

# Humanitarian Rationality

A rational analysis of humanitarian restrictions on warfare

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# Abstract

This thesis uses some key aspects of game theory-related research concerning the Cold War by re-interpreting it in a more generally applicable way. Three such key aspects, defined as the reciprocity factor, the rule complexity factor and the unrestricted destabilising measures factor, are then used to explain how likely restrictions on warfare are to persist for purely rational reasons. The essence of the theory is that restrictions on warfare for humanitarian reasons can be explained in rational terms. Furthermore, using game theory, the likelihood of a given restriction to be respected is measured. The theory is applied to a comparative study of two cases; the German chemical warfare and submarine warfare strategies during World War II. These two cases have much in common but the outcome was totally different. The differences between the cases are used to illustrate the theory.

*Key words:* limited warfare, game theory, humanitarian conventions, rule systems, warfare

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# 1 Introduction

In this day and age, the importance of conducting warfare in as humane a manner as possible is considered paramount by the international community. However, the question of humanitarian rules of warfare is not a new one, it was the subject of many debates and decisions more than a hundred years ago. Despite the enthusiasm that followed when new sets of rules were adopted, the World War I experience provided little but disappointment and bitterness as the rules were largely ignored by the warring parties. After World War I, the world once again set out to end what was considered the most barbaric aspects of warfare. The results were mixed; some restrictions were respected, others were not. From a strictly normative point of view, the ideal situation would be for all nations to respect the rules of warfare without question, regardless of their situation. However, I do not think it would be a controversial statement to claim that in war norms are stretched and bent in order to accommodate the brutal reality of armed conflict. War, in itself a sinister zero-sum game, is generally associated with cold calculation and rationality. That is why I suggest that rationality should be considered a factor of the utmost importance when breaches of the rules of warfare are to be analysed. In this thesis, I will try to provide a rational perspective on a few humanitarian rules of warfare and thus ascertain why one rule system<sup>1</sup> was respected even in the most dire of circumstances while another was quickly discarded.

## 1.1 A rational view on restricted warfare

The primary question I seek to answer is; "Can game theory provide analytical tools which can be used to understand why some humanitarian rule systems can persist while some fail?".

More specifically, I will attempt to establish some key aspects derived from theories on limited warfare<sup>2</sup> and similar aspects of research on the nuclear balance of terror during the Cold War and then attempt to apply these key aspects on a context in which attempts were made to limit warfare for humanitarian reasons. In this case, two aspects of "inhumane" warfare will be investigated; unrestricted submarine warfare and chemical warfare.

Submarine warfare and the use of chemical weapons were two aspects of warfare considered to be unacceptably brutal and "uncivilised" by the major

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<sup>1</sup>In this thesis, I frequently use the expression "rule system" rather than "convention" or "treaty" since the use of chemical weapons and submarines were restricted in several different treaties and conventions

<sup>2</sup>In this case, the fact that no nuclear weapons were used during the Cold War and that the available nuclear weapons were gradually restricted are interpreted as examples of limited warfare

powers after World War I, as is evident in the 1922 *Treaty relating to the Use of Submarines and Noxious Gases in Warfare*<sup>3</sup>, although that treaty was not ratified due to French resistance to the harsh restrictions on submarines. Nevertheless, these two aspects of "barbaric warfare", with the experiences from the unrestricted submarine warfare against the United Kingdom in 1917 and the horrors of the gas attacks on the western front fresh in memory, were later to be subjected to strict regulations during the 1920's and 1930's. These regulations were stated to be first and foremost of a humanitarian nature, to reduce the horrors of warfare to some extent. Against this background it is fascinating that one of them was respected throughout one of the most brutal and costly wars in the history of mankind, the second world war, by a regime that is considered to be one of the least humanitarian of all times; Nazi Germany. It might surprise the readers of this thesis to know that even Nazi Germany did not only follow the rules concerning chemical weapons throughout the second world war but also attempted to follow the rules concerning submarine warfare during the early phases of the war.

This thesis will try to find differences between these two rule systems by applying a rational dimension in order to find answers that could help explain this seemingly strange fact.

## 1.2 A game-theory approach

One hardly has to indulge in detailed studies of the tactics and strategies of warfare in order to see the rational ambitions of this activity. In the pursuit of destroying the enemy and achieve strategic as well as tactical victories, a state will have to develop some kind of strategy to defeat its opponent. This strategy will be influenced by the considerations of the leadership of said state as they need to take aspects of military relevance, diplomacy, relations to other states and other political factors into account. In essence, a modern state at war with another state will in most cases adopt a national strategy that combines the military aspects with the political ones when it finds itself at war, compromising between the two as it sees fit. In this thesis, I assume that the goal of the national strategy will be to define the most rational course of action, not necessarily from an objective point of view but rather from that of the leading decision-makers of said state, in order to maximise the gains for the state.

This type of behaviour on behalf of a state lends itself quite well to analysis from a game theory perspective due to its rational nature. The field of game theory can be said to be the study of rational actors in their pursuit of the best possible reward, or *pay-off*, in their relationship with other rational actors, whether they are adversaries or partners or even a bit of both. In many studies of limited warfare<sup>4</sup>, the primary focus is on various aspects of reciprocity. In this thesis, I

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<sup>3</sup>See appendix 1 and appendix 2 for more detailed information

<sup>4</sup>For more information on the limited warfare concept, see chapter 2.1

will attempt to add further elements into the theoretical analysis in order to understand the complex nature of rule systems intended to restrict warfare.

### 1.3 Methodology

In order to understand the rationality behind rule systems concerning warfare, I have chosen to base my approach on game theory. Since a considerable part of the research related to game theory is focused on the Cold War and more specifically on the issue of restricting nuclear weapons, I have studied some literature concerning that era and identified what I consider to be key aspects with a potential to be applicable to the limited warfare context. These conclusions are manifested in what I consider to be three key aspects which define the likelihood of a given set of rules concerning limited warfare to survive the challenges posed by a conflict. In the Cold War context, the rules concerning limited warfare were those which limited the potential use and deployment of nuclear weapons<sup>5</sup>. I think that the same basic lessons can be applied to another context in which limited warfare is defined as restrictions on warfare for humanitarian reasons. Consequently, I will attempt to apply the key aspects to explain Germany's actions in response to two attempts to restrict warfare before and during World War II; submarine warfare and chemical warfare.

Using the “method of difference” as defined by Teorell & Svensson (2006, p. 226), I will compare two examples of German warfare. The first is the submarine warfare against the UK in the North Atlantic (it should be noted though that although the war was directed primarily against the UK it also involved American and neutral ships as well as American aircraft) and the second is the non-use of chemical warfare. I consider the restrictions imposed on these two types of warfare to be closely related; both were implemented for explicitly humanitarian reasons during the inter-war period and both were focused on the use of specific weapons systems with considerable destructive potential. By comparing how the German regime during World War II acted in relation to the circumstances surrounding these two cases, I will establish what I consider to be the key differences which can explain such a significant difference in outcome.

I have chosen Germany during World War II for several reasons. First of all, the Nazi regime is considered one of the most vicious governments in history. On the basis of this, I assume that Germany during this time period showed little concern for ethics for the sake of normative concerns. The Holocaust, the decision to invade several nations despite strong international opposition and the ruthless persecution of opponents of the regime indicate to me that conventional ethics were not a major concern for the leaders of Nazi Germany. I assume that a

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<sup>5</sup>Although there was, to the best of my knowledge, no explicit ban on the use of nuclear weapons per se, the surrounding rule systems, such as the Non-Proliferation Treaty, the Anti-Ballistic Missile treaty and the Mutually Assured Destruction doctrine to mention a few, all testify to how problematic nuclear weapons were perceived to be and how urgent it was considered to restrict them. The fact that nuclear weapons were not used during the Cold War in any conflict by any nuclear power and that their deployment also was restricted testifies to the success of the overall ambition to restrict these weapons.

leadership that has shown such contempt for human rights and humanitarian concerns would wage warfare as effectively as they could, without taking ethics into consideration to any significant extent. Consequently, I assume that to the extent humanitarian rules of warfare were respected, they were respected for rational reasons rather than purely ethical. This makes Nazi Germany well-suited for this study, in my opinion. By reducing the influence of ethics, I hope to get to the core of humanitarian rationality. Naturally, this does not mean that I consider ethics for the sake of pure altruism to be unimportant in this context but I do think that although these ethics can greatly contribute to reducing the brutality of warfare, truly robust rationality will have an impact on both the most considerate and the most ruthless of leaders.

## 1.4 The material

For the theoretical discussion, I will primarily rely upon the works of Schelling (1980) and Axelrod (1987). Both are well-known in game theory for their groundbreaking contributions to the field. Schelling's book *The Strategy of Conflict* primarily serves as inspiration concerning the complexities of limited warfare. For the discussion relating to the consequences of the "shadow of the future" I have found Axelrod's theories very useful. In addition, I have used several other articles in which game theory has been applied to the Cold War context in order to study the various ways other authors have made use of game theory.

For the empirical data, I have mostly used second-hand sources with the exception of the various conventions and treaties, for which I have consulted primary sources. Since I am more interested in certain general aspects of the historical events than exact details, I have deemed it sufficient to rely upon well-known authors for second-hand material. For the treaties and conventions, on the other hand, the exact phrasings are quite important which is why I prefer to read them for myself rather than relying upon someone else's interpretation.



## 2 The theory in detail

### 2.1 Limited war

War might be said to be one of the most clear-cut cases of a real-life zero-sum game. The common perception is that two or more opponents will do their utmost to defeat one another by any means at their disposal, militarily and politically. However, even in the most vicious of armed conflicts, there are mutually accepted limiting factors. This can for example be the exchange of prisoners, the unspoken agreement to accept certain basic rules such as not executing enemy troops who surrender or refraining from the use of particularly destructive weapons. One of the most well-known game theorists, Nobel Prize-winner Thomas Schelling, calls this phenomenon *limited war* (Schelling 1980, p. 74-75). In essence, limited war is about mutual gain in the context of a zero-sum game. The logic behind this behaviour is, in simple terms, that actions which are equally damaging for both parties are irrational regardless of the context. For example, if both sides execute prisoners to an extent that is equally harmful to both<sup>6</sup>, no-one will gain from it but both sides will suffer more greatly than if they had refrained from doing so. Hence, the most rational course of action is to avoid it altogether. The strongest motivational factor in this context is usually the threat of retaliation. All things equal, it would be beneficial for one side to execute enemy prisoners if the enemy did not respond with identical actions. But, as long as said side cannot be certain that retaliation will be avoided by the opponent, it is wiser to refrain from risking an escalation that can be harmful to both and difficult to break, in the worst case scenario leading to a suboptimal equilibrium. In game theory terms, the basic situation can be understood as a repeated Prisoner's Dilemma (see Fig. 1). The initial gain made from one-sided defection will produce a repeated set of mutual defections which will create a suboptimal equilibrium neither side can benefit from. Avoiding this suboptimal equilibrium is the core of limited war.

	<i>Cooperate</i>	<i>Defect</i>
<i>Cooperate</i>	3      3	0      5
<i>Defect</i>	5      0	1      1

Fig. 1. Prisoner's Dilemma

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<sup>6</sup>This is based on the assumption that both sides have an interest in keeping their men alive, for example they may hope to get them back through a prisoner exchange, liberating them by force or through escapes

## 2.2 Robust or fragile?

In my analysis of the two rule systems concerning chemical warfare and submarine warfare respectively, I argue that they can be defined as being either *robust* or *fragile*. This should not be understood as a purely dichotomous relationship, but rather that a rule system is going to have a certain degree of robustness. The degree of robustness is determined by three factors; reciprocity, rule complexity and unrestricted destabilising measures.

### 2.2.1 Reciprocity

One of the central aspects of reciprocity during the Cold War was the nuclear “balance of terror”. The idea was that the threat of retaliation had to be maintained in order to deter the other side from launching a nuclear attack. For example, a massive nuclear strike can both take out the enemy command & control and missile silos while at the same time destroying enough infrastructure to reduce the target nation to a shadow of its former self, if deployed in sufficient scale. The ability to make such considerable gains by breaching the rules and at the same time destroy the enemy's ability to retaliate can be very tempting to any nation at war. This situation also adds emphasis to the degree of mutual trust. If the enemy can't be trusted to refrain from such methods, it would be wiser to strike pre-emptively rather than take the risk of being subjected to such an attack.

In a conventional (i.e., non-nuclear) context, the situation is similar but not identical. If one side in a conflict thinks it can make considerable gains for a small risk by breaching certain rules, it will be quite rational to do so. If, on the other hand, an equally destructive retaliation is likely to occur, which can outweigh the initial gains, it will be more rational to follow the rules since an escalation that does not bring an advantage to any of the belligerents is mutually undesirable.

As Axelrod (1987, p. 145) points out, the role of the “shadow of the future” is crucial in determining the importance of reciprocity. In war, a weapon that holds the promise of swift victory means that the conflict can be ended quickly and thus that the end of the interaction (at least within the conflict context) between the belligerents can be imminent. In such a situation, the future does not cast much of a shadow. The most rational act then is to limit one's own risks while attempt to maximising one's pay-off. In a nuclear context, this brings the temptation of unprovoked pre-emptive attack. In a conventional context, this can mean that one chooses to disregard limits to warfare if the consequences of such an action are sufficiently promising and the risks are insufficient to present a deterrence. If on the other hand the belligerents think that they will have to put up with the conflict for several years, they will have to pay more attention to the shadow of the future. This is where the humanitarian dimension of reciprocity enters.

## 2.2.2 Example: the role of reciprocity during the Cold War

During the Cold War, the superpowers developed the so-called second strike capability (which makes it nigh-impossible to destroy a nation's ability to retaliate) and the Mutually Assured Destruction (MAD) doctrine, which emphasises the consequences of breaching the rules by formally assuming retaliation and escalation. In a way, it was a guarantee for reciprocity.

The MAD doctrine and second strike capability gave considerable weight to the restriction of the use of nuclear weapons. A deeper understanding of the problems of the situation grew from the experience of being subjected to such a situation on a constant basis for decades. The Cuban Missile Crisis of 1962 is a good example. Although it was initially a set of escalating actions (placing missiles on Cuba on behalf of the Soviets, ordering a naval blockade on behalf of the US), it was ended because both parties were unwilling to risk facing the consequences of further reciprocal escalation, instead favouring caution and a negotiated solution.

That experience shows that the importance of reciprocity was understood to a large extent in the nuclear context during the Cold War. In theoretical terms, this was for example described by Schelling (1980, p. 187), who stated that “the purpose is deterrence *ex ante*, not revenge *ex post*” [emphasis in original]. In situations where the actors were faced with a situation in which they could choose escalation or caution, they always chose caution (although not necessarily until after several escalating actions).

## 2.2.3 Rule complexity

In addition to the role of reciprocity, I argue that the degree of complexity is an important factor in determining the robustness of a rule system. The least complex type of rule system will simply state that a specific action is forbidden, in a manner that does not lend itself to different interpretations or exceptions. The degree of complexity can have two dimensions; that of regulation and that of command. In terms of regulation, I have defined the degree of complexity as being the extent in which the rule system is open to interpretations and exceptions. In terms of command, I have defined the degree of complexity as being the degree to which subordinate commanders have the authority to at their own discretion issue orders that could potentially violate the rule system.

Both these factors can have a tremendous impact. The first factor has the unfortunate side-effect of enabling a “grey area” in which actions can constitute a violation or be permissible depending on the interpretation of the circumstances and the rule system. Retaliation and escalation will then gradually lead to a situation in which the rules are clearly violated. However, by then it may be too late to defuse the situation. Since communication and trust between the belligerents in war is usually at a minimum, the degree of coordination required for a gradual mutual de-escalation would be extremely difficult to achieve. The

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<sup>7</sup>*Ex ante* and *ex post* are Latin expressions meaning “before the fact” and “after the fact” respectively

result will most likely be a suboptimal equilibrium. The second factor is relevant in conjunction with the first because it effectively increases the number of people in a position of power sufficient to take the kind of actions the first factor is associated with.

#### 2.2.4 Example: rule complexity during the Cold War

Although there was no formal rule banning the use of nuclear weapons during the Cold War, neither side wanted a full-scale nuclear exchange either. Smaller nuclear weapons for use against military targets, so-called tactical nuclear weapons, were however mostly accepted and saw widespread deployment along potential front lines by both sides. Unlike the powerful strategic nuclear weapons, which could not be used without the approval of the highest authority, tactical nuclear weapons could be deployed by local commanders at their own discretion in case of armed confrontation.

Schelling (1980, p. 257-266) warned of the risks in terms of escalation based on his game theory research as early as 1960. Eventually, the superpowers realised at least to some extent the risks in terms of unwanted escalation concerning the use of tactical nuclear weapons since the largely unspoken rule system did not include an exact definition of the relationship between these weapons and the large strategic nuclear weapons, which meant that their use could be interpreted differently by the two superpowers. The worst case scenario was that use of tactical nuclear weapons would result in escalation leading up to use of strategic nuclear weapons. From the late 1960's and onwards, the number of tactical nuclear weapons was reduced and their potential use became increasingly a matter of approval from the highest ranks of leaders. In order to avoid mutually undesirable escalation, the use of tactical weapons was also avoided in conflicts in general, for example by the US in Vietnam (Hayes & Tannenwald 2003). The Soviet Union too gradually adopted a more careful approach to tactical nuclear weapons (Ulfving 2005, p. 47).

This experience shows that the leaders of the superpowers during the Cold War took steps to reduce complexity both in terms of regulation and command. In the first case primarily by reconsidering the potential use of tactical weapons and restricting their potential use in a way similar to that of strategic weapons, i.e. including them in the “we won't use them first” policy<sup>8</sup>, and in the second case primarily by reducing the number of people entrusted to order the use of nuclear weapons.

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<sup>8</sup>The “we won't use them first” policy meant that both superpowers clearly stated that they would only use nuclear weapons in retaliation. However, there were some shifts in this policy during the most tense times, when the US temporarily reserved the right to initiate the use of tactical nuclear weapons (Miller 2001, p. 356-357)

## 2.2.5 The role of unrestricted destabilising measures (UDM)

I argue that certain measures, which I have chosen to call *unrestricted destabilising measures*, abbreviated UDM for the sake of convenience, can have a significantly destabilising effect on the robustness of a rule system even though they are clearly not in violation<sup>9</sup> of it. By altering the circumstances which create balance, they can have a profound effect on the two other factors. For example, if one side drastically increases its offensive or defensive capability, it can have a profound effect on the reciprocity factor by causing an asymmetrical situation in which the balance of reciprocity is disturbed. Another effect which may or may not occur in conjunction with the effect on the reciprocity factor is an effect on the complexity factor. For example, if unrestricted destabilising measures causes difficulties for one side, it may give them more incentive to either violate the rules or to interpret complex rules differently (thus entering the previously mentioned “grey area”) in order to overcome this obstacle. This can in turn cause escalation, as mentioned in chapter 2.2.3.

## 2.2.6 Example: UDM during the Cold War

Both the US and the Soviet Union had plans on developing defences against nuclear attack but at that point, both sides quickly realised that such defences could upset the delicate balance needed to maintain stability. Consequently, such defences were restricted in the Anti-Ballistic Missile (ABM) treaty.. In an article on the impact of defensive measures against nuclear attack, Brams & Kilgour (1988) demonstrate how game theory can explain the potential risks of such systems damaging the delicate nuclear balance of the Cold War.

The decision of all nuclear powers during the Cold War to refrain from the use of any nuclear weapons in any conflict, as mentioned above in chapter 2.2.4, can also be argued to be a case of avoiding UDM. During a seminar, Schelling (2005) referred to this understanding as a form of unspoken taboo. This despite the fact that for example Soviet use of tactical nuclear weapons in Afghanistan could not have been misinterpreted as an attack on any other nuclear power.

## 2.3 Theoretical summary

A high probability of total reciprocity, a low level of rule complexity and a low degree of unrestricted destabilising measures will lead to a highly robust rule system. The opposite, a low probability of reciprocity, a high level of rule complexity and a high degree of unrestricted destabilising measures, will lead to a very fragile rule system. There is some overlap between the factors, a specific action can be said to have an effect on more than one factor. In addition, the

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<sup>9</sup>Interpretations of certain actions covered by the rule system are covered by the complexity factor, UDM specifically refers to actions which are clearly *not* covered by the rule system

factors may influence each other. An unrestricted destabilising measure can for example have an impact on the reciprocity factor.

In the case of a rule system designed to limit warfare, it will be subjected to serious strains and challenges due to the somewhat chaotic nature of armed confrontation. The higher the robustness, the more likely the rule system is to be in effect and followed despite this. A very fragile rule system, on the other hand, is unlikely to be respected for more than a very short time once hostilities begin.

# 3 The case of Germany, 1939-1945

## 3.1 Chemical weapons

### 3.1.1 The role of reciprocity in chemical warfare

Ellis van Courtland Moon (1984) states that throughout the war, deterrence was the primary reason chemical weapons were not deployed by any side during World War II. Although the Germans possessed vastly superior chemical weapons in the shape of nerve agents, they did not know that the Allies had not yet developed similar agents and thus did not dare risk a retaliation in kind by initiating the use of them, despite their advantages in terms of lethality. The fear of retaliation was too great to justify taking the risk of underestimating the capability of the enemy. Consequently, the situation can be understood along the lines of a repeated Prisoner's Dilemma (see Fig. 2). One-sided disregard for the rules bring an initial gain for the violating side but if this is followed by repeated mutual disregard for the rules as a consequence, which is the most likely outcome, the long-term result will be mutual loss compared to if both sides had adhered to the rules. The initial gain is not significant enough to warrant a violation of the rules if the long-term consequences are taken into consideration.

		United Kingdom	
		<i>Obey rules</i>	<i>Violate rules</i>
Germany	<i>Obey rules</i>	3      3	0      5
	<i>Violate rules</i>	5      0	1      1

Fig. 2. Chemical warfare

### 3.1.2 The role of UDM in chemical warfare

The rule system on chemical warfare during World War II shares a characteristic with the Cold War example; a balance of reciprocity must be maintained for the sake of deterrence. Just like the Cold War example, this reciprocity depends on

the equal ability to inflict damage and consequently asymmetry in defensive or offensive potential brought by UDM could destabilise the rule system by compromising the reciprocity factor. Throughout World War II, there was little in the way of credible defence against chemical weapons. The common gas mask could only protect the airways and lungs but the most common chemical weapons of the time would affect the whole body. The result would likely be that most people exposed to chemical warfare agents would be injured, presenting a serious challenge to the healthcare facilities in an urban environment if an urban area had been targeted for attack (Ellis van Courtland Moon 1984, p. 18).

The lack of effective defence against chemical attack made the threat of retaliation more effective since a successful attack had a high probability of leading to horrifying consequences. The attempts to improve defensive capabilities are the only signs of actions resembling UDM I have found in the chemical warfare case.

### 3.1.3 The role of rule complexity in chemical warfare

The 1925 *Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare* which both Germany and the UK had signed was simple and straightforward; the use of chemical and bacteriological weapons was prohibited without exceptions. There was no basis for interpretation or doubts as to how to implement the rules. Thus, any use of chemical weapons for whatever reason would constitute a clear violation of the rules, gradual escalation was made impossible by the non-existence of any form of grey area. Furthermore, only the most senior leaders had the authority to make any decision regarding chemical weapons, which also reduced complexity in terms of command.

## 3.2 Submarine warfare

### 3.2.1 The role of reciprocity in submarine warfare

To understand the role of reciprocity in submarine warfare, one has to have some understanding of both the stable and the fluctuating role the sea lanes of communication (SLOC) have for the two nations which I am studying in this thesis. For the United Kingdom, the SLOC are and always have been of great importance due to its geographical location. As an island nation that heavily relies upon a steady flow of imports, the UK must defend its SLOC at all costs. A severe disruption of the SLOC can result in catastrophe for the entire nation. The UK's dependence on imports from the US, especially during wars, further adds to this



problem since the ships carrying the imports have to travel a great distance across the Atlantic to reach the UK.

For Germany, the importance of the SLOC is completely dependent on the political situation. During World War I, Germany found it very difficult to receive sufficient amounts of supplies through its land-based infrastructure due to the strategic situation. This meant that the SLOC became vital to the survival of the nation. The British blockade of the German SLOC brought considerable difficulty to Germany and near-starvation due to a shortage of food<sup>10</sup>. During the second world war, on the other hand, Germany could receive supplies from the Soviet Union during the first years and after that it had sufficient control of the European mainland to make effective use of its land-based infrastructure. Throughout the second world war, Germany's SLOC was of secondary importance and consequently the British submarine campaign had little effect (Blair 2004, p. 101).

This presented a tempting situation for Germany during the second world war. Knowing how effective the German submarine campaign against the UK had been in 1917 during World War I, the Germans naturally planned to use submarines again to disrupt the British SLOC. The rules concerning submarine warfare might have been more interesting for Germany during World War II had the circumstances been more like during World War I and Germany's dependence on its SLOC had been greater. However, since Germany had little to lose from an escalation in submarine warfare whereas the UK had a lot to lose, it was quite rational for Germany to discard the rules in favour of a more effective submarine campaign.

The rationality in Germany declaring what is known as *unrestricted submarine warfare*, i.e. submarine warfare without any regard for rules or conventions, against the UK stems directly from the role of reciprocity. Knowing full well that the British retaliation would not be anywhere near as damaging to Germany as the German escalation would be to the UK, the temptation to disregard the rules becomes quite significant.

		United Kingdom	
		<i>Obey rules</i>	<i>Violate rules</i>
Germany	<i>Obey rules</i>	2      3	1.5      3.5
	<i>Violate rules</i>	5      0	4.5      0.5

Fig. 3. Submarine warfare

This can be understood as a Prisoner's Dilemma type of situation with an asymmetrical pay-off matrix (see Fig. 2). The UK has more to gain than Germany by both sides obeying the rules whereas Germany has more to gain by mutual

<sup>10</sup>It should be mentioned that Germany was far less inclined to use their submarines ruthlessly during World War I. They referred to exceptions for several years before finally deciding to disregard the customary rules altogether, when the situation became desperate

defection. I've used decimals to indicate how relatively unimportant a British retaliation or British one-sided disregard for the rules would be for Germany.

### 3.2.2 The role of UDM in submarine warfare

The submarine warfare rule system differs from that on chemical warfare in the sense that it permitted use of the weapon as long as certain rules were respected. This adds emphasis to the UDM factor since measures which obstruct the ability to wage war in accordance with these rules brings a new dilemma; the choice between accepting a disadvantage or disregarding/stretching the rules. Initially, the German submarines were ordered to obey the rules of humanitarian warfare concerning submarines when the naval war against the UK started on September 3<sup>rd</sup>, 1939 (Blair 2004, p. 94).

The admiralty soon ordered defensive measures, such as convoying with armed escorts and the issuing of an order to British ships to sail blacked out during nights. This made it more difficult for submarines to identify merchant vessels during the dark hours, which was the most favourable time for submarine attacks. This can explain one of the most serious mistakes of the early phases of the submarine warfare campaign, the accidental sinking of the passenger liner *Athenia* by the German submarine *U 30*. The submarine commander, Oberleutnant Fritz Lemp, had incorrectly identified the *Athenia* as a warship and legitimate target and thus engaged it with torpedoes without prior warning. The British interpreted the incident as a violation and thus further confirmation of their already established opinion that the Germans would not respect the rules set up by the treaties of 1922 and 1930.

Another defensive measure which made it difficult for the German submarines was the decision to arm many British merchant vessels and train their crews in the use of these weapons (Blair 2004, p. 106). The reason for that decision will be explained in more detail in the next chapter. The armament in question, comprising guns and depth charges, was concealed most of the time, so the submarine could be taking a serious risk by approaching a merchant vessel since it was difficult to spot these weapons until the crew removed the camouflage and started firing. By then, it could be too late for the submarine, a single lucky hit could cause severe damage or even be fatal. Furthermore, the crews of the merchant vessels were ordered to try to ram any enemy submarines in their immediate proximity and to send a special distress signal, SSS, if they encountered a submarine. The ramming could be fatal for the submarine unless it had enough time to dive beneath the attacking ship but the SSS signal could very well pose the most serious threat since it would reveal the position of the submarine to all enemy units.

The impact of these UDM on the submarine warfare case can be understood as a modified version of the original submarine warfare pay-off matrix. The measures reduce the vulnerability of British ships to both permitted attacks and attacks in violation of the rules, which minimises the risk for the UK. The most

significant difference can be found in the obey/obey option, in which Germany now faces a severe disadvantage. The option to stretch the rules in a response to the obstacles brought by the UDM will now be tempting to Germany as a way of restoring the original balance. However, the difficulty between establishing what actions constitute acceptable stretching and what actions constitute violation in that grey area makes it difficult to avoid escalation into mutual violation of the rules. Consequently, UDM can contribute to stretching of the rules or violation of them even though the UDM do not constitute stretching of the rules per se.

		United Kingdom					
		<i>No UDM</i>	<i>Some UDM</i>	<i>Violate rules</i>			
Germany	<i>Obey rules</i>	2	3	0.5	4.5	5	
	<i>Stretch rules</i>	3	2	2	3	1	4.5
	<i>Violate rules</i>	5	0	4	1	3.5	1.5

Fig. 4. Impact of UDM on submarine warfare (“grey area” marked)

### 3.2.3 The role of rule complexity in submarine warfare

During the initial phases of the German submarine campaign against the UK following the declaration of war in 1939, the leadership of Germany headed by Adolf Hitler clearly ordered all submarines to follow the rules set up by article 22 of the 1930 naval armaments treaty (Blair 2004, p. 93-95). Records from the early stages of the war shows that u-boat commanders tried to follow this order even when merchant crews sent the SSS signal and tried to ram the submarine, as was the case of the encounter between Kapitänleutnant Günther Prien's *U 47* and the British merchant vessel *Gartavon* on September 7th, 1939. Another example is the attack on the British merchant vessel *Royal Sceptre* by Kapitänleutnant Herbert Schultze's *U 48*, where he even acted more humanely than the rules required. A more difficult situation occurred when Kapitänleutnant Heinrich Liebe on the *U 38* was approaching the British merchant vessel *Manaar*. The merchant vessel opened fire from a deck gun. The *U 38* immediately submerged and sank the ship with torpedoes (Blair 2004, p. 116). Whether or not this was a violation of the rules, by the UK for arming the ship and/or by Germany for treating it like a military vessel, is a matter of interpretation.

The Germany navy also set up certain exceptions to the general rules of submarine warfare then in effect, (Blair 2004, p. 94). One exception was that it was permitted to attack the following targets without prior warning;

- Troop-transports, i.e. ships carrying large numbers of enemy troops
- Ships in convoys and ships being escorted by enemy warships or aircraft

- Ships participating in enemy action or which are engaged in actions in direct support of enemy operations, including intelligence-gathering

These exceptions were quite in line with the rule system concerning submarine warfare at the time, although they can be argued to be "stretching" the rules to some extent. The rules in question did not state that it was acceptable to attack a ship in convoy, for example. However, they did state that it was acceptable to attack a merchant vessel if it put up "active resistance" (*Treaty 1930*). This type of resistance is not defined in more specific terms. However, the convoy system is a defensive measure clearly directed to protect merchant vessels against submarines and surface raiders. In my interpretation, this can be considered "active resistance" on behalf of the merchant vessels in the convoy since they are taking part of an action (convoying) which makes it impossible for a submarine to "duly summon" and "visit and search" the vessels as the treaty requires (*ibid.*). Any attempt to do so would quite clearly result in an attack from the escorting surface vessels. The vulnerability of submarines meant that a single well-aimed volley of artillery shells from even a small surface vessel could be fatal. With the above mentioned circumstances in mind, it could be argued that the orders to engage merchant vessels in convoys without prior warning are not a clear violation of the treaties of 1922 and 1930, but rather an attempt at interpretation of these treaties. However, the complexity of the rules meant that the British quickly interpreted the German actions as being in violation of the rules, which invited escalation.

Immediately at the start of the war, the British admiralty issued an order that all merchant vessels belonging to the nations of the British Commonwealth, with the exception of ships capable of speeds surpassing 15 knots or ships incapable of speeds above 9 knots, should sail in convoys. Consequently, this defensive measure, a clear case of UDM, made it very difficult for the German submarines to engage enemy merchant vessels in accordance with the rules set up by the treaties of 1922 and 1930 without more or less guaranteeing their own destruction.

Following the accidental sinking of the *Athenia*, as mentioned in the previous chapter, the shift into the "grey area" and consequent retaliatory escalation came quickly, in the shape of arming of British merchant vessels (Burns 1971, p. 59). Although this action was not an escalation in the sense that it was not a violation of the rules, it did touch upon a controversial part of the rule system; whether or not merchant vessels would lose their merchant vessel status by adding armament. By choosing to arm merchant vessels and still consider them to be merchant vessels, the UK moved further into the "grey area", which was perceived by the Germans as an escalation. Consequently, Hitler stated that Germany would no longer adhere to the Prize Rules. This was followed by further measures, which gradually moved German actions from the "grey area" into that of clear-cut violation of the original rule system (*ibid.*, p. 60).

Interpretation poses a problem because of its subjective nature. Two actors may interpret the rules differently even when faced with the same situation. The fact that the UK had more to lose by sharing the same interpretation as Germany and vice versa further adds to this problem. Thus, by allowing for increased subjectivity in terms of what constitutes a violation and thus warrants escalation,

complexity of rules compromises the robustness of a rule system dramatically as soon as the simple two-option<sup>11</sup> solution of the total ban is abandoned.

Complexity in terms of command added to the complexity since every submarine commander could decide whether or not to attack a target. Thus, hundreds of officers had sufficient power to order actions that could violate the rule system.

### 3.3 The case of Germany – summary

I argue that the three factors mentioned above can explain both the stability of the chemical warfare rule system and the collapse of the submarine warfare rule system. No factor seems to be the sole explanation. Rather, it would seem that a combination of the three was required to completely undermine the rule system concerning submarine warfare. In terms of robustness, the ideal condition is to have low levels of UDM and complexity and a high reciprocity factor (manifested as a high probability of reciprocity for a given action in violation of the rule system). The chemical warfare rule system thus corresponded well with a high degree of robustness whereas the submarine warfare rule system was quite the opposite.

Since the German high command and leadership as well as the submarine commanders were willing, albeit with some reluctance, to follow the rule system at the start of the war, the strategic circumstances concerning the reciprocity factor cannot fully explain the events that followed since this factor was fairly constant throughout the war. If it had been enough in itself, the Germans should have disregarded the rule system from day one. However, the strategic circumstances meant that the Germans did not, rationally speaking, have to err on the side of caution, they knew that an escalation would not be particularly dangerous for their nation in terms of retaliation in kind.

The complexity of the rules cannot have been the single explanation either since the examples mentioned above indicate that the Germans did try to follow the complex rules without stretching them too much and even on occasion being more humane than the rules required, as indicated in the example of the sinking of the *Royal Sceptre*. However, it did mean that attacks on merchant vessels were permitted in the first case, which was the precondition for gradual escalation, as opposed to outright violation at the first attack, which would have been the case otherwise.

The defensive measures also contributed to the escalation by effectively preventing the submarines from performing attacks in accordance with the rule system. However, the implementation of these defensive measures were justified

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<sup>11</sup>In this case, a two-option situation means that an actor only has two options; to choose to act in accordance with the rules or to violate them. When no exceptions are acceptable and the circumstances are irrelevant, there is a pure two-option situation. Both the perpetrating actor and the victim have to realise that a violation is a violation and nothing else.

by the British admiralty by claiming that the Germans were already violating the rule system, an interpretation the Germans did not share; a consequence of the complexity factor. Furthermore, I argue that the German decision eventually decided to lift all restrictions rather than continue to refer to the exceptions permitted by their interpretation of the rule system or even to suspend attacks against merchant vessels in part or completely is directly linked to the reciprocity factor, which in this case favoured escalation rather than caution.

I argue that this development and the role of the above mentioned factors can be understood in chronological order;

1. Several UDM make it impossible to engage targets in accordance with rule system, thus providing Germany with a strong incentive to interpret the rules in a manner which can remedy this situation
2. Complex rules allow for exceptions and different interpretations, thereby opening the path to escalation, the British think the Germans are completely disregarding the rules
3. Little risk of reciprocity makes continued escalation the most rational German course of action (as opposed to de-escalation)

# 4 Conclusions

## 4.1 Alternative explanations

Several authors have pointed out that the German decision not to resort to chemical warfare during World War II may have been strongly influenced by Hitler's personal experiences of the horrors of gas warfare during World War I (Ellis van Courtland Moon 1984, p. 25-26). Although this can be considered irrational, I would argue that this can just as easily be interpreted as being quite rational. Considering that he had no objections to killing British soldiers and civilians in pretty much any other manner, it seems unlikely that Hitler's hypothetical personal reluctance would be caused by pity for the British victims. We know that this did not dissuade him from using chemicals on people in concentration camps. So the most likely reason for this reluctance if it was in fact of any importance would have been the fear for retaliation, which supports the importance of the reciprocity factor I have included as part of my theory.

However, it should be noted that there were advocates of chemical warfare among the top German politicians of the time, including Goebbels, Bormann and Ley (*ibid.*). Churchill had a similar point of view and was too an advocate of chemical warfare (*ibid.*, p. 18). This presents a situation where the most important people in power represent two fundamentally different positions on chemical warfare; one (possibly) reluctant, the other enthusiastic. The fact that the chemical warfare rule system could persist despite these individual differences should be evidence in itself of its robustness.

## 4.2 Limitations of the theory

The theory is based on the assumption that human beings will prefer to act rationally rather than irrationally, when presented with a choice. In my interpretation, this is not based on an objective ideal rationality but rather a subjective perceived rationality, albeit on the collective level of the state (which although can be argued to be individual in case of a totalitarian dictator). The subjective rationality is difficult to study because it includes both conscious and sub-conscious motives, i.e. an actor may act on sub-conscious rationality without being aware of it. I fully understand that not everyone will subscribe to this assumption, which presents a significant limitation of the theory. However, I

argue that my assumption in allowing for subjective perceptions of pay-off is more flexible than the quite rigid basic assumptions often found in the field of game theory.

### 4.3 General applicability of the theory

Although this thesis only attempts to apply the theory in a limited context, its nature should make it applicable to other similar situations. Although it is outside the scope of this thesis to speculate about such matters, I think it would be quite likely that the theory could be applied to at least other instances where rule systems have been implemented to restrict warfare.

### 4.4 Summary

Based on the theory and empirical data presented above, I argue that the rational understanding of the so-called "balance of terror" during the Cold War can provide analytical tools with which the rational robustness of rule systems intended to restrict warfare for humanitarian reasons can be understood. If these factors are taken into account to as large an extent as possible during the designing and implementation of rule systems intended to restrict warfare, it will bring incentives beyond those of the purely ethical and normative. Ideally, the purely ethical and normative incentives should suffice in themselves, but we all know only too well that belligerent states are all too willing to disregard such factors during armed conflict. However ruthless a state is, it will always be compelled to take rationality into account. If the most rational course of action then corresponds with respect for the rules of restricted warfare, they are far more likely to persist than if violating them presents a tempting option. Consequently, I consider it important to take these factors into the equation.



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# 6 Appendices

## 6.1 Appendix 1. Rules concerning chemical warfare

In 1922 in Washington, the Treaty relating to the Use of Noxious Gases and Submarines in Warfare was discussed between the five victorious nations of World War I; the UK, the US, Japan, France and Italy. The rules on chemical weapons, defined in the treaty as being "asphyxiating, poisonous or other gases, and all analogous liquids, materials or devices" (*Treaty 1922*) stated that they have been "condemned by the general opinion of the civilized world" (*ibid.*) and that they are to be prohibited. The treaty was blocked by France though due to its reluctance to agree to the submarine rules expressed in the treaty (*Washington Treaty 1922*). The failed 1922 treaty was followed by the *Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare* in Geneva in 1925 which uses an identical phrasing (*Treaty 1925*). Germany signed this protocol in 1925 and ratified it in 1929. The United Kingdom also signed the protocol in 1925 and ratified it in 1930.

## 6.2 Appendix 2. Rules concerning submarine warfare

Following the failed attempt to restrict submarine warfare in 1922 due to French resistance, a new attempt was made at the 1930 conference on the limitation and reduction of naval arms. The 22<sup>nd</sup> article of the fourth part of the Treaty for the Limitation and Reduction of Naval Armaments states that;

- (1) In their action with regard to merchant ships, submarines must conform to the rules of international law to which surface vessels are subject.
- (2) In particular, except in the case of persistent refusal to stop on being duly summoned, or of active resistance to visit or search, a warship, whether surface vessel or submarine, may not sink or render incapable of navigation a merchant vessel without having first placed passengers, crew and ship's papers in a place of safety. For this purpose the ship's boats are not regarded as a place of safety unless the safety of the passengers and crew is assured, in the existing sea and weather conditions, by the proximity of land, or the presence of another vessel which is in a position to take them on board.

The first sentence in the quote above refers to a complex set of rules for surface warships. For example, there was the so-called "prize rules", which stated that an enemy merchant vessel could be seized after being visited and searched if it was found that the ship was carrying "contraband", i.e. war-vital goods<sup>12</sup>. They would then be replaced by crewmen from the warship, who would take the role of "prize crew" and sail the ship into the nearest friendly or neutral harbour where a court would determine whether the cargo was in fact contraband. If this was found to be the case by the court, the ship and cargo could be sold on auction and the earnings would go to the ship responsible for the capture or its government. If the court on the other hand ruled that the ship was not carrying contraband, the intervening ship and/or its government could be sentenced to pay a fine and compensation to the owners of the ship (Blair 2004, p. 29).

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<sup>12</sup>The exact definition of contraband goods was determined by a complex and detailed list which was part of, for example, the Declaration concerning the Laws of Naval War, signed in London in 1909