joined other fighting groups, reshaping the active militant networks. Moreover, the involvement of unmanned vehicles does not attempt to tackle the origins of terrorism and pugnacity of the non-state actors.[443]

Furthermore, strikes of unmanned vehicles entail social effects. Drones spread fear and suspicion throughout the society, due to their ability to strike without warning or being noticed. This causes a wave of terror among the civilian population, to be in the wrong place at the wrong time when such an attack occurs. This influences daily economic and social activities within these communities. Moreover, operations with unmanned vehicles are often based on intelligence information of locals. Some of these contacts tend to lie and as such fuel communal mistrust.[444]

To conclude, the use of unmanned vehicles, to conduct targeted killings could only be useful, if it contributes to achieving the strategic goals of the operating state in a region on the short term and the long term. Even then, such weapons should be treated with caution.

The more prominent role of armed unmanned vehicles can potentially induce a dangerous arms race for this technology. Currently, there are only a limited number of states that deploy lethal unmanned weapons, such as the United States and Israel. Yet, other countries are not far behind. Consequently, some argue that a global arms race could be initiated. States with different, even conflicting interests will deploy unmanned vehicles. The increased use of unmanned vehicles could strengthen the possibility of states to exercise extensive surveillance, within the military context and possibly undercut civil liberties.[445] The use of unmanned vehicles could lower the de facto threshold to use force. This could entail an increased risk of war. Some go even further, by stating that the extensive use of unmanned vehicles could divide the world into two camps: Stronger states, that possess unmanned vehicles and weaker states and non-state actors that do not. Moreover, it could reshape the power structures in the world.[446]

9.3 RECOMMENDATIONS

According to the writer's opinion, armed unmanned vehicles cause legal and ethical controversy. As stated before, remotely controlled, semi-autonomous vehicles should be subject to clear legal and moral boundaries. Fully autonomous vehicles obviously violate international regulation and ethical codes. Moreover, it seems unlikely that technological development would be able to meet all the deficits. Consequently, strict restriction or even a ban on autonomous vehicles would be welcome. In addition, the proliferation of all this technology, could induce an arms race between various states.

[443] X, *Living under drones: Death, Injury, and Trauma to Civilians From US Drone Practices in Pakistan*, Stanford Law School and NYU School of Law, http://livingunderdrones.org, 2012, p. 125 – 146.
[444] M. J. Boyle, *The Costs and Consequences of Drone Warfare*, 89 International Affairs 1, 2013, p. 21.
[445] M. J. Boyle, *The Costs and Consequences of Drone Warfare*, 89 International Affairs 1, 2013, p. 22 – 27.
[446] R. Sparrow, *Predators or Plowshares? Arms Control of Robotic Weapons*, IEEE Technology and Society Magazine, Spring 2009, p. 26 – 27.

As a result, the adaptation of a legally binding instrument, coping with all these aspirations would be ideal. However, creating and implementing hard law is a long and difficult process, which often does not entail the expected results. Consequently, the establishment of informal or soft law initiatives to manage the risks and regulating the use of these emerging military technologies, without creating enforceable legal requirements would be recommendable. There are several different instruments available: Codes of conduct, transgovernmental dialogue, information sharing and confidence-building measures and a framework convention. The advantages of such a strategy are increased flexibility, less time consuming to develop and launch and easily adoptable to changing technological, political and security landscapes. Such a soft law approach is especially useful for arms control.[447]

First, a code of conduct with regard to the use of unmanned vehicles could be adopted. Codes of conduct are non-binding general guideline, defining ethical behavior and promoting responsibility. Codes of conduct are often a combination of three types of codes: Codes of ethics, which strife for professionalism, codes of conduct sensu stricto, which entail guidelines of appropriate behavior and codes of practice, which embody the practices to be enforced. A code of conduct can be adopted by the armed forces of a country, the executive branch of a state and proposed by a non-governmental organization, such as the International Red Cross. Codes of conduct may play a transitional role, while awaiting legally binding measures. Moreover, their creation can have educational and cooperation-building effects. Yet, drafting a good code of conduct can be very challenging, since it requires sufficient attention for detail and proper balancing of the policy interests of all the stakeholders. With regard to armed unmanned vehicles, the development of codes of conduct can be very useful, both at a national and an international level. It can be the beginning of an international debate. It can create awareness for the positive and negative characteristics of unmanned vehicles, the limitations of its use and the intentions of other countries. However, a code of conduct will most likely be insufficient. Consequently, adopting a legally binding document will be necessary.[448]

Second, setting up a transgovernmental dialogue with regard to unmanned vehicles could be a solution too. A transgovernmental dialogue refers to informal and flexible arrangements under which governmental officials from different countries meet on a regular basis to discuss and coordinate policies. This could provide a forum to share information and best practices, to seek to harmonize policies and oversight mechanisms, to coordinate enforcement practices, and to anticipate, prevent and resolve disputes. Transgovernmental dialogues could influence policy outcomes and enhance cooperation.[449] The results of a transgovernmental dialogue can be a good foundation for negotiating legally binding agreement. This model can start the dialogue among governmental policymakers with regard of the international policies for lethal unmanned vehicles.[450]

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[447] K. W. Abbott and D. Snidal, *Hard and Soft Law in International Governance*, 54 International Organization. 421, 2000, p. 434 – 450;
R. L. Williamson, *Hard Law, Soft Law, and Non-Law in Multilateral Arms Control: Some Compliance Hypotheses*, 4 Chicago Journal of International Law 59, 2003, p. 63;
G. E. Marchant and others, *International Governance of Autonomous Military Robots*, 12 Columbia Science and Technology Law Review 272, June 2011, p. 287.

[448] G. E. Marchant and others, *International Governance of Autonomous Military Robots*, 12 Columbia Science and Technology Law Review 272, June 2011, p. 288 – 289.

[449] P. Pawlak, *From Hierarchy to Networks: Transatlantic Governance of Homeland Security*, 1 Journal of Global Change and Governance 1, Winter 2007, p. 19.

[450] G. E. Marchant and others, *International Governance of Autonomous Military Robots*, 12 Columbia Science and Technology Law Review 272, June 2011, p. 289 – 290;

Third, sharing information between countries and adopting confidence-building measures can enhance stability, trust and security, for instance in the military and the national security context. These measures can be adopted unilaterally, coordinated or negotiated among several states. Confidence-building measures exist of a mix of communication, constraint, transparency, or verification measures. An example of such a measure is the Biosafety Clearing-House under the Cartagena Protocol.[451] This is a web-based portal that provides a forum for nations to share information on scientific risk of biotechnology products and regulatory, legal and ethical determinations from each nation. There are variety of confidence-building measures, applicable for armed unmanned vehicles. For instance, a limited moratorium on the deployment of autonomous vehicles could be installed. Furthermore, states could hold an international conference to discuss armed autonomous vehicles and to share information concerning important issues.[452]

Lastly, a framework agreement or convention could be established. This is an instrument between a soft law and a hard law approach. A framework convention does not contain substantive regulation. Rather, a framework convention creates a process and an institutional basis for gradually developing a formal international agreement, such as establishing an annual meeting of the representatives of the participating nations, creating a small secretariat to manage the progress and providing provisions for negotiating and adopting a more substantive legal document. An example constitute the Framework Convention on Climate Change.[453] A framework agreement provides several benefits for states, including acknowledging that a problem may exist, making it legitimate as an international concern, drawing the attention of relevant experts, interest groups, and the public to the problem, committing themselves to take, or at least to consider to take more substantive action and demonstrating that they are taking the issue seriously. Moreover, states will easier agree with a framework convention than a formal agreement. Subsequently, such a convention can open the door for more substantive commitments. This could be thus a very useful step in creating legislation concerning unmanned vehicles.[454]

These soft law initiatives contain different ways to solve the various problems of governance and policy concerning armed unmanned vehicles, through sharing information, providing structures to negotiate, adopting some behavioral and ethical rules for their use and others informal approaches. They are thus very useful to ascertain the appropriate substantive measures, to set out certain limits to the use of armed unmanned vehicles, taking into account political and ethical issues. Furthermore, they should be regarded as a step towards the creation of a legally binding agreement or convention. Yet, the adaptation of soft law instruments depends on the goodwill of states. However, currently states are not yet willing to initiate and engage in the debate concerning legal, ethical and political considerations for unmanned vehicles.

An example: Economic Co-operation and Development (OECD), http://www.oecd.org/ [Consulted on August 8, 2013].

[451] Biosafety Clearing-House (BCH), http://bch.cbd.int/ [Consulted on August 8, 2013].

[452] G. E. Marchant and others, *International Governance of Autonomous Military Robots*, 12 Columbia Science and Technology Law Review 272, June 2011, p. 290.

[453] United Nations Framework Convention on Climate Change, http://unfccc.int/2860.php [Consulted on August 8, 2013].

[454] G. E. Marchant and others, *International Governance of Autonomous Military Robots*, 12 Columbia Science and Technology Law Review 272, June 2011, p. 291.

10. CONCLUDING THOUGHTS

Throughout this master thesis, the influence of unmanned technology and the subsequent challenges have been investigated. Moreover, in these selected topics, the rules and limitations as confined by international humanitarian law and human rights law to unmanned vehicles have been assessed.

When consulting literature on unmanned vehicles, the writers often choose a rather extreme point of view. Yet, the result of this research shows that the relation between these emerging technologies and international law is more nuanced. International law, especially international humanitarian law has been designed to be flexible enough to adapt to technological developments, including those that could not have been anticipated at the time that the legal framework was created. Yet, it is also clear that the legal framework cannot keep up with the changes. Some of the deficits of the international legal framework are caused by the impact of the development and use of unmanned vehicles. Other problems of the framework originate from different challenges, imposed by the complexity of contemporary warfare. In that case, the difficulties regarding the influence of the use of unmanned vehicles is merely another symptom. The deficits of the current legal system should be address. However, the legal challenges surrounding the use of unmanned vehicles extend beyond that framework. Consequently, new rules and regulations should be adopted. Yet, the most important conclusion of this thesis, is the urgent need for the international community to initiate the debate regarding the legal issues, as well as ethical and political considerations.

Both the theory of the ius ad bellum and the typology of conflicts are not directly influenced by the use of unmanned vehicles. Rather, these new technologies illustrate the complex issues concerning these legal theories, due to contemporary warfare. Conflicts are no longer fought between countries. Hostilities take place between states and non-state actors or between non-state actors themselves. The current legal concepts are often not well adapted to such situations. With regard to the ius ad bellum, the rights of self-defense and consent are most relevant for the current conduct of unmanned operations. Yet, the legal theory behind these concepts is subject to extensive debate among legal scholars. The typology of armed conflicts entails the set of rules applicable in the hostilities. Consequently, it sets out applicable rules and limitations for operations with armed unmanned vehicles. Determining the characteristic of the conflict can be very challenging in the current context of contemporary conflicts, especially with regard to the war on terror. The classification of the war on terror is subject to various legal interpretations among international experts. With regard to both legal topics, the foreseeable future development of the unmanned technology will not entail radical changes.

In this thesis, the legality of the unmanned vehicles has been investigated. There are no specific legal provisions, originating from treaties or customary international law, that regulate the legality of unmanned aerial, naval and ground vehicles. Moreover, unmanned vehicles, remotely controlled or semi-autonomous do not violate the legal framework, common to all types of weapons per se. However, the payload has to comply with all the applicable legal standards. Regarding fully autonomous vehicles, meanwhile, the conformity with international law is debatable. Mainly the requirement for weapons to be able by their nature to distinguish between a civilian and a combatant, a civilian object and a military object seems to be violated. This thus questions the legality of autonomous vehicles.

Even if the unmanned vehicles are considered legal as such, the use of the unmanned vehicle can still render it illegal. Similarly to the legality of unmanned vehicles, there are also no specific rules prohibiting or limiting the use of unmanned vehicles. When considering the legality of the use of remotely controlled or semi-autonomous vehicles with regard to the general principles of law, it becomes clear that, in practice, there are some problems, for instance concerning the principle of distinction, the principle of humanity and the obligations to take necessary precautions in an attack. Consequently, clear legal boundaries are necessary to prevent an unlawful act. The use of fully autonomous vehicles, on the other hand clearly violates the general principles of law.

The framework of international human rights law adds an interesting prospective to the legality of the use of unmanned vehicles. During an armed conflict, its rules can contribute to the gaps in the framework of international humanitarian law and clarify certain concepts. During peacetime, the right to life renders targeted killing nearly impossible. In addition, due process considerations add valuable elements to targeted killing, such as executive self-control and post-factum judicial control. Autonomous vehicles are unlikely to meet the conditions set out in the right to life.

Finally, an internationally wrongful act entails both individual criminal responsibility and state responsibility. Regarding the first one, the operator is responsible for the conduct of the unmanned vehicle that it operates, except in cases of command responsibility. Yet, when an autonomous vehicle conducts an unlawful act, the establishment of responsibility is a difficult issue.

On the basis of the conducted research several recommendations have been made. The most important ones will be briefly summarized.

Due to all of the above mentioned challenges, it has to be concluded that some regulatory initiatives are indispensable. Adopting a legally binding international treaty regulating the status of unmanned vehicles and setting out some prohibitions and limitations seem ideal. Yet, arms control treaties tend to be very time consuming and difficult to establish. Therefore, installing some soft law approaches, such as codes of conduct, transgovernmental dialogue, information sharing and confidence-building measures and a framework convention would be the ideal step in between.

With regard to the content, a ban on armed fully autonomous vehicles, preferably through the prohibition of the deployment of such vehicles is necessary. Furthermore, some rules concerning the proliferation of remotely-controlled and semi-autonomous could be an advantage. In addition, transparency should be a key issue in such an international legal agreement. Moreover, the use of unmanned vehicles should be subject to strict limits, as set out in the general rules of international humanitarian law. Such a treaty should preferably contain an obligation to establish effective executive self-control and post factum judicial control, when deploying unmanned vehicles. Furthermore, a clear chain of responsibility should be established within that legal framework, both with regard to the accountability of an individual and of the state, under which command the vehicle was operated. Lastly, the relevant ethical issues should be taken into account.

Finally, the law concerning the ius ad bellum, especially with regard to the right to self-defense and consent should be clarified. With regard to the typology of armed conflicts, efforts towards a single legal framework for conflict should be made.

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ANNEX I: NEDERLANDSTALIGE SAMENVATTING

Deze thesis behandelt de legaliteit van onbemande wapens en de verschillende uitdaging voor het internationaal recht, als gevolg van het gebruik daarvan. In deze thesis werd ervoor gekozen om verschillende topics van het internationaal recht, in relatie tot onbemande toestellen te bespreken.

Het ius ad bellum, dat bepaalt onder welke omstandigheden een staat legaal geweld mag gebruiken ten opzichte van een andere staat, wordt niet direct beïnvloedt door de opkomst van deze wapens. De problemen worden echter veroorzaakt door vage definities en condities, die de juridische figuren van zelfverdediging en toestemming omringen. Zowel het recht op zelfverdediging, als het verkrijgen van de toestemming van de staat waar het gebruik van geweld zal plaatsvinden, worden door staten, zoals de Verenigde Staten als voornaamste elementen om het gebruik van geweld te rechtvaardigen opgeworpen. Een dringende verduidelijking door de internationale gemeenschap en het internationaal gerechtshof is noodzakelijk.

De typologie van conflict bepaalt of een conflict moet beschouwd worden als een internationaal gewapend conflict of een niet-internationaal gewapend conflict. Dit bepaalt op zijn beurt welke regels er van toepassing zijn in het conflict. Onbemande toestellen worden vaak ingezet tijdens de globale oorlog tegen terrorisme. De classificatie van dit conflict wordt hevig bediscussieerd in de juridische wereld. In de lijn van de redenering van het internationale comité van het Rode Kruis, moet de oorlog tegen het terrorisme worden opgedeeld in de verschillende sub-conflicten. Vervolgens moet de status van deze conflicten afzonderlijk bepaald worden.

Vervolgens rijst er de vraag met betrekking tot de legaliteit van deze onbemande wapens. Artikel 36 van het eerste protocol van de Conventies van Genève verplicht staten om nieuwe wapens te onderzoeken naar hun legaliteit. Het internationaal recht bevat geen specifieke bepaling omtrent deze toestellen. Wel kan er teruggeplooid worden op de algemene beginselen met betrekking tot de legaliteit van wapens. Deze lijken niet te worden geschonden door onbemande wapens, die vanop een afstand bestuurd worden of semiautonoom zijn. Wel, kan de legaliteit van volledig autonome wapens worden bediscussieerd, voornamelijk met betrekking tot de verplichting om onderscheid te maken tussen burgers en strijders. Verder, is het aangewezen om een verdrag te trachten te onderhandelen met betrekking tot een verbod op het gebruik van autonome wapens en andere regels, zoals over proliferatie en transparantie.

Ook al zijn onbemande wapens niet allen illegaal vanwege hun natuur, de wijze waarop ze gebruikt worden kan ook het internationaal recht schenden. Met betrekking tot de vanop een afstand bestuurde en de semiautonome onbemande wapens lijken er toch reeds enkele problemen te zijn over het gebruik. De autonome wapens daarentegen schenden duidelijk de algemene regels van het internationaal recht over het gebruik van wapens. Bijgevolg kunnen deze wapens enkel wettelijk worden ingezet, indien ze voldoen aan de regels van het internationaal recht. Deze verplichting en de specifieke regels zouden eveneens in een verdrag moeten worden opgenomen.

Daarnaast leggen de mensenrechten ook enkele voorwaarden op aan het gebruik van onbemande wapens. Meer specifiek, het recht op leven verzet zich tegen arbitraire moord. Het principe van het recht op leven legt bovendien een grote beperking op aan het gebruik van onbemande wapens. Dit lijkt niet meer dan logisch. Verder, kunnen de regels op het eerlijk proces ook positief bijdragen tot de legaliteit van het gericht moorden. Autonome onbemande wapens lijken niet te voldoen aan de voorwaarden om het recht op leven tijdelijk naast zich neer te leggen.

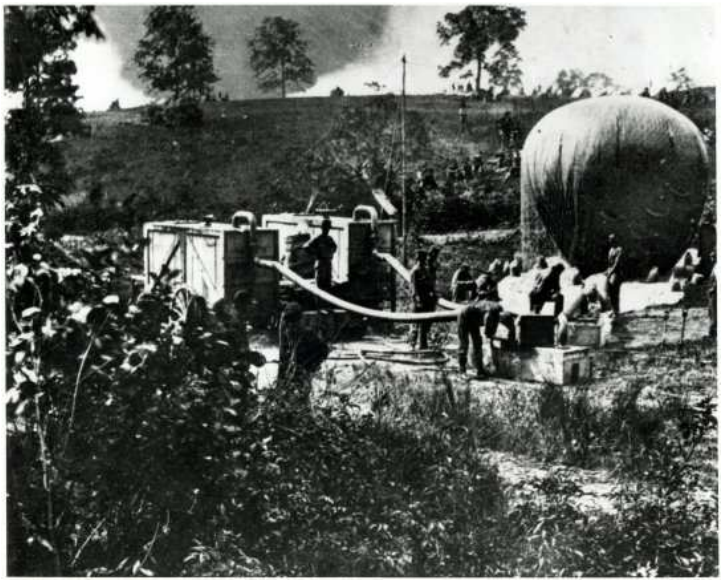
Het internationaal humanitair recht en de mensenrechten zijn, wat betreft hun afdwingbaarheid gedeeltelijk afhankelijk van een duidelijk en goed werkend systeem van verantwoordelijkheden voor schendingen en de daaropvolgende rechten van schadevergoedingen voor de slachtoffers. Echter, dit systeem wordt onder druk gezet door het gebruik van onbemande wapens. Daarom is het van belang, een duidelijke regeling inzake verantwoordelijkheid, zowel van het individu als van de staat vast te stellen.

Tenslotte, kunnen ook enkele ethische en politieke bezwaren tegen het gebruik van onbemande wapens in acht genomen worden, zoals de terroriserende effecten van een operatie met onbemande toestellen voor de plaatselijke bevolking.

Tot besluit, kan worden aangenomen dat de ontwikkelingen inzake onbemande wapens wel degelijk een invloed uitoefenen op het internationaal recht. Tevens legt dat recht eveneens zekere beperkingen op aan de legaliteit en het gebruik van onbemande wapens. Onbemande wapens hebben zeker bepaalde voordelen in sommige situaties. Toch kunnen ze ook erg gevaarlijk zijn. Bijgevolg, moet er allereerst dringend een debat op gang komen in de internationale gemeenschap over deze wapens. Vervolgens zouden wetgevende initiatieven moeten genomen worden.

ANNEX II: LIST WITH FIGURES

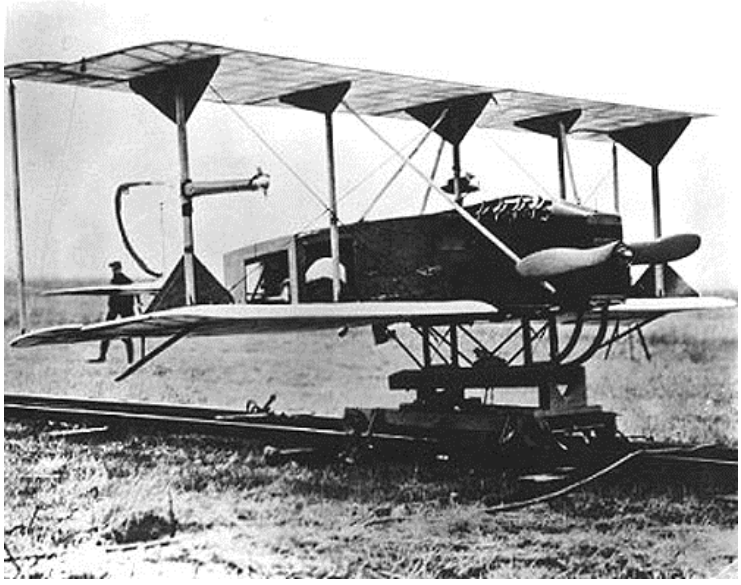
FIGURE 1



Description: Balloon at Battle of Fair Oaks: Thaddeus Lowe inflates his balloon Intrepid during the Civil War's Battle of Fair Oaks in Virginia.

Source: D. Miles, *Balloon reconnaissance marks 150th anniversary*, American Forces Press Service, http://www.army.mil/article/59509/, 13 June 2011 [Consulted on July 5, 2013]

FIGURE 2



Description: The original Sperry Aerial Torpedo, 1918

Source: x, The 'Aerial Target' and 'Aerial Torpedo' in the USA, Remote Piloted Aerial Vehicles, http://www.ctie.monash.edu.au/hargrave/rpav_usa.html [Consulted on July 5, 2013].

FIGURE 3

Description: X47A (UCAV)

Source: M. Arjomandi, *Classification of unmanned aerial vehicles*, the University of Adelaide, Australia, 2006, p. 31.

FIGURE 4

Description: MQ-1 Predator (Multi-Purpose Vehicle)

Source: M. Arjomandi, *Classification of unmanned aerial vehicles*, the University of Adelaide, Australia, 2006, p. 34.

FIGURE 5

Description: MQ-5B Hunter

Source: M. Arjomandi, *Classification of unmanned aerial vehicles*, the University of Adelaide, Australia, 2006, p. 35.

FIGURE 6

Description: ANDROS F6A on toes with SL6 shotgun and mount

Source: Northrop Grumman, http://www.northropgrumman.com/Capabilities/Remotec/Applications/Pages/Swat.aspx, [Consulted on July 5, 2013].

FIGURE 7

Description: C-Sweep Multi Role MCM (USV)
Source: Autonomous Surface Vehicles: Unmanned Marine Vehicles, http://www.asvglobal.com/military-unmanned-marine-vehicles/c-sweep [Consulted on July 5, 2013].

FIGURE 8

Description: A C'Inspector with side-scan sonar for seabed and ship hull inspection (UUV)
Source: Kongsberg Defence & Aerospace AS, Naval Systems - Command Management Systems, RWS and UUV, http://www.naval-technology.com/contractors/data_management/kda/ [Consulted on July 5, 2013].

FIGURE 9

Description: Sputnik 1 (4 October 1957)

Source: X, *Spacecraft: Past: Sputnik 1*, http://www.bisbos.com/sputnik.html [Consulted July 5, 2013]

FIGURE 10

Description: Global Hawk

Source: NASA, http://www.nasa.gov/centers/dryden/news/X-Press/50th_anniversary/on_the_horizon/global_hawk.html [Consulted July 7, 2013]

FIGURE 11

Description: Aegis Combat System

Source: Lockheed Martin, http://www.lockheedmartin.com/us/products/aegis.html [Consulted July 7, 2013]

FIGURE 12

Description: Shadow 200 RQ-7 Tactical Unmanned Aircraft System

Source: The Global Unmanned Aerial Vehicles (UAV) Market 2011-2021, *Shadow 200 RQ-7 Tactical Unmanned Aircraft System, United States of America*, http://www.army-technology.com/projects/shadow200uav/ [Consulted July 11, 2013].

FIGURE 13

Description: RQ-11 Raven Drone

Source: M. Thompson, *Gears of War: Inside America's Incredible Military Arsenal: RQ-11 Raven Drone*, Time, June 29, 2011, http://www.time.com/time/specials/packages/article/0,28804,2074830_2080103_2080115,00.html [Consulted on July 11, 2013].

FIGURE 14

Description: Russian MiG Skat

Source: N. Khan, *Russian 6th generation MiG Skat UCAV - Beyond 5th gen Sukhoi T-50 PAK FA*, Asian Defense, January 18, 2012, http://www.asian-defence.com/2012/02/russian-6th-generation-mig-skat-ucav.html [Consulted on July 11, 2013].

FIGURE 15

Description: Ground Control Station, Creech AFB, Nevada

Source: USAF Photograph/Tech. Sgt Kevin J. Gruenwald in D. Gregory, *From a View to a Kill: Drones and Late Modern War* , 28 Theory Culture Society 188, 2011, p. 192.