“How do Technological Advances in Warfare Influence the Effectiveness of Humanitarian Interventions?”

MSc POLITICAL SCIENCE THESIS

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Abstract

Humanitarian Interventions strive to safeguard civil liberties, end grave violations of fundamental human rights, and protect innocent lives. The effectiveness of humanitarian interventions has been scrutinized within the literature in terms of outcomes, but not in terms of conduct. The literature also neglects the fact that the intervening states prominently advocate advanced technological warfare. This thesis therefore sought to investigate three hypotheses; whether increased use of technology would lead to a decrease in civilian deaths, an increase in combatant relative to civilian casualties, and more easily contained damage. A theoretical framework based on the ‘Just War Theory’ was applied to the case studies of humanitarian interventions in Kosovo (1998-1999) and Libya (2011). The results highlighted that although the use of advanced technology in humanitarian interventions increases combatant casualties, it still leads to many preventable civilian fatalities. Moreover, consequences of modern technology in warfare seem to be more difficult to contain.

Introduction

Humanitarian intervention has been defined as a "military intervention in a state, without the approval of its authorities, and with the purpose of preventing widespread suffering or death among the inhabitants" (Roberts, 1993: 426). The reasons for employing humanitarian interventions and other military interventions vary. On one hand, humanitarian interventions use coercive force for the purpose of preventing large-scale fundamental human rights violations and loss of civilian life inside the territory of another state (Verwey, 1998). In contrast, other military interventions are often employed mostly in the nations’ own interest. According to Seybolt (2007), humanitarian interventions only strive to stop the very worst of civilian suffering, and not to reinstate a new and improved political system, or establish peace. However, it may lay the foundations for an environment in which peace can prosper.

Nonetheless, since humanitarian interventions are predominantly employed with the means of coercive force, the intervening states’ military plays a crucial role in the operation. It is therefore likely that the intervening forces will utilize their latest weaponry and technology to minimize their casualties and prevent the slaughter of civilians. The recent debate on the drone war launched by the Obama administration has further strengthened the role of technology-driven warfare in unofficial “shadow wars” in Pakistan and in the humanitarian intervention in Libya in 2011 (Scahill, 2015).

During the First World War, many heralded the belief that the war could be won quicker with the new additions of advanced technology in warfare (Zabecki, n.d.). It is evident from the First World War that the technology available to a country at any given time plays a significant role in how interventions are conducted. It is still a common assumption that more technology results in better
outcomes. However, it is possible that technological advancements do not always lead to an ‘improvement’ in the efficacy of humanitarian interventions. This thesis will therefore address the following research question: how do technological advances in warfare influence the effectiveness of humanitarian interventions?

**Literature review**

Humanitarian interventions have received significant attention in international politics and conflict resolution after the Cold War, with operations in Kosovo and more recently Libya defining and shaping it. This literature review will explore what is known about effectiveness of humanitarian interventions in terms of outcomes and conduct, as well as the development of technology in warfare.

A comprehensive analysis of humanitarian interventions and their effectiveness was provided by Seybold (2007). In his book he examines the interventions that took place a decade after the Cold War in the 1990s, specifically Northern Iraq, Somalia, Bosnia and Herzegovina, Rwanda, Kosovo, and East Timor (Seybold, 2007). Seybold defines a “successful” humanitarian intervention as one that ensures that any civilian’s death occurring during the campaign was not a result of military actions by the intervening forces (Seybold, 2007: 30). Although this definition is open ended, it is considerably more appropriate when assessing what constitutes a “successful” intervention as a consequence of technological warfare. Seybold’s definition plays a key role in this thesis, as it provides a critical short-term measure, thereby taking only the key factor of civilian fatalities into account (Seybold, 2007: 30).

In parallel, the empirical study by Western and Goldstein (2011) compliments Seybold’s work as it also explores the humanitarian interventions after the Cold War as well as the more recent intervention in Libya in 2011. By analyzing unsuccessful aspects of a range of humanitarian interventions, they highlight lessons that the intervening forces may have learned. For example, NATO’s bombing campaign in Kosovo had a negative short term outcome, due to the high number of civilians who were killed by the rebel forces in retaliation (Western & Goldstein, 2011: 53). However, in the long term the bombing campaign forced Milosevic to withdraw his troops from these areas. This therefore implies that a successful intervention should fulfil the initial mandate; however, it could be argued that this should not be at the expense of civilian lives.

The literature also highlights a relationship between humanitarian interventions and the number of civilians killed. Hultman (2010) examines the effects of peace operations in internal wars, and the amount of violence against civilians. Hultman reveals that when the intervening force, such as UN, does not have a clear mandate to protect civilian lives, the amount of violence against civilians by the opposition rises significantly. This conclusion is further supported by Nzelibe (2008), Wood and Sullivan (2015), and Wood, Kathman, and Gent (2012), who also find that humanitarian interventions
tend to result in atrocities being committed to the civilian population at the hands of the opposition or rebels. Following this line of argument, Finke (2016), concludes that humanitarian interventions do more harm than good, stating that they only bring short-term success. However, in the long term they fail to create long-lasting peace and may even result in fostering tensions, which in turn could lead to renewed conflict. In contrast, Condra, Felter, Shapiro, and Iyengar (2010), find strong evidence that the civilian deaths caused by the intervening forces results into a rise in insurgent violence, labelling this scenario the “revenge effect” (Condra, Felter, Shapiro & Iyengar, 2010: 6). This effect, in turn, highlights the repercussions of causing civilian casualties and shows how these can undermine the entire humanitarian mission. The literature discussing the effectiveness of humanitarian interventions in terms of outcome suggests that these operations have largely failed to save civilian lives; moreover, they highlight the danger of using coercion against the opposition, who will in turn target civilians. Overall these findings are important for this thesis as they can be used to examine the death toll of civilians at the hand of the intervening forces. Moreover, they can also be used to assess whether the civilian deaths were due to the advanced equipment or weaponry they employed for the operation.

Another crucial theme within the literature regarding humanitarian interventions is the effectiveness of the intervening forces’ conduct in these operations. For the purpose of this thesis, the concept of ‘conduct’ is used to describe exactly how the intervening forces operate. Lyall and Wilson (2009) provide a relevant insight in this regard, using a data set of 286 insurgencies to examine why powerful states, like the U.S. are struggling to defeat insurgent organizations over time. Additionally, they compared this data with two different levels of technology (‘mechanized’) U.S. army divisions in Iraq (2003-2004) (Lyall & Wilson, 2009: 68). This revealed that the increased mechanization of state militaries plays a crucial role in limiting their effectiveness against insurgents. They contend that the over reliance on modern weapons and vehicles hinders the state from collecting sufficient local intelligence, which is vital for a successful counterinsurgency operation. The comparison of the two divisions reveals that the mechanization of the military isolates them from the local population and costs them valuable interaction with the civilian population (Lyall & Wilson, 2009: 99). In this regard, the use of ground forces has proven to be superior in gathering intelligence (Lyall & Wilson, 2009). The consequences of relying too much on technology is a fundamental element of this research question, which explores the impact this may have had on the humanitarian intervention.

In contrast to the literature on humanitarian intervention, literature discussing the ‘technological advances in warfare’ that occurred over time throughout these interventions appears to have sparked less interest. The literature remains sparse and seemingly mostly comprised of news reports, articles or historic works. Nonetheless, there are several key works that address technological advances in warfare directly and indirectly. One of these is the emergence of “Revolution in Military Affairs” (RMA) after the Gulf War in 1991, which according to Biddle (2004) is a theory about future warfare
that lays particular emphasis on technology and a transformation of the military organization. The theory of RMA is primarily focused on U.S. military. The work by Galdi for example (1995) contends the U.S. has successfully implemented this theory by adapting new technologies and new doctrines and incorporating them within the organization. The applicability of theory is therefore limited, especially in humanitarian interventions.

However, Brunstetter’s and Braun’s (2011), in their article on drones, address key themes of this research question, by assessing the effect that drones have had on the ethics of war. Central to this question is the Just War Theory, which Brunstetter and Braun utilise to measure these ethical aspects. Brunstetter and Braun also tackle the important “drone myth” and “separation factor”. The former is a belief that “technologically advanced drones increase the probability of success while decreasing the risk to our soldiers and of collateral damage” (Brunstetter & Braun, 2011: 339). The latter refers to the fact that drone pilots are often thousands of miles away from the battlefield; both of these factors could potentially make it more difficult to distinguish civilians from combatants. Brunstetter and Braun conclude that the drone has had a significant impact on the ethics of war and, with the increasing integration of such technology, the Just War Theory will need to be adapted soon to reflect these and remain relevant. In addition, it is important to consider that whilst technology may increase the efficiency of humanitarian interventions, it does not have the power to “ultimately replace human judgement” (Porter, 2007: 49). This raises the crucial point that technological advances can potentially reduce the effectiveness of humanitarian interventions, as they might negatively impact the intervening forces ability to make decisions on when taking a life is ‘just’.

Just War Theory
The Just War Theory deals with the justification of why a state engages in a war and how it is fought. Traditionally it consists of two key parts, ‘Jus in Bello’, which stipulates how to conduct a war in an ethical manner, and ‘Jus ad Bellum’, which provides guidelines and conditions for when the use of military force is justifiable. The core of the theory is that war is permissible in some cases, for instance if it is protecting innocent human lives or defending fundamental moral values (Haog, n.d).

Domagala (2004) utilizes the Just War Theory to explore the limitations of humanitarian interventions. Domagala (2004) concludes that the ‘system of states’ is in part to blame for the ineffective humanitarian interventions as its nature and premise is not compatible with humanitarian goals. It is important to note that this thesis finds the Just War Theory to still be applicable and a useful tool to assess the effectiveness of such operations. Fixdal and Smith (1998) apply the conditions and principles of the “Just War theory” in order to understand humanitarian interventions. Walzer (2006) and Pattison (2011) also use the Just War theory to defend the concept, as it usually supports a state engaging in a humanitarian intervention as long as the core principles of the theory
are not violated. Moreover, the works of Michael Walzer (2006) and James Pattison (2011) stand out, as both are largely in favour of humanitarian interventions when they are guided by the two core principles of the “Just War theory”: that they are conducted ethically (Jus in Bello) and the reasons behind engaging in war are justified (jus ad bellum). Contrary to the majority of the reviewed literature, Walzer (2006) and Pattison (2011) argue on this basis that humanitarian interventions have not been failures and contend that the strategy does have a place in international politics and ethics. The literature reveals that the Just War theory – despite being an old concept – still has its uses today in modern interventions. However, the Just War Theory has been used less frequently to explore more recent interventions. It seems novel to apply this theory to technology in warfare in military interventions, particularly since the fact that the Just War theory was developed prior to the heightened use of technology in modern war.

The Geneva Conventions of 1949 are a series of treaties and protocols that play a vital role in humanitarian interventions which share significant similarities with the Just War Theory. The Geneva Conventions are central to The International Humanitarian Law, which provide a set of rules that “seek for humanitarian reasons to limit the effects of armed conflict” (“Summary of the Geneva Conventions of 1949 and Their Additional Protocols”, 2011: 1). The International Humanitarian Law essentially protects individuals who do not take part in combat or those who are no longer capable of fighting, by restricting the “means and methods of warfare” (“Summary of GC”, 2011: 1). The four Geneva Conventions, alongside its Protocols, mark the most complete and encompassing treaties that strive to protect civilians and soldiers.

The first and second Geneva Conventions primarily outline the rules to protect soldiers who are ‘hors de combat’ – wounded or sick and can no longer participate in hostilities (“Summary of GC”, 2011: 2). The third Geneva Convention specifies the treatment of Prisoners of War (POWs). The fourth and final Geneva Convention is the most extensive, and is important as it stipulates the protection of civilians “in areas of armed conflict and occupied territories” (“Summary of GC”, 2011: 4). This protects civilians from inhumane treatment and stipulates the obligations of the Occupying Power regarding the local civilian population (“The Geneva Conventions of 1949 and their Additional Protocols”, 2014). The Protocols of 1977 and Article 3 were introduced with the rise of non-international armed conflicts, which further strengthened the Geneva Conventions. (“Summary of GC”, 2011) Article 3 which condenses the rules from the Geneva Conventions into a smaller format and makes these rules “applicable to conflicts not of an international character” (“The Geneva Conventions”, 2014). Most notably this includes internal conflicts, which applies to humanitarian interventions (“The Geneva Conventions”, 2014).
Overall the literature remains divided on the subject of humanitarian interventions, as despite the good intentions, these operations tend to end in failure. Moreover, they often result in unnecessary human suffering despite the thorough precautions taken to ensure human rights violations are prevented. However the literature does not consider whether the methods of the intervening forces are justified and effective. It can be argued on the basis of the literature that technological advances in warfare are unable to abide by the principles of Jus in Bello and cause humanitarian interventions to become less morally ‘effective’.

**Theoretical Framework**

The *Jus in Bello* condition of the Just War theory serves as a framework within this thesis. *Jus in Bello* stipulates the ethical manner in which to conduct wars, and encompasses four main principles; distinction; proportionality; fair treatment of prisoners of war, and no means *Malum in se*.

The Geneva Conventions provide the Just War Theory with a strong legal foundation, as the conditions and principles are clearly reflected therein. Moreover, they have behaviour in conflict. However, there is no such global standard specifically relevant for modern warfare, due to the fact that there is no treaty which regulates the deployment of technologically advanced weapons, such as drones or smart bombs. The Convention on Certain Conventional Weapons introduced 1980 and the Ottawa Convention of 1997, both focus on specific weapons in warfare. The former prohibits “weapons that are considered to cause unnecessary or unjustifiable suffering to combatants or to affect civilians indiscriminately”, amongst which are booby-traps and incendiary weapons (“The Convention on Certain Conventional Weapons – UNODA”, n.d.). The latter refers to the convention that banned the use of anti-personnel landmines (Schmitt, 2013). This lack of a regulatory structure potentially poses a limitation in terms of measuring the deployment of drones. This is particularly relevant in Libya where their use was more prevalent.

The Just War theory encompasses an integrated measure of ‘moral’ effectiveness. Effective interventions should be assessed by moral standards, as well as the speed and force with which objectives are met. For this thesis, a humanitarian intervention that abides by the principles of a ‘just’ war, will also be considered effective. Effectiveness will be measured using three of the principles within the ‘Jus in Bello’ condition – distinction, proportionality, and no means *Malum in se*. The rationale for including three of the four principles is outlined below:
Distinction

The Jus in Bello principle of ‘distinction’ refers to the distinction between enemy combatants and non-combatants (Pattison, 2009). This principle consists of two parts, both of which are cornerstones in the conduct of war, as they stipulate two rules that play a vital role in any war or conflict, the distinction between legitimate military targets and illegitimate civilian targets (Pattison, 2009). The latter prohibits any violence or coercion against non-combatants, granting them non-combatant immunity (Pattison, 2009). The former states that acts of war should solely be directed towards enemy soldiers or military targets. The principle of distinction can also be observed in Protocol II Article 13 of the Geneva Conventions, which states that the “civilian population as such, as well as individual civilians, shall not be the object of attack” (“Treaties, States parties, and Commentaries”, n.d.). These treaties demonstrate the significance of this principle in the ethics of war.

Distinction should be straightforward to measure as this principle condemns all violence against civilians and non-combatants. It is possible to measure distinction, by comparing the number of combatant and civilian casualties resulting from the intervening forces’ use of military technology. This will be achieved by dividing the principle of distinction and focusing on three key themes: reliance on airpower, night-vision technology, and technology for intelligence gathering. Theoretically, an intervention with fewer civilian fatalities as a result of any of these three technological themes could be considered more effective. However, one limitation to consider when exploring this principle within the case studies is that it may be difficult to identify exactly how the civilians were killed, and whether their deaths were a direct result of the actions of the intervening state.

Proportionality

Another fundamental principle of Jus in Bello is ‘proportionality’, which dictates that “the use of force must be proportionate to the military advantage gained” (Pattison, 2009: 367). This effectively means that excessive force used against combatants is not permitted. Furthermore, Protocol II, with regard to the ‘Convention on Certain Conventional Weapons’, states that any weapon that causes harm or damage to civilians or non-combatant targets, such as civilian property, is deemed to be “excessive in relation to the concrete and direct military advantage anticipated” (“Practice Relating to Rule 14. Proportionality in Attack”, n.d.). Overall this principle is critical in conflicts and humanitarian interventions as it strives to limit excessive and unnecessary death and destruction.
This principle is especially applicable to the technologically advanced warfare used in Kosovo and Libya, such as smart bombs or drone strikes, as these measures tend to have a large radius of destruction. The measurement of proportionality is considerably more complex, but will be achieved by identifying how appropriate the technology employed was in attaining a certain military target. Each case study will be assessed in terms of ‘proportional means’ and ‘proportional outcomes’. Theoretically, an effective intervention will only utilize means that are reflective of the scale of the threat. However, it should be taken into account that this requires subjective judgement. Additionally, there are factors that need to be taken into account, such as failure of intelligence or plain hindsight. For instance, the scale of the threat may appear less severe in retrospect than it did during the conflict, or that civilians may have entered a targeted area after the strike had been launched. Nonetheless, for this thesis the calibre of the weapon will be used as an indicator to judge if excessive force was used; for example, airstrikes against military vehicles is permitted, however when an individual is targeted by the same technological means it will be deemed as disproportional. The outcome will be based on the military objective that the intervening forces were trying to achieve, and whether the force used was justified in terms of the results gained.

**Fair treatment of prisoners of war**

The principle of ‘fair treatment of prisoners of war’ identifies any enemy combatants who have surrendered or been captured as civilians, rendering them ‘hors de combat’ as they no longer pose a threat (Orend, 2008; Pattison, 2009). This status gives these former combatants the same rights and treatment as civilians, effectively granting them non-combatant immunity. This principle also prohibits any mistreatment or torture of surrendered or captured soldiers (Orend, 2008). Despite the fact that this principle of Jus in Bello plays a crucial role in the third Geneva Convention – which is dedicated to ensure fair treatment for prisoners of war – it seems understated and neglected in humanitarian interventions. The introduction of technologically advanced weapons and equipment, such as cruise missiles and drones, the likelihood of capturing or even recognizing potential prisoners of war has diminished. This principle is therefore not appropriate for this thesis due to the fact that technology is rarely used in the process of capturing or containing prisoners of war.

**No means Malum in se**

The final principle of Jus in Bello dictates ‘no means Malum in se’, essentially meaning that during war, combatants cannot resort to weapons or other methods of coercion that are indiscriminate or whose effects cannot be controlled, such as biological warfare or anti-personnel mines (Pattison, 2009). This principle shares some similarities with ‘proportionality’, however the focus of ‘no means Malum in se’ is on a weapon’s damage output and the ability to control its destruction. There are several treaties that address this issue of indiscriminate weapons and attempt to set a global standard,
such as Protocol II, the Ottawa Convention and the Convention on Cluster Munitions (CCM). However, these only cover conventional weapons and not technologically advanced warfare such as drones or laser guided missiles. Moreover, while some guidelines do exist they have all been ratified by different, and varying numbers of countries. With no universal standards for what violates No means *Malum in se*, it is therefore exceedingly difficult to measure. Therefore, this principle will be measured by identifying the ease with which the consequences of the technological weaponry deployed could be contained. Moreover, for this thesis the type of weapon and its impact radius will be a basic yet relevant indicator. Theoretically, an effective intervention would avoid weaponry that could lead to more widespread damage, particularly when it could lead to a knock-on effect for civilians.

**Hypotheses**
Using the aforementioned theoretical framework, and on the basis of the literature review, the following hypotheses are proposed:

**H1** – The increased use of advanced technological weaponry will lead to an increase in the number of civilian deaths created by the intervening forces.

**H2** – The increased use of advanced technological weaponry will lead to a reduction in the ratio of combatant to civilian fatalities.

**H3** – The increased use of advanced technological weaponry will lead to a reduced likelihood that damage caused by the intervening forces will be easily contained.

These hypotheses will be operationalized by investigating an approximate number of civilian and combatant fatalities, and by looking at each intervention’s ‘moral’ effectiveness using the Just War Theory. Quantitative methods will not be used due to the fact that figures within the literature are inconsistent. However, Qualitative methods will be used to approximate the scale of the damage caused to civilians as opposed to rebel forces.

**Methodology**
This thesis will take a qualitative approach, primarily using comparative analysis of two examples of humanitarian interventions to examine any shifts or changes that may have occurred due to the introduction of new military equipment or weaponry; Kosovo War (1998-1999), and the intervention in Libya (2011). The aim of this comparison is to analyse the impact of technological advances in warfare on humanitarian interventions, and to determine whether the impact had positive or negative consequences. The reason for selecting these case studies is that some of the most rapid changes in technological warfare have occurred after the Cold War in the 1990s, which marked the start of states more frequently engaging in humanitarian interventions.
Therefore, in order to fully address the research question the most recent and the most technological advanced humanitarian interventions will be explored, this includes Kosovo (1998-1999) and Libya (2011). Both of these cases are similar enough in their reliance on technology to warrant selection, but differ enough to reveal the changes and consequences of humanitarian interventions as a result of technological advances.

**Case Selection**

The two cases selected for the purpose of this thesis were Kosovo (1998-1999) and Libya (2011). In each case the intervening forces employed the latest military equipment and weaponry, ranging from modern jets and tomahawk cruise missiles in Kosovo, to drones and state of the art aerial reconnaissance vehicles in Libya. Both interventions relied almost solely on air power and not ground forces and in each case study the technological warfare used by the intervening forces vastly outperformed that of the opposition. This is important as this advanced technology would potentially be an advantage and shorten the intervention as well as result in fewer civilian casualties. These humanitarian interventions also vary in four fundamental ways. Firstly, the time span between these operations gave technology enough time to develop and evolve, highlighting different levels of technology in each intervention. Secondly, the technological trend in warfare seems to have developed towards precision, speed and range, and away from pure firepower. For example, the intervention in Kosovo featured the use of B52 heavy bombers that were well-known for their capabilities to hit large target areas (“Operation Allied Force”, 1999). In contrast, during the intervention in Libya, intervening forces had easier access to drone technology, and also frequently favoured Precision Guided Munitions (PGMs) as their weapon of choice. Thirdly, reconnaissance technology was more developed and readily available during the intervention in Libya. Finally, the intervening forces behaved differently according to the level of resistance they encountered.

**Data Selection**

The data from these case studies drew on multiple historical and archival sources to ensure that this research remained as objective as possible. Journal articles were used to highlight theories that may have been applied to areas of military intervention and technology in warfare. Sources such as ‘Human Rights Watch’ and ‘Amnesty International’ were vital for data collection as they had conducted thorough research with multiple other organisations. Official websites such as RAF, NATO and U.S. Department of Defense were also be utilized for the same reasons.
Results
Qualitative data was gathered from the case studies of Kosovo (1998-1999) and Libya (2011), and analyzed using comparative analysis. As per the theoretical framework, the results will be divided into the three principles of *Jus in Bello*. These sections will then be further separated into key themes that were apparent within the literature. The principles were therefore analyzed on the bases of several key examples, as to examine all documented civilian deaths would be beyond the scope of this thesis.

**Distinction**
The first principle assessed in the data analysis was ‘distinction’, which was assessed by comparing the amount of civilian and combatant casualties that resulted from the intervening forces. Due to the fact that both Libya and Kosovo relied heavily on air force as opposed to ground troops, it is reasonable to assume that most deaths caused by the intervening state or party were also a direct result of the technology used. The section on distinction will look at the following subcategories and key themes: reliance on airpower; night vision technology and the technology for intelligence gathering.

<table>
<thead>
<tr>
<th></th>
<th>Kosovo</th>
<th>Libya</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size of population</strong></td>
<td>1,966,000 (1998)</td>
<td>6,288,652 (2011)</td>
</tr>
<tr>
<td></td>
<td>1,762,000 (1999)</td>
<td>6,283,403 (2012)</td>
</tr>
<tr>
<td><strong>Civilian Fatalities</strong></td>
<td>90 incidents of civilian death, between 488 and 758 civilians killed.</td>
<td>+72 deaths, Including 20 women and 22 children.</td>
</tr>
<tr>
<td><strong>Combatant/Rebel Fatalities</strong></td>
<td>1200 Serbian soldiers and policemen, of a total 114,000</td>
<td>~4700*</td>
</tr>
<tr>
<td><strong>Damage to rebel resources</strong></td>
<td>93 tanks and 153 armored personnel carriers (APC) out of 350 and 440 respectively indicates a rather/relatively low (Walker, 1999)</td>
<td>Destroyed over 5900 military targets included 400 artillery or rocket launchers, and 600 tanks or armored vehicles. (“NATO Fact Sheet Operation Unified Protector Final Mission Stats November 2011”)</td>
</tr>
<tr>
<td><strong>Duration of Intervention</strong></td>
<td>Circa Months 15</td>
<td>Circa 7 months</td>
</tr>
</tbody>
</table>

Table 1. Shows the general statistics of civilian and rebel casualties in the NATO interventions in Kosovo and Libya.

Table 1 shows the differences between Libya and Kosovo in terms of overall fatalities caused by the intervening forces. It is clear that while the population size of Kosovo was considerably smaller than that of Libya, it saw a much more substantial loss of civilian life. Moreover, the overall damage to the Serbian forces in Kosovo appears minor in comparison; 1200 Yugoslav soldiers and policemen were killed within a total 114,000 (Operation Allied Force.1999) and only a fraction of their resources were successfully targeted (out of 350 tanks and 440 APCs, only 93 and 153 were destroyed). It is also important to consider that the facts and figures of Libya still remain ambiguous, blurring the lines of civilian and rebel fatalities, whereas the intervention in Kosovo has been thoroughly investigated and documented.
Reliance on Airpower
One theme that relates to the Jus in Bello condition of distinction, is the reliance on airpower over ground troops in both interventions. In Kosovo and Libya, the intervening forces predominately employed coercion in the form of the high-tech aircraft and in a few exceptions from naval platforms. The role of the technologically advanced warfare played a vital role in both cases as it allowed the intervention to be fought without any allied casualties, which is the prime reason ground troops were not deployed. However, this reliance on airpower resulted in numerous instances where civilian areas were targeted, in fact all civilian casualties and fatalities caused by the intervening forces in both Kosovo and Libya were a direct or indirect result of airstrikes.

Kosovo
The literature and reports suggests that a reliance of airpower in Kosovo led to the misidentification of targets. One example of this occurred in April 12th 1999, when at least 20 civilians were killed when a civilian train crossing a bridge was hit twice by airstrikes (“Civilian Deaths in the NATO Air Campaign”, 2000). This case highlights the breech of the condition of distinction, as not only did NATO intelligence fail to assess the danger of targeting the bridge that was used by non-combatants but also the pilot failed to distinguish between a legitimate military target and an illegitimate one (Short, 2002). In addition, it should also be taken into account that in order to prevent any allied casualties the aircraft operated from high altitudes to avoid being shot down by the Serbian forces, however in turn this limited their ability to successfully identify targets.

Libya
Although the humanitarian intervention in Libya resulted in lower civilian casualties caused by NATO operations, the issue of misidentification of targets prevailed despite the various technological advances in the allied airpower. Most notably, is the incident in Majer, in which NATO deployed an airstrike over several houses that resulted in the death of approximately 34 civilians among which included 8 children and 8 women. According to NATO, at the time this site was used for military purposes and therefore a legitimate target, however failed to provide any evidence (“Libya; the forgotten victims of NATO Strikes”, 2012). Technological advancement in Drone technology saw a dramatic improvement during the intervention in Libya; these drones were equipped with precision weapons, whereas the drones used in Kosovo were simply used for reconnaissance. However, drones, like all aircraft, is that it is based on ‘imperfect intelligence’ due to the time it takes to launch the attack and for it to hit the target (Brunstetter & Braun, 2011: 351). Furthermore, drones lack the tactical awareness that more conventional means can provide, specifically ground troops. This is due to the fact that the pilots are remote from conflict, therefore need to gain some level of contextual
knowledge or ‘eyes on the ground’ before orchestrating an attack. (Brunstetter & Braun, 2011: 351). This reveals the danger of overreliance on airpower, that despite technological advances, ‘effectively distinguishing between civilians and combatants still depends on the operator. Nonetheless in terms of distinction, the intervention in Libya saw fewer and less severe incidents than in Kosovo. The role of technological advances is likely to have been crucial in this regard, as both interventions used similar means and were fought the same way – through airpower.

The challenges associated with the data collection and analysis within this section was primarily due to the availability of relevant information and, perhaps more importantly, the reliability of the data. By using sources such as Human Rights Watch and Amnesty International, these numbers are a best estimate on the basis of what is currently known about the consequences of the interventions in Kosovo and Libya. From the aforementioned examples it seems that a reliance on airpower leads to a violation of distinction, and therefore a less effective humanitarian intervention.

**Night Vision Technology**

Both interventions saw the common use of night vision during the operations conducted. This piece of technology plays a critical role in the ability to distinguish legitimate military targets from non-combatant civilian targets.

**Kosovo**

In regards to the main bombing campaign in Kosovo, ‘Operation Allied Force’, General Michael Short stated that there was a “need for more accurate night bombing runs”, making it evident that NATO lacked night vision capabilities (“Allies need upgrade”, 1999). Furthermore, Gallis (1999) highlights various technological advances in warfare that the allied forces were lacking, among most importantly were night vision capabilities, along with high fidelity identification systems, laser-designator capabilities and precision guided munitions (Gallis, 1999). All of these are designed to increase and improve the accuracy of military operations, and in turn reduce civilian casualties. In Kosovo this technological limitation led NATO forces to conduct the majority of their strikes during the daytime, which meant that areas in close proximity to civilian areas were more populated with locals and the likelihood of civilian deaths. The high number of civilian fatalities caused by the intervening forces in Kosovo reflects these shortcomings.

**Libya**

The allied forces in the intervention in Libya seem to have learned from the experiences in Kosovo, as NATO made significant efforts to minimize the risk of creating civilian casualties by conducting more night time airstrikes (“Libya; the forgotten victims of NATO Strikes”, 2012). This capability was
supported by the development of aircraft that featured night vision technology ("Tornado GR4" (n.d.), Royal Air Force). The change of tactics alongside the use of the advancement in technological warfare improved the effectiveness of the intervening forces in Libya, as they were able to limit the civilian fatalities that might have otherwise occurred as a result of the intervention. This directly affected the number of civilian casualties the intervening forces caused, as the likelihood hitting civilian targets during the day are significantly higher than during the night. In this sense the increased use of advanced technology such night vision or thermal vision would have been beneficial in the air campaign in Kosovo and improve the effectiveness of their airstrikes.

Technology for Intelligence Gathering

Technological advances in warfare also contributed to the ability to conduct reconnaissance and Intelligence Gathering missions, in both case studies. These information gathering missions are vital to ensure that the interventions abide by the Jus in Bello principle of ‘distinction’, as they allowed allied forces to identify exactly where combatants were, and also allowed them to ensure that civilians were not present before conducting an attack.

Kosovo

A prime example of the use of technology for intelligence gathering can be observed in Kosovo in October 1998 with the launch of Operation Eagle Eye; a high-tech verification mission. NATO employed various types of specialized aircraft, each equipped with latest surveillance technology, to check and detect “removal of weapon systems, free movement of civilians, delivery of humanitarian supplies” ("Operation Allied Force", n.d.). However, the extent of the effectiveness of these technological support systems remains debatable; less than a year later, in May 1999, NATO forces mistakenly attacked civilian areas and property when an airstrike intended for the federal supply and procurement building instead hit the Chinese embassy in Belgrade, with no civilian fatalities. ("Operation Eagle Eye," n.d.) Moreover, according to Mann, the enemy forces were increasingly difficult to locate due to their small unit size, which apparently prevented NATO from establishing a clear intelligence picture and made it difficult to detect them from air (Mann, 1999). Not only did this reveal that the Serbian forces had adapted to NATOs air campaign strategy, but it also made evident that the intervening forces no longer a technological advantage.

Libya

The issue of distinction and ineffective reconnaissance was limited in Libya to some extent, as NATO realized the difficulties of protecting non-combatants and targeting Gadhafi’s forces due to the combatants’ close proximity to civilian infrastructure and property (Daalder & Stavridis, 2012). This would highlight the fact that the advanced technology used in Libya could have been beneficial in the air campaign in Kosovo and improve the effectiveness of their airstrikes.
target small rebel groups, as it did not have the human capacity to adapt to threats, nor the ability to target combatants within a certain proximity of civilians without the use of ground troops.

In terms of the principle of distinction, it is clear that technology in warfare has seen a clear directional change in terms of a more recent reliance on aircraft rather than on traditional ground troops. This shift into ‘aircraft’ led operations has also allowed strikes to be conducted at night which possibly allows for intervening forces to more easily avoid civilians who would be more likely to be safe in their homes during these hours. Technology has also been adapted for the purposes of collecting intelligence, however examples from the humanitarian intervention in Libya suggest that the use of ground troops is still a more effective means.

**Proportionality**

Technology was also important in both case studies in terms of meeting the ‘proportionality’ criteria of Jus in Bello. The fact that highly advanced technological weapons were used extensively in both Kosovo and Libya, raises the question as to whether these were used to create mass damage, or whether they were capable of being precise where required for smaller targets. Due to the strong similarities and overlap between the principles of proportionality and distinction, the following section will be divided into two subcategories which reflect the definition of proportionality. These are Proportional Means and Proportional Outcomes.

**Proportional Means**

The first subcategory within proportionality emphasizes that the methods used within a humanitarian intervention should be relative to the perceived threat. An ‘attack’ is deemed disproportionate when intervening forces have insight into the situation but still employ means of a greater magnitude than is necessary. The principle of proportionality particularly applies to the selection of technological warfare, as it is important to consider that different weapons will have been designed to achieve different goals.

**Kosovo**

The intervention in Kosovo sparked controversy with NATO’s decision to deploy weaponry typically utilized in conventional wars and not in humanitarian interventions, such as the use cluster bombs and B52 bombers in their air campaign. Cluster bombs are highly indiscriminate by nature and have a large target area, and therefore would be highly likely violate the terms of Jus in Bello. Similarly, B52 bombers are known for their heavy payload and therefore provide vast bombing capabilities. Nonetheless the operations in which these means were used revealed surprising outcomes and effectiveness, according to Dana Priest of the Washington post, NATO deployed B52 bombers on
open and vulnerable areas (Priest, 1999). This enabled NATO to maximize the capabilities of the B52 and use conventional dumb bombs on a high concentration of Serbian Forces (Priest, 1999).

Furthermore, according to a report by Human Rights Watch use of B51 and B52 bombers did not result in an increase in civilian fatalities, as they were deployed over depopulated areas (“Civilian Deaths in the NATO Air Campaign”, 2000). However, it should be noted that during NATO’s air campaign in Yugoslavia an estimated 90 to 150 civilians were killed, which in turn is a clear violation of no means Malum in se (“Civilian Deaths in the NATO Air Campaign”, 2000). The use of the B52 bomber suggests that traditional technology can lead to an effective intervention outcome, and can provide means that are proportional for large scale threats. This is only as long as they are utilized in an appropriate way, and only in the rare situation that rebel forces are both densely populated and isolated from civilians.

Libya

Another key case that depicts a violation of ‘proportionality’ through the employment and failure of high-tech weaponry and equipment, occurred in September 2011 when a NATO airstrike targeted a house and killed 3 women, 4 children and a 1-year-old, believing that one of Gadhafi’s brigadier generals was at this location (“Libya: The forgotten victims of NATO strikes”, 2012). However even if this intelligence proved to be correct, it would have not justified the use of a PGM against an individual, as an explosive with such a radius of destruction would not be a proportional level of force. It is therefore evident within the literature that availability of, and over reliance on, modern technology in warfare can lead to more disproportionate selection and deployment of weapons. The examples in this section suggest that more modern technology used in Libya still breached the principle of proportionality. Although Libya saw less civilian casualties, the intervening forces use of technology still led to cases where violations of the principle of proportionality could be observed.

Proportional Outcomes

This subcategory reflects that a humanitarian intervention is deemed proportional not just when large numbers of enemy soldiers are killed, but when the number of civilian fatalities is also kept to a minimum. Although theoretically civilian casualties and deaths would be avoided entirely, realistically this is not possible and therefore some tolerance is required. This aspect of proportionality is highly subjective and therefore difficult to measure, due to the fact that there are no set guidelines of what level of civilian deaths should be ‘tolerated’ in order to reduce combatant numbers.
Kosovo

As discussed in the previous section about proportional means, it is clear that the use of more modern technology in favor of traditional measures did not lead to outcomes that were as effective as they seemed. For example, PGMs were utilized in Kosovo to allow intervening forces to conduct more proportional attacks on smaller rebel groups than would be possible with weapons such as B52 bombers (Nardulli, Perry, Pirnie, Gordon & McGinn, 2002). However, the damage caused by PGMs was still disproportionate for technology that claims to be able to ‘precisely’ target small rebel groups. The reasoning and evidence for this is that the resulting casualties of the Serbian forces pale in comparison to those of non-combatants (See table 1). A more successful adaptation to the alteration of rebel tactics, whereby Serbian forces split up into smaller divisions, would have been to deploy helicopters as opposed to missiles. It may therefore be suggested that reliance on technology does not always increase the effectiveness of humanitarian interventions, and could increase the likelihood of violating the principle of proportionality.

Libya

Similarly, the humanitarian intervention in Libya faced problems involving the difficulties of using technology to ensure that operations and attacks were proportional to the threat. As mentioned in the previous section on ‘distinction’, these fatalities also reveal issues where technology also led to a breach of the principle of ‘proportionality’. The first example of this was confirmed by the report of the independent civil society fact-finding mission in Libya 2012. On 15th of September 2011 a NATO air strike using laser guided bombs (“Civilian Deaths in the NATO Air Campaign”, 2000) hit two of vehicles belonging to Gaddafi’s army resulting 57 –59 fatalities, of which 47 were allegedly non-combatants (“Report of the independent civil society”, 2012). Not only was this attack not proportional to the (perceived) level of threat these vehicles posed, but also highlights that these newer precision guided bombs were only as effective as the pilot who made the decision to employ them. However, in comparison to the cluster bombs used during Kosovo it is evident that the precision guided technology utilized during the intervention in Libya was more compliant with the ‘proportionality’ criteria of Jus in Bello as it resulted in fewer civilian deaths. Aircraft with lighter weapons, for example combat helicopters or even a drone equipped with weaker missiles would have been a more proportionate means of targeting the rebels. Evidence from the humanitarian interventions in Kosovo and Libya reflect differences in the conduct and outcomes of technologically driven attacks.
No means *Malum in se*

In order to abide by the conditions, set by the Just War theory, interventions must also comply with the criteria ‘*no means Malum in se*’, whereby all attacks should be easily controlled and contained. More recent technological advances have provided tools that are resistant to spillover effects or factors that would otherwise have altered their outcomes, such as weather conditions.

*Kosovo*

In Kosovo, the lack of technology to withstand poor weather conditions proved to be a major hindrance for the firepower of the intervening forces (Nardulli, Perry, Pirnie, Gordon & McGinn, 2002: 3). The impact of bad weather conditions in Kosovo should not be underestimated, as these led many PGMs and laser-guided bombs astray and even ‘lose lock’ which frequently caused them to hit or land kilometres away from their intended targets (Bender, 1999).

*Libya*

The following example also highlights an aspect where more advanced technology would have enabled the intervening forces to mitigate the effects of poor weather conditions. In Libya, despite not experiencing poor weather conditions, NATO prepared for this potential problem by converting unguided bombs with Joint Direct Attack Munitions (JDAMs), granting them an ‘all-weather’ capabilities and minimizing the chances of breaching no mean *Malum in se*. Furthermore, their aircraft used the latest technology to ensure greater accuracy by arming their jets with shadow storm missiles – a cutting edge PGM – and by deploying various types of reconnaissance airplanes, such as E-3D Sentry, Nimrod R1 and Sentinel to ensure full coverage of the battlefield. Current Operations: Libya, Royal Air Force, n.d). Considering the relatively low civilian fatalities, it is likely that these were able to minimize the incidents of “no means *Malum in Se*” as none were confirmed with the shadow storm missiles.

**Conclusion**

This thesis aims to answer the research question of how technological advances in warfare influence the effectiveness of humanitarian interventions. According to the conditions and principles set by Jus in Bello of the Just War Theory, the technological advances in warfare played a significant role in the overall effectiveness of the reviewed humanitarian interventions. The results suggest that extensive use of technological advanced warfare, does not necessarily translate into better outcomes, instead the contrary was found as they are unable to abide by the principles of Jus in Bello as they are unable to prevent civilian casualties. On the basis of these findings, H1 and H3 were tentatively accepted, as further exploratory research is needed to produce more concrete causal explanations. However, H2
was largely disproved and therefore is rejected. The findings are assessed on a theoretical level in relation to each individual hypothesis below:

**H1 - The increased use of advanced technological weaponry will lead to an increase in the number of civilian deaths created by the intervening forces.**

In both Kosovo and Libya, NATO had considerable difficulty ensuring ‘distinction’ between combatants and non-combatants. However, this was reduced by the use of night vision technology, which in Kosovo could not be used to its full potential as not enough aircraft were equipped with it. The violation of ‘distinction’ was one of the leading causes of civilian fatalities in both interventions as NATO continuously failed to distinguish civilians from legitimate military targets. It appears that any advance in technology between the two case studies had little impact on improving the effectiveness of the humanitarian intervention itself, therefore confirming the first hypothesis.

**H2 - The increased use of advanced technological weaponry will lead to a reduced ratio of combatant to civilian fatalities.**

The intervening forces also faced the problem of breaching the principle of ‘proportionality’ in multiple incidents, despite the extensive use of technologically advanced weapons, in the form of airpower, in both case studies. These technologies often violate the principle of proportionality as their systems are unable to fire smaller caliber weapons effectively due to the speed and altitude at which they operate. However, since the introduction of drones, it has been possible to employ smaller caliber weapons in air strikes, thus maintaining the advantages and overcoming the limitations of aircraft. Taking into consideration the failure of aircraft alongside the clear positives of drones, the second hypothesis has been rejected. This is primarily due to the fact that the use of advanced weaponry did not lead to a reduced ratio of combatant to civilian casualties; in both Kosovo and Libya the enemy casualties outweighed those of civilians.

**H3 – The increased use of advanced technological weaponry will lead to a reduced likelihood that damage caused by the intervening forces will be easily contained.**

In terms of preventing ‘no means Malum in Se’, NATO had difficulties containing the damage from their attacks, which caused unnecessary civilian deaths in Kosovo and Libya. A limitation of air power campaigns is that their capabilities are tailored for targeting large areas. Moreover, employing weapons at high altitudes can mean that damage is difficult to contain. The overreliance on airpower and technology in humanitarian interventions also creates problems, due to the fact that they lack the flexibility and adaptability that makes ground troops so effective. This is particularly clear in the evidence about the dependence of certain weapons on the weather, as smart bombs sometimes miss or lose their targets. Breaches of ‘no means Malum in Se’ were therefore not a result of technological failure, but rather were because technology simply hasn’t evolved enough. However, based on the
reported civilian casualties that occurred due to large caliber weapons, it can be contended that the technological weapons used in Kosovo and Libya could not be contained, and therefore Hypothesis 3 was accepted. Overall it can therefore be concluded that technological advances increase the likelihood of violating the principle of ‘distinction’ and no means *Malum in se in* humanintarinan interventions, therefore reducing the effectiveness of the intervention itself.

**Discussion**

Applying the Just War Theory to these examples of modern conflict proved difficult as it was not created with the purpose of explaining such advanced military tactics. On a theoretical level this study highlights that the principle of proportionality needs to be adjusted for modern conflicts, as it is considerably more challenging to measure what constitutes a breach of proportionality in terms of technology. Violations of proportionality could be kept to a minimum by enforcing guidelines that ensure ‘machine against machine’, thereby only permitting vehicular combat or similar mechanical level. Technological advances in warfare could therefore lead to an effective humanitarian intervention if regulated in the appropriate way. Applying the Just War Theory principle of ‘no means *Malum in Se*’ to the examples of Kosovo and Libya was also difficult as there are no international standards developed to regulate larger scale 'smart' weapons whose effects are more difficult to control.

A key concept that has emerged from this thesis, is the idea that it is the overreliance on technology that influences a humanitarian intervention and its’ effectiveness, not the technology itself. Technology employed in the most recent missions often relies on airpower, at the expense of strategies that utilize ground and naval. Solely relying on technology makes an intervention one-dimensional and lacking in all of the principles set out by Jus in Bello of the Just War theory. It can be argued that it is not possible to resolve human conflicts at a technological level, and it is even less possible to attempt to do so with just a bird’s eye view.

**Limitations**

There are several limitations of this study, one of them being the small case selection that highlighted the problem of getting accurate fatality counts, especially for enemy combatants. Furthermore, it should be considered that technology is only as effective as its ‘driver’ or operator. At the end of the day it is still human judgement that makes the ultimate decision whether the target is ‘friend or foe’ – since many civilian fatalities are still due to human error or misjudgment.
**Implications and Directions for Future Research**

The findings of this thesis could be used in further studies to develop a better understanding of whether a reliance on technology is ever entirely beneficial. This thesis also has implications for the use of ground troops, suggesting that they are still important.

Unfortunately, due to restrictions regarding the availability of data, the principle of ‘fair treatment of prisoners of war’ was not included in the scope of this thesis. However, it would be an interesting area to explore in further research, as it could potentially reveal if the principle could be upheld in a modern air power driven intervention.

**References**


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