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Nuclear Deterrence in the 21st Century: Can it Provide Stability

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1. Introduction

On 6 and 9 August 1945 the world witnessed the advent of a new kind of weapon; capable of an incredible amount of destruction. The events that took place on those days have changed the way statesmen, military leaders, and other strategists think about waging war. Since then nuclear weapons have become inextricably intertwined with defense and security strategies. The role of nuclear weapons was especially salient during the Cold War. The US and the Soviet Union both possessed an impressive amount of nuclear warheads. The concept of nuclear deterrence and mutually assured destruction (MAD) dissuaded both actors to attack each other. Nuclear weapons have also not been used after the bombings of Hiroshima and Nagasaki. This is more commonly known as the Nuclear Taboo.

Since the end of the Cold War nuclear abolition has become a more mainstream voice. In their view, Cold-War-relics like nuclear weapons have no place in today's world. However, the contemporary security environment has again become increasingly volatile. With Russia behaving in an increasingly belligerent way on Europe's eastern borders, China expanding its territorial claims in East Asia, and India and Pakistan experiencing one military conflict after the other, is it not somewhat naïve of nuclear abolitionists to advocate complete nuclear disarmament? More importantly, what kind of deterrence should replace nuclear deterrence, and will it be effective (Rühle, 2009: 11)? Of course, the contemporary security environment differs from the one that was present during the Cold War. This paper will therefore attempt to answer the following question: Can nuclear deterrence provide stability in the 21st century? The paper will be divided into three main sections.

The first section consists of a detailed analysis of the concept of nuclear deterrence. It will provide a framework for understanding deterrence and which requirements are needed for effective deterrence. Additionally, it will also examine some of the problems that deterrence faces, such as deterrence breakdown due to a lack of credibility, capability, resolve or communication. While deterrence does not have a perfect track record, this paper argues that the basic assumptions behind deterrence rest on a sound logic. Of course, nuclear deterrence is not just a theory. Evidently countries must assign a certain role to their nuclear weapons. Therefore, NWS's have adopted a nuclear posture and related doctrines in order to determine the threats against which nuclear weapons can be used, how such weapons will be used, and by which means nuclear weapons will be deployed during peacetime and also during crises (Shankar & Paul, 2016: 3). Consequently it is necessary to examine the nuclear postures adopted by the NWS's in question.

The second section will cover the ongoing debate on nuclear deterrence. It is notable that nuclear deterrence theory has drawn criticism from the onset and still generates significant

disagreement to this day. The main question is 'if nuclear weapons provide an effective deterrent or not'? However, before starting the debate, we must first define the notion of the stability. War did not disappear altogether after the advent of nuclear weapons. Hence, this paper distinguishes three kinds of stability; nuclear stability, large-scale-war stability and limited-conflict stability. The role of nuclear weapons is to deter the first two. The next part of the debate section will cover Ward Wilson's (2008) argument that 'the threat of using nuclear weapons to destroy cities is not an effective deterrent and that it is rather counterproductive'. After scrutinizing his arguments and presenting counterarguments, this paper is able to refute Wilson's claim. The second debate examines whether nuclear deterrence can be replaced by conventional deterrence. While conventional deterrence has its merits, there are financial reasons and possible miscalculations that make it less effective than nuclear deterrence.

The third section of the paper will analyze three case studies. First, the Russo-American case with the inclusion of NATO. Second, the Sino-American case and the strategy of extended deterrence in Asia. Third, the Indo-Pakistani case. Israel would have been an interesting case as well. But because it has no direct nuclear opponent and no declared nuclear posture, we have opted not to include it as a case. North Korea would also be an interesting case. However, its nuclear-weapons program is still in its infancy. In the future it will undoubtedly be an interesting case for deterrence, but for now its nuclear program is not developed enough to test it for deterrence.

The goal is to examine whether deterrence is more likely to fail or succeed in the different cases. Each case has different geographical, political and other contextual features that will be included in the analysis. By including a plausible hypothetical scenario for each case, it becomes more practical to see the effects of nuclear deterrence on a looming conflict. Nuclear deterrence appears to be fairly robust between Russia and the US-NATO alliance. This is due to the solidity of the multilateral NATO alliance, nuclear sharing agreements and a more credible deterrent as a result of recent Russian belligerence in Ukraine and the South Caucasus. In the Sino-American case extended nuclear deterrence faces credibility problems. It is questionable whether the US will risk retaliation in defense of its East Asian allies. Due to the absence of a multilateral alliance and nuclear sharing, extended deterrence is inherently less credible than in the first case. However, China will most likely be deterred by a mix of conventional and nuclear deterrence, as well as the risk of provoking a balancing coalition by its neighbors. Yet as its power grows, the US will find it increasingly difficult to guarantee extended deterrence in East Asia. Nuclear deterrence in the Indo-Pakistani case displays a relatively high degree of stability. Although the region is fraught with militarized disputes, and Pakistan displays a strong revisionist tendency, nuclear weapons appear to prevent escalation of limited conflicts to an all-out conventional war. However, the future stability of Indo-Pakistani nuclear deterrence is less certain. As India becomes more powerful, Pakistan will find it increasingly

difficult to maintain parity. Moreover, it is questionable whether India will keep tolerating Pakistan's destabilizing sub-conventional attacks.

As a conclusion, this paper argues that nuclear deterrence can provide stability to a relatively high extent. Nonetheless, it cannot unequivocally guarantee stability. The different cases show that it is more likely to succeed or fail under certain circumstances. Nevertheless, the risk of escalation and the prospect of nuclear retaliation compel countries to behave more cautiously. As a result, nuclear deterrence appears to be the most successful strategy for maintaining stability and will continue to play a role in the foreseeable future.

2. Nuclear Deterrence Theory

On 6 and 9 August 1945 the world witnessed the advent of a new kind of weapon; capable of an incredible amount of destruction. The events that took place on those days have changed the way statesmen, military leaders, and other strategists think about waging war. The events that are alluded to are of course the dropping of two atomic bombs, the infamous Little Boy and Fat Man, on Hiroshima and Nagasaki respectively. Before said bombing, the 2nd World War had already claimed the lives of millions of people. Yet the destructive force of the atomic bombs still came as a shock, and after the bombing of Nagasaki the Japanese were quick to offer their unconditional surrender (Quinlan, 2009: 6).

Since then, no nuclear weapons have ever been used again against a civilian or military target. Nonetheless, the bombing of Hiroshima and Nagasaki marks a turning point in the field of warfare and strategic thinking. In 1870, Wilkie Collins already speculated about the advent of such a destructive weapon. The following quote from Collins illustrates this point:

> *I begin to believe in only one civilising influence–the discovery, one of these days, of a destructive agent so terrible that War shall mean annihilation, and men's fears shall force them to keep the peace* (Baker & Clarke, 1999: 344).

It is exactly this point that constitutes the defining feature of nuclear deterrence. Inevitably, the presence of nuclear weapons forces us to think differently about warfare.

Historically, states have been preoccupied with guaranteeing their security and how to win wars. There is no central authority in the international system that tells states how to behave (Mearsheimer, 2001: 30). As a result, states are especially concerned about the security and survival of the state. The decision to go to war can, for the most part, be seen as a calculation of costs and benefits. If a certain country deems that that the costs of war will outweigh the possible gains, it will probably refrain from going to war (Waltz, 2013a: 5). Vice versa, war will become more likely if the

apparent gains outweigh the costs. The introduction of nuclear weapons fundamentally alters the cost-benefit calculation. While conventional wars have produced truly horrendous results, often claiming hundreds of thousands or even millions of lives, total annihilation has never been the end result. The ability to wipe out a city with a single missile or to rain utter destruction upon a country changes the outlook of war. Such a weapon provides a powerful deterrent. In that case, what chance does a country have of truly winning a war and how can benefits outweigh costs? Kenneth Waltz offers a more detailed view on the effects of deterrence:

> *War remains possible, but victory in war is too dangerous to fight for. If states can score only small gains, because larger ones risk retaliation, they have little incentive to fight* (Waltz, 2013a: 6).

Additionally, history has shown that in conventional wars countries have often made errors in their cost-benefit-calculations. At the eve of the First World War France, the United Kingdom (UK), Russia and Germany each determined they would have a reasonable chance of success in winning the war, or that they could at least successfully defend themselves (Fotion, 2008: 130-131). The war lasted 4 years and claimed much more lives than the participants had foreseen in their cost-benefit-calculation, so that in retrospect it is difficult to see how the benefits could have possibly outweighed the immense costs of that war. When nuclear weapons become part of the calculation it radically changes the chance of victory. With so many lives at stake a country should and most likely will avoid war. The prospect of intolerable losses, due to the destructive potential of nuclear weapons, can leave no room for calculation errors. Or as Bernard Brodie (1946: 76) puts it: "Thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them". Avoiding war is the key element here.

According to Michael MccGwire (2006: 771), there is a widespread belief in the West that nuclear weapons provided peace and stability during the Cold War. However, there is considerable debate on the effects of nuclear deterrence. But can it provide stability in the contemporary and future security environment? To attempt to answer these questions a detailed analysis of the concept of nuclear deterrence is needed.

2.1. The Concept of Nuclear Deterrence

Deterrence itself is nothing new under the sun. To say that it saw the light at the same time nuclear weapons made their infamous debut, would be factually incorrect. It has been present ever since humankind has waged war. The Roman proverb '*Si vis pacem, para bellum*[1]' has been ubiquitous

[1] If you want peace, make ready for war

throughout history (Quinlan, 2009: 20). Before going any further, it is necessary to provide a definition of deterrence.

> *Deterrence is the threat of force in order to discourage an opponent from taking an unwelcome action. This can be achieved through the threat of retaliation (deterrence by punishment) or by denying the opponent's war aims (deterrence by denial)* (Rühle, 2015).

Note that Rühle makes a distinction between deterrence by punishment and deterrence by denial. According to Mitchell (2015) deterrence by denial is achieved through a strategy that makes it more "physically difficult" for an opponent to achieve his objective. It aims to "make aggression unprofitable by rendering the target harder to take, harder to keep, or both" (Mitchell, 2015). In contrast, deterrence by punishment is achieved by threatening the enemy with a credible and lethal retaliatory strike; against which the enemy has no way to defend (Mitchell, 2015). Such a strike not only puts the enemy's military forces at risk, the population of the opponent is equally at risk. The fear of suffering a disproportionate amount of carnage constitutes the main element of this strategy.

Kenneth Waltz has a slightly different view. He states there are two ways to dissuade an opponent from attacking. The first option encompasses a strategy of greatly strengthening one's forces and "building defenses so patently strong that no one will try to destroy or overcome them" (Waltz, 2013a: 5). This defensive ideal somewhat resembles the 'deterrence by denial' strategy. The second option is to build or maintain "retaliatory forces able to rain unacceptable punishment upon a would-be aggressor" (Waltz, 2013a: 5). So Waltz makes a distinction between 'dissuasion by defense' and 'dissuasion by deterrence'; the two are not to be confused.

Essentially, a deterrent strategy gives a country the option to coerce its opponent to refrain from taking a certain action or to coerce its opponent to pursue an alternative course. While the basic principle of deterrence remains more or less the same, the advent of nuclear weapons gives it an eminently more destructive dimension. Quinlan (2005: 10) notes that:

> *The technological expansion of military capability exemplified by nuclear weapons convinced most people that the need to avoid war, rather than have to wage it, had acquired a new and special cogency.*

It is easy to confuse coercion and deterrence. However, they are not exactly the same. Schelling (1966: 67) argues that deterrence can be viewed as a passive action in which a certain threat serves as a warning to dissuade an opponent from doing something. Thomas Schelling then introduced the concept of compellence, which he thought to be more in correspondence with coercion. While deterrence relies on a passive threat, compellence is based on actively forcing an opponent to withdraw or collaborate by threatening him with the use of force (Petersen, 1986). In summary, deterrence works as a red line that will solicit a response when the opponent crosses that line

(Petersen, 1986: 282). In the case of compellence, if the opponent does not respond to the threat, punishment can be applied until he complies (Petersen, 1986: 282). So while deterrence is not the same as coercion, they are definitely related. It seems deterrence constitutes "the most significant outcome of the coercive quality of nuclear weapons" (Paul, 1998: 20). However, the compellent power of nuclear weapons seems to be a less effective due to the credibility problem (Paul, 1998: 28).

First, because of non-use or no-first-use policies nuclear weapons have very limited compellent power. Second, because there is a "lack of proportion between means and ends (Jervis, 1984). The immense destructive power of nuclear weapons raises question about the credibility of the threat (Jervis, 1984: 23). Using nuclear weapons as a deterrent to protect one's own country is arguably justifiable; the same cannot be said about using them as a compellence strategy. In other words, one can hardly justify using such weapons to actively coerce an opponent when the survival of your territory or an ally's territory is not at stake. For example, it would have been difficult for the US to compel Nicaragua to stop supporting rebel activities in El Salvador by threatening to destroy Managua with a nuclear strike (Jervis, 1984: 23). The level of destruction would have been completely disproportionate in relation to the goal. Moreover, this act would most likely be viewed as unacceptable by the American public as well as the US' allies. Nonetheless, Evans (2014: 92) notes there is a pervasive belief among states that nuclear weapons can greatly increase a country's coercive bargaining power. All of the above serves as a reminder that winning a war is no longer the chief objective of countries. Instead, the emphasis has increasingly shifted towards the art of coercive diplomacy. If coercive diplomacy is the new norm, it is no wonder states believe nuclear weapons to be the central element of that strategy. Faced with such a powerful weapon it is understandable that countries abandon the objectives that are deemed undesirable by the deterrer.

When is nuclear deterrence effective? This is a crucial question that needs to be answered. Yet it is a difficult one to due to the speculative nature of deterrence theory and nuclear weapons. Despite all the theories, models and structures pertaining to the use of nuclear weapons, one can't actually proof that nuclear deterrence definitely works; it is "in a strict sense speculative" (Quinlan, 2009: 13). Henry Kissinger explains exactly how difficult it is to prove this.

> *Since deterrence can only be tested negatively, by events that do not take place, and since it is never possible to demonstrate why something has not occurred, it became especially difficult to assess whether the existing policy was the best possible policy or a just barely effective one. Perhaps deterrence was even unnecessary because it was impossible to prove whether the adversary ever intended to attack in the first place* (Kissinger, 1994: 608).

Be that as it may, scholars and scientists can still put forward a whole range of arguments, hypotheses, and theories that make a good case for nuclear deterrence. On the other hand, there are

many voices that question the presumed deterrent capabilities of nuclear weapons. Regardless of the considerable disagreement about this topic, nuclear weapons do exist. Therefore it is crucial that their effects be examined, that theories and concepts are put forward, and that we develop policies concerning these weapons (Quinlan, 2009: 14-15).

There are a couple of important elements that are needed for effective deterrence. First off, it requires that an adversary is able to recognize the capability of the deterrent (Quinlan, 2009: 23). For example, during the cold war the US and the Soviet Union both possessed an enormous amount of nuclear weaponry. In 1977 the US possessed 25 542 nuclear weapons and the Soviet Union possessed 23 044 nuclear weapons, enough to destroy each other multiple times over (Norris & Kristensen, 2010: 81). The strategic concept of mutually assured destruction (MAD) entails that in the event of a nuclear strike from one superpower, the other superpower would have such a large nuclear arsenal that a first strike would be unable to completely destroy it. The idea behind this concept was that both sides would have the option to launch a second strike against the initiator, leading to an unacceptable amount of casualties (MccGwire, 2006: 772). The capability to destroy was thus clearly present. This second-strike capability is linked to Waltz' condition that a country's nuclear arsenal must give the impression that it is at least able to partly withstand an attack, and that it is ready and able to launch a strike of its own (Waltz, 2013a: 20).

Second, the enemy must be aware of the will of the deterrer to use a nuclear weapon if necessary (Quinlan, 2009: 23). This, of course, seems to be quite a paradox, since nuclear weapons serve to avoid war by deterring aggression. Yet as Quinlan (2009: 25-26) notes, a difference can be made between deterrence and use, the two are however "not wholly disconnected". More precisely, a state must retain the option to actually use the weapon in order for it to have a credible deterring effect. If the option to possibly use the weapon is taken away it loses its deterring effect. The will or resolve to use nuclear weapons is connected to what a deterrer considers to be a vital interest. It should come as no surprise that communication constitutes a vital part of a deterrence strategy. The notion of 'vital interest' leads to some difficult challenges. For starters, it is not always clear, certainly not for outsiders, what is seen as a vital interest or when vital interests are at stake. Consequently, the concept of vital interest is prone to ambiguity (Sauer, 2011: 12). What does it refer to? Protecting one's territory seems to be reasonable interpretation. Protecting allies could, in some cases, also be included as a vital interest. Nonetheless, the vagueness of the concept persists.

The 1982 Falklands War shows how the latter undermined deterrence theory. While the Falklands were considered an integral part of the UK by the British government, Argentina did not perceive it as a British vital interest (Sauer, 2011: 13). The Argentineans did not expect the UK to put up much of a fight, since they were convinced the Falklands were just a peripheral interest of the British. At first glance it seems that nuclear deterrence failed in this instance. But upon closer

examination, it seems faulty communication by the British was at fault (Paul, 2009: 151). Argentina was not oblivious with respect to the UK's nuclear capabilities. However, before the war they had obtained information that in the case of an invasion the British would probably break diplomatic ties and impose economic sanctions, but that a military intervention was not considered as an option (Paul, 2009: 151). Since capability and will/resolve are needed for credible deterrence, it is not hard to see why deterrence came up short in this case.

In order to deter a state must communicate, and to some degree be transparent, about capabilities, deployment patterns, and the conditions that will induce the use of nuclear weapons (Adamsky, 2014: 92)[2]. According to Quinlan (2009: 23), a deterrer must clearly communicate in advance which actions will be perceived as unacceptable. At the same time Quinlan (2009: 24) argues "deterrence does not require a precise specification of what form the non-acquiescence will take." In other words, it is not necessary to over specify the actions that are deemed undesirable or unacceptable. While at first glance this seems contradictory, there is an explanation for this. Over specification could actually undermine effective deterrence (Quinlan, 2009: 24). In the case of too specific thresholds, an opponent might take aggressive action which stays just below the proverbial 'red line', so that it can avoid a response by the deterrer (Quinlan, 2009: 24). Nuclear weapons are hardly suitable to deter conflicts at lower level. Because of this, nuclear weapons cannot be the sole instrument of military deterrence (Quinlan, 2009: 22). Therefore, nuclear weapon states (NWS) have adopted a more flexible stance. In practice, this means declaratory policy regarding the use of nuclear weapons can be somewhat vague; highlighting terms such as "extreme circumstances" and "to protect vital interests" (Gerson, 2010: 8). This form of declaratory policy is also known as "calculated ambiguity" (Gerson, 2010: 8). Perhaps then, deterrence can be seen as a tacit safeguard rather than a threat to a specific action. Or as Gray (2003: 1) puts it:

> *Furthermore, deterrence may work most efficaciously when it can rely not upon the potency of explicit threats, but rather upon the fears of publicly undesignated deterrees who are discouraged from taking action by their anticipation of the threats that adventurous behavior would bring down upon their heads. Deterrence can be so internalised by policymakers that it will be at work for our security even when it is nowhere visible, at least in the form either of vulgar threats or even of subtle hints of superpower displeasure.*

In that sense, deterrence would act as the looming sword of Damocles, reminding possible deterrees to act cautiously at any given time, as to avoid punitive action.

[2] This argument refers specifically to an asymmetric escalation strategy in which non-strategic nuclear weapons (NSNW) are considered as a first-use option against conventional attacks in order to deter their outbreak (Adamsky, 2014: 92). Nevertheless, some of these elements are also largely applicable to deterrence in general.

Third, and this is more of an assumption than a proposition, deterrence requires that an opponent is believed to be a rational actor (Sauer, 2011: 11). The argument is based on the assumption that rational actors will not behave in a reckless way or take certain actions that may elicit nuclear retaliation (Sauer, 2011: 11). However, this presupposed notion of rationality has generated considerable disagreement amongst scholars. One cannot escape the fact that nuclear deterrence theory is by large a creation that has sprouted from the minds of Western theorists. As an example, Payne (2011: 397) addresses the problem that US nuclear deterrence strategy and experiences during the Cold War perpetuated, and might still perpetuate, the assumption of a 'rational-actor-type' construed by Western standards. In other words, countries such as China or India might assess threats differently due to a difference in their strategic and cultural doctrine. Michael Quinlan rejects this argument. He acknowledges the fact that different countries have different value-systems (Quinlan, 2009: 30). On the other hand, having a different value-system does not mean that those countries have no value system at all; so that it is difficult to imagine an adversary who would have no concern for the survival of its people or the survival of its regime (Quinlan, 2009: 30). This is a compelling argument; indeed, the prospect of nuclear annihilation is enough to instill fear at a limbic level. For Quinlan (2009: 30), only the truly insane would not be deterred by the threat of nuclear weapons. While intuitively this statement seems to make a lot of sense, it also appears to have the characteristics of a 'no true Scotsman fallacy'.

The US and the Soviet Union had about forty years to fine tune their nuclear strategy. Yet Gray (2003: 20 – 21) claims the two opponents had different views on deterrence theory, so that even the seemingly more stable bipolar power configuration was susceptible to misunderstandings between the two superpowers. The Soviets did not have the same view of stable deterrence as the Americans did; possibly resulting in divergent views even when a nuclear menace was knocking at the door (Gray, 2003: 20 – 21). Nevertheless, in a most basic sense, Quinlan's argument might be correct. Issues such as misinterpretations, misunderstandings, and the inability to understand actions informed by a different strategic culture are a constant danger. Gray (2003: 21) claims American deterrence theory, and by extension Western deterrence theory, is struggling with a potentially dangerous "confusion of rationality with reasonableness". Payne (2001: 10) offers a more detailed explanation of this problem.

> *If rationality alone fostered reasonable behavior, then only in the rare cases of manifestly irrational leaderships would we likely be greatly surprised. Assuming challengers to be pragmatic and rational, and therefore reasonable, facilitates prediction of their behavior simply by reference to what we would consider the most reasonable course under their circumstances; the hard work of attempting to understand the opponent's particular beliefs and thought can be avoided. Such an opponent will behave predictably because by definition, it will view the*

> *world in familiar terms and will respond to various pushes and pulls in ways that are understandable and predictable. Contrary and surprising behavior would be senseless, "irrational".*

Moreover, it is important to address one's own biases. Decisions are, at least in some part, informed by a cultural background. In other words, what may look like a logical and rational action by our standards might be perceived as irrational by other standards. There are also further limitations that apply to rational behavior. In an ideal setting, decision-makers are in possession of all the information, can correctly asses the available alternatives, can foresee the possible consequences, and have an adequate amount of time to react to the unfolding situation. Based on this, rational decisions can be made. Unsurprisingly, these ideal settings rarely occur in real-life situations. In practice, this means leaders sometimes have a lack of information, that they lack the time to explore all alternatives, and that cognitive limitations make it impossible to foresee the consequences of decisions (Quackenbush, 2011: 748). Additionally, individuals and states do not always make the most rational decisions (Sauer, 2011: 11). In spite of this, Quinlan's argument does seem to hold up. While there are different value systems which influence what is seen as rational, Quinlan's argument is based on a feature that supersedes cultural and strategic differences. Survival is a primordial instinct, hard-coded into every human regardless of cultural differences. Nuclear deterrence thus reminds actor to behave cautiously.

Lastly, nuclear weapons require reliable command and control (C2) (Waltz, 2013a: 20). Evidently, conventional weapons and forces need reliable C2 as well, but due to the immense power of nuclear weapons, reliable C2 are even more crucial. Sauer (2011: 14) identifies three risks: *1) unauthorized use; 2) authorized use after false alarm; 3) accidents*. C2 does not rest solely in the hands of one person or government agency. To be clear, the distribution of C2 varies significantly across countries. While authoritarian regimes commonly exert a more central and tighter control on their nuclear forces, democratic regimes are subjected to a certain degree of accountability (Born, 2007: 2). That being said, even in democratic countries, control over nuclear forces partly escapes democratic control (Born, 2007). Unauthorized use poses a constant danger. To prevent such an event, a country must have certain physical and organizational safeguards against it. Miraglia (2013: 842) notes the following:

> *Within the academic literature, safe nuclear command and control systems are traditionally defined by three common characteristics. Such systems must be highly assertive – i.e. placed under tight and exclusive civilian control; they must respond to a highly centralised hierarchy; and nuclear weapons must include physical protection against unauthorised assembly or detonation.*

To start, some countries use permissive action links (PALs) or similar/alternative systems to prevent accidents and unauthorized use by terrorists, rogues or madmen (Born, 2007: 3). PALs are electronic locks that protect nuclear weapons from tampering and unauthorized use (Quinlan, 2009: 16). They require a code to unlock them for use[3]. However, the effects of PALs can be partially negated in some instances, for example when the US has several intercontinental ballistic missiles (ICBMs) on hair trigger alert (Waltz, 2013b: 88). Alternatively, an organizational safeguard of separating warheads from delivery systems, or a further separation of several components can also be used (Narang, 2014: 88). Another central element of nuclear C2 is also described as the "Always/Never dilemma" (Feaver, 1992-1993: 163). In other words, there needs to be an assurance that the weapons will work when it is needed, and conversely, that no weapon will ever be used without proper authorization (Feaver, 1992-1993: 163). This dilemma is also known as the issue of "positive and negative control" (Cimbala, 2001: 2).

Much thought must also be given to the maintenance of reliable computers, intelligence, reconnaissance, and surveillance systems (CISR). Coupled with command, control, and communications systems and intelligence (C3I), this becomes C4ISR (Hayes, 2015: 4). Indeed, early warning and assessment systems, and uninterrupted lines of communication during nuclear crises, are indispensable for avoiding nuclear catastrophes. The 1995 Norwegian rocket incident provides an example on the importance of warning and assessment. A Norwegian/US rocket was launched with the purpose of gathering data for a scientific project. This innocent scientific rocket was believed to be a US ballistic missile equipped with a thermonuclear warhead because it was following the same trajectory as a US Trident missile, a submarine-launched ballistic missile (SLBM) able to knock out Russia's detection systems (Forden, 2001: 2). This resulted in Russian prompt launch forces being put in a state of strategic alert, leaving President Boris Yeltsin with the decision to order a nuclear strike (Cimbala, 2001: 14). Fortunately, Russian early-warning capabilities at the time were able to detect that no ICBM had been launched from the US (Forden, 2001: 2).

Of course, nuclear deterrence is not just a theory. NWS's have to encompass nuclear weapons in a certain strategy. Therefore, the next chapter will provide insight on nuclear postures, and how this influences nuclear strategy and deterrence.

2.2. Nuclear Postures and Strategy

Nuclear weapons, by virtue of their immense destructive power, fall into a different category than conventional weapons. When it comes to security, survival, and war, experts are forced to devise a certain strategy and to formulate policy on the use of force. Therefore, NWS's have adopted a

[3] Newer PALs require a 6 or 12 digit code, while older models only require a 4 digit code.

nuclear posture and related doctrines in order to determine the threats against which nuclear weapons can be used, how such weapons will be used, and by which means nuclear weapons will be deployed during peacetime and also during crises (Shankar & Paul, 2016: 3). Simultaneously, a nuclear posture also serves as a signal; it communicates to external actors what kind of goals these weapons are for. In turn, nuclear posture affects nuclear strategy and the subsequent nature of a country's deterrent force. Each country's posture will probably have certain distinctive details. However, with the exception of the US and Russia, Narang (2014) claims nuclear postures of regional powers can be divided in three categories. Although Narang (2014: 14) claims that the US and Russia, due to their massive arsenal and extensive nuclear architecture, don't fall into what he characterizes as "regional power nuclear posture", it is still more or less feasible to determine on which posture they tend to rely most. For the purpose of this paper only two categories need to be discussed. Narang (2014: 14 – 20) characterizes them as follows:

A) Assured retaliation: A NWS with an assured retaliation posture aims for a direct deterrence of nuclear attacks and coercion. Seeking third-party intervention is not the objective. Instead, this posture operates on the basis of threatening an opponent with nuclear retaliation. Retaliation implies that the NWS in question has been attacked first. As a result, the presence of survivable second-strike forces able to target crucial strategic centers by certain retaliation, are a sine qua non. Ensuring second-strike forces survive can be done by procedures of dispersion, concealment, and deception. Moreover, technical means can also ensure survivability of second-strike forces. Sea-based systems such as the use of nuclear-powered ballistic missile submarines (SSBNs) make it a lot harder for opponents to successfully launch counterforce strikes[4]. The retaliatory aspect of this posture also means that NWS's who assume such a posture have incorporated a 'no-first-use policy' in their doctrine. While such a posture could enable first use of nuclear weapons, its core element relies on deterrence by punishment against important targets. Unlike the catalytic posture, which is often highly ambiguous about nuclear capabilities, an assured retaliation posture is more transparent about its nuclear capabilities in order to send a clear message to its opponents that nuclear retaliation is a credible option. However, as mentioned before, deployment patters can and should be secretive to guarantee second-strike survivability.

China and India seem to have adopted such a posture in combination with a 'no-first-use' policy. Schneider (2007) claims China's 'no-first-use' policy should not be taken for granted. According to him, there are serious doubts about the sincerity of China's declaratory 'no-first-use' policy. In the case of Taiwan, China has stated that 'no first use' is excluded because Taiwan is seen as a province rather than an independent country (Schneider, 2007: 7). To summarize, a credible

[4] Counterforce strikes being "military strikes aimed at disarming an adversary by destroying its nuclear weapons" (Lieber & Press, 2013: 3)

assured retaliation posture is successful when opponents believe they won't be able to destroy the nuclear forces of the country in question by means of a disarming first strike, and if the opponents are made aware that a nuclear first strike or conventional aggression that threatens the very existence of the country, will lead to nuclear retaliation.

B) Asymmetric Escalation: This posture specifically aims to deter conventional aggression by enabling a NWS to react by means of swift, asymmetric escalation. This strategy allows for first use of nuclear weapons against military or civilian targets, or possibly both. In this instance, the first-use option aims to deescalate a conventional conflict or deter an outbreak of a conventional attack (Schneider, 2008: 397; Adamsky, 2014: 92). To achieve a credible deterrent effect, the respective weapons "must be operationalized as war-fighting instruments" (Narang, 2014: 19). This posture also implies that the NWS in question employs a low 'nuclear weapons use threshold' (Schneider, 2008: 397). Asymmetric escalation requires that nuclear forces can be deployed rapidly, and that certain military personnel are given pre-delegate authority over tactical or strategic nuclear weapons. In theory, asymmetric escalation could include first use of strategic nuclear weapons. However, this posture tends to gravitate towards the use of tactical nuclear weapons (TNWs) for de-escalation[5].

The distinction between strategic and tactical nuclear weapons can at times be quite blurry. It is also not always easy to find an encompassing definition. The next quote should be able to clarify the details and distinction between the two.

> *A strategic mission is: Directed against one or more of a selected series of enemy targets with the purpose of progressive destruction and disintegration of the enemy's warmaking capacity and will to make war. Targets include key manufacturing systems, sources of raw material, critical material, stockpiles, power systems, transportation systems, communication facilities, and other such target systems. As opposed to tactical operations, strategic operations are designed to have a long-range rather than immediate effect on the enemy and its military forces. In contrast, the tactical use of nuclear weapons is defined as the use of nuclear weapons by land, sea, or air forces against opposing forces, supporting installations or facilities, in support of operations that contribute to the accomplishment of a military mission of limited scope, or in support of the military commander's scheme of maneuver, usually limited to the area of military operations* (Woolf, 2016: 6).

While this seems to be a very comprehensive definition, some countries might employ slightly different or additional definitions. Moreover, additional distinctions between the two can be made. Without going into too much detail, there are two more important defining features that help differentiate between 'strategic' and 'tactical' nuclear weapons. The first is by looking at delivery systems. Strategic nuclear weapons are characterized by their long range and indiscriminate amount of destructive power (Woolf, 2016: 6). They are able to penetrate deep within the enemy's heartland

[5] Also called Non-Strategic Nuclear Weapons (NSNWs). For the rest of the paper, the term TNWs will be used.

but are less useful in limited battlefield operations. One might think of ICBMs as a practical example. In contrast, TNWs were smaller and had limited range, but could be more easily deployed alongside troops in the field and were better suited for limited military operations (Woolf, 2016: 6 – 7). A second distinction can be made by looking at the explosive yield of warheads. With the addition of having a longer range, strategic nuclear weapons also carried large warheads with far greater destructive power (Woolf, 2016: 7). They were thus more suitable for "ultimate punitive actions" (Quinlan, 2009: 18). In turn, TNWs, which were traditionally equipped with smaller warheads, were more appropriate instruments for more limited, discrete targets or objectives during battlefield operations (Woolf, 2016: 7).

However, most of these distinctions have become partly obsolete since the end of the Cold War. Technical innovations of weapons, delivery systems, targeting abilities, and so on have partly blurred the difference between the two (Woolf, 2016: 7). However, the recurring element that seems to differentiate between the two is which targets they are meant to be used against. Perhaps that is the most feasible way to distinguish strategic from tactical weapons. Traditionally, this distinction has been relevant for the superpowers' nuclear arsenals. Yet recent reports have shown that newer nuclear powers also possess missiles capable of tactical missions. Pakistan for example, is in possession of NASR (Hatf-9) missiles which could be used in a tactical setting (Narang, 2014: 83)[6]. While Pakistan characterizes all its nuclear weapons as strategic, missiles such as the NASR (Hatf-9) can definitely be used in tactical, battlefield operations (Kristensen & Norris, 2012: 103).

Returning to Narang's characterization of asymmetric escalation, several additional factors must be clarified. This posture depends on the manner in which nuclear forces are arrayed, and how they can be credibly used. Moreover, to credibly threaten an opponent, this posture requires transparency regarding capabilities, deployment patterns, and overall conditions of use. Coupled with the requirement of rapid deployment, the asymmetric escalation posture can produce significant pressures on command-and-control abilities, and can strain operational management of nuclear forces. This makes NWS's who have adopted such a posture more vulnerable to risks of unauthorized use of nuclear weapons. Due to its low nuclear use threshold and first-use option, this posture seems to be the most aggressive of all the postures (Adamsky, 2014: 92; Narang, 2014: 19).

Asymmetric escalation is commonly adopted by states that face severe security constraints. In practice, such a posture is adopted by states that face a conventionally superior foe (Adamsky, 2014: 94; Narang, 2014: 20; Schneider, 2008: 410). Examples of the latter are provided by Pakistan's posture vis-à-vis a conventionally superior India and the Russian posture vis-à-vis the conventionally

[6] Additionally, it controls a variety of short to medium range missiles such as the Abdali (Hatf-2), the Ghaznavi (Hatf-3), or the Babur (Hatf-7) cruise missile (Kristensen & Norris, 2015a: 61). These could also be used in a tactical setting.

superior forces of NATO (Schneider, 2008: 410; Adamsky, 2014: 94; Narang, 2014: 20). The belief that first use of a TNW will deescalate a conventional conflict is a dangerous assumption and a cause for concern. There is no guarantee that such a strike will effectively deescalate a conflict. Even more, it could be viewed as completely unacceptable and draw in other NWS's into the conflict, possibly leading to a retaliatory strike, especially if the country targeted by the first strike has some sort of security agreement with a NWS or falls under an extended deterrence arrangement of a NWS.

The US and Russia differ from other NWS's due to the quantity and quality of their arsenals, and due to their historical importance with respect to nuclear deterrence. Though the US and Russia do not fall into a specific posture category, they do adhere to certain doctrines. The nuclear relation between the US and the Soviet Union has been a focal point during the Cold War. The nuclear doctrines used by the two superpowers were not static and have changed notably over the course of time. It is not necessary to elaborate all of these doctrines, yet some of them are historically significant and will be shortly discussed in a later chapter.

The role of the US nuclear doctrine in its defense strategy is defined in the Nuclear Posture Review (NPR) of 2010 and in the 2014 Quadrennial Defense Review (QDR). The NPR report states that "The fundamental role of U.S. nuclear weapons, which will continue as long as nuclear weapons exist, is to deter nuclear attack on the United States, our allies, and partners" (U.S. Department of Defense [DoD], 2010: VII). The QDR provides a more extensive explanation on the role of nuclear weapons:

> *Our nuclear deterrent is the ultimate protection against a nuclear attack on the United States, and through extended deterrence, it also serves to reassure our distant allies of their security against regional aggression. It also supports our ability to project power by communicating to potential nuclear-armed adversaries that they cannot escalate their way out of failed conventional aggression (DoD, 2014: 13).*

The 2010 NPR report formulates additional conditions for the US nuclear deterrence doctrine. During the Cold War, US nuclear doctrine allowed for first use of nuclear weapons in case of a large-scale conventional attack by the Soviet Union and its allies (DoD, 2010: VII). Furthermore, nuclear weapons served to deter the use of chemical and biological weapons (CBW) against the US and its allies (DoD, 2010: VIII). However, due to US conventional superiority, the contemporary nuclear doctrine has significantly reduced reliance on nuclear weapons as a deterrent to conventional and CBW attacks (DoD, 2010: VIII). Additionally, The US will strengthen its "negative security assurance" through a commitment stating that it "will not use or threaten to use nuclear weapons against non-nuclear

weapons states that are party to the NPT[7] and in compliance with their nuclear non-proliferation obligations" (DoD, 2010: VIII).

After observing all of the above, it is apparent that one notable element is missing. While the US does place strong constraints on the use of nuclear weapons and has decreased its reliance on such weapons, it does not exclude first use against other NWS. Even during the Cold War, China and later the Soviet Union made a no-first-use pledge (Paul, 1998: 31). Paul (1998: 31) claims the US did adopt such a pledge, albeit in an ambiguous way. The lack of an unequivocal 'no-first-use' pledge thus means that there are instances where the US could resort to a first use. Indeed, the NPR articulates that nuclear weapons can play a role in deterring conventional or CBW attacks coming from NWS's and states failing to comply with their NPT-obligations (DoD, 2010: VIII). Moreover, the NPR also states that at the moment, the US is not willing to "adopt a universal policy that deterring nuclear attack is the sole purpose of nuclear weapons, but will work to establish conditions under which such a policy could be safely adopted" (DoD, 2010: VIII). The US does state that it will only consider using these weapons under extreme circumstances and in the case that US or allied vital interests are at stake (DoD, 2010: VIII-IX). As Gerson (2010: 8) notes, it is rather vague what is meant by vital interests. As a consequence, US nuclear doctrine remains somewhat unclear.

Russia has already been briefly mentioned in the section of the asymmetric escalation posture. However, due to its superior nuclear capabilities, it cannot be classified as a state that adheres solely to the asymmetric escalation posture. The Military Doctrine of the Russian Federation (MDRF) indicates the role of nuclear weapons and the conditions of their use. Mark Schneider (2008) has claimed that Russia employs the lowest nuclear threshold in the world, with the possible use of nuclear weapons to de-escalate a conflict. The 2014 MDRF, however, shows some restraint when compared to earlier versions of the MDRF (Oliker, 2016: 3). The 2014 MDRF states that:

> *The Russian Federation shall reserve the right to use nuclear weapons in response to the use of nuclear and other types of weapons of mass destruction against it and/or its allies, as well as in the event of aggression against the Russian Federation with the use of conventional weapons when the very existence of the state is in jeopardy* (Embassy of the Russian Federation to the United Kingdom of Great Britain and Northern Ireland [RF Emb.], 2015)[8].

This paragraph demonstrates that first use is not excluded as an option. Nonetheless, the nuclear threshold does not seem to be lower than the one formulated in the US nuclear doctrine. The next paragraph of the 2014 MDRF is rather puzzling. It states that: "Nuclear weapons will remain an important factor of preventing an outbreak of nuclear military conflicts involving the use of

[7] NPT: Non-Proliferation Treaty. This treaty aims to prevent the spread of nuclear weapons and to bring about nuclear disarmament.
[8] Section III, paragraph 27 of the 2014 MDRF

conventional arms (large-scale war[9] or regional war[10])" (RF Emb., 2015)[11]. This can be interpreted in several ways. It could mean that Russia's nuclear arsenal serves to deter escalation to a nuclear level by and adversary during a large-scale war or regional war. Alternatively, it could also mean that Russia might use nuclear weapons first to de-escalate a large-scale war or regional war before it turns into a nuclear military conflict. The first explanation seems to be the most likely, but the ambiguous phrasing of paragraph 16 makes it difficult to draw a clear conclusion on what is actually meant. In light of this uncertainty, it is best to take both interpretations into account. As a conclusion, while de-escalation is not explicitly mentioned in the 2014 MDRF, the article in question is vague enough to allow for a possible first strike aimed at de-escalation of a conflict.

Theoretically, it would therefore still be possible for Russia to launch a first strike with the purpose of de-escalation. Oliker (2016: 2) argues that Western analysts interpret the Russian doctrine in a too aggressive way; instead, she argues, Russian declaratory policy is indicative of a desire to "leverage its status as a nuclear power" and to signal that Russia must be taken seriously. Russian analysts maintain that the primary motive is to increase Russia's political clout toward the US and NATO (Schneider, 2008: 397).

However, there is a consensus that Russia's military inferiority vis-à-vis NATO, increases its reliance on its nuclear arsenal (Schneider, 2008; Adamsky, 2014; Oliker, 2016). Additionally, the 2014 MDRF also identifies NATO as a main external military risk. Section II, paragraph 12, article a) states:

> *12. The main external military risks are: a) build-up of the power potential of the North Atlantic Treaty Organization (NATO) and vesting NATO with global functions carried out in violation of the rules of international law, bringing the military infrastructure of NATO member countries near the borders of the Russian Federation, including by further expansion of the alliance* (RF Emb., 2015).

Considering that NATO has been identified as a main risk, and that it has superior conventional capabilities, it would not be unreasonable to assume that Russia relies heavily on its nuclear weapons for deterrence purposes. Moreover, alliances and relationships can possibly shift over time. This means that aside from NATO and the US, Russia will also have to divert attention towards an increasingly powerful China. For 2015, China's defense budget was more than three times larger than Russia's defense budget; highlighting that even against China, Russia will be at a growing

[9] According to Section I, paragraph 8, article h) of the 2014 MDRF, a large-scale war is described as "*a war between coalitions of states or major states of the world community in which the sides are pursuing radical military-political objectives. A large-scale war may result from an escalation of an armed conflict or a local or regional war and involve a significant number of states from different regions of the world. It would require mobilization of all physical resources available and spiritual strength of the participating states*."

[10] According to Section I, paragraph 8, article g) of the 2014 MDRF, a regional war is described as "a war involving several states if the same region waged by national or coalition armed forces in the course of which the sides are pursuing important military-political objectives."

[11] Section II, paragraph 16 of the 2014 MDRF

disadvantage with respect to conventional military means (Stockholm International Peace Research Institute [SIPRI], 2015).

3. Nuclear Deterrence: An Ongoing Debate

The emergence of nuclear weapons and deterrence theory has led to a considerable amount of disagreement and lively theoretical debates. Consequently, this chapter will examine some critiques of deterrence and if there any alternatives to replace it.

3.1. Defining Stability

Before starting this chapter it is necessary to revert back to the original question of the paper; can deterrence provide stability? To answer this question, clarification about the term 'stability' is needed. Stability can mean different things, or in other words, there are different kinds of stability. Stability is quite a broad concept. For that reason, it might be expedient to rephrase the question in a way which better illustrates what is meant. As a result 'can deterrence provide stability?' could be rephrased into 'Does nuclear deterrence make war more or less likely'? Yet again further clarification is needed. What kind of war is meant? It is hardly fair to lump the 2nd World War into the same category as the 1969 Sino-Soviet border conflict. Similarly, one can hardly compare the Vietnam War with the rather limited Falklands War. Accordingly, it is possible and at the same time useful to make a distinction between different kinds of war and stability.

There is much discussion among international relations scholars and policy makers about what kind of stability nuclear deterrence provides. After nuclear weapons were used on Nagasaki and Hiroshima, war did not disappear all together. If stability is interpreted as 'a general absence of war', then obviously nuclear deterrence cannot provide that kind of stability. Historical evidence could immediately disprove such a claim. Another term that emerges in literature on nuclear deterrence is 'nuclear stability'. A large part of scholars believe that nuclear stability means that nuclear weapons are not used (Hall, 2014: 355). That is to say, according to "conventional wisdom", nuclear weapons deter the use of other nuclear weapons (Wilson, 2008: 421).

However, if the sole purpose of nuclear weapons is to deter other nuclear weapons, one might question the utility of nuclear weapons. Moreover, if it is true that nuclear weapons can only deter other nuclear weapons, wouldn't it mean that such weapons are redundant? In light of this, maintaining a nuclear arsenal for deterrence purposes would seem absurd. In this case, critics and opponents of nuclear weapons and deterrence could rightly point out that nuclear weapons are not an effective tool for stability and security. If nuclear weapons can only deter each other, then their

'raison d'être' would essentially be eliminated. Of course, deterring other nuclear weapons is not the exclusive purpose of nuclear weapons.

Avoiding a nuclear war is crucial, and undoubtedly ensuring 'nuclear stability' is of the utmost importance. Be that as it may, Quinlan (2009: 21) notes that the aim of deterrence is "to prevent all war between major powers, not just nuclear war". According to him there are two reasons for this. First, wars and their accompanying horrors were already present prior to advent of nuclear weapons. In other words, the immense destructive power of nuclear weapons tends to overshadow the fact that conventional wars were not 'nice and cozy' (Quinlan, 2009: 22). Secondly, conventional wars are not just atrocious, they also constitute the most likely path to a nuclear war (Quinlan, 2009: 22). As such, deterrence also aims to prevent conventional wars.

It is necessary to make an additional distinction within the concept of conventional war. As mentioned before, wars cannot be treated as if they formed one homogenous bloc. For the purpose of this paper, it is appropriate to differentiate between a large-scale war and a conflict of limited nature. Some have suggested that:

> *[…] the existence of strategic nuclear weapons made lesser wars without nuclear weapons more rather than less likely, as though the pressure for war was more or less constant and blockage of it in one direction made it only more insistent to break out in another* (Brodie, 1978: 75).

In this quote, Brodie is referring to a phenomenon in international relations theory known as the 'stability/instability' paradox. This paradox states that in the event that two adversaries each acquire nuclear weapons, the probability of a direct war between them is significantly reduced; while at the same time, the probability of minor incidents and limited or indirect conflicts increases (Jervis, 1984: 31; Fitzpatrick, 2013: 48). Considering all of the above, this paper has to take into account the effect of nuclear deterrence on: *1)* Nuclear stability, *2)* Stability of direct/large-scale conventional wars, and *3)* Stability of limited or indirect conflicts. One should note however, that it is sometimes difficult to make a clear distinction between a direct war and a limited conflict. Moreover, some military actions might have limited aims at the start, yet this does not mean that it can automatically be confined as it progresses. Violence entails an inherent possibility of escalation. As a result there is an ever-present risk that a limited conflict escalates into an all-out war.

3.2. Nuclear Deterrence: Ineffective and Counterproductive?

As mentioned before, nuclear deterrence theory is quite controversial and generates considerable disagreement between proponents and opponents. Some examples of criticisms against deterrence

and instances of deterrence breakdown have already been mentioned briefly in chapter 2.1. . However, it is necessary to delve further into the rich debate on nuclear deterrence.

A large part of the debate is centered on the question 'if nuclear weapons provide an effective deterrent or not'? An argument that deserves our attention is Ward Wilson's (2008) claim that 'the threat of using nuclear weapons to destroy cities is not an effective deterrent and that it is rather counterproductive'. Wilson (2008: 423) suggests that civilian targets and city bombing are still "at the heart of deterrence". To support this claim Wilson presents a number of historical examples of aerial bombing campaigns against cities, as well as a number of examples of civilian extermination in the last 3 000 years. While Wilson does provide some interesting arguments, scrutinizing those arguments provides a couple of counterarguments.

1st counterargument: Wilson's examples are set during war, which means that another cost-benefit calculation applies. It is indeed true that history provides ample evidence that a country's population can endure severe hardships and that they will not easily be coerced, even when facing horrific punishment. One must however distinguish a situation where two opponents are already at war and a situation where an opponent may possibly go to war. In a setting where two parties are already at war, the costs are already high. That is to say, there is already a lot of destruction and death going on. The situation is different when two countries are not yet at war, but one of the countries is contemplating if it should go to war. Therefore, when faced with the prospect of nuclear retaliation, the costs of going to war rise exponentially. Wilson seems to forget that nuclear deterrence aims primarily to prevent war, not to win a war. The claim that leaders and civilians will not easily be coerced by the threat of a nuclear strike during a war is at the very least debatable.

However, it is a different case all together when a country is faced with the threat of nuclear destruction if it does choose to go to war. It is highly unlikely that the population will exhibit the same level of determination and resilience in this case. How could the benefits ever outweigh the costs in this instance? What could the country in question possibly have to gain from going to war? Wilson's argument is flawed because it equates a situation where a country is already at war with a situation in which a country is calculating if it should go to war. Moreover, upon further examination it becomes quite evident that Wilson's examples can be categorized as compellence rather than deterrence. He is in fact arguing that compellence with nuclear weapons does not work well, and again this is a debatable statement. As a consequence, Wilson's equation of deterrence and compellence leads to an erroneous reasoning about the deterrent role of nuclear weapons.

2nd Counterargument: Wilson underestimates the enormous and uniquely destructive power of nuclear weapons. One ICBM can achieve the same results as hundreds of aerial bombing campaigns. Arguably, countries such as the US or China could probably completely annihilate certain countries with their conventional weapons. But this is not the point. The point is that nuclear weapons are

uniquely powerful. The largest conventional weapons, such as the 'bunker buster', have a destruction capacity of 10 tons of TNT (Sauer, 2011: 7). 'Little Boy' had a destruction capacity of 14 000 tons or 14 kilotons of TNT (Sauer, 2011: 7). Modern nuclear weapons are far more powerful than the rudimentary atomic bombs that were dropped on Hiroshima and Nagasaki. The W-76 is on average at least ten times more powerful, while the W-88 Trident II D-5 MK-5 SLBM contains 475 kilotons of TNT (Sauer, 2011: 7). The amount of destruction such weapons could cause is almost impossible to comprehend.

Additionally, conducting large-scale, aerial city bombing campaigns requires considerable efforts in logistics and mobilization of aircraft, navy and troops. In contrast, firing nuclear weapons, to put it bluntly, requires entering a code and pushing a button. Furthermore, ICBMs have a range of at least 5 500 km (Quinlan, 2009: 93). Standard Chinese, Russian and US ICBMs all have a range of over 10 000 km. In combination with their SLBMs, this means virtually any spot on earth can be targeted quite easily. Besides the ability of reaching virtually any spot on the globe, ICBMs are also able to do this at an incredible speed. The total flight time of an ICBM is approximately 30 minutes, but at its apex, an ICBM can reach up to Mach 20 or 15 000 mph[12] (Gibson & Kemmerly, 2009: 236). According to Krepinevich and Cohn (2016: 12), the two superpowers during the Cold War were left with an attack warning time of about 20 to 30 minutes. With multiple NWSs sharing borders in this day and age, the attack warning time is further reduced due to geographical proximity. For instance, Krepinevich and Cohn (2016: 12) estimate that the attack warning time would be as little as 5 to 6 minutes in the Indo-Pakistani case. In conclusion, nuclear weapons can cause much more destruction than conventional weapons, and they can do it faster and without the need for massive mobilization of military resources.

3rd Counterargument: The last counterargument that can be made is equally related to the unique nature of nuclear weapons. The unique nature of nuclear weapons has psychological as well as more tangible implications for a country's ability to defend against such weapons. Let's start with the more practical and tangible implications. Wilson puts forward several examples of city bombing campaigns such as the bombing of Dresden, the battle for Britain which involved numerous bombing raids on London, and a series of bombing raids on Tokyo.

According to Lorenz (1989), during the interwar period the British were quite worried about the destructive capabilities of airpower. At that time the British rationale was that "the bomber would always get through" (Lorenz, 1989: 14-15). However, thanks to the development of the radar and the campaigns by the Royal Air Force's (RAF) Spitfire squadrons, the British were able to ward off the Germans during the Battle of Britain (Lorenz, 1989: 14). At present, modern fighters and systems

[12] 15 000 mph = 24 140 kph

such as surface-to-air-missiles (SAM) are used in anti-aircraft (AA) defense. However, by no means does this mean that AA defense makes cities invulnerable to aerial bombing campaigns.

The introduction of nuclear weapons has dire implications for defensive measures. Imagine a hypothetical situation in which a bombing raid is conducted against a city. The defenders are able to intercept 90% of the enemy's aircraft. A defensive campaign with an interception rate of 90% could be evaluated as being very successful. Now imagine the same hypothetical situation with the exception that the attacker's aircrafts are now carrying nuclear weapons. For example, B61-3 bombs with a maximum yield of 170 kilotons (Kristensen & Norris, 2015b: 108). In this instance a 90% interception rate would be catastrophic. If only a couple of B61-3 bombs would get through, the city would most likely be obliterated.

Defensive measures are even further complicated when taking ICBMs and SLBMs into account. How can one take efficient defensive measures against missiles which have a top speed of over 24 000 kph and can reach targets in less than 30 minutes? Ballistic Missile Defense (BMD) is a possible option for neutralizing ICBMs and SLBMs. However, there are doubts about the technological readiness and effectiveness of such systems. Sauer (2011: 59) admits that "reliable missile defense technology does not yet exist". Likewise, Mayer (2015: 203) argues that BMD systems still exhibit significant shortcomings. American short, medium and long-range BMD systems for instance, are reasonably capable of countering smaller numbers of simple to fairly simple ballistic missiles (Mayer, 2015: 203). In turn, there are serious concerns about a BMD system's ability to counter larger numbers of missiles and more advanced missiles, or even ballistic missiles equipped with a multiple independently targetable reentry vehicle (MIRV). It is also doubtful that countries which have a significantly smaller defense budget than say the US or China would be able to afford an extensive BMD system. Moreover, even countries with smaller nuclear arsenals can possibly bypass BMD systems by employing haystack tactics[13] (Krepinevich & Cohn, 2016: IV). That way the likelihood of a nuclear weapon passing through is greatly enhanced.

These practical issues relating to defensive measures against nuclear weapons may also have a psychological effect. In the case of conventional city attacks and aerial bombing campaigns, a defending country can at least take defensive measures with underlying thought that survival is possible. This is not to say that they won't suffer extremely high casualties, but as Wilson rightly points out, such attacks rarely lead to submission. The point is that as long as a chance of survival is

[13] A haystack attack is described as follows: "*A haystack attack involves a relatively large number of ballistic missiles (the "haystack"), only a small percentage of which are armed with a nuclear warhead (the "needles"). Haystack attacks are attractive for those nuclear powers whose arsenals are small, but also have a large inventory of missiles to confront an enemy armed with advanced missile defenses. The objective of this form of attack is to maximize the chances of a nuclear weapon reaching its target by compelling the defender to spread his efforts out over all the incoming missiles, as he cannot distinguish between those that are armed with nuclear warheads and those that are not"* (Krepinevich & Cohn, 2016: 25).

possible, the defending country can arguably keep up its morale and resilience. But what chance of survival is there when nuclear weapons come into play? Slim to none would seem to be a fair assessment. Even countries with substantial BMD systems are expected to have severe difficulties to intercept nuclear weapons. If one or several nuclear weapons slip past the defensive nets, the result would be catastrophic. How then, one might ask, will the people and their leaders keep morale and resilience up when they are faced with weapons that are almost impossible to defend against?

3.3. Conventional Deterrence versus Nuclear Deterrence

In 2009 President Obama announced his desire to move toward a world free of nuclear weapons. However, in a nuclear-free world countries will have to rely on other defensive measures in order to ensure their security and stability. Liberal internationalists argue that economic interdependence and international institutions will foster peace and stability (Jackson & Sørensen, 2013: 100-113). While these liberal notions can indeed contribute to peace and stability, this paper argues that a country cannot depend on these notions alone. Realism, on the other hand, is primarily concerned with security and survival of the state (Jackson & Sørensen, 2013: 67). Mearsheimer (2001: 30) claims "the international system is anarchic". This does not mean that chaos reigns supreme, just that there is no higher authority that dictates how states should behave (Mearsheimer, 2001: 30). States can never be sure that other states will not attack or invade them (Kirshner, 2012: 55). The state has a duty to protect its people; security is a public good and it is the state's responsibility to provide it (Kirshner, 2012: 55).

Considering these realist principles, we must ask the following question: can conventional deterrence replace nuclear deterrence? To answer this question it is helpful to return to the notion of what Waltz (2013a: 5) calls the "defensive ideal". Such a strategy is achieved by "building defenses so patently strong that no one will try to destroy or overcome them" (Waltz, 2013a: 5). However, such a strategy requires an extraordinary amount of military spending. It is indeed quite possible that even without its nuclear deterrent, no country would dare attack the US due to its immense superiority in conventional forces. However, there are reasons to doubt whether conventional deterrence will be equally successful as nuclear deterrence.

First, it is questionable whether certain countries will be able to attain the necessary military spending needed for effective conventional deterrence. In 2015 the US defense budget amounted to 596 billion US$, almost three times larger than the Chinese defense budget of 215 billion US$ (SIPRI, 2015)[14]. No other country's defense budget exceeds 100 billion US$. Military power is distributed

[14] Measured in constant US$ with base year 2014.

unevenly and it would be nigh impossible for second-tier states[15] or smaller powers to match the defense budget of countries such as the US or China. As a consequence, it is not realistic to expect smaller powers to be able to field a credible conventional deterrent. Admittedly, nuclear weapons also require military spending. However, Rajesh Basrur notes that even small nuclear arsenals are able to provide an effective deterrent (Basrur; Cohen & Wilson, 2007-2008: 202). Pakistan, for example, has a defense budget of around 9.5 billion US$ compared to India's defense budget of 51 billion US$ (SIPRI, 2015). Thus Pakistan's conventional military means are inferior to India's, yet Pakistan's nuclear arsenal provides it with the ability to deter a conventionally superior India. Therefore, nuclear deterrence provides an attractive alternative for countries facing a conventionally superior foe.

Second, an increase in one's military capabilities for the purpose of deterrence may be perceived as a threat by other countries; this is also known as the security dilemma (Montgomery, 2006: 151). Inevitably, when one state increases its military power, it engenders a relative decline of other countries' military power. States, and particularly great powers, are acutely sensitive to changes in the balance of power. Of course, countries react to certain changes in their environment. Hence, it is likely that an increase in military capabilities from one country will lead to balancing behavior by other countries; be it internal balancing – accumulating military power – or external balancing – through alliances and military cooperation (Jackson, 2014: 333). This can possibly result in an arms race and heightened tensions between the involved countries. In contrast, nuclear weapons can serve almost exclusively as a defensive measure. It is true that their power comes from their enormous destructive capability, yet they are hardly suitable for campaigns of conquest and occupation. Nevertheless, nuclear weapons can also provoke anxiety, but their very nature makes it unlikely that they'll be used as an offensive weapon.

Third, because of potential mistakes in cost-benefit calculations or overestimating the actual strength of one's own military, even countries with strong conventional forces sometimes fail to deter adversaries. This is basically a reiteration of the 1st World War example provided in chapter 2 (p.2). According to Fotion and Copieters (2008: 102) states have a propensity to overestimate their abilities and underestimate opponents' abilities. Furthermore, even if a country expects the coming war to be difficult, it might still determine that the anticipated benefits outweigh the costs. The effect of nuclear weapons on the cost-benefit calculation has been mentioned several times in this paper. In contrast to conventional deterrence, the rationale behind nuclear deterrence is that costs will always heavily outweigh the benefits. Undoubtedly, the costs can be horrifically high in conventional wars, but the point is that it is not always easy to make accurate predictions before

[15] First-tier states being the US and China. Second-tier states being countries such as the UK, Russia, India, France, Brazil, ... (Geeraerts, 2011: 59).

going to war. On the other hand, nuclear weapons offer an immediate prospect of extreme destruction. Since the expected costs will be so massive, countries will not risk going to war.

However, it must be acknowledged that nuclear deterrence is certainly not foolproof. There have been crises in which it has failed to deter; one example is the Arab-Israeli war of 1973. On the other hand, its track record seems to suggest that it is relatively successful in deterring great power wars or large-scale conventional wars. Nonetheless, having a strong conventional deterrent is important for deterring smaller wars and limited conflicts. Ultimately the two can be viewed as complementary strategies rather than opposing strategies.

4. Examining Nuclear Deterrence in the Real World

To examine where nuclear deterrence stands today, three cases have been selected. First, the Russo-American case with the inclusion of NATO. Second, the Sino-American case and the strategy of extended deterrence in Asia. Third, the Indo-Pakistani case. Israel would have been an interesting case as well. But because it has no direct nuclear opponent and no declared nuclear posture, we have opted not to include it as a case. North Korea would also be an interesting case. However, its nuclear-weapons program is still in its infancy. In the future it will undoubtedly be an interesting case for deterrence, but for now its nuclear program is not developed enough to test it for deterrence. The Russo-American relationship has to include NATO due to its historical significance during the Cold War and its role in defending modern-day Europe. The Sino-American case focuses on the notion of extended deterrence in Asia due to rising tensions between China and its neighbors. The Indo-Pakistani case serves to analyze nuclear deterrence in a situation that features continuous military conflicts. The goal is to examine whether deterrence is more likely to fail or succeed in the different cases. For a correct analysis, it is therefore necessary to take into account the specific context, geography, the nature of the countries' relation, and their respective nuclear posture. Each case will also include a hypothetical scenario in order to present a more practical view of deterrence. As a reminder, nuclear deterrence aims to prevent nuclear and large-scale conventional wars. On the other hand, we do not expect it to prevent limited or small-scale conflicts.

4.1. The Russian – American/NATO Case

The US and Russia (then Soviet Union) were the original participants of the nuclear deterrence relationship. During the Cold War they fulfilled the role of the two opposing superpowers. The claim of nuclear deterrence proponents is that nuclear weapons kept the peace, or at least provided stability, between two hostile superpowers. The contemporary context differs somewhat from the Cold War setting. The Cold War power configuration can be characterized as 'bipolar'. The US and

Soviet Union formed the apex of their respective pole. They were roughly equal in military power, although the US always enjoyed a clear superiority in economic terms (Kennedy, 1989)[16].

At present, Russia is clearly inferior to the US in both military and economic terms. The US Gross Domestic Product (GDP) stood at 17,947 trillion US$ in 2015, almost fourteen times higher than Russia's GDP (International Monetary Fund [IMF], 2016). Russian military expenditure in 2015 amounted to 66,421 billion US$ and is clearly overshadowed by the US defense budget of 596,024 billion US$ (SIPRI, 2015). Currently, Russia maintains an arsenal of 4 500 nuclear warheads and is engaged in a modernization program of its nuclear forces (Kristensen & Norris, 2015c: 84). The US has 4 760 nuclear warheads in its stockpile and is also engaged in a 350 billion US$ modernization program over the next decade (Kristensen & Norris, 2015b: 107; US Congressional Budget Office [CBO], 2013). There is thus no notable difference in the size of the two powers' nuclear arsenals.

During the Cold War, the US and other members of NATO were especially concerned over an attack by the numerically and conventionally superior members of the Warsaw Pact (Quinlan, 2009: 37). Currently, the roles have somewhat reversed. Since the fall of the Soviet Union, countries in Russia's neighborhood have gravitated towards NATO and the European Union (EU). The MDRF also identifies NATO enlargement and the build-up of NATO military capabilities as a main external threat (RF Emb., 2015). Russian opposition to interference in what it considers its sphere of influence has been apparent. In the last decade, it has launched military interventions in South-Ossetia and Abkhazia, and has annexed the Crimean peninsula and is involved in an ongoing war in the Donbass region in Ukraine. Russia's reaction should have come as no surprise. Since the mid 1990's, Russia has clearly stated its adamant opposition against NATO enlargement (Mearsheimer, 2014: 1).

It is, of course, in times of increased tensions that nuclear deterrence matters most. Hall (2015: 362) notes that the US and the Soviet Union had no substantial territorial disputes, despite them being on different ends of the ideological spectrum. While there were no serious direct territorial disputes, the US and Soviet Union were nevertheless involved in numerous proxy wars across the globe in order to increase their influence. In the contemporary era, Russia does not have the wherewithal to challenge the US directly. What does seem to be the case is that Russia is trying to deny NATO of achieving military hegemony in Europe, or at least to prevent NATO from supplanting Russia's influence in its neighborhood. NATO and the US have increased their military capabilities in Eastern Europe and the Baltics, while Russia has reacted by announcing it would augment its arsenal with forty ICBMs (Melvin & Leroux, 2015).

[16] The US share of the Gross World Product was on average almost two times higher during 1960 and 1980. In 1980 the US Gross National Product (GNP) stood at 2,590 trillion US$ compared to the Soviet Union's GNP of 1,205 trillion US$ (Kennedy, 1989: 436).

To attempt to make a prediction about the stabilizing effect of the opponents' nuclear deterrent, it is helpful to encompass a scenario. We might consider a looming Russian incursion into Latvia as a possible scenario. More specifically, we will borrow some elements of the scenario presented by Krepinevich and Cohn (2016: 43-64) to provide a slightly alternative version of that scenario. Two things are important when analyzing this scenario: *a)* Russia's asymmetric escalation posture which allows for first use of nuclear weapons in or to de-escalate the conflict, and *b)* Russia's heavy reliance on its nuclear arsenal due to its inferiority in conventional military capabilities. As a reminder, this paper has determined that nuclear deterrence fails if nuclear weapons are used or if a large-scale conventional war breaks out. It has not failed if the conflict is limited.

Latvia is a country with a sizeable Russian minority. The economic and political position of ethnic Russians in Latvia has been a contentious issue for quite some time. The hypothetical scenario goes as follows: Fed up with social, political and economic disadvantages an increasing number of ethnic Russians from Southeast Latvia begin to protest against the Latvian government. The Latvian government is unable or unwilling to meet all the demands of the protesters and soon tensions rise, protests turn violent, and a call for autonomy is demanded by the ethnic Russians. Russia has been known to use (most lately in Ukraine) sub-conventional tactics[17] to assist Russian minorities or pro-Russian groups (Krepinevich & Cohn, 2016: 45). President Putin must now decide if Russia should intervene on the Russian protesters' behalf.

The Scenario: Trouble in the Baltics

Russia's economy has suffered substantially in the two years following its intervention in Ukraine. Due to the collapse of the Russian Ruble, falling oil prices, and financial an economic sanctions by the West, the Russian GDP contracted from 2,029 trillion US$ in 2014 to 1,132 trillion US$ in 2016[18] (IMF, 2016). As a result, it is questionable whether Russia would have the appetite to embark on a new adventure that could lead to even more economic chaos.

Additionally, unlike Ukraine, Latvia is a member of NATO and thus falls under the security guarantees provided by the alliance. Russian intervention will almost certainly trigger the invocation of Article 5 of NATO's treaty[19]. With the fate of Ukraine fresh in mind, it is unlikely that the US and NATO will acquiesce to a Russian intervention in Latvia. Moreover, if they do not react to Russian belligerence, it will put the future effectiveness of both their conventional and nuclear deterrent at

[17] Sub-conventional tactics: "Unconventional, low-intensity conflict, including insurgencies, militancy, cyber warfare, and proxy wars" (Krepinevich & Cohn, 2016: 45).
[18] Nominal GDP at current prices.
[19] Article 5 states that an attack against one or more members of NATO will be considered as an attack on all of them and will provide NATO members with a mandate to assist the attacked member, including the use of armed force (North Atlantic Treaty Organization [NATO], 2016).

stake. Putin will be faced with a conventionally superior foe which possesses technological and numerical advantages. Additionally, it will probably have to contend with US conventional prompt global strike (CPGS) capabilities which are able to strike targets across the globe in less than an hour (Woolf, 2015). Considering Russia's conventional military inferiority, Putin will have to eventually retreat or resort to threatening to escalate to the nuclear level. The sheer number and diversity of TNWs in Russia's arsenal, provides Putin with an important advantage in using nuclear weapons in battlefield operations (Kristensen & Norris, 2015c: 93). However, since Putin's domestic position depends on a nationalist and prestige-driven narrative, it becomes unlikely that he can retreat without losing face in the eyes of Russian public opinion. If Putin chooses nuclear escalation, the US and NATO will have to decide between disengaging or escalating to a level which threatens Russia with nuclear retaliation. A retreat from the US and NATO will not only hurt their credibility to deter Russia, it will also damage the credibility of US deterrence in the rest of the world. Therefore, it is questionable whether the US and NATO will back down. If none of the parties back down a nuclear exchange becomes possible.

With such a scenario in mind, Russia will certainly weigh the costs against the benefits before determining if it should intervene. What are the possible benefits of such an intervention? One benefit would be that if Russia succeeds, Putin will be able to add another foreign policy success to his track record, which will likely increase his prestige. If he succeeds, he will have weakened the status of the US and NATO in the eyes of the world. However will these possible benefits outweigh the costs? With the Russian economy already suffering significantly, another military adventure may send them even further in a downward economic spiral. Moreover, once Putin decides to intervene in Latvia under the pretense of protecting ethnic Russians, it is probable that Russian public opinion expects nothing less than a victory. A defeat would certainly hurt Russia's prestige. Taking into account NATO/US conventional superiority, it is also likely that the Russian military will suffer greater losses. Furthermore, there is no guarantee that the conflict will be limited to Latvia. The conflict could spill over into Russian territory and put the lives of its citizens at risk.

Russia's asymmetric escalation posture provides the option of a nuclear first strike for de-escalation purposes. Russia has been developing very low yield and accurate nuclear weapons which would limit collateral damage (Murdock; Brannen; Karako & Weaver, 2015: 12). Such a weapon could be used in accordance with the asymmetric escalation posture. Nonetheless, if it is used, the nuclear taboo will have been broken. It is also questionable whether the use of a nuclear weapon will actually de-escalate a conflict. It is, of course, not sure that NATO and the US will respond with nuclear retaliation, but there is a very real chance that they will do so.

The question is if the benefits are greater than the costs in this scenario. It should be apparent that they are not. A 'prestige boost' cannot outweigh the possible destruction of cities and the death

of millions of citizens on both sides. It would be irrational for Putin to take such a risk when the gains are marginal. He could also lose a lot of prestige once he realizes the crisis is getting out of control and Russia will be forced to retreat. Obviously we cannot say with 100% certainty that Russia will be deterred in this scenario, but the prospect of a possible full out nuclear exchange leads to the assumption that Russia will most likely be deterred.

4.2. The Sino-American case: Extended Deterrence in Asia

China's rise has been a widely debated issue for quite some time. Over the last decades it has displayed impressive economic growth[20] and has significantly increased its military capabilities[21] (IMF, 2016; SIPRI, 2015). Despite reiterations by the Chinese government that it is rising peacefully, an increasing number of countries are anxious about Beijing's growing power. This anxiety has even been further enhanced due to calls of the Chinese leadership to protect China's core national interests more assertively (Yahuda, 2013). This call for assertiveness is also supplemented by a nationalist discourse which frequently demonizes countries such as Japan and the US, a narrative that emphasizes a notion of humiliation by outside powers, and a sort of unmitigated 'Mare Nostrum' claim to the South China Sea (SCS) (Krepinevich & Cohn, 2016; Yahuda, 2013; Simon, 2012).

Again, realism offers some important insights when analyzing China's rise. During the Cold Warn the US was arguably never in any real danger of being overtaken by the Soviet Union. In contrast, China has so much latent potential and power that it seems destined to overtake the US and become the next superpower (Mearsheimer, 2001). Such a shift in the balance of power worries realists. Friedberg (2005: 19) notes that powers that increase their capabilities have a tendency to expand their interests and enlarge their influence. Likewise, Kirshner (2012: 58) argues that there are few historical examples of instances in which a strong rising state has stopped its expansion or has limited its power aims. This is not to say that conflict will be inevitable, but the possibility of a collision between China and the US or between China and its neighbors is an ever-present danger.

Aside from investing heavily in conventional military capabilities, China has also been expanding its nuclear capabilities. Kristensen and Norris (2015d: 77) estimate the size of the Chinese nuclear arsenal at 260 warheads. Furthermore, China is also quantitatively and qualitatively increasing its arsenal, as well as diversifying its means of delivery across land-, sea-, and air based components (Kristensen & Norris, 2015d: 77). That being said, it is still massively behind the US, which retains escalation dominance at every level (Krepinevich & Cohn, 2016: 97).

[20] The Chinese economy grew from 734,358 billion US$ in 1995 to 10,982 trillion US$ in 2015 (IMF, 2016).
[21] The Chinese military budget rose from 26,213 billion US$ in 1995 to 214,485 billion US$ in 2015 (measured in constant US$ with base year 2014) (SIPRI, 2015).

In order to increase their security, several East-Asian countries have concluded bilateral alliances with the US (Montgomery, 2016: 2). US extended nuclear deterrence serves to reassure allies, while at the same time dissuading those allies to pursue nuclear weapons for themselves (Bush, 2011: 1). These security agreements are seen as a necessary hedge against an increasingly strong and assertive China. China has a number of territorial disputes with several of its neighbors. First, these include contending claims between China, Vietnam, Malaysia, and the Philippines over the Spratly Islands and the Paracel Islands located in the SCS[22]. Second, similar to the previous case, China is involved in a territorial dispute with Japan over ownership of the Senkaku Islands in the East China Sea (ECS)[23]. Lastly, the question of Taiwan's re-unification with China remains unresolved to date and is a possible source of conflict.

To reinforce some of its claims, China has been bolstering its presence in the SCS by constructing artificial islands and by occupying portions of the Spratly Islands (Council on Foreign Relations [CFR], 2016). In 2010 Chinese fishermen collided with the Japanese coast guard, resulting in the arrest of the fishermen, and increasing nationalist anti-Japanese sentiment in China (CFR, 2016). In 2012 a two-month standoff between the Philippines and China occurred due to access denial for fishermen to the Scarborough Shoal (CFR, 2016). In 2016 China also deployed SAM-systems on the Paracel Islands (CFR, 2016). Amid rising tensions and increasing military capabilities, accidental escalation of conflicts becomes an all too real possibility. Again, a scenario will be used to examine whether (extended) nuclear deterrence will be successful in East Asia.

However, before starting the analysis we must first look at some important elements regarding US extended deterrence in East Asia[24]. Firstly, there are doubts about the credibility of extended deterrence. The following quote best summarizes this point:

> *Extended deterrent threats are inherently less believable than direct deterrence threats, since they involve putting the U.S. homeland at risk by attacking the adversary's homeland in response to a nuclear attack on the homeland of the U.S. ally. This dilemma is often expressed in the question "Will the United States trade Los Angeles (or New York City) for Tokyo (or Berlin)* (Murdock e.a., 2015: 13)

Nonetheless, this credibility problem of extended deterrence can be at least partly mitigated by some solutions. Here is where a distinction can be made between extended deterrence in NATO and

[22] The Spratly Islands are claimed by all the countries mentioned above. The Paracel Islands are claimed only by China and Vietnam.
[23] The Senkaku Islands are known in China as the Diaoyu Islands.
[24] US nuclear extended deterrence is explicitly guaranteed for Japan, South Korea, and Australia (Montgomery, 2016: 10). However, since the US also has security alliances with countries like Taiwan and the Philippines, it is not unimaginable that the US will threaten an external party with a nuclear strike if the very existence of those countries is at stake. So while there is no explicit assurance of extended deterrence for those countries, there is still a possibility that the US will incorporate it during a crisis.

extended deterrence in East Asia. Extended deterrence through NATO is inherently more credible because the US and its NATO allies have a nuclear sharing arrangement; meaning that some European countries have NATO nuclear weapons on their territory (Montgomery, 2016: 9). Furthermore, NATO features an integrated allied command structure with headquarters, staff, and high-level discussions within NATO's Nuclear Planning Group (NPG) (Montgomery, 2016: 9). The situation in East Asia differs significantly. Unlike the situation in Europe, the US does not operate within a multilateral alliance when it comes to its allies in Asia. Instead, security agreements are conducted on a bilateral basis. There are also no nuclear-sharing agreements and no nuclear weapons are based on allied territories, making the extended deterrence commitment less credible (Murdock e.a., 2015: 13).

The Scenario: Islands Quarrels in the SCS

In early 2018 the Chinese Communist Party (CCP) finds itself facing a number of important challenges that could destabilize their reign. Economic growth has continued to slow down, the country faces enormous demographic and ecological challenges; and so the CCP must rely on the pillar of nationalism to safeguard its legitimacy (Krepinevich & Cohn, 2016). Nationalist propaganda is spreading narratives such as 'China is being curtailed by the US and Japan', and 'foreign powers are denying China's rightful claims in the SCS and ECS'. Needless to say, nationalism can be a double-edged sword. On one hand it can provide stronger social cohesion among the Chinese populace, on the other hand it can severely decreases the maneuverability of the Chinese government in making compromises with other nations. With a combination of economic uneasiness and growing nationalism, the Chinese population is becoming increasingly restless and resentful. In their view, the Chinese government is failing to protect China's 'core national interests'. They feel that China is being denied a status that is in accordance with its actual power. Consequently, the demand that China takes a more assertive stance in foreign policy is beginning to resonate with an increasing amount of Chinese citizens.

To increase the popularity of the CCP the Politburo Standing Committee[25] (PSC) decides to increase China's military presence on parts of the disputed Spratly Islands. As General Secretary of the CCP and head of the Central Military Commission (CMC), President Xi Jinping orders to increase dredging activities in the Spratly's. Additionally, he also orders the People's Liberation Army (PLA) to increase its military presence at sea and in the air.

At this point, anxiety amongst China's neighbors is growing. Over in Washington D.C., the president has convened his National Security Adviser, the Secretary of State, and the Secretary of

[25] China's highest decision-making authority (Jakobson & Knox, 2010: 4).

Defense. After additional talks with several leaders of the involved Asian nations, the US decides to boost the forward deployment of the US Seventh Fleet in order to reassure its Asian allies and signal the US' resolve to China. With increased patrolling by all parties in the SCS, tensions are at an all time high. Chinese coast guard vessels also begin harassing fishing boats and commercial ships in the SCS. Washington issues a statement in which it condemns Beijing's actions and which emphasizes the US' adherence to the principle of 'freedom of navigation'.

Several weeks later a Philippine reconnaissance aircraft is shot down by a Chinese Type 052D destroyer[26] when flying over the Subi Reef. With the conflict threatening to spiral out of control, the US even further reinforces the forward deployment of the Seventh Fleet. Additionally, orders are also given to put US nuclear forces and CPGS forces in a state of readiness. The message from Washington signals to Beijing that 'you will not be able to escalate this conflict without facing serious repercussions'. Meanwhile in Beijing, Xi Jinping has assembled the CMC to discuss the possible options. An intelligence officer briefs the CMC about the increased level of readiness of US nuclear and CPGS forces. The CMC is however not convinced that the US would escalate beyond the nuclear threshold unless the very existence of some of its most important allies is at stake. 'They did not use nuclear weapons in the Korean war or in the Vietnam war when they were on the brink of being defeated, why would they use them now'?

What worries them more is the US' ability to launch preemptive counterforce strikes which could annihilate their relatively small nuclear arsenal[27]. A combined limited Nuclear and CPGS first strike would most likely succeed in neutralizing the biggest part of China's nuclear arsenal (Krepinevich & Cohn, 2016: 99-100; Lieber & Press, 2006: 9). Additionally, US forward deployed BMD systems would only have to deal with a severely weakened "broken-back" Chinese retaliatory strike (Krepinevich & Cohn, 2016: 100). However, there are still important risks involved. There is no guarantee that China's whole arsenal will be destroyed. If it decides to retaliate with a couple of surviving 4 to 5 megaton DF-5A's[28] in combination with a haystack attack, it could still do an impressive amount of damage to a number of US cities. Would the US consider this an acceptable option? That is doubtful, to say the least.

The presence of the conventionally superior US Seventh Fleet is an additional concern for China. The head of the PLA Navy (PLAN) argues that 'China has done much to improve its naval

[26] Can target aircraft as well as submarines (Office of the Secretary of Defense [OSoD], 2016: 26).
[27] Lieber and Press (2006, 2013) claim that the US could theoretically preemptively destroy (most of) the Russian nuclear arsenal, assuming it would be in an extremely low level (a very unlikely scenario) of alertness. Although China has improved the survivability of its arsenal it is still far smaller, and will remain far smaller in the near future, than the Russian arsenal. This means a counterforce strike by the US would have a significant chance of succeeding.
[28] The DF-5A has a range of about 13 000 km and carries a 4-5 megaton warhead (Kristensen & Norris, 2015d: 78). It has also been reported that some of them have been MIRVed (Kristensen & Norris, 2015d: 79).

capabilities'. It is possible that the PLAN puts up a good fight and can inflict significant damage on the US Navy. Nonetheless, the US will probably be able to do even more damage to the PLAN. Moreover, they could perform denial operations in key strategic and economic areas[29], which would cause significant damage to China's economy. Another official adds 'we must also take into account that other Asian states are likely to side with the US due to anxiety about our growing power'.

The conclusion of the meeting is that if China decides go through with a military confrontation, it will have to face conventionally and nuclear superior foe with a high probability of other Asian states joining the US' side. Not only would the war cause significant casualties on both sides, there is also the risk that China will be seen as the aggressor; resulting in a damaged reputation abroad and a further alienation of its neighboring countries. While escalation beyond the nuclear threshold seems unlikely, a protracted conventional war is a possibility. China is thus deterred by the prospect of facing superior conventional forces, diplomatic setbacks that might damage its reputation, and the possibility that the costs will increase exponentially as the war progresses. It seems that a robust conventional deterrence is more effective in this case[30]. It is also questionable whether extended nuclear deterrence alone will deter China in the future. The US could bolster its extended deterrence guarantees by engaging in nuclear sharing agreements with its East Asian allies. That way conventional deterrence will be complemented by a more credible extended nuclear deterrent, so that the US and its allies will have flexible options in deterring China at different levels of conflict. However, as China continues to rise the US and other involved countries will have to acknowledge China's special status.

4.3. The Indo-Pakistani Case: Military Conflicts and Asymmetric Escalation

> *If the global taboo on nuclear use that has prevailed since 1945 is ever broken, a common view among foreign-policy commentators is that it will happen in South Asia* (Fitzpatrick, 2013: 47).

Already, the first chapter of this paragraph presents a gloomy outlook on the stability in South Asia. However, not everyone seems to share such a pessimistic view of nuclear stability in South Asia. Some scholars such as Ganguly (2008: 46) and Montgomery and Edelman (2015: 159) argue that nuclear deterrence has reduced the risk of full-scale war. Fitzpatrick (2013: 47) adds that in spite of occasional limited conflicts the probability of a nuclear war is low. Nonetheless, there are several elements present in the Indo-Pakistani case which are cause for concern.

[29] This could include blockades in several maritime transit zones which would constitute a severe blow to Chinese imports and exports.
[30] Cunningham and Fravel (2015: 37) note that due to US conventional superiority, the Chinese believe that the need for nuclear signaling by the US is reduced and that the US is unlikely to resort to nuclear escalation.

Unlike the first two cases, India and Pakistan share a land border. They also have long lasting territorial disputes in the Kashmir area, which have led to minor incidents but also to limited wars. While this does not automatically have to lead to war, it does increase the likelihood of direct conflict. The situation is even further complicated by Pakistan's use of sub-conventional tactics such as proxy wars in Kashmir or even alleged state-sponsored terrorist attacks such as the 2008 Mumbai attacks (Biswas, 2015: 683). Montgomery and Edelman (2015: 159) claim that Pakistan's nuclear deterrent has emboldened Pakistani leaders to resort to subversive tactics using militant groups as proxies. Hall (2015: 357) asserts that strategic stability has partly been the result of India's inability to capitalize on its conventional superiority. But the question is how long India will continue to tolerate Islamabad's subversive tactics.

Again, here is where another set of problems arise. While Ganguly (2008) argued that nuclear deterrence provided stability in South Asia, he also admitted that if India were to deploy a BMD system it could destabilize the situation. Likewise, Hall (2015: 358) maintains that if India is successful in completing its nuclear triad and deploying a BMD system, nuclear stability in South Asia will be undermined[31]. Evidently, it would be absurd to expect India not to take measures to bolster its defenses. India cannot continue to tolerate a situation in which Pakistan's asymmetric escalation posture serves as a shield for aggressive sub-conventional warfare aimed at destabilizing the Kashmir region. The already significant gap in economic and conventional military terms between India and Pakistan is also likely to widen in favor of India over the course of time. The result is that Pakistan will have to rely even more on its nuclear weapons. Although there has been a debate about adjusting India's doctrinal response to Pakistan's strategy, it has not yet materialized into an operational doctrine. However, for the moment it is possible to say that during several crises and a war, Pakistan's asymmetric escalation posture has been able to deter an Indian conventional counterattack, while India's assured retaliation posture has been unable to deter Pakistani sub-conventional violence.

One could state that there is ample evidence to conclude that deterrence works in the Indo-Pakistani case. Nonetheless, this paper deems it useful to present another hypothetical scenario in order to see how nuclear deterrence will affect a conflict.

The Scenario: Another Kashmir Conflict

In 2017, early in the morning, the silence along the Line of Control (LoC) in the Jammu and Kashmir region is suddenly shattered by the sound of artillery and gunfire. Indian intelligence officers report to Prime Minister Narendra Modi that a small, but seemingly well trained Pakistani battalion has

[31] While this paper discusses nuclear deterrence between India and Pakistan, one should keep in mind that India's nuclear arsenal also plays an important role in deterring China.

crossed the LoC. Several outposts of the Border Security Force (BSF) have been shelled by artillery stationed on the Pakistani side of the LoC. A preliminary report estimates the number of Indian military casualties at 21. Additionally, several outposts have been occupied by Pakistani forces. After consulting the Minister of Defense and the Chief of the Army Staff (COAS), Prime Minister Modi decides to reinforce the BSF with two additional infantry divisions; but with the explicit order not to cross the LoC.

Meanwhile the number of casualties, some of which are civilian, is rising. Indian intelligence is also reporting a growing number of Pakistani troops on India's side of the LoC. Moreover, due to the difficult terrain in the Ladakh plateau Indian troops are experiencing difficulties in repelling Pakistani forces, let alone regaining terrain (Narang, 2014: 268). The advance of Indian forces is also hindered by artillery fire coming from Pakistan. Over in Islamabad, Prime Minister Nawaz Sharif warns that 'Pakistan will not accept Indian forces launching a conventional assault on Pakistani territory'. Back in New Delhi, Modi is briefed about the ongoing conflict. Senior military officers argue that Indian forces are unable to regain control of the region due to barrages of artillery fire coming from Pakistan. After careful consideration, the green light is given for a swift and limited aerial bombing campaign against artillery posts on the Pakistani side of the LoC. In addition, India's Nuclear Command Authority (NCA) instructs that the Pritvi-2 and Agni-1 ballistic missiles are to be placed in a heightened state of readiness[32].

To bolster Pakistan's deterrence credibility, Prime Minister Sharif mandates the reassembling[33] of the Ghaznavi (Hatf-3) and the NASR (Hatf-9) ballistic missiles[34]. Deploying the NASR missile serves as a nuclear signal, reminding leaders in Delhi that it can be used as a first strike option if India chooses to launch a large-scale conventional incursion into Pakistan. However, Sankaran (2014) has doubts about the actual credibility of such a strike. According to Sankaran (2014), using the NASR will not only produce casualties among the Indian military, but also among Pakistani civilians. Depending on where the NASR is used inside Pakistan, the number of estimated fatalities could be anywhere between 10 000 in the best-case scenario, and 378 000 in the worst-case scenario (Sankaran, 2014: 81). Would Pakistan accept such a high number of casualties?

However, as seen in the 1999 Kargil War, India will most likely keep the conflict limited in order to avoid nuclear escalation (Narang, 2014; 269). The leaders in New Delhi believe that a limited

[32] The Pritvi-2 is a 250 km range ballistic missile carrying a 12 kiloton warhead (Kristensen & Norris, 2015e: 79). The Agni-1 is a 700+ km range ballistic missile carrying a 40 kiloton warhead (Kristensen & Norris, 2015e: 79).

[33] To ensure the safety of its nuclear arsenal, Pakistan uses organizational safeguards by separating warheads from delivery systems, or a further separation of several components (Narang, 2014: 88).

[34] The Ghaznavi is a 290 km range ballistic missile with a 12 kiloton warhead (Kristensen & Norris, 2015a: 61). The NASR is a 60 km range ballistic missile that can be equipped with up to 4 12 kiloton warhead, especially suited for battlefield operations against an Indian conventional campaign inside Pakistan (Kristensen & Norris, 2015a: 61-63).

airstrike will not solicit a nuclear response by Pakistan[35]. After a couple of months Indian forces have been able to reclaim most of the occupied territory and have driven the enemy back into Pakistan. However, Indian troops do refrain from launching a punitive conventional campaign across the LoC. Such a move would risk triggering a nuclear response by Pakistan. The benefits of launching such an attack would also be quite marginal. At this point the conflict has also been internationalized and increasing diplomatic pressure by the US is forcing India and Pakistan to conclude a ceasefire agreement[36].

For the time being India will probably be deterred from launching large-scale conventional counterattacks. However, stability in South Asia remains precarious and it is questionable if it will be able to endure the many shocks that threaten it. There have also been signs that India will no longer tolerate Pakistan's subversive tactics. Kampani (2014: 391) notes that India has been gradually moving away from an unambiguous "No-First-Use" doctrine. Stability is thus by no means a given. As India will continue to increase its conventional superiority and adapt its nuclear posture, and Pakistan will expand its nuclear capabilities, the situation will become tenser and the probability of accidents and miscalculations will rise.

5. Conclusion

This paper started by presenting an overview of the concept of nuclear deterrence. The paucity of empirical and measurable data, and the inability of testing deterrence, means deterrence theory is frankly speaking, of a speculative nature. As a consequence, it has to rely on logical arguments and a coherent framework. By and large, effective deterrence depends on credibility and capability. The enemy must believe that the threat made by the deterrer is credible, and that the deterrer is capable of executing the threat. The logic behind deterrence is sound. Even when faced with a challenge such as the notion that different countries have a different image of rationality and might assess threats differently, deterrence theory appears to be solid. It supersedes cultural and national differences because it appeals to basic instincts like fear and survival.

[35] Note that this is a hypothetical scenario and therefore I cannot determine with absolute certainty that this will be the case. Nevertheless, recapturing the contested territory would be difficult without air support. Hence, a limited airstrike is a more probable strategy than a protracted war, claiming more casualties on both sides. The situation also depends on how fast a third party (like the US) would intervene diplomatically. In 1999 for example, Bill Clinton pressured the Pakistani leadership to withdraw its forces from India's territory (Narang, 2014: 269).

[36] Third-party intervention has occurred several times during Indo-Pakistani crises (Montgomery & Edelman, 2015). According to Kapur (2005: 128) *"Indo-Pakistani strategic behavior is subject to far more international pressure than U.S. and Soviet nuclear policy was during the Cold War, and this pressure may act as a check on conflict escalation in South Asia"*.

In the debate section we addressed some critiques of nuclear deterrence. Firstly, Wilson's claim that nuclear deterrence is ineffective for deterrence purposes; and secondly the use of conventional deterrence as an alternative to nuclear deterrence. Wilson's claim that deterrence does not work is based on faulty reasoning and erroneously equating deterrence with compellence. Moreover, he ignores the immense destructive power of nuclear weapons and the lack of credible defensive measures against such weapons. As a result, Wilson's arguments do not support his original claim.

An additional issue that we addressed in the debate section was directed at proponents of nuclear abolitionists. If we eliminate all nuclear weapons, and by extension nuclear deterrence, on what alternative can we rely to provide security and stability? The only possible alternative would be conventional deterrence. However, conventional deterrence is unlikely to be sufficient unless it is incredibly strong. This would require an exorbitant amount of military spending; a burden few countries can carry. In contrast, a small nuclear deterrent enables smaller countries to deter larger and more powerful countries. Moreover, it can do it at a relatively small cost. Conventional deterrence will also face more problems with respect to the cost-benefit analysis. Countries are prone to making overestimations and miscalculations in their cost-benefit analysis. Facing a conventional deterrent, they might still think that they have a reasonable chance of success in achieving their goal and that they can achieve that goal swiftly. Nuclear weapons offer almost absolute clarity in the cost-benefit analysis. The immediate prospect for utter destruction leaves no room for miscalculations. Accordingly, it will be much more effective in avoiding large-scale conventional wars. While conventional deterrence may be more appropriate for lower levels of conflict, it is not a viable alternative for deterring large conventional wars.

Our case study section started off with Russian-American/NATO case. Despite deteriorating relations and a tenser environment, deterrence is very likely to ensure stability. Thanks to nuclear sharing and a comprehensive multilateral alliance, Russia will refrain from belligerent activities against a NATO state. Nuclear deterrence will force both parties to behave cautiously. Because of the danger of escalation, limited conflict also seems unlikely to break out. Nevertheless, both parties should be mindful of encroachments on each other's sphere of influence and the possibility of accidents happening during moments of heightened tension.

The Sino-American extended deterrence case is more complex. Unlike the first case, this region has a higher probability of conflict due to territorial disputes over island in the SCS and ECS. Extended deterrence is also less credible in this case because of the absence of nuclear sharing and a multilateral alliance framework. Moreover, China's power is growing at fast pace. Nonetheless, we argue that China will most likely be deterred from resorting to high levels of violence. Howbeit, it will not be deterred solely by virtue of nuclear deterrence. Instead, deterring China requires a mix of

both extended conventional and extended nuclear deterrence, so that escalation dominance can be maintained at any level. Yet as China will continue to grow, the US' extended deterrence will become less credible, unless The US will bolster its security guarantees by building an alliance framework comparable to that of NATO in Europe. If it fails to do so, countries in China's vicinity might proliferate themselves. This would result in even more hands on more nuclear triggers.

The Indo-Pakistani case is the most intense of the three case studies. The region is rife with border conflicts and Pakistan's revisionist tendencies and use of sub-conventional tactics form a constant threat. Despite all these gloomy indicators neither India nor Pakistan have used nuclear weapons or escalated conflicts into full blown wars. Up until now, the region has seen a considerably high degree of nuclear stability. Be that as it may, it is questionable how long India will stand for Pakistani belligerence. Pakistan's asymmetric escalation posture has been able to prevent Indian conventional counterattacks to date, but if it continues to launch sub-conventional attacks the situation might escalate. Furthermore, India has gradually moved away from its unequivocal no-first-use doctrine. Despite increasing tensions, we argue that nuclear deterrence is likely to provide stability. Additionally, the Indo-Pakistani case is subject to third-party intervention which further decreases the likelihood of escalation. In the absence of nuclear deterrence, it would also be more likely that limited conflicts escalate into large-scale wars.

Ultimately, the question boils down to this: would the world be a safer place without nuclear weapons? It is completely understandable that people consider these weapons to be morally abhorrent. Yet from a strategic perspective, this paper argues that nuclear deterrence provides a high degree of stability. It is likely that in the absence of nuclear deterrence, the world would see more great power wars. For the moment, there seems to be no viable alternative to nuclear deterrence. That being said, nuclear deterrence does require constant vigilance in order to prevent accidents. Additionally, countries should increase the role of diplomatic dialogue and mediation. But if that fails, nuclear deterrence will act as the ultimate guarantor of security and stability.

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