

Abstract

The conflict over the looming threat of Iran's alleged ongoing development of a nuclear bomb has been one of the more potent and discussed problems on the international arena since the nuclear program was discovered in 2002. After several unsuccessful diplomatic efforts to halt the development Israel has issued threats to militarily strike Iranian nuclear facilities. The purpose of this study is to evaluate the credibility of these threats to create a better understanding of the current status of the conflict. By analyzing the preferences and the military strategies available I created a game theoretic model that shows that Israeli escalation will, even with a successful strike, end up *weakening* the Israeli power position, thereby rendering an Israeli attack irrational. This is due to the Iranian options of creating new theaters of war at Israel's borders through Hezbollah and Hamas and the potential escalation of a new Intifada. The conclusion of this study is that the cost of the expected Iranian retaliation as well as significant operational hazard connected to a strike, with uncertain prospects for success as well as potential high costs, is the main reason why Israel has not acted on its threats. Adding to this is that the Israeli threats have been unclear as to where the line is drawn and what will effectuate that Israel carries through. These factors are the cause of a significant lack of credibility in the Israeli threats.

Preface

This study was essentially finished in November 2013 before the interim nuclear deal between the P5+1¹ and Iran was announced later that same month (Logiurato 2013). This deal includes that Iran must halt progress at the Arak reactor, stop expanding Natanz and Fordow, stop its enrichment at 5%, dilute enriched uranium over 5% and give the International Atomic Energy Agency unprecedented transparency at the main facilities at Arak, Natanz and Fordow. For Iran this deal will apparently yield some modest relief in sanctions as well as access to some of the revenue that were held back due to the sanctions. For the purpose of this study it has had some effect on my analysis on Iranian resistance to sanctions, but it has no effect on the main issue in this study. Israeli Prime Minister Benjamin Netanyahu called it a “historic mistake” and vowed for Israel to act on its own if need be (Simpson & Lews 2013; Davidovich 2013). The Israelis are not convinced that this deal will come through, claiming it will only giving Iran relief while letting them continue to develop their nuclear program and eventually developing nuclear weapons. If anything the result is that Israel must act without the US, which they previously hoped would attack Iran or assist in a joint military operation. I decided to keep my analysis between Israel and Iran and leave the P5+1 out of the model, due to the fact that it would be simpler, and because my motivation was to explain why Israel has not acted. It would be much more natural to include the P5+1 if the conflict were to be analyzed from the Iranian point of view. And with this interim deal, the Israelis will most certainly have to rely on their own capacity if any military strike is going to happen against Iran.

This study has been a very interesting journey and it is with mixed emotions I finally finish it. I am very happy that my conclusions fall in line with the preconceptions that the study started with, and look forward to employing the tools and knowledge I have acquired in future endeavors. I want to acknowledge my deepest gratitude towards Mr. Jo Jakobsen for analytical and methodical insight, suggestions and thorough editorial assistance. Without his guidance this study would not been where it is today.

¹ P5+1 refers to the five permanent members of the UN Security Council: United States, Russia, China, United Kingdom and France, with the addition of Germany

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Chapter 1: Introduction

Iran's secret pursuit of nuclear power was exposed in 2003, when the DC Office of the National Council of Resistance of Iran (NCRI) revealed several Iranian nuclear projects, including efforts to enrich uranium at a facility in Natanz and heavy-water production near Arak (Alexander & Hoenig 2008:119). Despite several years of diplomatic efforts and sanctions, the latter of which apparently is taking its toll on the Iranian economy, causing a huge devaluation of the Iranian rial due to currency-dumping (Gladstone 2012), the Iranian nuclear research and development is still going strong and information divulged to the International Atomic Energy Agency (IAEA) concerning nuclear safeguards is lacking at best. All the while the Israeli response has been to threaten with attacks if they do not discontinue their nuclear development, as well as escalating the conflict by assassinating Iranian nuclear scientists and trying to sabotage the program through covert operations like the Stuxnet-virus (Ferran 2013). Even with sanctions, covert actions and assassinations, which are costly for Iran, they are unwilling to give in, claiming to have only a peaceful intent with its program, but Iran has yet to convince Israel and the western world.

The Israeli Air Force (IAF) is without a doubt the strongest in the nearest vicinity of Israel, and Israel has shown that it is both willing and able to take action against military facilities outside its own borders. The 1981 strike conducted by the IAF against the Osirak nuclear facility in Iraq is a testament to their capabilities. This later became known as a precision strike with no loss of Israeli jets and no collateral damage outside of the facility (Raas 2007:8). A similar level of efficiency was shown by Israel in 2007, when they hit the Syrian reactor in Dayr Az Zawr with no jets downed. And there is no doubt that the IAF has grown significantly since then, both in size and technology. Whether or not the attack on Osirak and on the reactor in Dayr Az Zawr gives them more face credibility against Iran is on the other hand questionable, considering that we are going on 10 years since the Iranian program was revealed with no military strike.

So why have Israel not acted on threats to strike Iran? There are two essential aspects that need to be explored: What is the potential success of a military strike and what is the expected cost of carrying it through? To answer these two questions I intend to explore some previous research on the effect of striking nuclear facilities as well as analyze Israel's capacity to attack Iran. I will explore this through examining different potential scenarios with different levels of success both regarding setbacks to the Iranian program and the attrition

attached to the operation. To understand the ability of Israel to strike Iran, as well as the Iranian reprisal options, I will outline Israel's own capacity in its air force and weapons arsenal and the Iranian ability to defend itself, as well as considering the Iranian reprisal options. I will put heavy emphasis on the Iranian ability to escalate the conflict to a new rung through groups like Hezbollah and Hamas, which could come at great cost to Israel's economic and military power. The amount of variables and the complexity involved are reasons why I want to explore potentially partial successes and different outcomes to understand how the actors expect the game to progress and what potential cost and benefits that lay down each path. I will use an extensive game model that is built around preferences of the two states and predicted outcomes of the conflict that show that the only rational choice for Israel is to keep the status quo, because escalation will only harm their primary goal of keeping ahead in relative power to the rest of the region. I will break down the chapters to clarify how I reach that conclusion:

In chapter 2 I will build the theoretical foundation for this study. By exploring previous research we will see that the historical credibility for succeeding in destroying a nuclear program is not necessarily valid in the case of Iran. Previous strikes at nuclear facilities have been against unfinished and unprotected singular targets above ground. The time frame for completion of new facilities after the prototype facility has been built is approximately five years. Given high levels of indigenous knowledge and experience, it is likely that even with a successful attack, Iran could have new facilities built within the same time frame. This previous research also indicates that an Israeli strike will have a lot of operational hazard connected to it, with one of the studies estimating a loss of 20-30 Israeli jets, something the authors presumed to be too costly for the Israelis. In the same chapter I will explain my assumption of rational actors that choose strategies that most efficiently will lead to improvement on their main goals. The theoretical foundation will be based on Kenneth Waltz's approach to realism, with high focus on relative power vis-à-vis other actors, where the main priority and definition of success is contingent on how well the actor maintains or improves its relative power that ensures a favorable position in the international system. This is necessary to explain why the Israelis prefer to keep the status-quo instead of escalating, since this might jeopardize their power position. In addition I will explore two main aspects of the nuclear weapon. Firstly, how it acts as a security maximizer where actors are hesitant to make the first move, since they must also always consider the last when nuclear weapons are a part of the conflict. Secondly I will put much emphasis on the symbolic role the nuclear weapon plays, where nuclear status yields prestige, identity and acts as a ticket into the club

of major powers. With this theoretical basis I will move on to how conflicts escalate and I will show that wars are a bargaining process where each participant weighs costs versus profits and the primary motivation is to improve their bargaining position. The last section in this chapter comprises Schelling's criteria for efficient threats, where I will create a list of criteria necessary for a threat to be efficient and able to force a victim into compliance. This is the necessary foundation upon which I will ultimately evaluate the Israeli and Iranian threats in light of my analysis.

Chapter 3 will outline the choice of method for this study; here I will show the game theoretic model I intend to use when exploring the strategies available to both Israel and Iran. Here I will show an empty model without preferences and explain how the analytical clarity that game theoretic modeling provides is the most fitting for this kind of strategic analysis. The theoretical foundation for these preferences is based on realism where uncertainty of future conflicts ensures that a state will try to maximize its security by staying ahead of rivals in power. This is applied in two different ways; with Israel the goal is to stay ahead in conventional power versus the entire region and for Iran the goal is to develop nuclear weapons as a security maximizer, where the utility in the model is based on how well the strategies will affect these goals. This chapter will also explain how I intend to combine the theoretical background and the empirical data from chapter 4 to successfully analyze the strategic options available, which is necessary to build a credible model with three different outcomes of a potential Israeli strike. By reviewing the warheads acquired by Israel and their air force, and by comparing that with the Iranian anti-air-defense and the Iranian air force as well as with previous military analysis, I can operationalize different levels of attrition in different outcomes of possible Israeli attacks. Through a mixture of these two evaluations, I will build three scenarios of different levels of success, with a range of outcomes that include complete success, partial success and complete failure.

Chapter 4 gives the empirical background for Israel and Iran. It serves as both an introduction and a background to how the Iranian nuclear program has developed and the unsuccessful efforts to shut it down. I will also give some information on the four main facilities that are the most important in the Iranian nuclear cycle to produce weapons-grade material. The next section in this chapter is dedicated to exploring how strong the Iranian capabilities are, how they have questionable defenses and that their missile and naval capabilities are lacking, where it is the ability to use proxy groups like Hamas and Hezbollah that will probably be their most efficient tools. For the Israelis I have focused on the type of warheads that will be used in a potential military strike as well as how strong their air force is.

The final section in this chapter is dedicated to the three main concerns the Israelis will have when considering a military strike on Iran. First the operation will be very complex and uncertainty on the ability to carry it through with success is a big concern. Secondly there might be a lack of information regarding how strong the Iranian defense actually is, where an underestimation could result in a disastrous operation with much more attrition than expected. And third there is a credible fear of a third Intifada breaking out in Israel. The last concern is one I put much emphasis on, where a localized conflict initiated by Iran through Hezbollah and Hamas might spark an Intifada which could be very costly for Israel. This is a vital issue considering the fact that the previous conflicts and intifadas cost Israel almost as much as their military budget in terms of their GDP in addition to long term negative effects on their economy.

Chapter 5 is the actual analysis and presentation of the model. Here I will make a stronger argument for the preferences I have assigned to Israel and Iran. I will outline the main facilities in the Iranian nuclear program and judge both target preference and difficulty, and I will consider the overall difficulty of the operation as well as an analysis of the Iranian strategic retaliation options. The retaliatory options will clearly show that using Hamas and Hezbollah is their most important and most probable strategic choice. In this chapter I will show that even with the best possible outcome, where the Israelis cause a significant setback to the Iranian nuclear program by destroying three of the facilities and partially destroying the fourth, the Iranian response where they open a new theater of war at Israeli borders through Hamas and Hezbollah will be very costly for Israel, and the fear of a new Intifada and the significant costs attached to that scenario ensure that Israel is unwilling to strike against Iran. My model will show that, viewed in isolation, Israel can theoretically improve their position vis-à-vis Iran with the best possible outcome, but this outcome also carries a high cost to their utility payoff due to an overall decline in power. This is also the only outcome that actually improves their bargaining situation; the result of a military strike might even put them at a worse position where the setback to the Iranian nuclear program is insignificant and the retaliation still does much damage.

Chapter 6 uses Schelling's criteria to show that the findings in my study reflects the cause of a strategic problem for Israel, where due to unclear ability to carry through on threats of a military strike, as well as a credible retaliation from Iranian agents, Iran is unlikely to be coerced. There they also have a big strategic problem in the fact that the nuclear program in itself is the core of the conflict. Iran wants to keep it going, and Israel threatens to strike the nuclear facilities if they do not concede, thus Iran is faced with either be coerced or being

military attacked, both of which will harm their program, but where a military strike has a lot of uncertainty around it. Adding to this is the fact that Israel have tried to employ a tripwire diplomacy where they set a line that the Iranians are not allowed to cross. The problem is that, according to Israel, that line is nuclear weapons themselves, and when you consider that Israel must strike well before Iran is capable of producing nuclear weapons, this threat becomes unclear and allows the Iranians to keep developing their program, and the Israeli threat consistently fails.

Chapter 7 concludes that the complexity of the operation and the uncertainty of success, as well as the credible expected retaliation from Iran through groups like Hezbollah and Hamas and the cost associated with that response, ensure that the Israelis are unwilling to strike. Thus the threats from Israel lack credibility, but the country continues to issue threats since there is little cost in issuing empty threats.

Chapter 2: A theoretical approach to states, violence and threats

The theoretical approach is divided into five sections. First I explore some of the previous research on military actions against nuclear facilities and the prospects for success, and then, secondly, I will continue with an approach to the idea of rational actors and preferences. For me to build a believable course of action for the two actors involved, I need to establish an understanding for the rationality behind their actions and theoretic preferences, both regarding relative power and nuclear ambitions. Thirdly, I will explore the phenomenon of war through bargaining and by showing the cost of war, that is, how actors evaluate consequences and war. Since my point is to answer the question of why Israel has not escalated the conflict, I will use Herman Kahn's ladder of escalation to show how Israel has escalated the conflict, but stops shy of the steps that lead to direct war actions. Using these three aspects I can create a foundation for understanding how the actors perceive war and potential costs, and how they would escalate a conflict – this is the basis for modeling the conflict. The model is a necessary foundation for my threat analysis based on Thomas Schelling's work. With his outstanding analysis of threats and their efficiency, I can create a framework for analyzing what variables need to be present in order for both Iran to be efficiently coerced into action, but also for Iranian threats against Israel to act as a successful deterrent.

Bombing nuclear facilities: What are the prospects?

Kreps and Fuhrmann (2011) have made an excellent analysis of several previous military attacks on nuclear facilities and their efficiency. By outlining several problematic areas and applying it to their different cases they conclude that peace-time attacks could delay nuclear programs, but the effect might be modest. I will explore both their analysis of difficulties surrounding information around choke points as well as their conclusions regarding the probability of efficient military strikes.

The two paths to nuclear weapons are enrichment technology for uranium enrichment to produce highly enriched uranium and reactor-based technology for plutonium production.

This ensures that 3 main key chokepoints are necessary to knock out, namely: 1) uranium enrichment facilities, 2) plutonium reprocessing facilities and 3) reactors. By destroying any of the chokepoint facilities listed above, the nuclear program of the intended target might suffer setbacks and delays, but it is difficult to evaluate just how much it would be delayed (Kreps & Fuhrmann 2011:165). If a country possesses several chokepoints, and if an attack would raze all of them, the estimate would be a setback of five to ten years if the facilities were close to completion. This estimate is based on a slightly lower estimate than the original build times, because the knowledge present and diminishing costs of building new facilities ensure quicker build time (Kreps & Fuhrmann 2011:166)

The problem with using the success of previous Israeli strikes on both Iraqi and Syrian nuclear facilities is that these were in their infancy. They were not completed, were not very well protected and were concentrated in one area, making strikes on the facilities far easier than would have been the case had they been spread out and fortified (Kreps & Fuhrmann 2011:179).

On the question of Iranian nuclear facilities, the most critical ones are the enrichment facilities at Natanz and Qom, as well as the heavy water reactor at Arak and the conversion facility at Isfahan. The prospects of the latter facilities' viability for nuclear weapons development leave something wanting as "the plants at Arak and Isfahan are significant but they are alone insufficient to provide Iran with weapons grade material" (Kreps & Fuhrmann 2011:181). This means that the enrichment facilities need to be razed preferably completely to ensure delaying the program. By comparing a potential strike on Iran and the time frame for reconstruction in view of India's improved construction time on their second enrichment facility, the authors conclude that:

"In all likelihood, a raid would still delay the program. Considering that it took India five years to construct a second centrifuge enrichment facility once it completed a pilot plant, we could assume that destroying Natanz and other related enrichment facilities would delay Iran's ability to produce fissile material by the same amount of time. This is a relatively modest gain in light of the well-known risks associated with striking Iran's nuclear facilities" (Kreps & Fuhrmann 2011:181).

The problem with lack of information regarding key chokepoints

Using the 1991 Persian Gulf War to illustrate the problem, Kreps and Fuhrmann (2011:180) conclude that there is a high likelihood of unknown key facilities. Many key facilities in Iraq were not targeted by the US because the whereabouts of the facilities were unknown. Similarly, in the case of the 1981 Osirak strike, there existed an intelligence gap due to the fact that the reprocessing facility close to the reactor was not targeted, which would imply that the Israeli either thought that that facility was buried under the reactor, or that they just were not aware that it existed. Considering this in the case of Iran, the second enrichment facility at Qom was not discovered until 2009, and it is most likely that construction started in 2002 (Kreps & Fuhrmann 2011:182). Given that the Iranians managed to keep the facility at Qom a secret, it is plausible that there might be at least one or two key facilities that are unknown, which could have a severe strategic impact on the Israeli ability to delay the Iranian nuclear program.

Conclusions and view from other studies

A cautious conclusion from Kreps and Fuhrmann (2011:183) implies that it is likely that the high levels of indigenous knowledge of facility building, and how to enrich uranium, would ensure that a military strike might at best delay the Iranian ability to build nuclear weapons by around five years. Even this outcome is optimistic considering the modest yield from previous military strikes. Supporting the very cautious conclusion is also the CSIS's study on an Israeli strike on Iran, but the latter adds a very important factor for Israel: High operational risk.

The estimate done by the Center for Strategic & International Studies (Toukan & Cordesman 2009:71) is that a complete mission would demand the use of 90 aircraft to carry through a strike due to the fact that there is a 50% penetration precision in the use of the BLU-113's² (Toukan & Cordesman 2009:37), with 90% reliability on the aircrafts and the weapons. This means that 20% of the high-end combat aircrafts, as well as 100% of the Israeli tankers, will have to be used for the mission. Their conclusion is that a military strike on Iran is

² The BLU-113 is a penetrator warhead, also known as a "bunker buster", that has a credible penetration capacity of 6 meters of reinforced concrete and 30 meters of earth

possible, but that it would be a highly complex operation associated with a high risk at the operational level with no certainty that the mission would have a high success. Not only because of what Kreps and Fuhrmann questioned as regard the defenses and complexity of the operation, but also in relation to the evaluations made of the Iranian defense as well as possible involvement from the states that Israel has to fly over, they estimate a very high attrition rate. With a strike force of 90 aircrafts, a previous CSIS study estimates the attrition to be between 20 to 30 aircraft, or at 20 to 30%, and they are highly doubtful that that is a price Israel is willing to pay (Toukan & Cordesman 2007).

This is much higher than the estimates done by Whitney Raas and Justin Long (2007:31-2) who conclude that an attack on Iran is unlikely to have much more operational hazard than the one against the Osirak reactor in Iraq and that the estimated delay of the program should be thought to be about the same. A very optimistic approach, considering that Iraq was pre-occupied with a war, that the Iraqi defenses were not even close to the Iranian defenses and the fact that the Iranian facilities are better protected and prepared for this scenario, I think Raas and Long are too optimistic. They do at least acknowledge that the Iranian response might be too costly, even if they can strike the Iranian facilities with no cost to the Israeli air force.

Rational actors and their preferences in the view of Realism

To be able to predict strategies and outcomes, we must understand the line of reasoning that the actors use when they are faced with challenges and have to use the tools available to their advantage to reach some sort of goal. This would be rational, but one can view rationality as either procedural or instrumental, which will be explored in the present section.

According to Zagare (1990:238), the rational actor-model has been criticized for being inadequate, and thus it becomes a problem for a lot of deterrence theory. One of the classic criticisms is that governments are not necessarily rational, in fact they are “particularly subject to irrationality in times of crisis or actual attack”. This takes the view of rationality as *procedural*, where a rational actor is an actor who has a clear cool head when faced with a choice, and evaluates pros and cons of every available option and chooses the one that is best

suiting to achieve the desired goal. This would require omniscience, that is, complete information of all the potential consequences of every action and expected reaction. This is clearly a problematic assumption because it really does not reflect upon reality.

In my game I have to base this presumed rationality on a perceived benefit-cost-analysis, which is in line with the traditional rational deterrence theories, where the actors involved act on perceived interests and costs that are connected to the strategies available and the level of information they have regarding both the probable outcome and expected behavior of opponents. Thus certain threats and outcomes may be perceived as too expensive, even if the outcomes are not necessarily the most likely ones. The critique is quite adequate in a situation where actions unfold without the possibility of preparation, but in the case of Israel-Iran, the actors involved have had years of planning for different outcomes and scenarios and what action they should take. So the problem with spontaneous and uncontrolled reaction caused by an unexpected military escalation becomes a lot less likely.

With regard to *instrumental* rationality, Luce and Raiffa (1957:50) supply the most direct definition: “a rational actor is one who, when confronted with two alternatives which give rise to outcomes, will choose the one which yields the more preferred outcome”. There are only two relevant factors here. One: the actor must have connected preferences. This means that the actor is able to analyze and understand potential outcomes in a feasible and coherent way. Thus given a choice between A and B, the actor will either prefer A to B, B to A or be indifferent because neither option is wanted. Thus the outcomes are connected. Secondly, the preferences must be transitive. This means that if an actor prefers A to B and B to C, the actor would also prefer A to C. If not, the actor is not coherent and it would be meaningless to analyze the actor’s actions within this framework.

Realism: Understanding preferences

In my thesis I will use a state-centric rationality based on realism. In this segment I will explore state reasoning and rationality based on realism, and especially Kenneth Waltz’s version of realism, to create a foundation for preferences that later will be decisive factors in my own analysis.

“The test of political success is the degree to which one is able to maintain, to increase or to demonstrate one’s power over others” – Hans Morgenthau (1946:192)

Waltz explores several prominent aspects of realism in his work *Man, the State and War* (2001 [1959]), which defines the problem facing states in an anarchic system: A state is self-reliant and cannot expect external help. And as Fredrick Dunn (1937:13) says it, “so long as the notion of self-help persists, the aim of maintaining the power position of the nation is paramount to all other considerations”. States will look to their comparative power in the anarchic system, and compare themselves to potential threats. In effect it becomes a zero-sum game, where any loss in power should be considered a relative gain for any opponent. Through the nature of the anarchy, the interaction between independent states can be considered a game, and as Waltz points out, games must have objects. States can have many objects: some seek world domination, some seek regional hegemony and some might even seek to exclude themselves from the world and live on their own. Regardless of the object of the state, all have in common that they, as a minimum, want to continue their existence (Waltz 2001:203) through sufficient security.

In the anarchic world one state can seek to gain the advantage over another. That advantage can be measured in power and the capability to destroy or inflict harm on another state. It is not necessarily the case that the objective sought by increasing relative power is aggression or expansion, it could be defensive and meant to ensure maximum security, but this is neither certain nor necessarily obvious to any adversary of the state in question. Thus any threatened state only refrains from increasing its own power at the risk of its survival. If a state already has “natural” enemies, and have acted aggressively toward them earlier, it would be potentially suicidal to choose a strategy that might weaken its strength vis-à-vis its neighbors. It is the prospect of future change in the balance of power between states that concerns them. Waltz (2000, 1979:126) points out that realism is better at saying *what* will happen, then *when* it will happen, but states always look to a undefined tomorrow that might change the balance of power in someone else’s favor since “the first concern of states is not to maximize power, but to maintain their position in the system.”

I would like to add some notions from the offensive realist school of thought with Mearsheimer’s observations on hegemony: The disagreement between Waltz and

Mearsheimer is funded in the difference between how they approach security guarantees: where Waltzian realism focuses on achieving an appropriate amount of power to balance and ensure status-quo, while Mearsheimer's (2001:21) states are revisionist with the ultimate goal of becoming a hegemon in the system. The hegemon is defined by a "market gap" between the hegemon and the next potential challenger on the list, with a clear gap in economic and military capacity (Mearsheimer 2001:45), where the hegemon not only is the most powerful state in the system, but have the power gap to potentially dominate the other states. A potential hegemon does what is in its power to achieve that position when the opportunity arises. A state that has multiple enemies and no allies in its vicinity, would seek to become a regional hegemon and maintain that position, so that even concerted efforts might fail. Rousseau (1950:18-19) states that "the end of the state is the preservation and prosperity of its members", and that is achieved in the anarchic system by being powerful enough not to be realistically threatened by other states, or at least be powerful enough so that the potential cost of attacking would be high enough to deter any future would-be-attacker. The important contribution of this section is both in the assessment of a potential hegemonic role and that the important prerequisite for that aggressive behavior is that the benefits must clearly outweighs the cost and risk of the expansion. The potential hegemon will only expand when the benefits greatly exceeds cost (Mearsheimer 2001:37). Expansion is not explicitly stated by Mearsheimer, but Glenn Snyder (2002:153) observes that it seems to mean territorial expansion, for my purpose an aggressive action outside own territory to improve power position by either gaining power or weakening potential rivals should suffice to fall under this argument even without actual territorial expansion.

It seems that whether or not states have a limit to how much power they want and are willing to amass for security, the basic prerequisite is that it is only through clear benefits that a state is willing to make an aggressive move and this does have a lot of strategic importance for my study.

Deterrence and compellence

Building on these realist preferences, the concept of deterrence denotes how states effectively keep other states from acts of military aggression, which is essential to understanding the credibility of threats of military aggression. The dominant approach to theories on deterrence involves the use of rational choice and game-theoretic models of decision making. Examples

on this tradition of deterrence include the works of Schelling (1960), Zagare (1987), Zagare & Kilgour (1993), Brams & Kilgour (1998), Powell (1990) and Selten (1975). Paul Huth (1999:29) summarizes the concept of the rational choice tradition:

“State leaders considering the use of military force compare the expected utility of using force with that of refraining from a military challenge to the status quo, and they select the option with greater expected utility. A potential attacker considers the possible gains to be secured by the use of military force to change the status quo and evaluates the likelihood that force can be used successfully. This estimate of the expected utility for military conflict is then compared with the anticipated gains (or losses) associated with not using force and an estimate of how probable those gains/losses would be.”

Zagare and Kilgour (1993) define the potential challenger and the defender as two possible types: The Soft and Hard Challenger/Defender. The Hard player will prefer conflict to capitulation and a Soft player will not. Not knowing the other players' type may cause uncertainty regarding initiation of conflict, because expecting a soft player and then being faced with opponent that defends might be quite costly. This means that a Hard defender will always defend because the possible outcomes of defending is preferred to capitulation. This means that rational choices in an asymmetric deterrence game are determined by the players' preferences for conflict versus capitulation. The deterrence equilibrium is the equilibrium where a Challenger never initiates conflict because the deterrence threat of the defender is credible and will end up in an outcome that is worse than the status quo. The higher the Challenger values the status quo, the more unlikely the choice of attacking becomes. The potential gains are outweighed by the potential losses due to a credible defense.

The strategy of deterrence threats is usually static – we want to keep the status quo and not let our adversary do something to alter it. The problem arises when our adversary is already doing something that we want discontinued. Here is the difference between deterrence and what Schelling (1960:71) defines as *compellence*. Whereas deterrence is the act of discouraging our adversary from doing something in the first place, compellence concerns attempts to change someone's behavior. The act of compelling can involve hostile actions

against the adversary. Economic sanctions are a good example. Here the threat is continuous and has a definite stopping place: We will lift the sanctions when you change your behavior. Problems might arise if the threat is vague, or if it is uncertain what qualifies as sufficient change in behavior.

Deterrence can be gradual. What is meant here is that there is a difference between a forceful defense where an action against the defender cannot succeed and one where an action might succeed, either partially or wholly, but where the costs connected to both the attack and the reprisals would be too high. The last kind of deterrence is a coercive defense, where the fulfillment of that defense will play itself out over time even after the hostile action has been carried through. One end of the scale here is represented by full defense, where the attack fails, but nothing can be done to hurt the attacker. The other end is when the resistance to the attack is futile, but where the reprisals would be extremely costly for the attacker (Schelling 1960:78-79). A mixture of a capable defense and an ability to retaliate would then most likely make an attacker think twice about whether or not the success of an action is even possible, and about how much pain will be inflicted in reprisals. There might even be a slight chance of offensive failure as well as extensive reprisals, although the latter are unlikely to be heavy since they will probably escalate with the degree of success of the offensive, nevertheless causing a net loss for the attacker.

In sum, deterrence is effective because of the logic behind realism and how the international anarchy is viewed, when a potential challenger perceives that a path of action might result in losses that are too expensive because they weaken the state vis-à-vis the opponent, or vis-à-vis other opponents – the challenger is effectively deterred. In the next section I will explore the ultimate deterrent – the nuclear bomb – and I will account for why states seek it.

The nuclear ambition: Chasing the Bomb

One of the main premises of my argument is how the nuclear bomb is perceived. In this section I will explore the benefits and role of the nuclear weapon to the nuclear state. The purpose is to establish an understanding for the choice of preference that Iran is making regarding the development of their nuclear program. This will be partly constructed on the basis of the security perspective, and partly based on the symbolism it stands for.

The Bomb and state security

As mentioned, it is the objective of survival in the anarchic international system that is the minimum goal for any state, and this survival is ensured primarily by means of military power. The argument that the nuclear weapon is first and foremost a tool of security is based on the concept of ultimate deterrence and mutual assured destruction, where the looming threat of nuclear weapons being used will dissuade any would-be-attackers from conducting that first act of military aggression. This is an important difference from conventional weapons, where decisive early strikes might be the key to ending a war quickly and gaining a clear advantage over opponents. Examples of this might be the Six-Day-War when Israel struck Egypt pre-emptively to gain the advantage. If we consider the counterfactual opposite case where Egypt and its allies had struck first, Israel's survival in the region might have been threatened. In general, the first phases of war become the most important, but when faced with an opponent with a nuclear weapons capacity, the worry is not what happens in the beginning of the war, but rather what it might end with. As Clausewitz wrote, this makes it "imperative...not to take the first step without considering what may be the last" (1976:584). It is a lot easier to go to war when the potential costs might be bearable and the gain outweighs it. In the case of a nuclear option, however, the costs are too high. Kenneth Waltz (1990:734) explains it perfectly:

"Because catastrophic outcomes of nuclear exchanges are easy to imagine, leaders of states will shrink in horror from initiating them. With nuclear weapons, stability and peace rest on easy calculations of what one country can do to another...The problem of the credibility of deterrence, a big worry in a conventional world, disappears in a nuclear one."

Nuclear weapons dominate strategies since any strategy derived from conventional superiority when facing a nuclear opponent is in effect rendered obsolete when there is talk of large scale invasion and war. If war reaches totality where the leaders of the nuclear state is faced with the prospective loss of sovereignty, the last option is the use of nuclear weapons, a fact of which the attacker would be fully aware – any strategy would be overshadowed by the nuclear option. When faced with a nuclear adversary, the only rational way to deter this opponent is to

develop the nuclear weapon or join an alliance with a nuclear state in the hope of establishing a credible extended deterrence. With second-strike capability, the ability to strike back with nuclear weapons even after a massive attack (hidden nuclear silos, submarines), the cost of going to war would be immense (Sagan 1996:57).

The security aspect of the nuclear weapon should be very clear: any state with a nuclear weapon would be quite safe in the international anarchy since no other states would dare to escalate a war to the point where the last step is considered. As said by George Schultz (1984:18) “proliferation begets proliferation”. If your opponent develops, or in some way acquires, nuclear weapons, the threat would have to be deterred by developing own nuclear weapons or joining an alliance, as Sagan puts down as an option.

Prestige and symbolism

The second aspect I want to focus on is the role of prestige and symbolism. While I emphasize security quite heavily, I also believe that prestige matter greatly – becoming a nuclear state affects how states perceive themselves.

Sagan (1996:78-79) employs lessons from the French nuclear weapons program to explain his model of nuclear symbolism and nuclear state identity. The belief that nuclear weapons were deeply linked to a state’s position in the international anarchy was an important factor when the French in 1951 wanted to stake out a path that would keep France an important country within the next ten years. The ambition was to work its way back to the historical great power status, and nuclear capabilities was seen as an ideal tool to achieve this. Charles de Gaulle (1971:209), in particular, was obsessed with nuclear weapons as a means to French grandeur and independence:

“A France without world responsibility would be unworthy of herself, especially in the eyes of the Frenchmen. It is for this reason that she disapproves of NATO, which denies her a share in the decision-making and which is confined to Europe. It is for this reason too that she intends to provide herself with an atomic armament. Only in this way can our defense and foreign policy be independent which we prize above everything else.”

The nuclear weapons tests conducted by the French starting in February 1960 was not so much about acquiring actual capabilities in the use of the weapons. Indeed, France's tests were perceived by its own leaders as "potent symbols of French identity and status as a great power" (Sagan 1996:80). The same rationale can be seen in how Saddam Hussein allegedly perceived his own nuclear program, where technological advancement was a prerequisite for Iraq to become a leader of the Arab nation, and the nuclear weapons program was a way for Iraq to establish themselves with that role and becoming a bigger player in the international system (Brands and Palkki 2011:147). Apparently, according to texts from a Cabinet meeting in June 1981, Saddam Hussein (1981:121) conveyed that the nuclear reactor was one of the symbols of "Iraq's progress".

This idea that nuclear capacity and nuclear armaments are highly connected to the status as a great power is clearly an important aspect. When considering the Iranian example, a lot of overlaps are present. For France, the fear was the Soviet Union with its massive nuclear capacity, for Iran it is Israel, which is both a rival and an enemy. Iran wants to be an Islamic leader of the region, and preferably on a more global scale as well – Iran wants to become a major player in the international anarchy. Nuclear weapons are perceived as one way to enter the club of great powers. This should, for the purposes of my own analysis, provide a sufficient background on nuclear weapons to argue for why Iran prefers to chase the nuclear bomb. In the next section I will review theories on the costs of war and on how states bargain in conflicts.

Bargaining and the cost of war

"War is always a bargaining process, one in which threats and proposals and counterproposals and counter threats, offers and assurances, concessions and demonstrations, take the form of actions rather than words, or actions accompanied by words". This is Schelling's (1960:142) summary of war. It is in "limited wars" that this is seen most clearly – such wars are usually conducted much more consciously than a full-scale war. Limited wars are wars where the state of the enemy's mind is even more important than the state of his position on the battlefield, where the expectations of the enemy are as important as the state of his military, and where military capacity held back in reserve is more important than those already in the field. This is outcome bargaining where the cost of attacking one strategic

interest relies heavily on how you expect your adversary might respond considering his capacity and perceived state of mind. A restrained war actually involves a certain amount of cooperation with the adversary. Both parties might have an interest in some limited commitment, but the cost of full-scale war is not worth it, so they bargain over the degree of damage they are willing to inflict and take. No one understands this better than the military, which is why there are limits to what you are willing to do, because if you cross that line against your adversary, he will most likely cross it right back.

Effectiveness in war: defined as improving one's bargaining position

To understand how bargaining works and how it affects considerations about escalation, Herman Kahn (2012 [1965]) is a good place to start. Kahn (2012[1965]:208-209) defines war efficiency not by how much damage something is capable of inflicting isolated, but by how it affects the bargaining position and relative situation. Each side has a certain threat capability that influences both pre-attack and post-attack: the ability to do counter-damage to an attack. But Kahn specifies that damage is complex and that evaluating how much it affects the strategic interests of each party is difficult. That is, it is difficult to assess how much damage it does to people and to property, and whether that property has military value or is culturally valuable. He specifies that each side is most likely to try to attack the enemy's morale and resolve, since his resolution might be more vulnerable than the capacity of his military. This type of warfare is an easy way to harm your opponent while at the same time avoiding the wrong kind of response or retaliation. It acts as a deterrent and can cause fear, but is more overt than other military tools. It is necessary to mention that these observations are meant for a more traditional style of war, but the mechanisms which he describes are still applicable to my case with Israel and Iran. And to continue this thought process in light of Kahn, I will look at his observations regarding states that prefer status-quo over change.

Status-quo states and gains

Status-quo states are inherently unwilling to take steps that might cause disorder to the status quo (Kahn 2012[1965]:244-245). This is a natural generalization that can be supported, for instance, with the example of the 1962 Cuban Missile Crisis. During that crisis, the Soviet Union tried to shift the status quo in their favor by placing missiles in Cuba, but, when confronted with potential escalation, they preferred the status quo. The potential gain in shifting an unfavorable status quo to a more favorable situation is not as important as the potential loss that comes with the move that could challenge the status quo, should the move fail. The two cases – the Cuban Missile Crisis and the Iranian–Israeli conflict – are different, with nuclear weapons being a part of the equation of the former, but the mindset is the same in both cases. Taking risks for favorable status gains is not something you would do as a status-quo power when there is a great risk of also losing your relative position vs. the current status quo.

The ladder of escalation by Herman Kahn

Herman Kahn has analyzed how conflicts escalate, and he created a metaphorical ladder with several rungs that any crisis could go through. His focus has been mainly on the cold war and US-Soviet-relations, and the hypothetical outbreak of major war where both parties have nuclear arms. I will focus on rungs 1 through 13, which categorize conflict and actions available from dispute to traditional war. The nuclear aspect is very important in understanding why states are unwilling to escalate on earlier rungs of escalation, but not very applicable to my case since Iran has yet to develop nuclear weapons.

Subcrisis maneuvering: 3 pre-crisis rungs

The 1st rung is when one or both sides assert openly that unless a given dispute is resolved, they might take actions to escalate the dispute. Vague or explicit threats that one side is willing to go to extreme lengths rather than back down are likely. These threats of escalation

are made credible through the emphasis by the government on how important the issue of the dispute is (Khan 2012[1965]:53-54).

Rung 2: If the dispute is not resolved, and the other side makes no indication that they are willing to see reason as perceived by the first side, they can do more than just drop hints or say that something *might* be done. Here there are more offensive tools that are being used against the other side, which include, as mentioned, political, economic or diplomatic gestures that are legal but that might be perceived as unfair and can use the international community against the other side. Some of the tools available at this level are, according to Khan (2012[1965]:55), for example: (1) to approach the enemies of the other side to convince them to assist; (2) make moderate but unmistakable legal economic actions against them; (3) push for a resolution in the U.N. against them; (4) start a violent publicity campaign to involve the public against the other side and support their side of the issue as well as actions. They could also (5) “leak” the news to a newspaper that they are planning on taking serious actions against the other side. Military gestures can also be a part of this escalation rung.

Rung 3 does not usually include press conferences or when some higher senior official says that they might act in a certain way if their opponent does not change the way they behave. This rung needs clear diplomatic communications between heads of states. A state level understanding that they are committed to acting and that whatever dispute they have is very important. This is an official threat to act that is based on the actions of their opponent. Kahn (2012[1965]:57) exemplifies a rung 3 gesture with the guarantee issued by the British to Poland, that they would declare war on Germany if Hitler invaded Poland. Such a proclamation usually is based on stopping an opponent from climbing the escalation ladder, by the threat that that would cause another escalation.

Traditional crisis: Rung 4-9

This is rung 4-9 where a dispute reaches the definition of crisis. Here the actors involved use more offensive tools, even the use of violence, and clearer threats as the crisis escalates, and in essence it is a negotiation of risk and a game of risk-taking.

Rung 4 encompasses the confrontation of wills and the hardening of positions; Kahn posits that when the negotiations take on a more coercive aspect, the crisis has reached rung 4. This is more about strengthening resolve with a clearer committal to “bridge-burning” acts through threats. This also includes more activity in previous rungs with military targets made public in the media and with talk about how they could act if the other side does not comply. Rung 5 usually includes show of force, in the more traditional sense this would be military exercises and military operations close to enemy borders, or publicly enough that it sends a message of competency and shows that they have enough power to act if they would want to. This could also include missile-testing or other displays of technological prowess with unusual publicity (Kahn 2012[1965]:68-69). Rung 6 is significant mobilization, where one side prepares their armies for military conflict or action. Rung 7 indicates “legal” harassment through damaging the other side’s prestige, property or nationals legally through so-called retortions in international law (Kahn 2012[1965]:72). Rung 8 is acts of harassment through violence, where violence is meant to harm, exhaust, frighten or weaken the opponent or his allies. Here bombs could be exploded within their territory, usually anonymously. Individuals of their nationality could be kidnapped or assassinated. Sabotage and guerrilla warfare are natural tools. Rung 9 is military confrontations, this is where missiles are strategically targeting bases and other valuable targets in other countries. This is a test of nerve and commitment where small border skirmishes might erupt (Kahn 2012[1965]:74).

Intense Crisis: Rung 10-13(20)

The earlier rungs of intense crisis are what Kahn defines as “neither war nor peace”-rungs, and these are what I want to focus on. Considering that rungs 13-20 are of such scale that we haven’t seen since World War II, it will not be necessary to go past rung 13 for this particular case.

Rung 10 is defined as the breach of diplomatic relations. This can be seen as a move to show that war is imminent and that the two sides cannot co-exist in the current situation. This is a very circumstantial rung and diplomatic breaches might actually just be a frivolous gesture that indicates a lack of seriousness (Kahn 2012[1965]:85). Rung 11 is the super-ready status. The military forces are mobilized and readied for action within a short time span, leaves are cancelled and troops are being moved into strategic positions. It is a costly move

that is meant to signalize that the actor is willing to go further than the current situation, or else he would not ready up. It is a clear preparation for war. Rung 12 is large conventional war or war actions: This is where the actors involved actually use organized military violence. This might be a large-scale undeclared war, it might be border fighting or, for our purpose, large-scale military action against the strategic interests of the opponent. Rung 13 is large escalation that is combined by several “theatres of war”. For example, there could be a border skirmish war initiated by one party, and the other party could respond by attacking their naval bases. It is a part of the war, but it could be separated into different acts of war. Thus the two parties could fight in two different theatres of war and limit it to that instead of breaking into full-scale war. Threatening to open a new theater of war is a strategy of deterrence that keeps the war limited but escalated from the original attack. Thus, opening a new theatre could be considered a sort of strategic reprisal.

The next rungs of Khans escalation ladder is based on a more conventional conflict-escalation directly connected with the cold war and major war where the threat of nuclear escalation looms in the background. Since I do not consider this a realistic escalation for my case (massive troop mobilization, bombardment and war), I will stop at rung 13. I have mentioned bargaining and threats, and effective threats are a key for avoiding escalation by compelling your opponent, and the credibility to do so is also the key research question of this study. The next section will explore what actually makes these threats efficient and credible.

The diplomacy of violence: efficient threats, credibility and risk

The diplomacy of violence is the uglier side of diplomacy. Diplomacy is an act of bargaining, where two or more actors try to achieve an outcome that may not be ideal but that is still better for both parties. This requires some sort of common interest, or else bargaining would be impossible. Where it has been said that war is diplomacy by other means, diplomacy of violence is the act of coercion. It does not necessitate continued acts of violence, which would be the definition of war. It incorporates the threat of violence as a means to achieve some sort of behavioral change on the part of its victims. Violence becomes a tool of bargaining.

There are different types of violence, of which the ugliest is to hurt people – that is, not hurting your opponent’s military capacity, but causing plain suffering to people. Pain, shock, loss, grief and horror have always been a part of warfare, sometimes a part of tradition, for revenge or some other motivation, but in modern traditional military they are accidental, not the object of warfare. The act of inflicting suffering on people gains nothing or protects nothing; in itself it only has the power to make other people try to avoid it. If one does not count acts of revenge or for sports, the only purpose of inflicting pain is to control behavior. For violence to be coercive, the violence has to be anticipated, but also avoidable by accommodation (Schelling 1960:1-2).

The basis for efficient coercion and threats

Thomas Schelling (1960:2-4) describes several aspects of coercion that define whether or not threats will be credible and effective. Credibility in this case means that other actors find it believable that they are both able and willing to commit. Whether it is effective depends on both perceived costs and the likelihood of the action being carried through.

Firstly we have to consider the *ability to cause pain*. The willingness to hurt, the credibility of a threat and the ability to exploit power to cause harm will depend on the ability of an adversary to hurt in return, since there is little or nothing in an adversary’s suffering or hurt that directly reduces one’s own suffering. Two powers cannot both have the power to overcome the other; both sides cannot win a military fight and gain from it. One has to lose and the other has to win. This is the case when power is being used to dispute objects of interest, to gain territory or important resources. Sheer violence, on the other hand, can be used to destroy objects of interests, and this both parts can achieve. So some of the credibility of a threat lies in whether or not the one issuing the threat has the ability to hurt his opponent the way they indicate.

One must also have the *ability to withhold and continue to cause pain*. The difference between the use of brute force, that is, to actually use that force, and the threat of using that force, is that the threat of force is best used to manipulate behavior and to change the victims’ preferences. This restructuring of preferences is based on the latent use of force, where the victims’ changing behavior can be met by the withholding of force or the use of force with the expectation of more to come if the victim does not change its behavior. Usually the ability to

use force and hurt is communicated by some exhibition of force. When it comes to coercion, it is not the pain or damage inflicted that matters, it is the influence on other people's behavior. The expectation of more violence is what effectuates the wanted behavior, if that behavior is even possible at all.

To efficiently threaten someone with the use of force, one must *focus on something the victim treasures*. To successfully exploit the ability to hurt someone, one needs to know what the victim fears, what could one target that will make him more likely to change his behavior? The cost of non-cooperation must be so high that cooperation is a preferred outcome of bargaining.

Communication must be clear. The adversary needs to know what kind of behavior is expected from him to avoid being the victim of the use of force, and also what kind of behavior will ensure that pain will be inflicted. Thus the infliction of violence is contingent on the receiver's behavior. He must know that not only can one inflict pain, but one also has the ability to withhold it, so the threat also comes with the assurance that cooperation will make sure that he avoids pain. If the adversary complies, and the threat is still carried out, the credibility of subsequent threats will be severely damaged, since other adversaries might conjecture that the threat will be carried through regardless of compliance.

There must be *a mutual interest that is achievable*. If the coercer and the adversary have completely opposed interests, there is no room for coercion. To put it somewhat clearer, this situation arises if we get the highest pleasure from inflicting pain and the adversary's only interest is to avoid pain. There is no room for coercion, because there is no better alternative for the adversary. The behavior we want from the adversary must cost him less than the pain we are able to inflict. Coercion requires that the parties find a bargain, arranging for the adversary to be better off than he would be under alternative we threaten with. Then he will be better off with compliance than with non-compliance.

Hostages as a bargaining tool represent the power to hurt someone in the purest form. Traditionally one has to fight the military forces before one could affect civilians, but by using the civilians as hostages by targeting them, you bypass the military and might even possibly keep the military in check by threatening to inflict pain directly on the civilians. The civilians can be used as hostages against the adversary. This is a tool usually applied in cases where nuclear weapons are directed against large cities, thus holding the civilians of these cities as hostages.

The art of commitment and credibility

In traditional military thought one is concerned with the adversary's capabilities, not his intentions. But in deterrence, the concern is not only about estimating intentions, but also about influencing them. This also comes down to projecting our own intentions, which can be difficult. War can be disastrous, and any commitments made to intentions of war must have much credibility. Nations have been known to bluff, and they have been known to make threats sincerely but to back down when the time comes. The cost might be too high; the territories might not be worth fighting over, or the resources not that essential (Schelling 1960:35).

There is a difference between inherent credibility and commitment-credibility. To threaten to fight back if the nation's sovereignty has been violated has an inherent credibility; if it involves fighting back on one's own territories, it has very large credibility. When that threat of war involves projection of power outside one's own borders, there is a much lesser degree of inherent credibility. To defend oneself and to defend an ally are too very different things, and the latter requires a credible projection of intentions. Historical credibility most likely help ensure current threat credibility. The nation has made threats before and acted on it when it was necessary. The point is, there is a very large difference in credibility when it comes to committing to military acts outside one's own borders. That is the difference between those threats that are inherently credible and those that have to be *made* credible through some sort of commitment.

Schelling (1960:37) employs the historical analogy of a chemist in Ireland who supplied anarchists with bomb materials. The police did not do anything to him, and as he himself explained it to those who wondered why: he had a tube of nitroglycerine in his pocket which he would detonate if they tried to attack him. It would mean suicide on his part, but the police did not dare to do anything, because even if it hurt the chemist as badly as them, they still believed he was willing to do it. The threat, then, is not only credible due to the capacity to cause harm, but also due to character and projection of intentions. Commitments to threats would then rely on obstinacy and resolve, and whether or not the threat becomes credible boils down to character. But there is a large difference between the chemist and a government, and that sort of character is not necessarily easy to portray; that kind of suicidal tactic is rarely if ever credible for a state. States are not suicidal since their main objective is sovereignty and

survival, although this does not mean that they cannot build a perceived character upon the willingness to accept damage as long as they can hurt their adversary in return. Then the state's commitment to a threat becomes credible, whether it is perceived as rational or not. Relevant nations to mention here are highly authoritarian regimes like North Korea, where the leadership's rationality, according to some, is highly questionable, but it is clear that any attack on North Korea would likely be met with a credible counter-attack, even if this comes at an extreme high cost to North Korean civilian and military assets.

A possible strategy to make a threat credible is to relinquish the initiative to the adversary and to communicate a strategy of burnt bridges so that one's *hand is forced*. We cannot stand back while our nation's sovereignty is violated, and an attack of that force has to be responded to. By drawing the line, and also by removing choice of the situation, the credibility increases: "I do not want this, but it is not possible to let it be, my hand is forced". It requires, however, that the adversary acts first and that there is no way that a *lack* of response will follow. It is the only option, the equivalent of the burned bridge.

Manipulation of Risk

"If all threats were fully believable (except for the ones that were completely unbelievable), we might live in a strange world – perhaps even a safe one, with many of the marks of a world based on enforceable law." - Thomas C. Schelling (1960:92)

The hypothetical world that Schelling depicts would require full information, where the actors would know exactly what would happen, what would spark off aggression and what level of pain would be inflicted. The real world, however, has too many dynamic variables. We do not know where and how our opponents might strike us, they might declare areas which they are planning on hurting if we do anything – thus communicating deterrence – but that does not necessarily mean they will carry through that exact threat, this could be a diversion and they could even just change their minds. Violence and war are unpredictable, and they are subject to human decisions, rational or irrational, where orders and action can carry their own momentum and risk doing a whole lot more than intended (Schelling 1960:93). This risk can be exploited to coerce. *Rocking the boat* is coercion based on risk manipulation. You cannot

necessarily force someone to row a boat you are sitting in, and vocally threaten to tip the boat does not have inherent credibility, since tipping the boat would not help you attain your goal. A tipped boat cannot be rowed by your victim, and it will also get yourself soaked, but by rocking the boat you are threatening to tip the boat as well as increasing the risk of the boat tipping over due to momentum outside your control as the boat is rocking back and forth. This uncertainty and elevated risk might cause your victim to give in out of fear of the boat tipping.

*Tripwire Diplomacy versus Crisis:
No Uncertainty of What Would Release War*

The 1962 Cuban missile crisis is defined as a traditional crisis because it was not necessarily certain what kind of steps was going to lead to an escalation where the situation spiraled out of control and war was unleashed. The choice to set a blockade and declare that the action of breaking this blockade would start a war set a hard line in the crisis that, if crossed, would likely cause escalation. In both the Cuban missile-crisis and in my own case the actors involved have made it clear that there is a very clear line that, if crossed, will lead to retaliation and war, if even of a limited kind. In the case of a defined line of no-return, we have what is called tripwire diplomacy (Schelling 1960:99). It acts more as a physical barrier than a psychological game of unpredictable moves that might escalate the situation. Full information about what will cause escalation favors the passive part rather than the aggressor, as it is easier to deter than to compel. There is no question that there will be retaliation of some sorts, but to what degree is more uncertain.

Summary

Through the preceding five sections I have explored the rationality behind actors' strategic behavior, I have defined preferences, and I have built a theoretical foundation both for understanding bargaining in war and with regard to how conflict escalates. These aspects will be the foundation for understanding how Israel and Iran have successfully or unsuccessfully followed Schelling's "recipe" for threat credibility and efficiency. Next I will explore how I can combine this theoretical foundation with game-theoretic methods to build models that can sufficiently reflect the conflict.

Chapter 3: Method - A game-theoretic approach

Politics are inherently strategic; all aspects of politics are affected by strategies and international politics especially. It is a game where actors know that their actions affect other players and where they try to outmaneuver their opponents. The idea behind the choice of game theory is that it is an efficient tool for simplifying strategy selections and predicting the outcome of conflicts. With game-theoretic tools I can build a framework which enables me to analyze the strategies of the actors in question, and I can build a model that reflects upon those strategies and potential payoffs.

Why game theory?

As mentioned earlier, most deterrence theories are based on rational choice theory and, often, the more formal version of game theory, so it is the natural tool to use in my study. Game theory has an advantage in its precision and rigor as a formal tool of analysis. Gates and Humes (1997:5-6) explain what we gain from precision and rigor: This type of formal analysis demands that assumptions are laid out and made explicit by the modeler, unlike verbal arguments that tend to get blurred and that might have hidden assumptions. By explicitly laying out assumptions I can create a clearer connection between the theory and the model in exploring a certain social phenomenon. Secondly we gain analytical clarity and rigor. This means that arguments made by formal logic or mathematical analysis are explicitly precise, meaning we cannot “whitewash” the details through our text. Assumptions are laid out clearly, and the analysis and conclusion have to be coherent and consistent within the formal analysis.

Game theory does not attempt to explain all the complexity of social interaction. The value of the game theoretic method is in creating an elegant and simple explanation. Game theory narrows down the content to only the most essential actors and choices, where additional assumptions and additions can be added as the model develops. The idea is to create the best explanation with the simplest model (Gates & Humes 1997:8)

Setting up the framework: Key concepts and preferences

A game consists of three aspects: The actors involved, their strategies and the payoffs that are connected to the set of strategies each player can follow. Strategies available are whatever tools and general options of which they are in possession. For example, a strategy can be to attack or not to attack, and each strategy and the outcome connected to that strategy have a specific level of utility. A sequential game differs from a more classic, static game, like Chicken, in that the actors act in turns and are able to consider their options and evaluate choice of strategy based both on expected outcomes but also as a direct response to the original move from their opponent – instead of acting simultaneously without being certain of what the opponent does at the same time.

A game with limited information is when the actors involved has some sort of knowledge gap regarding the opponent's preferences, what their opponent is willing to do or what the player's own actions might result in. A limited-information game is a lot more difficult than a game with complete information. Playing out a game with limited information is more realistic than a game with full information where the actor knows exactly what outcome his own actions has, but it also makes the model more complex. I will try and model my game based on the assumption of a realistic lack of information, and I will examine how that affects the choice of strategy in my game through the use of empirical data on capacity as well as based on some qualified assessments. I solve the problem of limited information in my game by adding the factor of “nature” that can change the outcome of a strategy to three different scenarios. Nature is a random factor that can lead to different outcomes due to limited information or different outcomes within a plausible range.

Building preferred outcomes of conflicts is not necessarily easy, that means that I have to build a realistic preference ranking and accurately evaluate what the actors involved consider the most important for their long-term goals and gain. Here I want to introduce a concept of primary goals, which means that the actor involved has a main goal that it will always aim for. By setting a primary goal I can evaluate the actor's choice of strategies based on how these strategies affects their primary goal in different outcomes. This makes it easier to estimate preferences and utility from different outcomes. The problem with this, as well as with any ranking of preferences, is that what I perceive as the primary goals for each actor

may not actually be what they consider primary goals. This is particularly more difficult with regarding to Iran where I argue that nuclear weapons ambitions weigh more heavily than relative power. Considering the theoretical background and my own logical exploration, it seems likely that my estimates are close to the actual goals.

The primary goal for Israel is relative power. A pretty straight-forward and natural goal, most realists would say, but especially so for Israel, since their existence is and has been built on their ability to stay the strongest when faced with opponents in the area that wish to annihilate that state, so their main goal will always be to improve and distance themselves militarily so that their security does not diminish. This is to ensure that the survival of their state does not become jeopardized and that they maintain a dominant position in the regional international system. One could argue that a non-nuclear Iran should be a primary goal, but I beg to differ. A nuclear Iran is very problematic because of the change in status quo and that ever-existing chance that they might use a nuclear device against Israel, but a nuclear weapon is not something to be (easily) used. It is a deterrent, it is a security measure, it radiates power and yields status, it is a ticket into a club of grand powers. If the option is a nuclear Iran or a considerably weakened Israel, both in the short term and in the long term where it actually might result in a more direct and likely conventional conflict in the region, the latter is far more dangerous. Therefore, the primary goal of Israel is to maximize relative conventional power, not to ensure that Iran remains non-nuclear.

Actor B, Iran, on the other hand, is in another position. There are no imminent conventional threats in the area, but as mentioned, transition into a nuclear state means a lot for the prestige and power of a state, that is not directly connected to the nuclear weapons' offensive capabilities. Iran has already taken a lot of economic and political damage (and naturally that damages their military capacity as well) that has hurt their relative power, but continues to build their nuclear state. Their primary goal is a nuclear Iran, and the regime will chose the strategy that best reflects upon that. This does not eliminate the base goal that all states have, namely survival, but it means that I am of the opinion that a nuclear Iran is less a threat to the existence of the Israeli state than a weakened conventional Israel is, and that I argue that that is the real view of the Israeli decision makers too. I have created a table to formally outline the preferences (see Table 3.1 on the next page). These preferences will be more extensively argued for in the first section of chapter 5.

TABLE 3.1: PREFERENCE RANKING OF ISRAEL AND IRAN

Assigned utility	Israel
4	Improved position in the region
3	Status-Quo in the region
2	Weakened position in the region
1	Significantly weakened position in the region

Assigned utility	Iran
4	Nuclear Facilities and program intact
3	Minor setback to nuclear facilities and program
2	Moderate setback to nuclear facilities and program
1	Significant setback: facilities destroyed or program disabled

This is important because understanding the goals and the strategies that opponents are expected to act on from these goals results in what Howard (1971) describes as a metagame. This is where the players act out an imaginary game in their heads, and the choice of strategy is based on what they expect the opponent to do. This metagame is important to the different actors’ evaluation of strategies, since how the different strategies affect their primary goal is the key to decisions.

Combining the framework and empirical data: Analysis of strategies

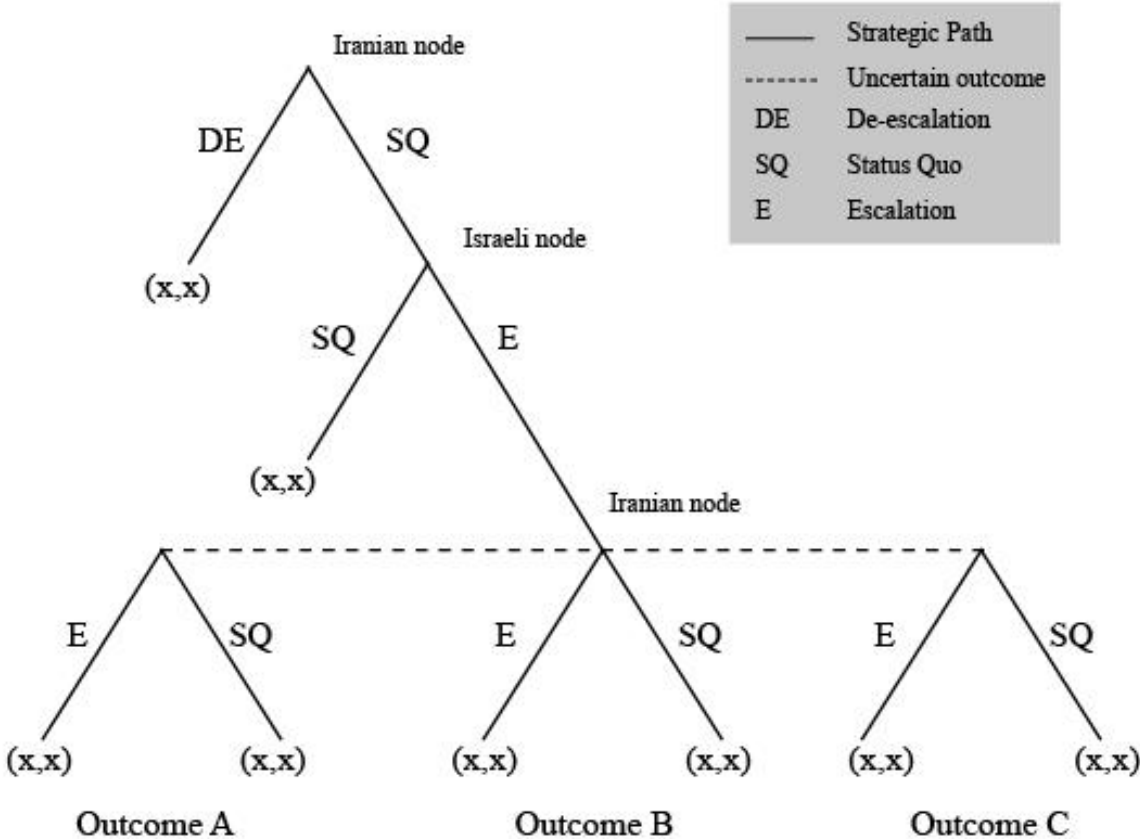
By using this game-theoretic approach in my analysis I can build a framework which I can include my analysis: With military data gathered from different organizations I will be able to come to conclusions regarding the viability of the options presented for Israel and Iran. By reviewing the warheads acquired by Israel and their air force, and by comparing that with the Iranian anti-air-defense and the Iranian air force as well as with previous military analysis, I can operationalize different levels of attrition in different outcomes of possible Israeli attacks. Furthermore, I will outline the main facilities in the Iranian nuclear program and judge both target preference and difficulty, and I will consider the overall difficulty of the operation. Through a mixture of these two evaluations, I will build three scenarios of different levels of success, with a range of outcomes that include complete success, partial success and complete

failure. One might argue that this will be a clear oversimplification of the strategic situation, and that it does not necessarily reflect all possible outcomes, but it should be sufficient to create a logical evaluation of the most likely prospects. That would take care of the first problem to consider in my thesis: The difficulty of the operation from Israel's point of view. Secondly, I have to analyze the options Iran has when it comes to retaliation. Here I will use the military data collected from mostly the same sources as in the case of Israel to evaluate Iranian naval, air force, ballistic and proxy-fighting power and making conclusions on whether these options would be effective and, therefore, if they are the likely choice of strategy. I will evaluate these options regardless both of considerations of threats made but also without actual threats made, since all plausible strategies needs to be evaluated even if they were not explicitly threatened.

Building a model, operationalizing outcomes and final threat analysis

When these two essential analyses are made, I can use the framework and these analyses to build game models where I have different outcomes that have different utility, and through that model in figure 3.1 I will conclude why Israel has not yet acted.

FIGURE 3.1: SEQUENTIAL GAME WITH THREE DIFFERENT OUTCOMES. NO PREFERENCES DESIGNATED



This is a graphical representation of a sequential or extensive game. The base form is a tree with different nodes where there are options of strategy choices available to the player acting. It also includes “nature” as a decider between outcome A, B and C. The different outcomes are based on a Von Neumann-Morgenstern utility, this is the utility of an outcome according to their primary goals, which means that the actors will maximize the outcome of expected u since higher utility means more success in achieve their primary goal. The different outcomes will be ranked from 1 to 4, where 4 is maximum utility. Players are expected to act on *a priori* evaluations of the utility of different strategies. Thus I can use backward induction to find the sub game perfect equilibrium where there is no reason for any of the players to change their strategy (if they could), since they will not achieve a higher u (Hart 1992; Neumann and Morgenstern 1953; Selten 1975).

The game starts with Iran having the option to either de-escalate (DE) or stay on course. Given DE the game ends immediately since Israel would then have achieved their objective, and there are no more strategic options. If Iran stays on course (i.e. chooses status quo), Israel has two possible strategic paths, either to keep the status quo (SQ) or to escalate (E). With E I have listed outcomes A through C. This is a representation of the level of

success associated with the Israeli strike. I plan to operationalize the outcomes with a given range of successful damage to facilities, the number of facilities damaged, and the level of attrition in the Israeli air force. The outcomes range from complete success, to partial success to complete failure (note that “complete” does not necessarily mean a complete destruction of the Iranian nuclear facilities, but rather such an overwhelming success that “complete” is the adequate description). The operationalized definitions are:

Complete success: 3-4 of the main facilities almost completely destroyed, low attrition in the Israeli air force

Partial success: 2-3 of the main facilities completely or partially destroyed, medium attrition

Complete failure: 1-2 of the main facilities partially destroyed, high attrition

It would already be clear that an attack does not necessitate that destroying the facilities necessarily come with low attrition, or that not destroying facilities come with high attrition. Especially the latter might as well be that the bombs had to be dropped earlier due to pressure from Iranian jets or failed to use the intended burrow-technique³. But for the purpose of the game, it is easier (and still true to a potential outcome) to define the outcomes like that. Each branch and potential outcome has a corresponding choice of path for Iran: SQ or E.

After making this essential analysis I can use these results to continue my analysis of the main topic: whether or not Israeli threats are credible. To do this I will return to my theoretical approach to the subject, which centers on Schelling’s list of what needs to be present for threats to be efficient. I will go through that list and analyze and compare those with Israeli threats made, seen in light of the most likely outcome of the conflict and Israel’s preferred outcome. With the previous analysis I will be able to show why the Israeli threats have clear shortcomings, why they do not adequately cover Schelling’s demands for effective threats, and why Iran has yet to be forced into compliance due to the lack of Israeli credibility.

³ Burrow-technique is the act of repeatedly bombing same target with the aim to spill debris to the sides of the impact center and repeatedly hitting the same impact center to burrow through the ground. This is essential for gaining access to facilities below ground.

Chapter 4: The actors and their background – an empirical overview

In this section I intend to explain the background for the Iranian nuclear program as well as the current status of their program according to actors like the IAEA, showing their most important facilities, since this will be the basis of operationalizing an Israeli attack later in this study. Furthermore I will explore the Iranian capacity both to defend against a potential Israeli attack and their options if they decide to strike back in some form should an Israeli attack be successful. Then I intend to show what kind of arsenal Israel possesses, where I only focus on that which is relevant to this operation: The kind of bombs they have and the air force which are intended to deliver that payload. I will also outline some of the main concerns for Israel in this conflict.

Nuclear background and current status of a nuclear Iran

Iran's secret pursuit of nuclear power was exposed in 2003, when the DC Office of the National Council of Resistance of Iran revealed several Iranian nuclear projects, including efforts to enrich uranium at a facility in Natanz and heavy-water production near Arak. Both of these facilities were concealed as electrical companies, through front corporations acting out of Tehran. This was already suspected by the US, since Iran had been in contact with Abdul Qadeer Khan, the head of the Pakistani uranium enrichment program, but Washington had no tangible information on the development due to unreliable sources at the time (Alexander & Hoenig 2008:119)

Abdul Qadeer Khan supplies know-how and components

It was most likely through the A.Q. Khan network that Iran acquired the schematics and components for development of its P-1 and P-2 centrifuges that is the basis for the Iranian nuclear project. The A.Q. Khan network worked out of Pakistan with a front corporation in

Malaysia, offering both the knowledge and the required material to jump-start any states' nuclear ambitions. With blueprints stolen from Unesco when he worked there and probably alongside Pakistani components, Khan was the man who started the Pakistani nuclear development. The A.Q. Network was revealed in late 2003, when a cargo ship carrying components along with other information was intercepted on its way to Libya, which prompted the end of Libyan nuclear ambitions (Alexander & Hoenig 2008:114-116)

Following the revelations of Iranian nuclear projects, the IAEA entered the scene and Iran's cooperation with both the IAEA and other states have been evasive and deceptive with the Iranian stance being that their pursuit of nuclear technology is for peaceful, energy-related purposes only. Several efforts have been put in place to restrain the development. The most prominent is probably the Paris Agreement, with three European states negotiating a suspension in development which was due to take effect in October 2003 but which was almost completely abandoned within the next 6 months (Alexander & Hoenig 2008:126-127). Due to the failed efforts of the EU-3 initiative and other failed diplomatic incentives, two years later the UN Security Council imposed several sanctions against Iranian corporations and efforts to stop materials from being imported to Iran, alongside several diplomatic efforts (Alexander & Hoenig 2008:156-161). The closest to an effective deal was probably the Iranian offer through Swiss channels in 2003, an offer that came because of Iranian concerns over the US success in Iraq. Iran offered insight into its nuclear program, a halt in development and recognition of Israel. In return they wanted sanctions lifted, relations normalized and cooperation from the US in developing peaceful nuclear energy. The offer was ignored by the US, most likely because they were unsure of its authenticity (Litwak 2008).

Despite several years of diplomacy and sanctions, the latter of which apparently is taking its toll on the Iranian economy, with a huge devaluation the Iranian rial due to currency-dumping and western sanctions (Gladstone 2012), the Iranian nuclear research and development is still going strong and information divulged to the IAEA in correspondence with the nuclear safeguards is lacking at best.

“Between 2007 and 2010, Iran continued to conceal nuclear activities, by not informing the Agency in a timely manner of the decision to construct or to authorize construction of a new nuclear power plant at Darkhovin and a third enrichment facility

near Qom (the Fordow Fuel Enrichment Plant). The Agency is still awaiting substantive responses from Iran to Agency requests for further information about its announcements, in 2009 and 2010 respectively, that it had decided to construct ten additional enrichment facilities (the locations for five of which had already been identified) and that it possessed laser enrichment technology” (IAEA 2012:13)

The military aspect of Iran’s nuclear development and current situation

In the November 2011 report the IAEA made a review of whether or not it was likely that the Iranian nuclear development had a military aspect. Among the concerns were the developments of three particular technical areas: the green salt project; development of weapons grade uranium; development of high explosives; and the re-engineering of the Shahab 3 missile with the intent to be able to deliver a nuclear payload (IAEA 2011:15)

“The Agency has serious concerns regarding possible military dimensions to Iran’s nuclear program. After assessing carefully and critically the extensive information available to it, the Agency finds the information to be, overall, credible. The information indicates that Iran has carried out activities relevant to the development of a nuclear explosive device. The information also indicates that prior to the end of 2003, these activities took place under a structured program, and that some activities may still be ongoing.” (IAEA 2011:10)

As it stands, it is highly likely that the Iranian nuclear program also has a military project running parallel with the civilian energy project. Too much effort has been put into hiding development, acquirement of materials and facilities built deeper into mountains in hopes to negate any effort to neutralize those facilities. One of the smoking guns, if accepting its credibility, is the US acquisition of a stolen Iranian computer with more than thousand pages of nuclear weapon activity, such as models, blueprints and an outline of efforts to create a cone for the Shahab 3 missile capable of carrying a nuclear warhead, as mentioned earlier (Alexander & Hoenig 2008:155:156)

Main facilities

Some of the facilities have already been mentioned. The purpose of this section is to outline the main facilities which would be natural targets for an Israeli air strike, and their purpose in the Iranian nuclear program.

The Fuel Enrichment Plant at Natanz

The facility at Natanz is Iran's main enrichment facility with over 9,000 centrifuges installed. There has been a 50 percent increase in centrifuges in the last years, and continued expansion seems imminent. The plant is currently enriching at nearly 20 percent. The Fuel Enrichment Plant is the main source for Iran's Low Enriched Uranium Hexafluoride, having produced 5,451kg as of February 2012. If further enriched, these levels of uranium could be enough to make four nuclear weapons (Albright et al. 2012:3). It has been reinforced with several meters of what is most likely reinforced concrete and dirt.

Fordow Fuel Enrichment Plant near Qom

The Fordow Fuel Enrichment Plant (FEP) was discovered in 2007 and is most likely the second most important enrichment plant in Iran. The plant is being invested heavily in by the Iranian government. It is capable of producing low enriched uranium at 19.75 percent, the same as Natanz. As of 2012 the Fordow plant is producing less than a third of what the plant in Natanz is (Albright et al. 2012:4). The main difference between these two plants is that the Fordow Plant is buried deep into the mountains near Qom, thereby making it much more protected than the Natanz Plant, even with several new meters of reinforced concrete and dirt above the facility at Natanz.

Arak – Heavy Water Research reactor

The Heavy Water Plant at Arak was one of the facilities revealed in 2002. It is located near the river Qara-Chai in order to have easy access to water from which deuterium oxide is extracted. Its purpose is to produce heavy water, although that type of production does not necessarily fall under the safeguards of the Non-proliferation Treaty. The main function of deuterium is as a moderator in nuclear research and plutonium production reactors. Its advantage is its effectiveness in slowing down neutrons without absorbing them, allowing the use of natural uranium fuel in reactors without any enrichment. But that uranium fuel, if irradiated for a long time, is also a very fertile source for potential nuclear weapons (Alexander & Koenig 2008:146). The Arak-reactor therefore is a very important factor in one of the two potential ways to develop nuclear weapons, where the Isfahan-Arak-cycle would be very important for Iran in developing weapons-grade plutonium (The Jerusalem Post 2013).

Isfahan – Uranium conversion facility

The uranium conversion facility that lies roughly 15 kilometers southeast of Isfahan was originally within the limits of the NPT safeguards. However, the intention of the facility was to act as a conversion plant for uranium to natural metal, to provide shielding material and in case of a future development in their nuclear program. It seems that it was set up to deliver natural uranium to be sent to the reactor in Arak for use in their IR-40 research reactor, which could be used to develop weapons-grade plutonium.

Military prowess: A review of Iranian and Israeli capabilities

Iranian capabilities

The Iranian military is experienced and battle-hardened as a result of the Iran-Iraq war as well as years of fighting various types of counter-insurgency campaigns. Their main problem is

outdated technology, mainly bought and mixed from other countries. Their main strength is in innovative and cost-effective tactics and in particular the use of asymmetric warfare. The analysis of Iran's capabilities in this study will consider all potential tools they have in their effort to thwart Israel and strike back. Is their air-combat ability and anti-air defense capable of stopping an Israeli operation? Considering their threats of closing the Strait of Hormuz, do they have naval capacity to do it? Is their missile arsenal a potential threat? And, what will be one of the more important tools in their ability to deter Israel: How strong is their ability to fight an asymmetric proxy war through different militant groups?

An outdated Air-Force and anti-aircraft capacity

“The air force's ageing fleet of US and European fighters is of limited value and many may already have been cannibalized to keep others flying” (IISS 2012:323).

Iran has a force of some 336 combat capable aircrafts. About 189+ of these are categorized as fighters. A main composition of 100+ different types of F-5s along with 44 F-14s and 35 MiG-29A/U/UB (IISS 2012:326). The F5s are a remnant of extensive US support in 1960s and the 1970s before the fall of the Shah. The F-14s were also delivered in the late 1970s from the US. Even with modifications and newer weapons added, the Iranian air force is still outdated against the Israeli F15s and F16s. Those are not only newer and better fighters, but unlike the Iranian fighters, they also have access to the right spare parts and technology required to maximize their potential. The MiGs on the other hand are Soviet fighters developed purposely to counter the American F15s and F16s (Gordon & Davison 2005:9). It would be natural to assume that the situation of their MiG fighters could be an important factor in hopes of causing enough attrition in Israeli fighters that the strike would not be a success. It is important to note that fighter numbers could be lower due to scavenging and refurbishing of other planes in order to maximize their utility.

Raas and Long (2007:22) find the Iranian capacity to thwart an Israeli strike wanting. Along with the outdated Air Force, they also point out that the air-to-air missiles that the Islamic Republic of Iran Air Force (IRIAF) fleet is in possession of are old and of low quality, which makes their ability to threaten an Israeli air force very weak. They also, however, point out two advantages that Iran has in a potential clash: Firstly, Iran will be fighting on their own

ground. The Iranian fighters will be operating close to their own bases, which means that fuel usage is not a very high concern. This is not the case for the Israeli jets, which will most likely be refueling midair over Iraqi or Saudi territory and cannot waste too much fuel in Iran on air-to-air-combat. The second is Ground Control Intercept radars, which could guide the Iranian fighters to Israeli fighters. This could give a tactical advantage in engaging the Israeli fighters from a favorable position, for example, by attacking from behind.

Iran's Surface-To-Air-capability is probably in the same state as their air force. It is technologically outdated, as well as divided between different branches of the Iranian military. The main threat would be the newest acquisition in the Russian SA-15 Gauntlet of which, according to International Institute for Strategic Studies (2012:326), Iran is reported to have acquired about 29. Raas & Long (2007:22-23) believe that the SA-15 maximum range of 6,000 meters versus Israeli fighters most likely attacking from higher than 5000 meters would make it unlikely that those Surface-to-Air-Missiles (SAM) would present a major threat. They do acknowledge that the combined SAM inventory, as well as a large amount of anti-aircraft guns, could provide some defense at key points. The main problem would be coordination and tying these weapons into some sort of integrated air defense, which is uncertain to what extent this is achieved due to limited information.

In sum, Raas & Long find that the Iranian air force and their anti-air-capabilities are unlikely to inflict major damage on an Israeli attack, but there is some risk that they might inflict enough damage to some substantial part of the Israeli operation. Considering the research done by the Center for Strategic and International Studies (CSIS), which estimated an attrition rate of 20 to 30 percent, it might be likely that Raas & Long underestimate the Iranian defenses. Even between these two positions, it is clear that Israel will sustain attrition, and it might be severe enough to jeopardize both the operation and Israeli air power in the short and medium term.

Is the Iranian navy strong enough to close the Strait of Hormuz?

The main asset in the Iranian Revolutionary Guard Naval Corps is based on a substantial number of patrol boats and frigates as their main force of 95 combatant ships. The Navy in itself has 59 ships with the biggest threat being a few corvettes and gunships. The Iranian navy is mainly suited for hit-and-run tactics in the hope of disabling bigger opponents with

anti-ship-missiles and fast attack-ships (IISS 2012:323-326). It is unlikely that they will be able to close the Strait of Hormuz, as it would be an aggressive act against far more actors than Israel, which possesses far heavier ships and firepower. Neither is Iran's navy built for that kind of blockading action. The other option they do have, on the other hand, is to deploy mines which could cause heavy damage to traffic, but as Caitlin Talmadge (2008:117) concludes, this would be mitigated by a US intervention that would most likely both take out much of the mines and cause a massive wave of attacks against Iranian harbors and naval capacity.

Iranian missile capabilities

The Iranian missile capabilities are derived mostly from North-Korean missiles. The Shahab missiles, which is the main part of the arsenal of offensive Iranian missiles, are North-Korean Scud-missiles renamed and potentially modified with Chinese and Russian navigational systems. The longer Range Ghadr-1 missile is the North-Korean No-Dong-missile. The problem of the Iranian missile armaments is that their technology is foreign, and Iran has only a limited capacity to develop their own. The Iranian missiles are believed to be imprecise; most likely Iran has a capability of causing fear more than a capability of actually destroying any particularly large target, or for that matter, Iranian missiles are unlikely to cause much damage to a well-protected military target. As we know, Iran has most likely sought to develop a missile cone to the Shahab-3 capable of supporting a nuclear warhead. Given both chemical and biological-weapons capacity, it is likely that they also have created cones that support those kinds of warheads. This could imply that there is a very high terror capacity in an Iranian missile threat, but this capability is not very likely to be used as it would be considered crossing a threshold if these kind of weapons were to be utilized (Chipman 2010). Using chemical or biological weapons would cause massive diplomatic backlash as well as a severely escalated response.

Asymmetric warfare-capacity: The proxy possibilities

The resources and organizations that Iran can utilize also involve their connections to different militant groups in the region. The main assets in their conflict against Israel have been Hezbollah and Hamas, operating respectively from Lebanon, the Palestinian territories and other neighboring countries. Iran's cooperation with these groups has been both direct and indirect, ranging from military training to the transferring of funds.

Hezbollah is operating out of Lebanon. Their official goal is to keep Israeli troops out of Lebanon, and their long term goal is to turn Lebanon into a Islamic Republic. This has resulted in several military conflicts with Israel; the height of the escalation was when they kidnapped two Israeli soldiers, to which the Israeli response was an invasion of southern Lebanon. A conflict which according to analysts were putting a massive break on the Israeli economy and the total costs were estimated to 1,6 billion USD, which was approximately 1% of their GDP (Borger 2006). The Iranian Revolutionary Guard has been supplying Hezbollah directly by training troops, providing military supplies and giving general economic support. Iran is Hezbollah's main contributor, with reports valuing their support to 500-600 million US dollars yearly, in addition to paying militia troops 150-200 dollars daily. The Iranian state is also the main contributor of weapons and ammunition, and the Iranian military have performed military exercises with Hezbollah's troops (Alexander & Hoenig 2008:67-75).

The other main organization Iran supports, Hamas, is one of the main actors in the Israeli-Palestinian conflict. Hamas is an acronym for the Islamic Resistance Movement, which is dedicated to an armed struggle against Israel. Their explicit goal is to destroy Israel and create an Islamic state. The group has been highly supported by Iran, but also several other actors in the region, like Syria and other Gulf states over the years, all with the intention of weakening the Israeli state. The Iranian contribution is valued to roughly 3-30 million US dollars. The purpose is to undermine peace talks. As an example: Hamas got 15 million dollars to sabotage the Oslo agreement, a central process in the peace negotiations (Alexander & Hoenig 2008:86-93).

Israeli capacity to destroy Iranian nuclear facilities

What kinds of bombs does Israel need and what do they already possess?

Israel is probably looking to the US military, having a Massive Ordnance Penetrator in the GBU-57AB. The GBU-57AB is a penetrator bomb with an effect of roughly ten times that of the BLU-109 (Moran 2011). The latter is the main ordnance of which the Israelis are in possession after a 500-warhead purchase from the US. Alongside the BLU-109 purchase Israel also bought 100 BLU-113 warheads with a considerably larger penetration power. Jane's Air-Launched Weapons electronic database gives the BLU-113 a penetration credibility of 6 meters of reinforced concrete and 30 meters of earth (Raas 2007:17).

Israeli Air Force

The Israeli Air Force (IAF) is without a doubt the strongest in the nearest vicinity of Israel, being a main source of their domination in newer wars and operations. The 1981 strike that the IAF conducted against Iraq's Osirak nuclear facility is a testament to their capabilities. That attack later became known as a precision strike with no loss of Israeli jets and no collateral damage outside of the facility (Raas 2007:8). They showed their capacity again in 2007, when they hit the Syrian reactor in Dayr Az Zawr with no jets downed. And there is no doubt that the IAF has grown significantly since then, both in size and technology. As of 2008 they had 411 fighters consisting of F16s and F15s in different variants (Cordesman and Toukan 2008)

Main concerns for Israel on a potential operation

There are three main concerns that have to be accounted for when I seek to evaluate Israeli considerations to take action against Iran. These will be reviewed chronologically according

to how events would unfold. Firstly is the aspect of how complicated the operation is. This covers the difficulty in launching the operations, and successfully locate and deliver an attack on the facilities. Secondly I assume a lack of information regarding the defensive capabilities of Iran, how much interference that could come from Iranian air-defense both through anti-air-artillery and from their own air force. Lastly there is the issue of retaliation, what kind of expected retaliations are likely? In this section I will focus on a perceived risk of a new Intifada breaking out. A more detailed analysis of potential retaliations will follow in the chapter dedicated to the actual analysis.

Complexity of the operation

For the mission to be a success, Israeli jets need to use a burrowing technique that relies on dropping several bombs in rapid succession to successfully dig through several meters of reinforced concrete and dirt. Not even considering potential attrition, which will be considered in the next part, this burrowing technique requires exceptional precision, luck and enough information to know how much of the arsenal is to be dedicated to each facility. Exceptional precision is needed because each successive bomb needs to hit the same hole as the previous one, thereby effectively being able to dig through solid mass. If a bomb hits off target or not close to the center, it could severely reduce the efficiency of penetration, resulting in either the lack of success in penetrating the concrete and dirt and therefore not causing damage to the facility, or it might end up with penetration, but with limited damage due to most if not all bombs being spent just getting through. Next there is an issue of sheer luck, because the mass that gets bombed does not disappear, and if the initial blast or successive blasts are able to explode that mass outwards and away from the hole, there is a chance that debris from the explosion fills in the hole, if only just partially. This will slow down and might even effectively ruin a penetration attempt. Lastly there is a probable information gap. Iran has continuously reinforced their facilities defenses by burying them and pouring concrete on top, which means that Israel needs a rather accurate estimate of density, depth and resistance power of each facility's defenses. If they miscalculate and not enough resources are distributed to facilities, Israel could end up literally banging on a wall and not breaking through. As the CSIS rapport estimated a 50% penetration ratio, this is quite plausible.

Uncertainty of the Iranian defense

Lack of information is a central point for any conflict, and especially when there is high risk involved. It should be considered high risk for Israel to dedicate a large portion of their air force and sending it into enemy territory. Their air force is one of the key tools in their own defense and in controlling the region. Striking into an unprepared Iraq and a Syria in disarray is one thing, but quite another thing is crossing countries, going deep into enemy territory, with an enemy that almost certainly has played out a lot of attack scenarios and prepared for that exact defense, with heavy bombs that will make Iran's F16s vulnerable. That is quite a different risk to take. I have already reviewed the Iranian capacity, and even though it is clearly technologically inferior, there are still many variables that can come into play. Slower Israeli jets carrying payloads have a clear disadvantage should they be forced to enter a dog fight. As earlier mentioned, Iranian jets could also come in from behind after the jets have delivered their payload, and that could give them an excellent opportunity both to exploit Israeli jets out of position but also Israeli jets that have fuel concerns since they need to refill midair on their way back. If some of the newly bought Russian anti-air-equipment are capable of causing injury or even downing one or more jets. Israel could be looking at a potential attrition to their air force, considering CSIS's estimates of 20-30% attrition, which could considerably weaken their position as a superior air force nation in the area. Not to mention the injury that Israeli military would sustain to their reputation should they fail and be harmed by an outdated Iranian air force. There is a level of incomplete information in this operation that comes with a potentially big risk to the Israeli position as a dominant military force in region, and that is not something to be considered lightly.

The cost of a potential reprisal: Israel and a Third Intifada?

I want to put a rather large focus on the asymmetric capacity of Iran, since previous data seem to find both some of the main conventional options rather lacking, with a weak naval force, outdated missiles and the questionable state of the air force. This will be explored further later in this study. In this situation, the most relevant case for Israel to consider if they are to evaluate a potential outcome of an Iranian proxy-war and the potential cost for that conflict snowballing would be to look to the history and the two previous intifadas.

The first uprising started in December 1987 and continued up to September of 1993, and the second uprising started in September 2000 and lasted until 2003. David Fielding (2003) attributes a lot of Israeli issues with low saving levels to the high levels of violence and political instability in the years after the uprisings. Israeli levels of savings were very low by international standards, and due to lack of savings Israel has had problems with investments and economic growth. The actual cost of the second Intifada has been estimated by the Bank of Israel (Bassook and Hareetz Correspondent 2004) to be at least between 31 and 40 billion Shekels (ILS)⁴, and that is not including the military cost of participating in the Intifada. This amounts to roughly 6.2 to 8 percent of Israeli GDP, which is a huge cost. The report from the Bank of Israel concludes that the Intifada was one of the principal reasons behind the recession in Israel between 2001 and 2003. With agriculture and construction hit the hardest, this came with estimated costs of 12.2 billion ILS. The increase in defense-industry spending and an increase in public consumption hit investments hard, as noted by Fielding in his cost-analysis. In 2002 Israel saw a decrease between 3.1 percent and 3.8 percent in GDP.

When you consider that Israel in 2002 spent approximately 7.9 percent of GDP on their military, and even up to 9.6 percent in 2004 (World Bank 2003), the cost of the second Intifada was the equivalent of a whole military defense budget, and that is not even considering the economic ramifications over time. A Palestinian uprising is an extremely costly affair.

Post second Intifada concerns and the likelihood of a third:

The dangers of a new Palestinian uprising have always been a factor in Israeli politics. I do not intend to delve too deeply into Israeli policy against the Palestinian people and the Palestinian Authority because that is a complete field in itself. I intend only to show that vocal threats from Palestinian actors like Hamas and the Palestinian Authority have been present in the years since the Second Intifada, and that there are a lot of concern regarding when the next Intifada will break out and what exactly will spark it (Browning 2013; Levy 2013, Good 2012)

⁴ One billion Israeli New Shekels (ILS) equals roughly 285 million US dollars (USD)

In 2007 senior Fatah officials hinted at a new wave of violent protest against Israel if the peace conference that was held at the time in Annapolis did not produce any results. “If we don't prepare well for the conference so that it will result in something positive, the repercussions will be more dangerous than what happened after the failure of Camp David” was the quote from Azzam al-Ahmed, a close associate of Palestinian Authority President Mahmoud Abbas and head of the Fatah parliamentary list (Toameh 2007). Naturally, the collapse of talks at Camp David in 2000 was likely among the factors that eventually sparked the uprising later that year. A more direct threat was called from Hamas in 2008 when the political leader of Hamas called for a military Intifada against the enemy after Israel killed at least 220 people in attacks against Hamas on the Gaza Strip (Al Jazeera 2008).

“The third Intifada is Inevitable” says political analyst Nathan Thrall (2012) at the International Crisis Group. There has always been a fear of sparking a new Intifada, but the previous ones were a result of spontaneous escalation and not organized rebellion, and that is problematic for Israel because that makes it very difficult to control and deter an uprising. And as the peace talks keep failing and no progression is made, the more militant Palestinian leaders are clear: “Not an inch of Palestinian land will be liberated while Israelis feel that controlling it exacts few costs”. The third Intifada is coming; the only question is what will spark it. Israel is clearly concerned, seeing that the new commander of Israeli Defense Forces has been tasked specifically with preventing a new Intifada (Harel 2013).

Chapter 5: Analysis - Preferences, strategies and game equilibrium

After thoroughly exploring the theoretical foundation, methodology and the relevant data for both Israel and Iran I can continue with my analysis. First I will argue more thoroughly for the different preferences involved for Israel and Iran. Then the analysis will be divided into the complexity of the operation, which includes Israeli preferred targets, difficulty and the operationalizing of three different outcomes. The second part of the analysis concerns Iranian retaliatory options and the potential effectiveness of these in relation to affecting the Israeli position. With those two analyses in place, I can build my model with outcomes and their related preferences and explore the different outcomes and argue why conflict will play out the way I predict.

Establishing preferences: Understanding choices

I have already explored some of the preferences and the aspect of primary goal in my method section, but I want to establish a stronger argument for the preferences by connecting the theories from realism to the current and historical situation for both states. I will explain why *realpolitik* defines the Israeli mentality and that they would not risk significantly harming their relative power over the nuclear issue. On the other hand, Iran still continues its nuclear development, even if it leads to harm. Why would a nuclear armament be so important to them that they would risk a decline in conventional power?

The first thing to point out is that the international system is anarchic, in the sense that each state is dependent first and foremost on itself for the provision of security, which makes power instrumental to survival. The definition of power varies, but central for most hard-power definitions is military capacity and economic capacity. Military capacity is dependent on economic power, and economic power in itself can increase the available strategies both domestically and abroad. Military power can be focused on either the capacity to maximize security, or to maximize power abroad: The ability to coerce or even defeat and annex other nations. This power is not isolated; it is dependent on the power of other nations that are

capable of affecting the state. This is the aspect of relative power, where loss of power is the equivalent of your opponent gaining power. This aspect of relative power and security is essential for understanding the Israeli mentality. Considering a state grown out of violence and hostile environment, there have always been security threats to the state. The neighboring Arab countries attacked the day the state was announced, later Israel also struck early against the air force of Egypt, Jordan, Iraq and Syria, which led to their victory in the Six Day War. Then again in 1973, Syria and Egypt staged a surprise attack on Israel on Yom Kippur. The unprepared Israelis spent three days to fully mobilize, but in the end turned the tide of war. They have known acts of aggression, they have enemies and they have felt the fear of their own state survival. Now this means one thing in particular. The single most important thing for Israel is not to let that happen again, not to be threatened, not to risk getting caught off-guard in an invasion. They have to always have such power superiority that they are able to deter any would-be attackers. So they would seek to maintain a market gap and aspire to become a hegemon in the region. Any decline in relative conventional power diminishes that ability. A nuclear challenger in the region is only a threat if they perceive the nuclear use to be a realistic option for their adversary, considering that they have been in three conventional wars, and globally nuclear armaments have been used offensively only on two occasions (in August 1945). The issue of relative conventional power is far more important and thus represents Israel's primary objective.

When it comes to Iran on the other hand, they have not bulged when confronted with sanctions that have hurt their economy or when they have had limitations put on their ability to import military goods. These two things are essential for gaining conventional power; Iran is losing out on both accounts, yet they continue to develop their nuclear program. The first thing to notice is that, unlike Israel, Iran has not had a history of continued threats to their survival. The rivalry with Iraq is noteworthy, but the Iran-Iraq war showed that Iran was stronger and caused big problems for Iraq, culminating in the Iraqi invasion of Kuwait and the American response that left Iraq considerably weaker than Iran. And since the fall of Saddam Hussein in 2003, this threat from Iraq became relatively non-existent. So Iran does have enemies, but none that is in a position and has the clear intention of threatening Iran's existence. This leads to decline in conventional power for Iran becoming less of a threat in short-medium time perspective than for Israel. So what are the gains that accrue from acquiring nuclear weapons? Historically we have seen several states vying for nuclear status, yet the US – which was the first nuclear-weapon state – is the only one that have ever used the

nuclear bomb offensively, and since then it has become much of a consensus that the nuclear bomb is not to be used. I do not intend to explore why it has not been used, but rather to explain why states want it even if it is not actually a viable offensive weapon. The first explanation is the most obvious one, and is also why Israel has acquired the nuclear bomb: having a nuclear bomb is the ultimate guarantee for security. No state would rationally risk pushing another, nuclear-armed state to the point where the latter would feel their existence being threatened. That is an offensive risk not worth the cost. So realism, with its focus on survival and existence, has some explaining power on this score. As Schultz writes, “proliferation begets proliferation”, so when Israel has the bomb, the natural move for the rival Iran would be to also get the bomb.

The next thing to consider is that any state with a nuclear capability that is not completely shut off from the rest of the world, like North Korea, is considered a major player in the international scene. Having nuclear weapons yields status, it yields prestige; it is something that separates that state from all those with roughly similar capacity that constitute the grey matter of mostly un-important medium states. This was the reasoning behind France wanting to go nuclear (De Gaulle 1971:209), and this was the logic that presumably Saddam Hussein used when he was building the reactor at Osirak. Now, let us think in a longer perspective. I mentioned that Iran has no immediate threats, but as Waltz (2000) explained it, states must always prepare for a distant future. Nuclear weapons would give Iran a mechanism for maximizing state security at home in the long term where new rivals might rise up, and in a more short-to-medium term the gain of nuclear status would lift them up into an exclusive club of major powers. The short-term cost of having their conventional power damaged by the UN Security Council and other nations over their nuclear program would then be worth it, and thus I could argue that Iran wants nuclear weapons, and that this would be their primary objective.

In sum, if I were to rank preferences for Israel, the top preference would be improved relative power position, and the lowest preference would be a significantly weakened relative power position. In the case when I assess and predict Israeli behavior, a potential cost to relative power position would weigh deeply. Iran, on the other hand, has shown a willingness to accept a decline in relative conventional power to keep their nuclear program going, and the incentives in the medium-to-long term would lead to Iran ranking their highest preference as leaving their nuclear program as intact as possible, and the lowest preference being dismantling the program. With the preferences of Israel and Iran more thoroughly explained, I

can continue with my analysis with predictions of Israeli attack and the operationalizing of outcomes.

Playing out an Israeli attack: Main targets, operational hazard and the three outcomes

I intend to outline the different targets, how important they are likely to be considered by Israel, and how difficult it will be to strike them, with this I can create an analysis with three different levels of success as mentioned earlier.

Firstly there is Arak, the Heavy Water Research Reactor. This is the research plant where Iran could create weapons-grade plutonium when the reactor is up and running. It is also essential to the Iranian research on nuclear power and nuclear weapons. A recent article by The Wall Street Journal (Solomon 2013) writes that Iran probably could have a reactor online by next year capable of producing weapons-grade plutonium, giving them the ability to create two nuclear bombs within two years. Considering this recent change in how the Iranians approach their nuclear program, I consider this the primary target for Israel. By striking and damaging this facility they would both severely harm the Iranian research as well as destroy one of the most important reactors that could create weapons-grade plutonium. This reactor is not as well protected as the enrichment facilities at Natanz or Qom, since it is out in the open and above ground. That is why the Iranians have built the most elaborate air defense around it, as seen by the map in appendix 1, with massive anti-air-artillery and several surface-to-air-missile-bases. Israeli F15s and F16s could be able to mainly avoid their anti-air-range, but this will come at the cost of a loss of precision. It is likely that the facility could be easier to damage than the others, but an attack would also come at a much higher attrition.

Secondly, I think it would be natural to continue along the lines of enrichment with the main Iranian enrichment plant at Natanz. This facility has as previously mentioned over 900 centrifuges installed and is Iran's main source of low-enriched uranium. A strike at this facility would, if successful, harm or destroy most of the Iranian uranium enrichment and would probably set back the Iranian enrichment process with several years depending on both the level of impact and how well developed the facility near Qom is. There is a reason why the Iranians have reinforced this plant with several meters of concrete and dirt. It is unlikely that it would be an easy target. Israel would have to use several bombs, effectively hitting the

same spot again and again, and the debris from the initial and subsequent bomb would have to blast to the sides of the impact hole to efficiently burrow through to the reactors. Natanz is clearly the toughest facility to successfully damage after the Fordow plant at the mountain near Qom.

Thirdly I will emphasize the Uranium Conversion Facility at Isfahan. It was meant to convert uranium to be used at Natanz, but it seems it also had the purpose of converting uranium to natural metal and to be sent to be used in the Arak IR-40 Research Reactor. The conversion facility is then to be considered a prerequisite for optimal use of the Research Reactor in Arak and will naturally constitute a focus in an attack. This facility, as with the Arak facility, is above-ground and has a lot less defense than Arak. It is most likely the easiest target to hit of the four of them.

Lastly is the new enrichment plant in the mountain near Qom, which I have listed as the least important target of the key targets. That is because it acts as a second enrichment plant after Natanz, and also it is the most difficult target to hit since it has been built within a mountain. Striking the plant in Qom will be extremely difficult, and since it is currently in development it would be a lot more important for Israel to strike at Natanz.

Considering the complexity of hitting the different targets, avoiding the Iranian defenses and also being able to inflict enough damage to the facilities that the strike sets the nuclear development long enough, I have decided to create three different potential outcomes of such a strike and include the amount of facilities harmed and attrition inflicted to reflect different probable outcomes.

Outcome C: Complete failure

The least successful outcome I will outline is defined as complete failure. This is defined as an attack where a maximum of only one or two of the facilities is partially destroyed. This outcome is the worst possible outcome for Israel, where I estimate even higher attrition than the interval estimated by the CSIS. In this scenario, at the most two of the nuclear facilities are only partially destroyed, causing only a minor setback to Iran's nuclear program. In this scenario the facilities would most likely be up and running again within a year. In this scenario the attrition is very high; that is to say 30 to 40%.

Although the facilities at Arak and Isfahan are above ground and it is unlikely that the Iranian anti-air defense would be able to stop some partial damage, this scenario would estimate that Israel only causes partial damage to the facilities due to Iran causing enough disturbance and attrition to stop Israel from causing major damage or even completely destroying the facilities. This would also have to mean that Iran cause a lot of attrition in the Israeli attack, with both downed jets and jets that have to drop bombs off target so as to avoid getting shot down. This is a highly unwanted scenario for Israel, not only have they failed in the attempt to harm the Iranian nuclear program, but it will also show that they do not possess the capacity to do it, at high cost to their air force capacity.

Outcome B: Partial Success

This outcome is the one I find most likely. It leans more on CSIS than Raas & Young and seems the most plausible considering the complexity of the operation. The most likely outcome is the one that sees 2-3 of the facilities partially or completely destroyed, with medium attrition to Israeli jets. Medium attrition is to be considered roughly 20% of the dedicated air force. In this outcome the setback to the Iranian nuclear program is probably modest.

In this scenario it would be highly likely that Isfahan would get completely destroyed, that is to such a degree that operations would be completely halted in much of the foreseeable future. Arak could in this scenario be somewhere between partially to completely destroyed, with major damage to the IR-40 reactor and the facility itself. The big “if” in this scenario is partial destruction of Natanz, where Israeli jets are mostly able to burrow through the ground and might do some partial damage to the facility, but it is unlikely that it would be affected to such a degree that it would not be up and running within a shorter time frame. Fordow would still be unharmed, burrowing through the mountain still seems to be quite a feat to accomplish. This is a partial success because it would most likely cause a modest setback for Iran, halting both some of the uranium conversion and the IR-40 reactor at Arak, which has been a big focus in their plutonium production cycle. If Natanz is back up again within a few months, and Fordow is left unharmed, the Iranians still have a clear alternative to the Arak reactor for producing weapons grade material.

Outcome A: Complete Success

This leans substantially on Raas & Young's (2007) optimism regarding Israeli strengths and their high doubts regarding Iranian defenses. Considering the four main targets, the key aspects of the optimal outcome is 3-4 of the facilities completely destroyed and low attrition. This would mean that Isfahan, Arak and Natanz were to be completely destroyed and, in addition, there would be caused some damage to the enrichment facility near Qom. It would also be natural to consider low attrition amounting to about 5 to 10% of the dedicated air force, which is considerably less than the CSIS concludes with. In this case the Iranian nuclear program would be delayed significantly.

I have defined the final outcome as 3-4 of the main facilities completely destroyed with low attrition to the Israeli Air Force. This is closer to the Israeli strike on the Syrian reactor in Dayr Az Zawr. It amounts to an almost perfectly executed attack where everything goes according to plan and every margin is in the Israeli favor. In this scenario both Arak and Isfahan would get completely destroyed with no comeback in the foreseeable future. Natanz would be almost completely destroyed; a majority of reactors would be rendered unusable, debris and radioactive spillage would cause immense problems in cleaning up the facility and getting it back on track. The only questionable outcome in this scenario is whether the strike on the enrichment plant near Qom would lead to that facility being partially destroyed, this requires a perfectly executed burrow technique that somehow manages to either penetrate the mountain or cause some partial damage by proxy even without complete penetration. This would be the ideal outcome; with Natanz also taking major damage the only viable enrichment plant left would be Fordow, which is both rather new and not even close to the size of Natanz. This would cause a major setback to the Iranian nuclear program at relatively low cost to the Israeli air force.

In sum these operationalized outcomes should be sufficient to evaluate how the result of a military strike might be analyzed. These are my own predictions that naturally rely on military analyses done by people like Raas and Young, Kreps & Fuhrmann, as well as my choice to put emphasis on the CSIS rapport. Unlike Raas and Young, I am more skeptical of the capability to cause massive damage to the facilities and to the program overall as well as the level of attrition expected. The uncertainty with regards to whether Israel can cause enough damage to the Iranian nuclear program with a military strike becomes an important

strategic factor in this conflict. If Israel thinks it unlikely that they can efficiently damage the Iranian program, the probability of choosing military action declines. For Iran, if it is perceived unlikely that Israel can cause major damage to their nuclear facilities, it lowers the probability that Iran will cede the program. There is also the aspect of potentially hidden or camouflaged chokepoints that Iran may have built, but these analyses only consider the known facilities. The strategic success of both outcome A and B would be very diminished if Iran has replacement key facilities hidden away. This is only one part of the analysis, since this escalation from Israel into war action, will give Iran the option to strike back and even take a step up the escalation ladder by creating new theatres of war. In the next section I will explore and analyze the efficiency and likelihood of Iran's different retaliatory options.

Iranian retaliatory options

Iran has several options available, but not all of them are particularly efficient or necessarily very wise to use. In this section I will analyze the options available based on my previous exploration of their options. My intention is both to argue what the intentions behind the different options are, how much damage they would likely be able to inflict, and how each option would be perceived or otherwise affect other states in the international anarchy. Thereafter I will use those evaluations to assess what is the most likely option for Iran.

Firstly, I will perform a quick evaluation and dismissal of the Iranian Air Force's capacity to strike back into Israel. They do not stand a chance against the Israeli Air Force, that is obvious. The only credible option they are left with, as they have threatened, is to strike at Israeli allies in the region. That would necessarily mean to strike US bases in the region. It is clear that Israel, allies and other nations in the area would be at high alert and ready to scramble jets at short notice. This would most likely end in a lot of Iranian jets being shot down with few potential gains from hitting these bases. It is likely that escalating to rung 13 with compounded war against new opponents would give Iran nothing more than more enemies and potential new backlashes. This option is highly unlikely.

Secondly there is the option of missile attacks. Iran has conducted several prominent missile tests with a lot of special exposure intended to deter any would-be attackers. However, according to the available data it seems that the Iranian ballistic-missile options consist of modified North-Korean missiles with limited navigational ability and low damage explosive

armaments. The same consideration as that noted above regarding allies applies here as well: it would be unwise to strike at anyone other than directly at Israel. Striking Israel would be considered a legitimate reprisal, escalating against others would only give them the option of climbing the escalation ladder even higher, at high cost to Iran. The problem that stands out with attacking Israel with missiles is not only that the missiles have limited precision and power, but that Israel has long lived with missile attacks from militants in neighboring countries and have developed an extensive anti-missile defense. A missile attack from Iran would most likely cause only limited damage, and would at most be able to cause some terror by hurting morale, but in the end it would only show that Iran does not have the capacity to successfully harm Israel. This option is therefore not a particularly wise one for Iran, and it is reasonable to assume that they would only use this option if Israel actually managed to destroy the Iranian facilities completely, since the response from Iran would escalate with the amount of damage done by Israel.

Thirdly Iran has threatened to close the Strait of Hormuz. Earlier I explored their naval capacity drawing on the latest paper from *The Military Balance*. Especially two problems stand out with this option. First is the problem that Iran mostly has patrol boats with a few corvettes and gunships. These are most efficiently used in a hit-and-run setting against larger ships, conducting guerrilla warfare. To close the Strait of Hormuz I think this tactic would only act as a form of piracy; it would constitute harassment, it would involve the deployment of mines, but it would clearly be insufficient to close the Strait. They would need bigger warships to actually blockade the Strait. Apart from the rather clear deficiency in capacity to carry through with that threat, it also has a considerable effect aside from harming Israel and the US (which would be the main intention), seeing as it is an act against all states that have an interest in keeping that Strait open. This could, and probably would, cause a reaction and reprisal from several other nations. In essence, all they have to do is to send warships to the Strait and engage Iranian vessels. The guerrilla tactics of the Iranian vessels would soon cease to be efficient and the only logical outcome would be a quick re-opening of the Strait and severe damage to the Iranian navy. This might even escalate to mass strikes against Iranian harbors and naval capacity, leaving the Iranian naval capacity devastated with the best possible outcome being a short-term spike in oil prices. The threat is concise in what it does, but Iran does not have the capacity to go through with it, and repercussions would be too severe. This strategy is not a viable option.

At last there is the aspect that I have given a lot of attention: Iran's ability to strike back at Israel by taking the war to the borders and streets of Israel – that is, by funneling weapons and money into militant organizations in and around the Israeli state. The Iranian bonds with both Hamas and Hezbollah have been very close, and it is not very unlikely that if the support from Iran were to continue, they would be very willing to escalate against Israel. Especially Hamas owes much of their capacity, their military knowledge and access to arms to the Iranian government. Iran could then escalate the conflict by creating a new theatre of war, that is to say fire up an old one between Israel and Islamic militants, by pushing different groups to increase their hostility and military actions against Israel. This would be a very efficient strategy considering that Israel has had varying degrees of problems with these in the past, and it would also be a way for Iran to show to the international community that they are responding to the Israeli aggression, while at the same time appearing to be holding back, thus avoiding giving Israel and the western-dominated international community any reason to respond. Isolated, a localized crisis will be expensive for Israel. The 2006 invasion of Lebanon was an expensive affair, not only due to the damage caused by Hezbollah, but also considering the costs of waging wars in terms of mobilization of troops, bullets and other war expenditures. There is also the highly feared scenario, as mentioned earlier, that this could, and the word *could* needs to be emphasized, potentially lead to an escalation of Israeli-Palestinian hostilities. As I showed earlier, almost every year since the second Palestinian uprising came to an end, there have been concerns that a third intifada might break out. The problem is that the reason why a new intifada might break out could be very arbitrary, it could consist of some act or event that occurs regularly without any major effects, but which on that exact day sparks a riot, which could fire up an entire new intifada. Thus the threat looming in the distance in this strategy is one of “rocking the boat”. Iran will start rocking the boat by escalating in the streets of Israel through proxy warfare, and if the boat tips, if the Palestinians start rioting and Israel has a new intifada on their hands, that cost would be immense. As previously discussed, the cost of a new intifada in pure damage, but also decreased economic activity, tourism and such, could amount to the cost of an entire military budget and a significant decrease in GDP. Escalating with a compounded war effort consisting of Islamic militants is a viable strategy, a smart strategy and potentially a very damaging strategy.

In sum Iran has only limited options, mostly because of their limited military capacity when compared with Israel's military capacity, but also because some of the options they have threatened with would just cause an unwanted backfire. It is naturally clear that an

Iranian response would be highly dependent on the levels of damage done by the Israelis, but the use of the conventional air forces and naval forces seems to be out of the question. That leaves ballistic missiles and the un-conventional choice of fighting a proxy war. The first choice has both limited use and apparent limits with respect to damage inflicted, which pretty much make the use of it only a statement to Israel, a reprisal that shows that they did not appreciate being attacked and that they have a right to respond. The actual amount of damage done by their ballistic missiles would most likely be inadequate to successfully deter Israel from acting against them. The last option is very viable and it would probably be enacted whether or not the Israeli attack is successful. So any breach of Iranian air space and military attack against the Iranian facilities, thus raising the conflict to rung 12 on Kahn's escalation ladder, would be responded to by yet another escalation by Iran independent of damage done by Israel. With these analyses on both the complexity of the operation and the likelihood of Iranian responses, I can continue to build a game theoretic model to play out the choices of strategy in this conflict, and to determine what is the preferred outcome of both actors.

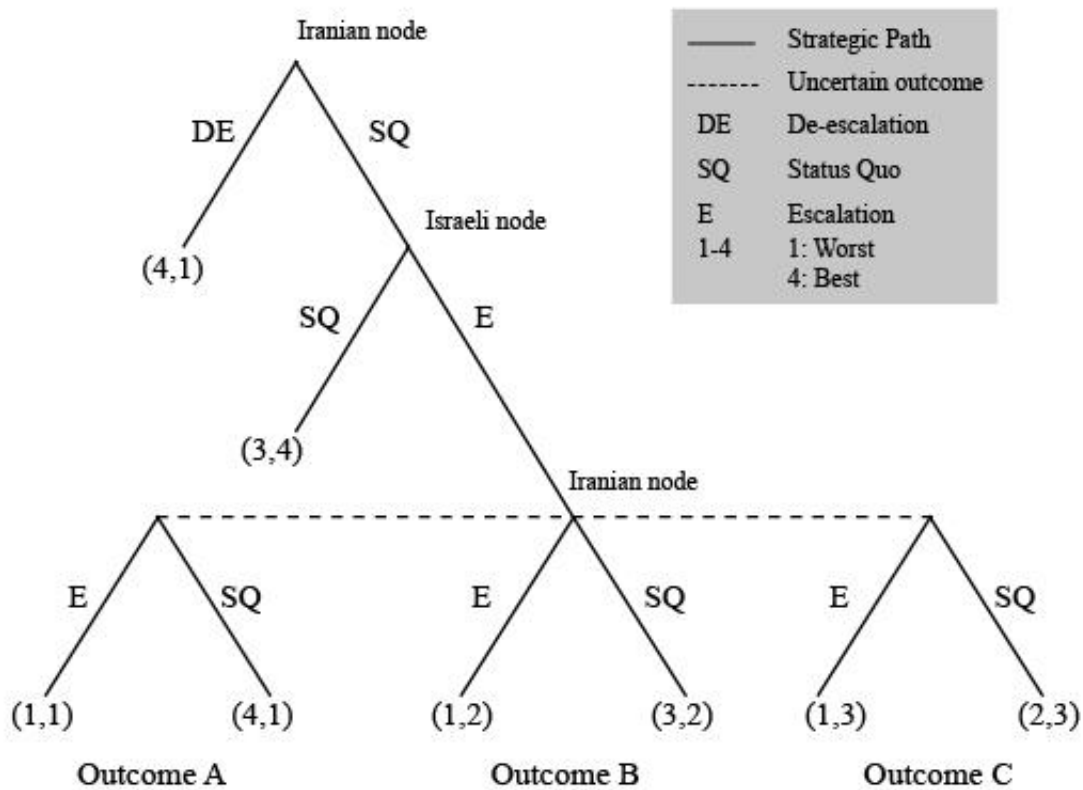
Modeling of escalation and Subgame equilibrium

By building a framework of actor preferences, drawing on the works of Waltz and other International Relations realists, along with analyses of the complexity of the operation and the Iranian retaliatory choices, I have created a model for how the conflict likely would escalate.

For Israel I have arranged the utility of each choice of strategy by how the choice of strategy affects their relative power both in terms of Iranian retaliation and how efficiently they shut down or hinder the Iranian nuclear program, and the level of attrition that is connected to that success. For the Iranians it has been arranged in accordance with how to best preserve their nuclear program. These represent the primary objectives of the two actors. With status-quo at the start of the game, Israel has made repeated threats against Iran to discontinue their nuclear program, and has escalated the conflict to rung 8 by assassinating Iranian physicists to harm the nuclear program and the research done in Iran (Borgers 2002; Reuters 2002). Iran, on the other hand, does not recognize Israel, and diplomatic relations between the states are cut off. The sum of the hostilities between Israel and Iran puts the

status-quo of this conflict at approximately rung 10 on Kahn's escalation ladder. This is where my game begins by evaluating the Iranian response to threats and sanctions.

FIGURE 5.1: GAME MODEL WITH PREFERENCES



Assigned utility	Israel
4	Improved position in the region
3	Status-Quo in the region
2	Weakened position in the region
1	Significantly weakened position in the region

Assigned utility	Iran
4	Nuclear Facilities and program intact
3	Minor setback to nuclear facilities and program
2	Moderate setback to nuclear facilities and program
1	Significant setback: facilities destroyed or program disabled

Threat compliance or status quo

First of all, Iran has the options of conceding to Israeli threats to strike their nuclear facilities; Iran can thus choose to de-escalate the conflict (DE) by abandoning their program and give full insight to Israel and/or the IAEA, effectively stopping any ambitions to produce nuclear weapons on their own. This outcome is designated (4,1): This is the best possible outcome (4) for Israel because it depicts Iranian compliance to threats, which shows that the Iranians consider the Israeli threats credible. This not only ensures that Israel achieve their ambition of a non-nuclear Iran, but it also re-enforces the image of Israel as the dominant actor in the region. For Iran, on the other hand, this is the worst possible outcome (1). And considering that their primary objective is to become a nuclear state, as well as noting that the status quo yields a much better outcome (3,4) – indeed, this is Iran’s most preferred outcome – there is obviously no reason for Iran to DE.

Given that Iran chooses SQ, Israel is faced with the option of accepting the status quo or acting on their threats and attacking Iranian facilities. As mentioned earlier, the potential outcome of such a strike has been operationalized into three different outcomes. Here I will start with outcome C, then B and finally A, before comparing it to the status quo, showing that escalation will not put Israel in a better position in total.

Outcome C: Complete failure

Outcome C was high attrition, even over the highest interval of the estimates done by CSIS; this is an outcome that ensures that the Iranian nuclear facilities are left mostly intact, as well as being associated with high attrition.

This shifts the model from (3,4) status quo to a new status quo at (2,3). This means that it has done some minor damage to the Iranian strategy of nuclear weapons, and also that it has harmed Israel’s position. Israel would lose prestige and lose much of any future credibility to carry through on threats, given that they were unable to do here as they had threatened to do, and it even came at a great cost to the Israeli air force. Now, this option has two potential strategic paths for Iran as a response. Iran can choose the status-quo, the option which diplomatically denounces violent attack and breach of Iranian sovereignty, or they can choose to escalate to rung 13 by striking back at Israel. Due to the low damage inflicted and relatively high cost to Israel on the attack, Iran could be satisfied with the outcome (2,3) and

choose not to escalate to rung 13 with compounded war. It is clear that due to the low cost of the Israeli attack, the potential missile-reprisal is unnecessary. On the other hand, the option of creating a new theatre of war against Israel would be the natural choice for Iran instead of accepting the new status-quo. This would shift the outcome to (1,3). This does not affect Iran's level of utility, but it lowers Israel's utility and thus it improves Iran's position vis-à-vis Israel. That choice is low-risk, since it is not an overt action that can be responded to against Iran, as opposed to the Israeli strike, but still it is a very effective tool that Israel knows Iran is behind. So they would escalate, and this would also put Israel at the worst possible outcome for them, unable to damage Iranian facilities as well as facing an escalation of militant activity and a proxy-war at home that might turn into a new intifada. This has dire consequences for Israel and could place them in a much worse bargaining position in future conflicts with both Iran and other enemies in the region, significantly weakening their conventional power base as well as not achieving their target.

Outcome B: Partial Success

Outcome B is partial success: 2-3 of the main facilities completely or partially destroyed, medium attrition. This shifts the model from the previous status quo (3,4) to (3,2), which means that Iran has taken a moderate hit to their preferred outcome while Israel's is unchanged. The reason it is unchanged is due to the fact that even with some moderate attrition it has certain positive effects on the Israeli situation. First and foremost it shows that Israel is both capable and willing to strike against Iran, which will enhance the credibility of future threats. It is a testament to power; latent capabilities are not necessarily that intimidating, but if it is acted upon successfully it would cause fear in rivals, especially if there were initial doubts to those capabilities, much like we saw when the US invaded Iraq and Iran proposed a nuclear deal. In sum, the cost in actual capacity is balanced by the projection of power through actions.

There is no reason for Iran not to respond to such a level of success in any other way than escalation. Iran escalates at least with proxy war, but it could also consider use of ballistic missiles to send a signal. This would most likely be limited to attacks on Israeli air force targets, seeing that it would be considered a legitimate retaliation against the armed attack on Iran. How much damage it would cause is uncertain, but it could cause some and it

would send a signal. Israel faces the same problems as previously with the proxy fighting at home, but I would also make a logical assumption that the support Iran supplies, and the leverage that Iran would put on militants, would greatly increase with the level of damage caused by Israelis. This would ensure that a more successful Israeli attack also would cause a harsher response in the streets back home through Iranian covert military actions. This is the obvious strategic choice for Iran in this scenario, and it would shift the outcome from (3,2), which favored Israel, and put it at (1,2). Escalation would cause an outcome that is a lot worse for Israel, but not better for Iran, the damage is already done to the nuclear facilities of Iran but at least they can shift the game in their favor by striking at Israel. It is worth noting that this is the last outcome at which Iran can strike back and still be in better position with higher utility payoff than Israel.

Outcome A: Complete Success

Outcome A was complete success with 3-4 of the main facilities almost completely destroyed and low attrition in the Israeli air force. This outcome underplays the estimates of the CSIS in a scenario where the Iranian nuclear program is significantly set back.

Here the choice for Israel is to escalate from rung 11 to 12 and changing the status quo (3,4) to (4,1), which greatly favors Israel. This is the equivalent score of the first strategic path, causing significant damage to the Iranian nuclear program, and it is Iran's worst outcome. As with the earlier scenarios, the only rational option for Iran is to escalate with compounded war efforts through both missile strikes as well as igniting the proxy war at Israeli borders. This option triggers the worst possible outcome in the model (1,1). It is worth noting that this is the only scenario and the only outcome in which the preference is not in favor of Iran; this outcome can be considered equally bad for both actors, but it does cause an improvement in the position of Israel vis-à-vis Iran since Iran lose their improved position. The next section will explore why the (3,4) outcome, that is the status-quo in the conflict as it exists today, is the most rational outcome due to the fact that it is the only outcome that maximizes Israeli utility. This is also better than the (1,1) outcome that improves Israeli position vis-à-vis Iran due to relative power position decline outside the isolated game.

Subgame Equilibrium and Keeping the Status Quo

The scenario A outcome (1,1) is interesting because, whether or not it is favored over the previous status quo (3,4), is defined by a debate regarding utility maximizing and absolute or relative gains versus an opponent.

Through backwards induction and if Israel due to *a-priori* estimates expect Iran to be a Hard Defender (which is the only rational strategy for Iran in this game), with a Von-Neumann-Morgenstern utility, the Subgame-perfect equilibrium is (3,4). Israel would choose the strategy that maximizes their own preference regardless of the other player's preference, and there is no path of action that could improve total utility. There is, on the other hand, a potential outcome where Israel improves the relative position versus Iran. That debate is interesting because, seen in isolation, this might be a preferred outcome if the relative gains of Israel versus Iran did not include the rest of the world. This game is simplified with two actors, but Israel's primary objective is also concerned with the rest of the region and all other actors. This means that a total decline for both actors, where Iran's decline is higher and Israel improves relatively, is not viable because it comes with a relative cost outside the game against other opponents and therefore hurts Israel's primary objective.

I would like to employ a chess analogy to clarify why this is problematic. Consider a tournament where Israel is in the lead and has a superior number of officers (rooks, bishops etc.), where Israel and Iran are playing against each other. Israel will win the entire tournament if they end all their games in *remis* (draw), but they will lose completely with one loss. When facing Iran, Israel has a strategy that could, with a best possible outcome, exchange two of their own officers for three of Iran's. This would, seen in isolation, be a huge move in that game and would improve Israel's chances of winning the game. There are on the other hand two other possible outcomes of the strategy that either does not improve Israel's position or even leaves them in a worse position. The problem is that Israel is also playing against several other opponents simultaneously in this tournament, and any loss in officers against Iran directly affects these other games, since Israel is playing with the same pieces in all games. This therefore weakens the original advantage in officers and position in the tournament. This could lead to other players playing more aggressively since they see a weakness and an opportunity to strike. It is therefore better to end the game against Iran in *remis* without any losses, because this will most likely ensure that Israel wins the tournament,

where the alternative strategy entails a substantial risk of getting knocked out. And if “the aim of maintaining the power position of the nation is paramount to all other considerations”, as Dunne (1937:13) puts it, one single game is not worth risking the overall power position.

With the metagame assumption that Iran is a Hard Defender and will always defend itself vigorously, and considering that Israel is what Kahn would define as a status-quo state, when faced with limited prospects for positive utility payoff, Israel does not escalate. In all scenarios, Iran has the capacity to turn the conflict into Israel’s lowest utility outcome of 1. The only real change is how much it harms Iran. Thus the only viable outcome is not to escalate, and accept the (3,4) equilibrium, which favors Iran and which also yields higher payoff in utility for Israel.

In sum it is clear that is quite likely that for Israel to escalate beyond rung 11 and go as far as a military strike would only shift the Israeli utility much lower, where the Iranian nuclear program is not sufficiently harmed to be worth the cost associated with likely Iranian reprisals. This might appear as an over-estimation of the potential cost of the Iranian retaliation, but I find the fear of a new intifada and the related cost to be quite credible. The presence of this factor, as well as the complexity of the military strike, leaves a game equilibrium where Israel does not escalate from the status-quo. And this has indeed been the case ever since the Iranian nuclear program was discovered. This analysis of the conflict is essential to understanding how the threats are perceived and their effectiveness, which is the topic for the next chapter of my study.

Chapter 6: Threat assessment - what is efficient and what is credible?

Through a thorough understanding of the conflict and the potential outcomes I can build my argument around the credibility of the Israeli threats against Iran. I will use the criteria that I extracted from Schelling's work and evaluate them systematically, going through each of them and evaluating both the Israel threats but also Iranian threats, in order to understand why the Israeli threats to attack Iranian nuclear facilities are actually empty threats.

My first consideration is the *ability to cause pain*. This, as Schelling points out, is dependent on the bargaining behind the causing of pain, since both parties cannot inflict human suffering and gain from it. This is best applied to a situation where one of the actors has something to lose and someone has something to win. His example is objects of interest, territory or important resources. In my scenario there is a clear contested issue and objects of interests. Israel has threatened to attack the Iranian nuclear facilities, and Iran does not want that to happen. So the credibility in the ability to cause pain revolves around the issue of whether or not the party that issues the threat has the power to harm the contested object. This is one of the main reasons why I carried through with an elaborate game-theoretic analysis of the conflict. It seems that the Israeli ability to actually carry through and cause enough damage is questionable; it is very likely that their attack would not severely damage the Iranian nuclear facilities, and even with the partial success scenario there is a lot of uncertainty in whether they would be able to destroy the enrichment plant at Natanz. This would leave Iran with a moderately damaged nuclear program, but still with two important enrichment facilities intact, and thus with a path to a nuclear weapon. It seems that this aspect of the Israeli threat is very uncertain and has low credibility.

Secondly we have the ability to *withhold and to cause pain*; this is dependent on some show of force where the intended target is threatened by the latent force not used. In our case this could be relevant considering that the Israeli strike on the nuclear reactor in both Iraq and Syria can be considered as a show of force, and this should give this part of the threat some face credibility. Unfortunately, both the Iraqi and the Syrian reactors constituted only a single target, they were a lot closer and a lot less defended, as stated in my previous analysis on Israeli capacity to harm the facilities. This is a continuation of the previous aspect and does

not give credibility to Israel's ability to coerce Iran into changing their strategy in favor of Israel.

Thirdly, *one must focus something the victim treasures*. This aspect is very relevant because the contested object in this conflict is both what the victim treasures and what Israel wants to harm. The problem here is that the target threatened is the same as the one Iran wants to keep operational by not being compelled by threats. So it does target something the victim treasure, but is the equivalent of being bullied to give away a cone of ice cream, under the threat of getting it knocked out of your hands. If you want to keep the ice cream you would rather try and avoid it getting knocked out of your hands, knowing that the bully has a questionable ability to do so. A continuation on this subject is that the cost of non-cooperation must be so high that cooperation is a better outcome of the bargaining. Unfortunately for Israel, my model has shown that cooperation is a less preferred outcome for Iran considering that keeping their nuclear program going has higher utility than conceding, and even the worst possible outcome yields a better outcome vis-à-vis Israel. It is problematic to use these criteria when the wanted change in behavior is, to such a large degree, interconnected with the threat. I would also like to add the comments from Kahn on targeting objects that could harm the morale of the opponent. In the reprisal available to Iran, it is well known that agents like Hezbollah and Hamas are both willing and do prioritize to attack civilian populations and infrastructure. So when the threat from Iran and their agents are directed at civilian targets, the threat from Iran might be considered a lot more worrisome.

Fourth, *communication must be clear*. The key concept here is that the victim must understand what kind of behavior is expected of him, and what sort of behavior will lead to the infliction of pain. This is a major problem in the Israeli threats against Iran. They have been very clear about what they are going to do, as exemplified by Prime Minister Benjamin Netanyahu's threat of taking "action that will knock out their nuclear facility" (Allen 2011) if Iran do not discontinue their program. The problem with this threat lies in the difference between tripwire diplomacy and coercive diplomacy. Tripwire diplomacy is about setting a clear line that, when crossed, will effectuate the cause of harm. Coercive diplomacy, for its part, is to stop an ongoing action. When Mr. Netanyahu says, "They're edging up to the red line. They haven't crossed it yet," he tries to invoke a sort of tripwire diplomacy; the problem is that the line is undefined. He continues with, "They're getting closer and closer to the bomb. And they have to be told in no uncertain terms that that will not be allowed to happen" (Al Jazeera 2013). These statements do imply that the red line is the acquisition of nuclear

weapons, and this is very problematic since it makes the threat unclear. The red line in Netanyahu's threat is nuclear weapons, but Israel needs to strike before Iran develops nuclear weapons. Therefore, when Iran crosses the line, Israel is already too late. They have tried to frame the conflict as tripwire diplomacy, but it is really not, and Iran is not easily compelled when there is a very blurry red line somewhere in the future. This leads to a scenario where Iran can continue to press on and see what happens, which is a clear advantage for Iran since they actually have a clear tripwire diplomacy; the red line is a physical barrier that when crossed will effectuate retaliation. If Israel strikes, the red line is crossed, no matter the outcome – and there will be retaliation.

Fifth, there must be *a mutual interest that is achievable*. This is another problem with the Israeli threat. Schelling indicated that there is no room for coercion if the coercer and the victim have completely opposite interests, and this is certainly the case here. I have argued that the most important objective for Iran is to keep working against a nuclear status. What Israel wants in the efforts to coerce Iran is to stop them from that. There is very little room to strike a bargain, when Israel has very little to offer besides not causing harm. This was very different in 2005 when Iran allegedly approached American officials to cut a deal after having been scared by the US invasion of Iraq in 2003. The proposed deal then was to give up sovereignty over the nuclear program, and to allow for full insight into the program, if the US recognized Iranian interests in the region, assisted Iranian security issues, cut all sanctions and ceased hostilities (Litwak 2008). This was a bargain where Iran found the American threat to be credible because they had recently toppled Saddam Hussein after making the same threats – and it was a bargain where the parties could find some sort of mutual interest. This deal did not go through, though, but it shows that the Iranians are possible to coerce if there is some mutual interests. In the case of the Israeli threat, such a mutual interest does not exist.

Sixth, a more pure form of violence is to use *hostages as a bargaining tool*. This is partially used when there are threats of sanctions that also affect the Iranian economy and population, but as we have seen, these sanctions are not effective in stopping the nuclear program. On the other hand, Iran has been very clear in their threats that also incorporate attacks on cities and civilians. Iran's Supreme Leader, Ali Khamenei, said that "At times the officials of the Zionist regime (Israel) threaten to launch a military invasion, but they themselves know that if they make the slightest mistake the Islamic Republic will raze Tel Aviv and Haifa to the ground" (George 2013). This is effectively a threat to destroy cities if Israel carries through their military attack. This strategy can be enforced through the use of

proxy warfare, especially seen through the quotes of Secretary General of Hezbollah Hassan Nasrallah (Shapira 2012):

“Iran will respond forcefully and resolutely and the Israeli attack will give Iran an opportunity to destroy Israel as it has already dreamed of doing for thirty-two years. Hezbollah cannot destroy Israel, but it can turn the lives of millions of Israelis into hell. You have a number of targets, not large, that can be hit with a small number of high-precision missiles, and these are missiles that are in our hands, they can turn the lives of hundreds of thousands of Israelis into hell... Our targets are not only military; we will react with the same force to any Israeli attack. If Israel talks about destroying Lebanon, I say to them that we will destroy everything in the Zionist entity. Israel suffers from many weak points in its economy, in industry, electricity, and nuclear reactors. If Israel attacks targets in disregard of international limitations, we will not have any limitations in responding. Hezbollah’s missiles can reach any target in Israel. I say to the Israelis that Hezbollah can hit their electricity grids and cause enormous economic damage.”

The strategy is a clear danger to Israel, due to the close proximity and the specified targets which could directly harm their economic situation. Although it is important to mention that the ability to “destroy everything in the Zionist entity” is inflated rhetoric since their “high-precision” missiles are not that really precise, but they will still be able to do damage and terrorize inhabitants in the Israeli territories, as we have seen in earlier skirmishes between Hezbollah and the Israeli army. The strategy is somewhat effective in using the population as hostage, but the main threat is when Israel responds and a local conflict escalates. Hezbollah will suffer significantly more than Israel in such a conflict, but the same logic applies to this game as it does between Israel and Iran: Israel will be weakened, because it will both take damage from missiles and other attacks, but there is also a lot of cost in mobilizing the military against these local threats and the fighting that ensues. It might even result in a repetition of the 2006-invasion of Lebanon, which led to a 0.5 percent drop in economic growth. The potential cost of such a conflict is estimated to be as high as 167 billion ILS (Reuters 2012). To put that into perspective: this equals roughly 47 billion USD which is around 17% of Israel’s GDP in 2013⁵. That could be an immense cost to Israel. Here Iran has

⁵ Estimates by the IMF in their World Economic Outlook Database 2013 puts Israel’s GDP at 272 billion USD

a clear advantage in the clarity and effectiveness of their threats, due to both how it will be carried through and the estimated costs attached to the threat. The concept of “the hand is forced” is also something that enforces the credibility of this threat, the violation of Iranian sovereignty is something that just cannot be ignored, they must respond.

With all these factors available it is important to point out the difference between inherent credibility and commitment-credibility. Iran has inherent credibility since it is their borders that are being violated; reprisals are expected both by the international community and the Iranian population. Israel on the other hand is dependent on a commitment-credibility, which is a lot harder to create, and as it seems, the Israeli credibility to commit to a strike on Iran is not convincing.

In sum, the conflict has a very small bargaining room because there is no mutual interest. The Israeli capacity to cause major damage or completely damage the Iranian facilities is questionable, and Israel has a strategic disadvantage in that they cannot define a clear red line for Iran to cross, and naturally it is much harder to cause someone to comply and to change their path than to deter them. In this respect, Iran has a clear advantage in the threats that are made, because Iran works on gradual deterrence, they have a clear red line that when crossed will cause a very clear response: Iran will escalate through militant groups, taking the war to Israeli borders, targeting civilians and infrastructure to cause both human suffering and economic costs. If the conflict escalates near and within Israeli borders, which it will, since Israel cannot allow aggression from Hezbollah or Hamas go unpunished, the potential costs will be severely damaging to the Israeli economy. At the same time, this acts as a sort of “rocking the boat” threat, since a major escalation in militant activity on Israeli soil could spark a third Intifada, significantly increasing the potential cost of the conflict. Iran is efficient in their gradual deterrence against Israel and do not believe that Israel is capable or committed enough to carry through on their threats to “take out Iranian facilities”. This means that the Israeli threats are not credible in the Iranian eyes, and therefore should be considered empty threats that will not be carried through.

Chapter 7: Conclusions

My intentions with this study were to analyze the Israeli-Iranian conflict and the credibility of the Israeli threats against Iran. By building a theoretical foundation built on assumptions from Waltz's realism, a theory on escalation from Herman Kahn and theories on threats by Thomas Schelling, I could explore the background of the conflict, the military capacity of both actors and the main concerns for Israel in a potential attack on Iran. Through this I estimated preferences and analyzed both the complexity of the operation and the Iranian retaliatory options. Using dynamic game-theoretic modeling to build a model to predict different outcomes of the conflict, and by evaluating both maximal utility and relative outcomes, I found the subgame perfect equilibrium at the status-quo outcome. For Israel, to escalate to a higher rung of conflict will not be a rational act.

The best possible outcome for Israel is keeping the status quo by not escalating. Since any Iranian retaliation would mainly manifest itself in a proxy war through militant groups like Hezbollah and Hamas, as well as potential missile strikes, and considering the potential damage this could cause and the danger that this would have a "rock the boat"-effect where there was a risk of a Third Intifada, any other choice than status-quo would not improve the expected utility payoff of Israeli strategies. The only option that could improve Israel's bargaining position versus Iran comes at too great a cost to relative power if the game is seen in the context of Israel's position in the region. This has major consequences for my analysis of threats. Israel's lacking scope for improving their overall bargaining position and shifting the conflict in their favor creates a lot of credibility problems when they threaten to knock out the Iranian facilities. There is very little or perhaps no mutual ground on which these two actors could bargain; Israel has nothing to offer besides not attacking, and Israel has questionable capacity to carry through with the threat. They have made unclear threats, that is to say, they are clear in what they are going to do, not what Iran has to do to cross the line that makes the Israelis act on their threat. Prime Minister Netanyahu, for example, talks about red lines that are nuclear weapons, and that red line would naturally mean that Israel strikes when that red line is crossed, but when the red line is crossed Iran already has nuclear weapons. They try to play a tripwire diplomacy-game, but they fail because it is really compliance diplomacy, not tripwire diplomacy for Israel, which causes a strategic problem. This, on the other hand, is very efficient for Iran, because Iran can use tripwire diplomacy; when Iran threatens Israel, they threaten to act when Israel attacks. This is credible because their hand is

forced, and breaking the sovereignty principle is too much of a hostile action not to respond. Iran is very clear in their threats, even if they have threatened with a lot of things that are not credible, like closing the Strait of Hormuz. Their main and most efficient threat is creating a new theatre of war by escalating on Israeli borders. They use civilians as hostages by threatening to attack cities and they use Hezbollah to threaten to attack civilians and infrastructure that could cause severe economic damage to Israel. In particular, one should look at the fact that Iran explicitly say they would cause economic damage; this is too important for the Israeli relative power in the region, and it is a very credible threat due to the historic costs of conflict against Hezbollah and Hamas. This makes the Iranian gradual deterrence credible and ensures that Israel is not willing to take a strategic path that does not shift the bargaining position in their favor because it weakens their relative power and may weaken their dominant position in the regional international system.

In sum, the Israeli threats are neither credible nor efficient due to both the complexity of the operation, but mainly due to the fact that Iranian threats are both credible and efficient, so even if the Israeli threats are credible in capacity, the deterrent is effective, so the will to carry through is not credible. A strike against Iran would be irrational, since the potential gain of harming the Iranian nuclear facilities are not worth the cost that comes with Iran escalating the conflict. And when there are a lot of uncertainties to which degree they might even damage the nuclear facilities, and considering the attrition connected to failure, Israel stays their hand and continues to issue empty threats.

What does the future hold for the Iranian Nuclear Program?

It is not easy to make predictions about what will happen, but the success of the nuclear deal is contingent on Iran being content with the sanction reliefs. If they do not feel they are being rewarded for compliance we might see some negative response and less transparency, spiraling back into today's status-quo. Depending on the time frame for the collapse of this deal the result would only leave Iran in a better position to jumpstart their weapons grade production cycle, with more knowledge and experience than before.

The most likely outcome of the P5+1 deal with Iran is a continued tug-of-war between Iran and the IAEA with disagreements on how much transparency Iran must be willing to accept. This tug-of-war could yield enough insight to keep control, in a situation where Iran

actually feels that the sanction reliefs are a strong enough incentive to keep the nuclear program civilian. The problem, on the other hand, could be that Iran could continue developing indigenous knowledge with a civilian program and at the same time be able to develop nuclear grade uranium or plutonium. This either simultaneously through hidden facilities or that they one day cut the transparency and jumpstart their weapons grade cycle. The latter scenarios are definitively what the Israelis are expecting and are why this is a “historic mistake” as Mr. Netanyahu calls it (Simpson & Lews 2013). It seems reasonable to think that the prospects of having your cake and eating it are too enticing for the Iranians. After several years of heavy sanctions it would not be unlikely that a historic deal at the change of the Iranian presidency would be an excellent opportunity to create the image of a new path of cooperation and transparency founded on democratic change in the Iranian state, which both legitimizes the Iranian democracy and improves diplomatic relations. In the meantime they could continue developing a security guarantee in the form of a nuclear bomb that would yield the Iranian state much prestige.

The solution for Iran could be some key facility that is already hidden away somewhere to ensure that Iran can continue a divided nuclear program, but with high transparency in their known facilities they also avoid being punished for developing the bomb. The IAEA had access (albeit restricted) to some of the key facilities while Fordow was unknown, and Fordow was hidden for several years. Considering that even Arak was disguised as an electrical company, I find it plausible that the Iranians could have a secondary facility somewhere, to which they can funnel the knowledge from other facilities and continue to develop their nuclear weapons program. My first thoughts would be to another enrichment facility and that the uranium enrichment would be the best path to the nuclear bomb, but considering Fordow being the backup to Natanz, is it likely that they would be able to build a backup to Arak if they wanted? And what is to say it is not already in progress? It seems likely that the ideal dual Iranian program has both a hidden uranium enrichment facility in Fordow as well as a hidden reactor for developing weapons grade plutonium somewhere else.

For Israel the future is contingent on how this deal plays out, in its current status the diplomatic consequences of an Israeli strike is even higher than it was before. It would not be very well received by the P5+1 if Israel were to strike against Iran on its own or assisted by Saudi-Arabia when there finally was prospects of a deal on the table (Mahnaimi 2013). Israel is still unlikely to act on its own, considering the conclusions in this study and that with this new interim deal Israel is in a worse position to act. They will most likely be working to

undermine the credibility of the nuclear deal with Iran in hopes that it will be abandoned. They do not trust that Iran is willing to stray from the path of the nuclear bomb, and I find such an interpretation likely to be true.

Whether or not the deal falls through completely or is continued in a tug-of-war without full control, the ambition of Iran is still to develop a nuclear bomb and Israel is unlikely to act unless assisted by the US. I find it probable that within ten years, depending on which path the deal and the Iranian program takes, the Iranians will detonate a nuclear bomb in one of their deserts, announcing that the development of the bomb was a necessary evil when confronted with an aggressive enemy (that is, Israel) with a frightening arsenal of nuclear weapons. The nuclear bomb is a security measure, that will never be used unless the enemy attacks with a nuclear weapon first, and I would imagine the official rationalization and rhetoric from Iran to be along the lines of that it was an unwanted necessity to ensure the survival of the Iranian state in a region with the aggressive “Zionist entity”.

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Appendix

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