

RATIONAL MINDS OF THE PERSIAN GULF WAR (1990)

by

CHRISTOPHER COOK

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M.A. Thesis Committee:

Dr. Elizabeth Kosmetatou

Dr. Devin Hunter

Dr. Liang Kong

Dr. Nathan Steele

Chapter One: The Persian Gulf War and Methods of Study

On August 2, 1990, Saddam Hussein authorized an invasion on the sovereign country of Kuwait. On January 17, 1991, the United States joined forces with the Kuwaitis in an attempt to drive the Iraqis out of Kuwait and away from Saudi Arabia. This led to an all-out conflict between the Iraqis and the coalition forces known as Persian Gulf War.¹

The war had begun as an economic conflict between Kuwait and Iraq. Saddam Hussein believed that the Kuwaitis were not abiding by OPEC (Organization of the Petroleum Exporting Countries) rules. Saddam Hussein made it known that Kuwait's overproduction of oil was hurting the Iraqi economy and therefore decided to invade Kuwait to take their oil fields and disband their government. Besides treaties and other politics that brought the United States into the war, the most noteworthy would be the United States' reliance on oil as its economy depended on OPEC and oil-rich countries like Kuwait. If Saddam Hussein controlled Kuwait, not only would the United States be supporting his dictatorship, but he could control the oil prices within the region as well.² At any rate, this war had both positive and negative consequences. Although its aftermath maintained economic stability on a global scale, it created a reverberating instability within the Middle Eastern Region, which led to further conflicts in the early 21st century.

In principle, every war is driven by at least one purpose, such as religion, economics, or politics. Each country involved then has a goal, which may or may not support that same purpose. Furthermore, not all individual goals make sense to everyone. This leads to philosophical questions, like whether or not the war and the actions within the war were rational.

¹ "Operation Desert Storm," Operation Desert Storm, accessed March 29, 2017, <http://nsarchive.gwu.edu/NSAEBB/NSAEBB39/>.

² Alex Cruden, *The Persian Gulf War*, Farmington Hills, MI: Greenhaven Press, 2011.

To answer the why's and how's of these conflicts, historians turn to different methods of analysis, each of which holds its own value, and of course, not all questions can be answered by one historiographical approach. This chapter includes ways in which the Persian Gulf War has been analyzed in historiography. Whether these scholars use military history, political history, economic history, great man history, or quantitative history, they all contribute to the overall analysis of the Persian Gulf War. Unfortunately, every one of these analyses steers clear of rationality and vindication.

Furthermore, I hypothesize that by using mathematical structures and logic theory, we can piece together some of these historiographical analyses to make a whole argument that gives a reason and/or a solution to the question: "why?" Why did Saddam Hussein feel the need to take matters into his own hands and invade Kuwait? Why did George H. W. Bush allow Ambassador April Glaspie to state cooperative intentions if they planned on retaliating against the Iraqi forces after the invasion of Kuwait?

Rationality can, however, be a huge problem when answering these why's. It is much easier to assume that some action was made irrationally, because the answer as to why just stops there. However, a rational action always has a logical motive and an expected outcome. Rational decisions rarely involve emotional influence, inconsistent behavior, or random acts of punishment. The rationality behind these why's can also be subjective, or relative at best. Scientific approaches, such as Game Theory, can diminish the relative aspects of a given situation and return an objective foundation from which to prove rationality based on pure logic.

Methods of Study

Relative to other notable wars, the Persian Gulf War lacks variety in terms of historical approaches, due to the fact that it is so recent and most primary sources are unavailable to the

public because of security issues. Consequently, the United States military holds the most amount of historical analyses on this event. This is not to say that the United States military completely controls any future historical analyses, but rather many of the analytical works available involve military history. Moreover, many of these analyses were written within a year or two after the war ended as a type of initial reflection on the conflict.

Furthermore, biases can destroy any objective analysis in military history, especially when one side controls most of the official work. At the Army Center for Military History, a team led by chief historian Richard Stewart produced a historical analysis focusing on military history called “War in the Persian Gulf Operations Desert Shield and Desert Storm August 1990-March 1991.” This document shows some of the subjectivity involved in one-sided military history.

Following the introduction, Stewart initiates his work with a brief overview of the events leading up to and including Saddam’s invasion of Kuwait. As mentioned previously, it can be harder for those involved in a specific historical event to analyze the situation objectively, especially since they have their own experiences, heuristics, and perspectives associated with the situation. For example, Stewart starts off his work by saying, “In the early morning hours of 2 August 1990, Iraqi dictator Saddam Hussein launched an overwhelming invasion of tiny, oil-rich Kuwait.”³ On the surface, this statement seems to be pure fact. Further examination uncovers biases inherent in this statement. Although Saddam Hussein did in fact invade Kuwait, Stewart assumes the intentions of Saddam Hussein and the status of Kuwait. Stewart acknowledges the size of Kuwait as “tiny” and draws attention to Saddam Hussein’s cruelty. By mentioning the

³ Richard W. Stewart and Center of Military History, *War in the Persian Gulf: Operations Desert Shield and Desert Storm, August 1990-March 1991*, Cmh Pub, 70-117-1, Washington, D.C.: Center of Military History, U.S. Army, 2010, 1.

“overwhelming invasion” and the “tiny” size of Kuwait, Stewart strongly suggests that the size of the invasion was overkill and that Kuwait was helpless and nonintimidating, which in turn questions the rational behavior of Saddam Hussein. Why did Saddam Hussein act so aggressively against Kuwait then? Yet, Stewart draws the reader back to this question by stating that Kuwait held large amounts of oil and draws attention to the possible intentions and cruelty of Saddam Hussein.

Stewart continues with some other events happening around this time, including the dissolvment of the Soviet Union and the fall of the Berlin Wall. Stewart then states that “This collapse left the United States as the sole remaining superpower in a new, unsettled world. The United States came to have more responsibilities around the globe and more strategic maneuver room to intervene in foreign crises with less risk of catastrophic confrontation with the Soviet Union.”⁴ Words like “unsettled” hold numerous meanings, including lack of stability and/or unoccupied. Furthermore, he states that the United States holds the responsibility for global issues. In doing so, Stewart argues for the necessity of the United States’ involvement in the Persian Gulf due to their seemingly parental responsibilities and the obvious lack of leadership in this region.

He later notes the influence of the coalition forces and talks about how the United Nations would not allow Saddam Hussein to get by freely without repercussions. George H. W. Bush then brought the United States into the coalition, not only to defend Saudi Arabia, but also to free Kuwait from Saddam Hussein’s rule. Thus, not all responsibility laid in the hands of the United States military and George H. W. Bush. However, many scholars to this day see George

⁴ Stewart, *War in the Persian Gulf*, 1.

H. W. Bush and his military leaders as the driving force behind the coalition of Iraq. Stewart even talks about the coalition as the “U.S.-led coalition.”⁵

The reason for this example is to show that the use of military history, especially for those involved on one side or another, can mislead historians and other readers into believing a certain detail—like whether or not the United States was the completely in charge of the coalition. In this case, it was the necessity of the United States’ role in the Persian Gulf War. Although the majority of Stewart’s work did not focus on disproving the vindication of Saddam Hussein’s actions and the need for the United States military, the underlying ideologies can sway a reader into believing this is the case. Therefore, military strategy alone does not help the reader understand all the reasonings for the war.

Nevertheless, military history can give us insight into the justification for specific actions. As an example, in the Iran-Iraq war, Saddam Hussein was on the edge of gaining new Iranian territory. This could have been a driving force as to why Saddam Hussein attacked Kuwait. With Kuwait’s size and power shadowed by Iran’s size and power, Saddam Hussein may have felt that invading Kuwait was a viable and rational option.

Joseph Collins mentions this theory in his article titled, “Desert Storm and the Lessons of Learning.” Collins argues that Saddam Hussein relied on similar military strategies of the past to takeover Kuwaiti territory. Supposedly, Saddam Hussein’s strategy—strict movements and large defenses—was used previously in the Iran-Iraq War.⁶ All morals aside, this form of inductive reasoning rationally justifies the actions of Saddam Hussein. This does not, however, argue that

⁵ Stewart, *War in the Persian Gulf*, v.

⁶ Joseph Collins, "Desert Storm and Lessons of Learning," *Parameters*, Autumn 1992, 85.

his option was the most sound, but rather it gives enough analysis to understand his actions. This closely ties into the ideas surrounding Game Theory. In short, rationality is relative to each person's perspective and may not coincide with the rationality of another person, or the absolute rationality.

Another contributor tied to the military, Barry Schneider, works for the United States Air Force Counterproliferation Center and analyzed on the events of the Persian Gulf War. In *Deterrence and Saddam Hussein: Lessons from the 1990-1991 Gulf War*, Schneider tries to answer some of the major questions on the Persian Gulf War. Specifically, he attempts to explain why Saddam Hussein attacked Kuwait—even though Kuwait was backed by the United States. He does this by using military history and political history.

As previously stated, military history alone does not give a strong enough argument as to why a certain conflict happened. Thus, Schneider relies on political theory to analyze the actions and outcomes from both sides of the war. This way, economics and casualty ratings are thrown into the mix, which allow for more of an in-depth analysis on the motive.

To do this, Schneider looks at deductive and inductive reasoning and how these play a role in the use of military deterrence. A logical explanation of deterrence would suggest that deterrence relies on the idea of deductive reasoning, whereby what seems to be the obvious outcome will be the outcome. For instance, if Saddam Hussein used nuclear weapon threats against other countries, such as Kuwait who did not have them, then more than likely Saddam Hussein has the nuclear capabilities to destroy Kuwait.

Schneider also uses an example of this in his work. He writes that it would definitively be an irrational decision for a smaller or weaker nation to start a war with someone much stronger. Unfortunately, the real world is not so simple and deductive reasoning is flawed for

this reason. Schneider acknowledges this problem and attempts to rectify it by using inductive reasoning, which looks at past events to explain what may happen in the future.⁷

In his use of inductive reasoning, Schneider touches upon a theory better known as Bayes' Theorem. He uses this to show that inductive reasoning is a more accurate way of foretelling an outcome. To be concise, Bayes' Theorem uses a form of probability called conditional probability, which means the probable outcome was/is affected by previous actions. Collins also briefly mentions something like this in his article when he talks about why Saddam Hussein's forces were a certain formation like they were in the Iran-Iraq War.⁸

Moreover, what really makes Schneider's work analytically credible is his analysis on the counter-deterrence of Saddam Hussein. In each of these incidences, Saddam Hussein attempted to deter coalition forces. For instance, Schneider suggests that Saddam Hussein found that his biological weapons were rather effective, because of their high casualty rate. He also noted the effectiveness because of the United States' letters of acknowledgement and warning. Moreover, Schneider thinks that Saddam Hussein may have taken these letters to mean that the United States saw these weapons as a great threat and therefore Saddam Hussein attempted to deter the United States. Schneider even asks the question, "Who was deterring whom?"⁹

Overall, Schneider uses a scientific technique, mainly used in experimental situations, to present his analysis on Saddam Hussein during the Persian Gulf War. He gives the reader a list of questions, he then proposes some hypotheses on the reason for action, and then attempts to back up his hypotheses with factoids and quantitative records. This is credible and effective if

⁷ Barry R. Schneider, *Deterrence and Saddam Hussein: Lessons from the 1990-1991 Gulf War*, Maxwell Air Force Base, Ala.: USAF Counterproliferation Center, Air University, 2009, 2.

⁸ Joseph Collins, "Desert Storm and Lessons of Learning," *Parameters*, Autumn 1992, 85.

⁹ Schneider, *Deterrence and Saddam Hussein: Lessons from the 1990-1991 Gulf War*, 29.

Schneider had asked the questions before starting his analysis and if he had presented information that contradicted his hypothesis. Unfortunately, this is where his skewed materials lie. Instead of presenting some counterarguments to his hypotheses and then attempting to disprove those, he relies heavily on specific factoids that back up his specific claims, which is more instinctive approach than it is an objective approach.

When dealing with statistics, it is important to present your hypothesis (alternative hypothesis) and the counter-hypothesis (null hypothesis). In order to prove your argument, you must disprove the null hypothesis, otherwise your argument is not sound. Therefore, one can stipulate that Schneider systematically skews the analysis by picking and choosing specific factoids in favor of his argument, thus invalidating any of his conclusions.

The other historical approach used by Schneider to analyze the Persian Gulf War is the quantitative historical approach. This method mainly focuses on the severity of a situation and relies little on why such a situation happened. Hence, historians usually use this method with other approaches to make an argument. For the purposes of this topic, this approach uses statistics and quantitative data to show the casualties of war.

Numerous fields use casualty numbers and statistics to understand the severity of a situation. For instance, medical practitioners use casualty ratings and health statistics of people from the Persian Gulf War to diagnose and help those from that war. In example, some soldiers from the Persian Gulf War suffer from Gulf War Illness or rather Gulf War Syndrome.

In 2008, researchers published a book called *Gulf War Illness and the Health of Gulf War Veterans*. This book includes a historical background of what troops faced in the Persian Gulf and analyzed the health risks involved. For instance, it is stated that the burning oil fields

created a hazardous environment that could fatally harm anyone in these fields.¹⁰ It is also noted that the use of biological weapons or the burning of oil fields may have been a tactic used to deter or hurt the coalition troops, thus preventing them from further offensive tactics.¹¹

This type of analysis not only helps the patients, by figuring out what might be causing their symptoms, but it also backs historical theory, such as the case above. In terms of the Persian Gulf War, high rates of soldier mortality after returning home from their deployment hints to biological warfare, or at least evidence that Saddam Hussein lit oil fields on fire to deter coalition forces. Although this may not be the best example, archeologists, anthropologists, and historians sometimes rely on facts such as this to back their claims.

In terms of other quantitative records, military numbers help us see the risk factors involved in a war. In *Perspectives on Modern World History: The Persian Gulf War*, Alex Cruden presents a chart, courtesy of Anthony Cordesman, that shows the number of troops, tanks, and air support from both sides. This gives us a look at the overall strategic perspective that made it seem like such a decisive victory. The numbers are as follows:

Land Troops

US-led coalition: 600,000

Iraq: 545,000

Tanks

US-led coalition: 3,360

¹⁰ James Binns, "Gulf War Illness and the Health of Gulf War Veterans," *Research Advisory Committee on Gulf War Veterans' Illnesses*, November 2008, 76.

¹¹ Binns, "Gulf War Illness and the Health of Gulf War Veterans," 88.

Iraq: 4,230

Other Armored Vehicles

US-led coalition: 4,050

Iraq: 2,870

Artillery

US-led coalition: 3,633

Iraq: 3,110

Helicopters

US-led coalition: 1,959

Iraq: 160

Other Aircraft

US-led coalition: 2,700

Iraq: 770¹²

Even though this information is important, Cruden does not capitalize on it. Numbers play a big role in military deterrence and predicted outcomes. It essentially comes down to who

¹² Anthony Cordesman, Alex Cruden, *The Persian Gulf War*, Farmington Hills, MI: Greenhaven Press, 2011, 23.

has a bigger army. The Allies used this tactic in World War II when they started making fake tanks and planes in order to intimidate the Axis forces.¹³

In terms of the Persian Gulf War, the US-led coalition and Iraqi troop counts are equivalent with a difference of only 55,000 troops. More specifically, the Iraqi troop count was approximately 9% less than US-led coalition troops. In the grand scheme of things, this difference alone cannot make or break a war, especially if we consider the tank count. Iraq used 870 more tanks than the US-led coalition. Even though this difference is considerably less than the difference in troop counts, the US-led coalition tank count was approximately 21% smaller than the Iraqi tank count. Both troops and tanks are used for aggressive ground war tactics, which makes up a large portion of war conflict.

The remaining four categories are where the Iraqis fall short. However, the lack of statistical details makes these categories tough to analyze. For instance, Other Armored Vehicles could include anti-tank vehicles, which would be to the benefit of the US-led coalition, or they could be anti-aircraft vehicles, which would not help the US-led coalition as well as the anti-tank vehicles, because of the lack of Iraqi aircrafts. Again, looking at a war through military tactics and statistics alone does not support an analytical foundation on why these events occurred.

Furthermore, casualty statistics are precise, but not one hundred percent correct, even after the conflict has been settled. For example, the casualty statistics of Iraq are not something communicated to the United States during the war, although better estimates were made later. Nonetheless, accuracy depends not only on documentation, but also the honesty of the opposing side. In “A Case Study in Estimating Casualties from War and Its Aftermath: The 1991 Persian

¹³ Jonathan Gawne, *Ghosts of the ETO: American Tactical Deception Units in the European Theater 1944-1945* (Havertown, PA: Casemate, 2014).

Gulf War,” Beth breaks down the casualties into civilian/military, age groups, gender, and location, which benefits those using the cultural history approach, as well as the military history approach.¹⁴ This is because these statistics help historians understand war strategies, such as attacks on civilians or attacks on specific cultural groups.

One of the few other historical approaches not involving the military would be the Great Man historical approach. However, many do not see Saddam Hussein as a great man, per se. Thus, a more appropriate description would be the narrative approach or biography. This approach allows historians to analyze the inner workings of a specific man or woman.

Efraim Karsh and Inari Rautsi are coauthors of a book called *Saddam Hussein: A Political Biography*. This book analyzes Saddam Hussein’s rise to power using the great man approach. Similar to Collins’ and Schneider’s work, Karsh and Rautsi use inductive reasoning to help understand Saddam Hussein’s actions. In their book, they bring to light the method that Saddam Hussein used to internally fluster the coalition forces, known as “Divide and rule.” By wedging a confrontation between the nations within the coalition, he could potentially create some internal conflict that would prevent the coalition forces from moving forward with their plans.¹⁵

Furthermore, other approaches are embedded in this work, including economic and political history. Karsh and Rautsi note Saddam’s economic sanctions when discussing the deterrence methods of Saddam Hussein. Saddam attempted to persuade the United States and other western nations that the war would cost a fortune and would just cause further turbulence

¹⁴ Beth Osborne Daponte, "A Case Study in Estimating Casualties from War and Its Aftermath: the 1991 Persian Gulf War," *The PSR Quarterly* 3, no. 2 (June 1993): 63-65.

¹⁵ Efraim Karsh and Inari Rautsi, *Saddam Hussein: A Political Biography*, New York: New York: Free Press, 1991, 148.

within the Middle Eastern region.¹⁶ These fear tactics and economic sanctions gave Saddam Hussein the crutch he needed to deter coalition forces from entering in a war.

Some other characteristics of Saddam Hussein can be found in political history, as well. Jerrold Post, founder of The Center for the Analysis of Personality and Political Behavior at the Central Intelligence Agency, did a profile on Saddam Hussein, which he later used in his book.¹⁷ In *Leaders and their Followers in a Dangerous World*, Jerrold Post describes Saddam Hussein as a “ruthless political leader who will go to whatever lengths are necessary to achieve his goals.”¹⁸ He also considers Saddam to be a survivalist, hell bound on saving the political and economic systems of Iraq.¹⁹ These are clear objectives and characteristics for Saddam Hussein that can be used to understand the actions he made when leading his country. Additionally, Post notes that Saddam Hussein focused most of his attention on internal affairs and kept himself from the outside world, which restricted his foreign relations and his foreign intelligence.²⁰ This gives the reader further insight into the working of this leader.

In all, some scholars, including Karsh, Rautsi, and Schneider, offer arguments that explain the reasons behind certain actions, but they do not argue whether or not it was the most rational option. Many analyses on the Persian Gulf War look at the war in a nonlinear fashion, which allows them to see what happened after a certain leader’s decision and then state whether it was the right decision based on the outcome. The problem is that the leaders during the Persian Gulf War did not fully know what was going to happen, which would tremendously affect their decisions.

¹⁶ Karsh and Rautsi, *Saddam Hussein: A Political Biography*, 232.

¹⁷ Jerrold M. Post, *Leaders and their Followers in a Dangerous World* (Ithaca: Cornell University Press, 2004), xv-xvii.

¹⁸ Post, *Leaders and their Followers in a Dangerous World*, 220.

¹⁹ Post, *Leaders and their Followers in a Dangerous World*, 220.

²⁰ Post, *Leaders and their Followers in a Dangerous World*, 230.

On that note, there is an approach that allows us to look back to the events as they were happening and examine the actions in a linear fashion. Game Theory is a political and mathematical approach to real life decisions that allows us to make an accurate prediction of an outcome if and only if it was based on a rational decision. Therefore, we can not only predict what could happen and compare it to the actual events that took place, but we can also verify that it was indeed a rational decision.

This theory is widely used across many professions including, but not limited to, economics, politics, psychology, military, and history. Hypothetically, by applying game forms to historical situations, we can see into the minds of the leaders involved without using psychological evaluation. Even more importantly, we can learn from these decisions and avoid these faulty decisions in any future event.

Game Theory involves 2 to n players in a given game. Most games are set up such that each player takes a turn in sequential and alternating order. Each player also attempts to maximize their profit. Since rationality is assumed, it is also assumed that each player is focused on their own payoffs and losses with little to no consideration for the other players payoffs or losses. In "Three and Four-person Games," Rapoport suggests that the game theorist should remember that each player is "neither benevolent nor malevolent vis-à-vis the other players."²¹ Basically, each player's core tactic is to maximize their own values instead of hurting the other players' values. However, each player's core tactic may inevitably hurt the other players' tactics, even though that was not the goal.²²

²¹ Anatol Rapoport, "Three and Four Person Games," *University of Toronto and University of Michigan*, 192.

²² Rapoport, "Three and Four Person Games," 192.

In the case of the Persian Gulf War, the entire conflict, from start to finish, can be incorporated into one game. Starting with Saddam's decision to invade Kuwait and ending with the liberation of Kuwait and the ceasefire from Iraq, this game unfolds into a volley between Saddam Hussein and George H. W. Bush. Many variables went into play when making each decision. Each of these decisions can be found in the government transcripts from the presidential meetings between Saddam Hussein and his council and George H. W. Bush and his council.

The goal of maximizing payoff would be as follows:

- Saddam Hussein's Iraq: Keep Kuwait as an Iraqi territory and minimize casualties in war.
- George H. W. Bush's Coalition: Liberate Kuwait from the Iraqi government and minimize casualties.

These goals are generalized, implicit, and based upon deductive reasoning, yet these are not the only payoffs of the war, for either side. Instead, the underlying drives lie within these goals. In the logical sense, if war is inevitable, Saddam Hussein wants to minimize his casualties while consequently maximizing the coalitions' casualties. This contradicts the statement that "A player is neither benevolent nor malevolent."²³ However, Rapoport notes this with his conjecture on diametric opposition. Essentially, diametric opposition means that for everything one player gains the other one must lose. In a sense, this is the basis for day trading.²⁴ This is also a form of a Zero-Sum Game, which uses the rule that for every win, there must be a loss.

²³ Rapoport, "Three and Four Person Games," 192.

²⁴ Ibid.

We can see this theoretical mindset in “Saddam Hussein and the Revolutionary Command Council Discussing the Iraqi Invasion of Kuwait and the Expected U.S. Attack.” Since the Persian Gulf War was based in Iraq and Kuwait, Saddam not only faced troop casualties, but civilian casualties, as well. To minimize the civilian casualties he says, “We should decide on the evacuation plan and tell them that every citizen should befriend a rural citizen, just in case the war expands and we are forced to evacuate.”²⁵ He also tries to make a point by saying:

“[*Can anyone tell me*] why America has not ventured to a war for a long time now? Because they see our preparation and realize that they will suffer a great [*number of*] human casualties. After that, the decision maker would say that he does not want to remain; he states that whether he wins or fails he will not remain.”²⁶

In both of these rhetorical suggestions we can see that both parties want to minimize casualties. Fortunately, either side can use this information to their advantage, both in terms of military deterrence and payoff maximization. Thus, the detriment of one side is the success of the other.

There are two base games, in particular, that can neatly and concisely interpret the actions and decisions of Saddam Hussein and the coalition during the Persian Gulf War. The first game is the symmetrical game. The symmetrical game is best interpreted through the Prisoner’s Dilemma (Figure 1).

²⁵ "Saddam Hussein and the Revolutionary Command Council Discussing the Iraqi Invasion of Kuwait and the Expected US Attack," January 15, 1991, History and Public Policy Program Digital Archive, obtained and translated by the Conflict Records Research Center, National Defense University, 16.

²⁶ Ibid.

		Prisoner 2	
		not incriminate	incriminate
Prisoner 1	not incriminate	2,2	0,3
	incriminate	3,0	1,1

Figure 1

Two prisoners are taken into custody, and both are facing 3 years in prison. If prisoner 1 incriminates prisoner 2, prisoner 1 will get 3 years off their sentence, as long as prisoner 2 does not incriminate player 1, as well—denoted as (3,0). This is the same deal for prisoner 2—denoted as (0,3). If neither incriminates the other, they both get 2 years off their sentence—denoted as (2,2). But, if both prisoners incriminate each other, they will only get 1 year off each—denoted as (1,1). If we side with prisoner 1, the best option would be for prisoner 1 to incriminate prisoner 2 no matter what prisoner 2 decides, because prisoner 1 has nothing to lose then. However, if prisoner 1 does not incriminate prisoner 2, prisoner 1 has everything to lose.²⁷

According to Branislav Slantchev in “Game Theory: Dominance, Nash Equilibrium, Symmetry,” one prisoner will always dominate in terms of strategy. Basically, whatever player goes first in a turn-based game, their strategy will dominate all other strategies. In terms of a game whereby players go at the same time, each player’s strategy is important and can drastically change the outcome of the game.²⁹ Thus, what makes this game symmetrical and

²⁷ Branislav Slantchev, "Game Theory: Dominance, Nash Equilibrium, Symmetry," University of California San Diego, May 23, 2008, Accessed March 1, 2017, <http://slantchev.ucsd.edu/courses/gt/04-strategic-form.pdf>.

²⁸ Figure 1, Christopher Cook, April 03, 2017.

²⁹ Slantchev, "Game Theory: Dominance, Nash Equilibrium, Symmetry."

important in terms of strategy is that whichever player goes first, the option to incriminate is always the better option; therefore, it forces the other prisoner's best interests to incriminate, as well, making this whole thing mirrored or symmetrical in theory.

In terms of the Persian Gulf War, the symmetrical game can be used to describe the chosen options of Saddam Hussein and George H. W. Bush in the incident with Israel, wherein Saddam Hussein attacked Israel and George H. W. Bush convinced Israel not to retaliate. William Rosenau explains this in his book, *Special Operations Forces and Enemy Ground Targets: Lessons from Vietnam and the Persian Gulf War*. In his book, he talks about how "The Scud attacks on Israel, it was feared, would provoke an Israeli military response that would make it difficult for Arab states to remain a part of the anti-Iraq coalition. As a matter of national policy, Israel was committed to responding militarily to attacks on its territory."³⁰ He elaborates on this by saying:

"An Israeli response, in all likelihood, would entail air strikes against Iraq, which would require overflying Jordan, Saudi Arabia, or Syria. Leaders of the coalition feared that the Arab members of the anti-Iraq force, including Saudi Arabia, Egypt, and Syria, would then withdraw, thereby undercutting a crucial political and diplomatic component of the war to drive Saddam Hussein's forces from Kuwait."³¹

Israel's long-standing conflicts with others in the Middle East have led to some contempt towards Israel. If Israel were to retaliate against Iraq, other Middle Eastern countries would see

³⁰ William Rosenau, *Special Operations Forces and Enemy Ground Targets: Lessons from Vietnam and the Persian Gulf War* (Santa Monica, CA: Project Air Force/Rand, 2002), 29.

³¹ Rosenau, *Special Operations Forces and Enemy Ground Targets: Lessons from Vietnam and the Persian Gulf War*, 30.

this as a threat and as a chance to wage war on Israel. This is what Saddam Hussein was banking on. This would dissolve the coalition forces and prevent the United States from initiating further attacks, leaving Saddam Hussein with the newly acquired Iraqi territory known as Kuwait.

Unfortunately for Saddam, George H. W. Bush knew this would be an issue and persuaded Israel to stay out of the conflict. Rosenau notes that the United States used numerous approaches to persuade Israel into withholding any offensive actions. One way the United States did this was by giving Israel our defense vehicles that would prevent any SCUD missiles from entering Israel.³² This was the only way to keep the coalition together, while still backing a country with which the United States already had an alliance. Letting Israel join the alliance would have been the irrational decision seeing as it had the lowest payoff for the coalition.

This type of game reviews the potential thought processes of Saddam Hussein and George H. W. Bush, thereby analyzing their mindset and potentially their rationalities. If we could isolate the true reasons for their actions, we can begin answering questions about how we could have avoided this war altogether. With the rise of oil prices and the inequality of supply and demand, the Organization of the Petroleum Exporting Countries (OPEC) and Middle Eastern governments hold a monopoly on oil distribution, which could potentially create a rivalry again. Therefore, diplomacy is key for sustainability and economic growth.

³² William Rosenau, *Special Operations Forces and Enemy Ground Targets: Lessons from Vietnam and the Persian Gulf War* (Santa Monica, CA: Project Air Force/Rand, 2002), 30.

Another game form known as the Extensive Form Game can help us understand the actions taken during the Persian Gulf War. The Extensive Form Game is created using a turn-based decision tree. Moreover, it is used when the previous player's turn determines the options for the consecutive players.³³

As shown in Figure 2, player **I**'s initial decision—at node 8—can end the game or allow

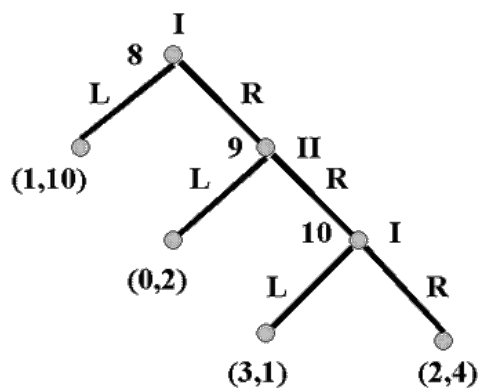


Figure 2

player **II** to take a turn. Then player **II** has a chance to end the game, or allow player **I** to have another turn—at node 9—and so on and so forth. Eventually, one of the players will end the game leading to one of the numerous outcomes—in Figure 2, there are 4 outcomes denoted as (1,10), (0,2), (3,1), and (2,4) where the first number in the pair is player **I**'s points and the second number in the pair is player **II**'s points.

If we assume that both players have a rational mindset, this can lead to some problems. The paradox of backward induction has player **II** predicting the move of player **I** in the first round, but player **I**'s decision is also based on predicting player **II**'s option in the second round. The idea is that player **I** could end the game by picking L in the first round, which gives player **I**

³³ Johnathan Levin, "Extensive Form Games," January 2002, 1.

³⁴ Figure 2, Johnathan Levin, "Extensive Form Games," January 2002.

“1” point and player II “10” points. This is the safest decision for player I, because if player II goes, player II has the opportunity to give player I “0” points. Since this game is about player II predicting player I’s moves, player II believes that the rational decision is for player I to pick L instead of R. But, player I picks R, so player II thinks this is irrational and looks at their options at node 9. Player II could pick L giving player I “0” points, but player II could possibly benefit from picking R and allowing player I to play at node 10. In the eyes of player II, player I’s initial decision was irrational; therefore, if player I goes again, they may choose the irrational option—denoted as R or rather (2,4). Unfortunately for player II, both decisions for player I in node 10 are better than his original option in node 8. Therefore, player I’s original decision in node 8 to pick R was rational. Thus, player I will make the rational decision in node 10—denoted as L or (3,1). Ultimately, player II’s prediction will always be wrong, because of the decision based on rationality, and they will inevitably give the most amount of points to player I every time.

The Extensive Form Game can take on many shapes different from the one above. The decision tree, as shown in Figure 2, is unique in that it creates a paradox. The paradox of backward induction is not always a part of an Extensive Form Game or it may show up multiple times within one game. Regardless, the paradox of backward induction explains why a rational player may choose an irrational option. In a sense, it is a bluff that one player creates and the other player fails to realize.

This game form is important because most of the major decisions made by leaders are sequential and turn-based, meaning each player’s action affects the following player’s action. If certain coalition forces had initially refused to join the fight against the Iraqi invasion, would George H. W. Bush have decided to attack Iraq? Would Saddam Hussein still be in power if the

coalition did not liberate Kuwait? Even the attack on Israel affected the actions of the coalition forces, because the coalition had the opportunity to let Israel into the conflict or sit them out.

Overall, military history can be a very intricate topic for analysis, but it lacks deep rooted political motives and the “what if?” factor. For instance, what if Saddam Hussein would have successfully dragged Israel into the matter? Would this have been the best move played throughout the whole war? Was this the turning point of the war?

From a strategic point of view, military history is right on point. Actions taken by the generals of the Persian Gulf War could have led some of the battles in different directions, but affectively the major decisions of the war were political at their core, which is used in a political history analysis. Furthermore, if Saddam Hussein decided on economic sanctions instead of an invasion or if the United States decided that the conflict was an internal Middle Eastern issue, the situation would have been completely different; this is the “what if?” factor that military history needs.

Political theory, at its foundation, gives the reader that “what if?” factor. Political motive is the driving force in most of today’s wars—excluding religious wars. The use of political history for the Persian Gulf War not only allows an in-depth analysis of the reason for war, but it also helps define what is worthy of war. When faced with economic hits and global ridicule, a leader can feel backed into a corner with no other option than to fight. In the event that this happens, the opposing force may feel that there is no other option, as well. Simple thought experiments like this create a basis for war analyses.

The problem with political history is that it is open to biased analyses, just like military history. Politics in general create a channel for debate, wherein one ideology stands out over another based on any preconceived notions or biases. Fortunately, political theory is closely tied

to Game Theory, which uses universal proofs and conjectures that objectify a political or economic situation.

The quantitative approach used by Alex Cruden and Anthony Cordesman relies heavily on quantitative factors, including the number of casualties before, during, and after a war. They also include statistical data that exemplifies predictions. This type of analysis is beneficial for those suffering from illness surrounding a specific event, such as the soldiers with Gulf War Illness. This approach also uses inductive reasoning to help us predict the outcome of any future war, by looking at the military counts. Without this data, predictability is more of a shot-in-the-dark than a reality.

The issue with quantitative analyses is the lack of information on the actual event. By studying the casualty rate alone, we cannot fully understand why certain forces fought in the first place, or even why there were so many casualties. Again, the quantitative approach works more effectively if paired with military or political history—and in some cases, cultural history.

There is, however, a standalone approach that ties all of these analytical approaches together and redefines the idea of historical analysis as more of a scientific approach—Game Theory. On the surface, Game Theory has little to do with history, but deep down, each theory can have an historical application. Using the very most basic concept of Game Theory, historians can examine and analyze historical events using a rather objective and unbiased approach. While analyzing each player, historians can play devil's advocate to look deep into the reasons why certain events happened. Two of the most basic games used in Game Theory are the Symmetric Games and the Extensive Form Games. Both offer insight into the workings of a specific event.

If any player's actions seem irrational, these games can justify their reasoning using logic. In the case of Saddam Hussein and George H. W. Bush, both are said to have made mistakes throughout the war. But, what if each option was their best choice? Was the war inevitable if both sides wanted to maximize the payoff? If the outcome of the war was inevitable, was Saddam Hussein's initial action of invading Kuwait rational? These are some of the questions that Game Theory may be able to answer.

Chapter 2: The Setup and Initial Actions Before the Invasion of Kuwait

In game theory, extensive form games can be created from the beginning or the end of a conflict. These follow their analytical counterparts, known as forward induction and backward induction respectively. Forward induction is used to make future rational assumptions when the other player's past events are rational. Backward induction is used to look at a player's final action to rationalize their initial action.³⁵ For this analysis, forward induction was used to note that the first few moves were rational.

In order to justify the rationality of each decision, an initial value needed to be given to each player. To start, the main leaders (players) in the Persian Gulf War were Iraq and the United States. More importantly, it should be noted that some decisions were made under the authority of George H. W. Bush, yet George H. W. Bush knew of these decisions and gave the go ahead. This is as opposed to some wars, wherein factions within a government or regime can become autonomous and make decisions on their own premises.

To continue, this game allocated Player 1 as Saddam Hussein and Player 2 as the United States, since a few of the actions were delegated to others, such as ambassador April Glaspie. Furthermore, a point system was developed in which to evaluate each decision made by each player. More often than not, the point systems used in game theory involve financial profits and deficits or a similar objective point system, however this conflict involves other values not attributed to concrete values. For this to work, asymmetrical values, which are relative to a country's economic status, needed to be normalized. For instance, if one benefit included numerous factors, a point was assigned for each factor—both positive and negative. This was to

³⁵ Sujata Ghosh, Aviad Heifetz, and Rineke Verbrugge, "Do Players Reason by Forward Induction in Dynamic Perfect Information Games?" *Electronic Proceedings in Theoretical Computer Science* 215 (2016): 157.

avoid any de-legitimization of a specific party's reasoning. The problem with benefits and detriments is that they are relative, especially when weighted. Therefore, an interval point system gives the research a more objective view of both sides. The point system was created as follows:

Affects Both		
	Use of Military	-1
Affects only US		
	Oil prices	±1
	Sanctions from Other Countries/Sanctions Lifted	±1
Counteract	Sanctions For (Control)/Sanctions Lifted	±1
	Affects only Iraq	
	Sanctions Against /Sanctions Lifted	±1
	Demand	±1
	Territory	±1

Oil Prices Raise due to escalation of conflict

Figure 3

The following justifications for each point allocation are as follows:

Use of Military: The only permanent detriment used in this game, because the financial costs, destruction of military equipment, and human lives cannot be restored.

³⁶ Figure 3, Christopher Cook, 2017.

Oil Prices: Raise due to the escalation of conflict and lower due to de-escalation of conflict.

James Williams from WTRG Economics notes this when he says, “The price of crude oil spiked in 1990 with the lower production, uncertainty associated with the Iraqi invasion of Kuwait and the ensuing Gulf War.”³⁷ This can also be seen in the following chart provided by WTRG Economics:

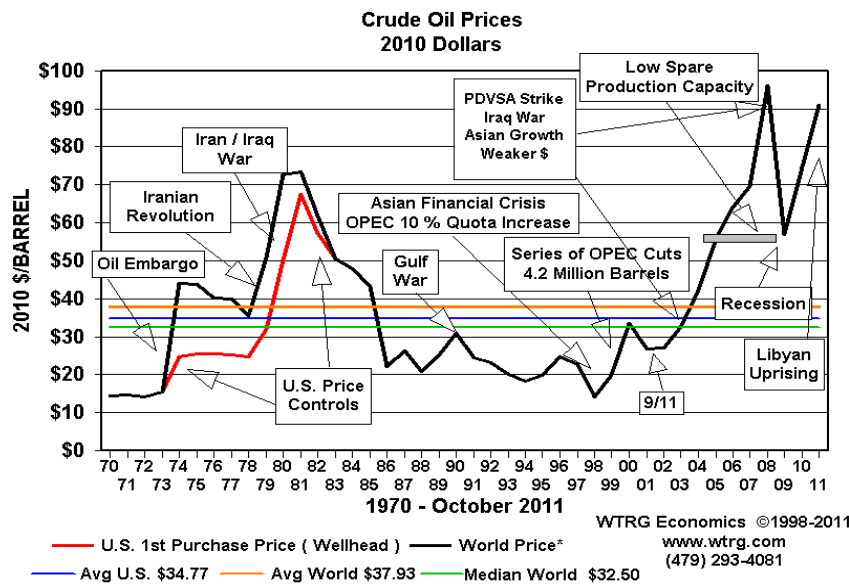


Figure 4

In addition, oil prices counteract/affect demand, but not every demand affects oil prices. In example, if Saddam Hussein were to invade another country, although oil prices would increase from escalation of conflict, they will not increase from the positive demand that Saddam Hussein has gained, since the objective demand is not affected.

³⁷ James L. Williams, History and Analysis -Crude Oil Prices, accessed October 7, 2017, <http://www.wtrg.com/prices.htm>.

³⁸ Figure 4, James L. Williams, History and Analysis -Crude Oil Prices, accessed October 7, 2017, <http://www.wtrg.com/prices.htm>.

Sanctions from Other Countries/Sanctions Lifted: These sanctions affect the United States, in particular. According to “index mundi,” the United States consumed 16,988,000 barrels per day in 1990 and according to “U.S. Energy Information Administration,” the United States imported 2,151,387,000 barrels in 1990.³⁹ Therefore, $\frac{2151387000}{16988000 \times 365} \approx 0.35$, which means that approximately 35% of the United States’ oil consumption was from imports. Furthermore, according to OPEC’s statistics, OPEC made up approximately 77.8% of the world crude oil reserve in 1990. Thus, sanctions from other Middle Eastern countries in OPEC would harm the United States economy.

Sanctions for (Control)/Sanctions Lifted: These are the sanctions the United States gives to Iraq, which affect Iraq’s point system and give leverage to the United States. This claim is backed up by Daniel Drezner in his article, “Serious About Sanctions - Positive and Negative Aspects of Economic Sanctions.” He argues that Unilateral Sanctions are a great detriment to Middle Eastern countries, such as Iraq, and they give leverage to the United States in terms of power.⁴⁰ Once sanctions are lifted, the United States loses that power.

Sanctions Against /Sanctions Lifted: These are the sanctions Iraq receives, which harms Iraq’s economy vis a vis imports and exports. Lifting these sanctions allows Iraq to trade again. Note that these are affected by **Sanctions for (Control)/Sanctions Lifted** and vice versa.

³⁹ "United States Crude Oil Consumption by Year," IndexMundi, accessed October 06, 2017, <https://www.indexmundi.com/energy/?country=us&product=oil&graph=consumption>.

⁴⁰ Drezner, Daniel. "Serious About Sanctions - Positive and Negative Aspects of Economic Sanctions." 2004. Accessed October 06, 2017.

Demand: Demand is the need for oil exportation from a given country. For example, the overproduction of one country could lower the need for another country to export their oil, thereby lowering the demand from the affected country. This affects Iraq in particular.

Territory: Although the coalition loses territory, the United States is not directly affected by this and therefore, direct relation of quantitative territorial influence is associated with Iraq alone. In example, when Iraq invades Kuwait, they gain +1 for territory, while the United States is affected by other detriments. Alternatively, when Iraq loses Kuwait, they receive -1.

To initialize the game, there needed to be an initial value system for each player. This can be done by evaluating the events that preceded the war. This involves the overproduction of oil in Kuwait and the United Arab Emirates and the price reductions of oil for importing countries, such as the United States.

On that note, Middle Eastern countries thrive on oil production. With the lack of forestry and the destabilization of the Middle East, countries such as Iraq heavily rely on the supply and demand of oil.⁴¹ So, when another country overproduces oil, the demand for oil is lowered and the prices decrease. This affects all oil producing countries, because the price per barrel of oil drops, consequently affecting the economy of the given country.

In 1960, Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela, banded together to form an organization known as the Organization of the Petroleum Exporting Countries (OPEC).⁴²

⁴¹ "The World Factbook: IRAQ," Central Intelligence Agency, October 19, 2017, accessed October 19, 2017, <https://www.cia.gov/library/publications/the-world-factbook/geos/iz.html#Econ>.

⁴² "Brief History," OPEC : Brief History, 2017, , accessed October 07, 2017, http://www.opec.org/opec_web/en/about_us/24.htm.

Throughout the 1960's and the 1970's, other countries joined this organization, as well. OPEC's objective statement is as follows:

“OPEC's objective is to co-ordinate and unify petroleum policies among Member Countries, in order to secure fair and stable prices for petroleum producers; an efficient, economic and regular supply of petroleum to consuming nations; and a fair return on capital to those investing in the industry.”⁴³

However, in 1990, Saddam Hussein blamed Kuwait and the United Arab Emirates, who were a part of OPEC, for overproducing oil, thereby decreasing oil prices across the board. During this time, OPEC did little to change this outcome as Kuwait and the United Arab Emirates refused to make cuts. This was an ongoing struggle for OPEC and the affected. It also affected the demand for oil from other countries within OPEC.⁴⁴ Therefore, Iraq starts the game off with a -1 due to the lack of oil demand from Iraq.

From an alternative perspective, oil prices exponentially lowered from 1980 to 1988, as seen in Figure 4. This was due to the overproduction of Kuwait, which upped the supply, consequently lowering the prices. This helped the United States, seeing as 35% of all US oil consumption came from imported oil in 1990. As a result, the United States starts the game with a +1 for better oil prices. With Saddam Hussein at -1 and the United States at +1, this is where the game begins.

Figure 5, on the following page, is an extensive form decision tree. Each round is denoted as $R(n)$ where $n = \{1, \dots, 10\}$. Furthermore, each outcome is denoted as (x_1, x_2) , where x_1 denotes Saddam Hussein's payoff and x_2 denotes the United States' payoff. The only other

⁴³ Ibid.

⁴⁴ "Iraqi invasion of Kuwait-International Response," *Keesing's Record of World Events* 36 (August 1990).

type of outcome is shown in Round 4, where a 2x2 Prisoner's Dilemma matrix is utilized, as will be explained later.

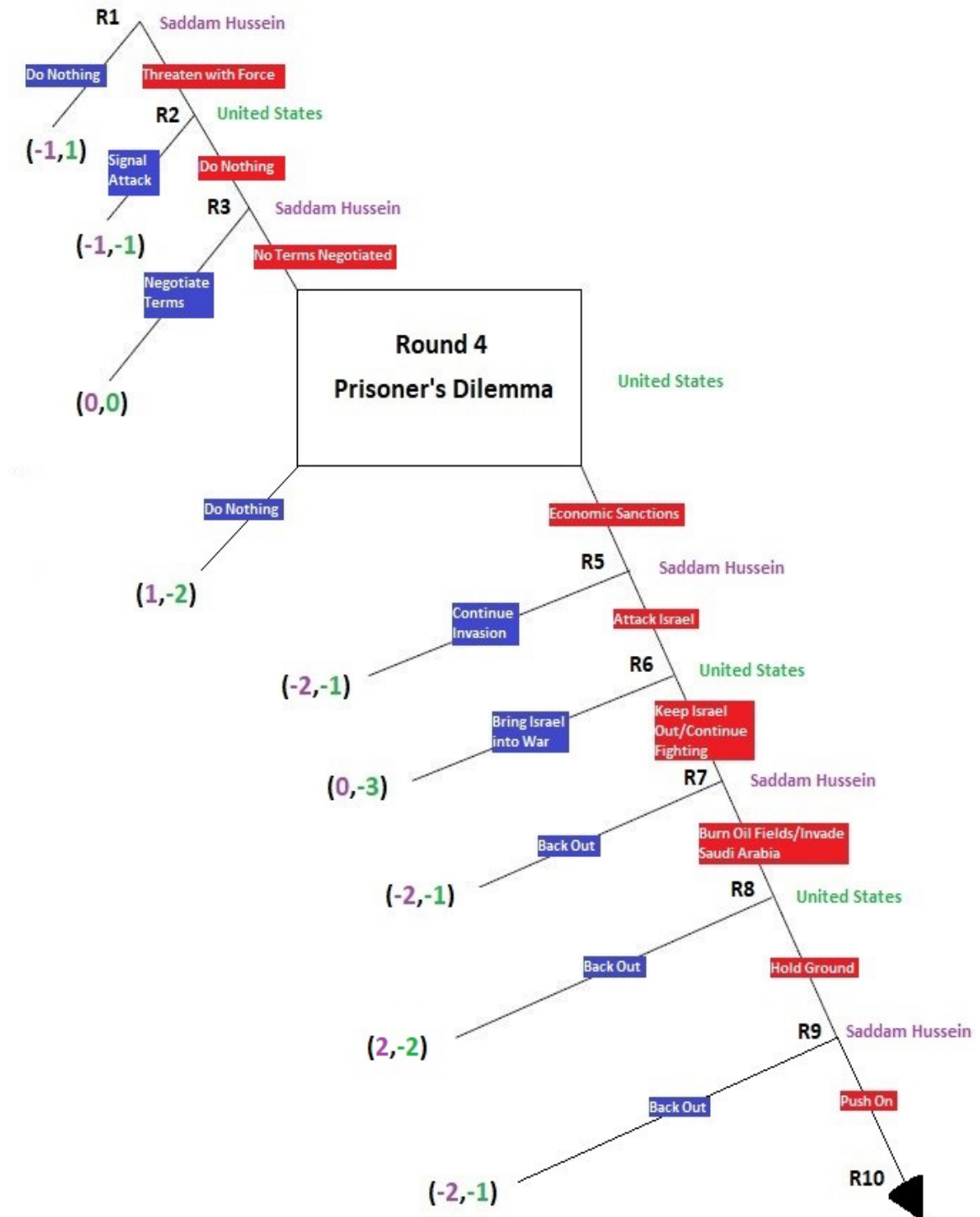


Figure 5

⁴⁵ Figure 5, Christopher Cook, 2017.

Figure 6 and Figure 7 explain the points given at each outcome. Figure 6, in particular, denotes the status at the beginning of each round. For example, Round 3 starts with -1 for Saddam Hussein and 0 for the United States. Similarly, Round 8 starts with -2 for Saddam Hussein and -2 for the United States. However, Figure 7 denotes the alternative outcome statuses that would happen at the beginning of each round. Therefore, Round 3 would start with -1 for Saddam Hussein and -1 for the United States. Likewise, Round 8 would start with -2 for Saddam Hussein and -1 for the United States.

Extensive Form				
Saddam Hussein			US-Led Coalition	
Round 1	Demand	-1	Oil Prices	1
Round 2		-1	Oil Prices	0
Round 3		-1		0
Round 4		-1		0
Round 5	Military	-2	Sanctions	1
	Territory	-1	Military	0
	Sanctions	-2	Oil Prices	-1
Round 6		-2		-1
Round 7		-2		-1
Round 8	Territory	-1	Oil Prices	-2
	Military	-2		-2
Round 9		-2		-2
Round 10	Demand	-1	Sanctions	-3
	Territory	-2	Oil Prices	-2
	Territory	-3	Oil Prices	-1
	Sanctions Lifted	-2		-1

*	Status at Saddam's Turn
	Status at United States Turn

Figure 6

⁴⁶ Figure 6, Christopher Cook, 2017.

Alternative Outcomes			
Saddam Hussein		US-Led Coalition	
Alt Round 3	-1	Oil Prices	-1
Alt Round 4	Demand 0		0
Alt Round 5	Demand 0	Sanctions	-1
	Territory 1	Oil Prices	-2
	Demand 2		-2
	Military 1		-2
Alt Round 6	No change		
Alt Round 7	Demand -1	Military	-2
	Demand 0	Oil Prices	-3
Alt Round 8	Territory -3	Oil Prices	0
	Sanctions Lifted -2	Sanctions Lifted	-1
Alt Round 9	Sanctions Lifted -1	Sanctions Lifted	-3
	Demand 0	Oil Prices	-2
	Demand 1	Oil Prices	-1
	Demand 2	Sanctions from Others	-2
Alt Round 10	-2		-1

Figure 7

This chapter starts at Round 1 and looks at the first 4 rounds of the game. In “Trust Development, the GRIT Proposal, and the Effects of Conciliatory Acts on Conflict and Cooperation,” Svenn Lindskold notes that cooperation is primarily based on trust, specifically in terms of the intentions of the opposing party. If there is mutual trust between both parties and both parties follow through with stated intentions of cooperation, a de-escalation of conflict can happen. However, there is something of a paradox if one side decides to state hostile intentions. For instance, if player 1 states hostile intentions and player 2 states their cooperative intentions, and if both parties follow through, there is an escalation of conflict since player 1 was hostile. Thus, player 2 finds that the better payoff is to not follow through with cooperative intentions, or that they should initially state hostile intentions thereby escalating the conflict even further than

⁴⁷ Figure 7, Christopher Cook, 2017.

if they followed through with cooperative intentions. This is a similar concept to the Prisoner's Dilemma.

The type of thinking that Player 2 is using, whereby they weigh the best outcome based on already stated information, is called backward induction, in such that Player 2 looks at the previous player's decision to make a decision themselves. In order to fully understand how this paradox works, we need to look at forward induction, as well. Forward induction happens when Player 2 sees the intentions of Player 1 and believes that by offering a cooperative intention to Player 1, Player 1 will not follow through in the future round. Although player 2's goal was to de-escalate conflict, there still may be an escalation since player 1 did not follow through with their hostile intentions—unless an alternative intention is given. There would be an escalation of conflict because either way future decisions/intentions made by one of the players will be surrounded by suspicion and distrust.

The Ambassador to Iraq, April Glaspie, found herself in this exact predicament. In July, 1990, Saddam Hussein proclaimed, "Iraqis will not forget the saying that 'cutting necks is better than cutting the means of living'. If words fail to protect Iraqis, something effective must be done to return things to their natural course and return usurped rights to their owners."⁴⁸ Because Kuwait was their southern neighbor, Kuwait was put on high alert. At this point the United States stepped in and asked for the intentions of Saddam Hussein, and in return Saddam Hussein asked for the intentions of the United States from Ambassador Glaspie. On July 25, 1990, Ambassador Glaspie, directed by Secretary of State James Baker, met with Saddam Hussein in Baghdad, Iraq. Below is the conversation between these two individuals:

⁴⁸ "Bound Volume Hansard - Debate," House of Commons Hansard Debates for 26 Feb 1996 (pt 20), July 16, 1990, accessed October 12, 2017, <https://publications.parliament.uk/pa/cm199596/cmhansrd/vo960226/debtext/60226-20.htm>.

“U.S. Ambassador Glaspie – I have direct instructions from President Bush to improve our relations with Iraq. We have considerable sympathy for your quest for higher oil prices, the immediate cause of your confrontation with Kuwait. (pause) As you know, I lived here for years and admire your extraordinary efforts to rebuild your country. We know you need funds. We understand that, and our opinion is that you should have the opportunity to rebuild your country. (pause) We can see that you have deployed massive numbers of troops in the south. Normally that would be none of our business, but when this happens in the context of your threats against Kuwait, then it would be reasonable for us to be concerned. For this reason, I have received an instruction to ask you, in the spirit of friendship – not confrontation – regarding your intentions: Why are your troops massed so very close to Kuwait’s borders?

Saddam Hussein – As you know, for years now I have made every effort to reach a settlement on our dispute with Kuwait. There is to be a meeting in two days; I am prepared to give negotiations only this one more brief chance. (pause) When we (the Iraqis) meet (with the Kuwaitis) and we see there is hope, then nothing will happen. But if we are unable to find a solution, then it will be natural that Iraq will not accept death.

U.S. Ambassador Glaspie – What solutions would be acceptable?

Saddam Hussein – If we could keep the whole of the Shatt al Arab – our strategic goal in our war with Iran – we will make concessions (to the Kuwaitis). But, if we are forced to choose between keeping half of the Shatt and the whole of Iraq (i.e., in Saddam's view, including Kuwait) then we will give up all of the Shatt to defend our claims on Kuwait to keep the whole of Iraq in the shape we wish it to be. (pause) What is the United States' opinion on this?

U.S. Ambassador Glaspie – We have no opinion on your Arab – Arab conflicts, such as your dispute with Kuwait. Secretary (of State James) Baker has directed me to emphasize the instruction, first given to Iraq in the 1960's, that the Kuwait issue is not associated with America. (Saddam smiles)"⁴⁹

As we can see, the Ambassador clearly noted cooperative and peaceful intentions, but questioned why troops were massed outside of Kuwait. Saddam then stated his intentions by noting that if Kuwait refused to cooperate with them, they were going to attack Kuwait and reform the Iraqi border as they saw fit. In other words, they would invade Kuwait and absorb its resources and structure. Glaspie then further stated cooperative intentions by asking for a solution. After letting Glaspie receive this new information, Hussein asked for the United States' updated intentions, whereby Glaspie noted that, "The Kuwait issue is not associated with America." Saddam Hussein most likely took Glaspie for her word, since he smiled at her, probably signaling his relief that the United States would not intervene.

⁴⁹ "Gulf War Documents: Meeting between Saddam Hussein and US Ambassador to Iraq April Glaspie," Global Research, July 25, 1990, accessed October 07, 2017, <https://www.globalresearch.ca/gulf-war-documents-meeting-between-saddam-hussein-and-ambassador-to-iraq-april-glaspie/31145>.

Here is where the paradox of trustworthy intentions lies. According to the Nash Equilibrium, as defined by Columbia University, the best individual payoff, as well as the opponent's best payoff are taken into consideration by both players and therefore each party chooses what would give them a higher payoff in order to offset the option that the other player will choose. Only in the circumstance of complete trustworthiness within a Prisoner's Dilemma does the highest payoff for both parties as a sum get chosen—usually denoted as the cooperative/cooperative option.⁵⁰

By merely stating the intentions of Iraq and the United States, no trustworthiness is defined on either side. Thus, the best option for both parties would be to state their intentions as invade/defend, respectively. This way, future intentions can be defined as more trustworthy, possibly leading to a de-escalation of conflict. Although, this would initially lead to an escalation of conflict, since they would be threatening each other, which is what the United States seemed to want to avoid. On the other hand, if the United States stated an intent of cooperation, the opposing party, Iraq, may back down from their stated intentions. This would temporarily maintain the current situation, but may lead to further escalation due to untrustworthy and suspicious intentions of Saddam Hussein, since Saddam Hussein did not follow through. This is the same situation with the United States and North Korea, in terms of nuclear escalation.

Glaspie's only hope is to rely on forward induction to weigh the outcomes discussed in Round 3. If Saddam Hussein is able to come to an agreement with Kuwait, then Glaspie's initial intention of complete cooperation would be fulfilled, thereby de-escalating conflict. However, if

⁵⁰ Rajiv Sethi, "Nash Equilibrium," *International Encyclopedia of the Social Sciences*, 2nd Edition, April 12, 2007.

Saddam Hussein does decide to invade Kuwait, the United States' best option is to contradict their previous intention, leading to increased distrust and conflict.

To summarize, if Glaspie used backward induction to make a decision on US intentions, the conflict would escalate either way, thus the predicted payoff is minimized. Instead, if Glaspie used forward induction to make a decision on US intentions, the payoff now has a 50% chance of payoff maximization in the next round. This 50% maximization ends with Saddam Hussein coming to an agreement with Kuwait, denoted as (0,0), wherein Iraq equalizes their demand by getting Kuwait to stop overproducing and the United States loses their better prices—but at least this does not end with a worse outcome and there is a de-escalation of conflict.

The problem with this way of thinking is that the other 50% is weighted by larger potential minimizations for the United States—seen in R4-R10 in Figure 5. Therefore, initially choosing a cooperative intent seems risky and a gamble. This logical approach can be seen when reporters question Glaspie on her interaction with Hussein. The following is an excerpt from her questioning:

“Journalist 2 – You knew Saddam was going to invade (Kuwait) but you didn’t warn him not to. You didn’t tell him America would defend Kuwait. You told him the opposite – that America was not associated with Kuwait.

Journalist 1 – You encouraged this aggression – his invasion. What were you thinking?

U.S. Ambassador Glaspie – Obviously, I didn’t think, and nobody else did, that the Iraqis were going to take all of Kuwait.

Journalist 1 – You thought he was just going to take some of it? But, how could you? Saddam told you that, if negotiations failed, he would give up his Iran (Shatt al Arab waterway) goal for the Whole of Iraq, in the shape we wish it to be. You know that includes Kuwait, which the Iraqis have always viewed as an historic part of their country!

Journalist 1 – American green-lighted the invasion. At a minimum, you admit signaling Saddam that some aggression was okay – that the U.S. would not oppose a grab of the al-Rumeilah oil field, the disputed border strip and the Gulf Islands (including Bubiyan) – the territories claimed by Iraq?”

In defense, journalists and common citizens do not see the predictive outcomes as easily as those involved in foreign relations and conflict resolutions. If we take a look at the decision tree, an initial decision at Round 2 can send the situation on a completely different route. If the United States decided to threaten Hussein (the left route), the predicted outcome would be (-1,-1)—wherein Iraqi demand would still be in a deficit, Hussein would have raised oil prices through escalation of conflict, and the United States would have experienced raised oil prices through escalation of conflict. This would have a 100% outcome of (-1,-1). Alternatively, using the expected outcome for the United States, we can see that $E(x) = \frac{0+0+1-2-1-1-3-1-2-1}{10} = -1$, which means that their individual expected outcome is equal to their outcome if they choose to

threaten Iraq. Moreover, looking at the optimal mutual outcome for the sums of both parties' payoffs, we can see that:

$$E(x + y) = \frac{(0+0)+(-1+0)+(-2+1)+(1-2)+(-2-1)+(-2-1)+(0-3)+(-2-1)+(2-2)+(-2-1)}{20} = -0.9,$$

which is less than the summed outcome if the United States threatens Iraq. Either way, the optimal option would be for the United States to state cooperative intentions, whether or not they would follow through. This is because it gives the United States a 50% chance of a better outcome in Round 3 and the potential risk—if no terms are negotiated—is equal to the definite risk if the United States decided to threaten in Round 2.

Did April Glaspie and James Baker see this situation in a similar light? Were their intentions based upon forward induction or backward induction? In retrospect, the United States seemed focused on future outcomes and less on instantaneous deficits and profits, which would make their initial decisions seem irrational—despite being quite the opposite.

Furthermore, if Glaspie was instructed by Secretary of State James Baker to state the United States' intentions, George H. W. Bush and James Baker had already made their decision before knowing Saddam Hussein's initial response. Forward induction best explains this situation because the United States was looking at the future outcomes and not basing their decisions on the decision of the other player in the previous round. Also, in August 1990, King Fahd of Saudi Arabia requested help from the United States to defend Saudi Arabia and lower the risk of Saddam Hussein moving into Saudi Arabia.⁵¹ In order to keep foreign relations amicable between the United States and Saudi Arabia, their best option was to create sanctions against Iraq, despite their initial intentions to cooperate and stay out of the situation. This

⁵¹ Josh Burdick, YouTube, September 30, 2015, accessed October 07, 2017, <https://www.youtube.com/watch?v=Vi9dCvFugMo>.

allowed them to show intimidation and resistance, but not too much resistance, keeping escalation at a minimum.

Now, in Round 3 Saddam Hussein has the option to negotiate terms. This decision depends on Kuwait's cooperation, as well. Nevertheless, we do not have any sources on how the meeting went between these two countries, although we do know that no terms were negotiated. This led to Round 4, represented as a 2x2 Prisoner's Dilemma.

Round 4		UNITED STATES	
		Do Nothing	Economic Sanctions/Military
IRAQ	Do Nothing	(-1) (0)	(-2) (1)
	Invade Kuwait	(1) (-2)	(-2) (-1)

Figure 8 represents an asymmetric Prisoner's Dilemma based upon the decisions of Saddam Hussein and George H. W. Bush. After no terms were negotiated between Kuwait and Iraq, Saddam Hussein had the option to do nothing about it, or invade Kuwait. Similarly, George H. W. Bush and the United States had the option to do nothing, or create economic sanctions and use military force. Figure 9 also explains the point system of Figure 8.

If Saddam Hussein and the United States both decide to do nothing about the lack of negotiations, then the status remains the same as it was at the beginning of Round 2, which was after Saddam Hussein made his decision to threaten Kuwait, denoted as $(-1,0)$. If Saddam Hussein decides to do nothing, but the United States decides to create sanctions based on the idea that Saddam Hussein is creating instability in the Middle East, then Iraq receives -1 for economic sanctions and the United States receives +1 for gaining leverage over Iraq.

If Saddam Hussein does decide to invade Kuwait and the United States continues to do nothing, then Saddam Hussein would stabilize the economic demand for Iraq by incidentally creating a decrease in Kuwaiti production (+1). Also, they would take the Kuwaiti territory (+1), they would take control of the demand of Kuwaiti oil (+1), and they would receive -1 for “use of military.” The United States would most likely receive sanctions from other countries (-1),

IRAQ	US	IRAQ	US	IRAQ	US	IRAQ	US
Do Nothing	Do Nothing	Invade Kuwait	Do Nothing	Do Nothing	Sanctions	Invade Kuwait	Sanctions
-1	0	-1	0	-1	0	-1	0
		Demand	Sanctions	Sanctions	Sanctions	Territory	Sanctions
		Territory	Oil Prices			Military	Military
		Demand				Sanctions	Oil Prices
		Military					
-1	0	1	-2	-2	1	-2	-1

Figure 9

because they would not be helping Saudi Arabia and other United Nations members, and they would receive -1 for oil prices since the escalation of conflict would increase oil prices. If Saddam Hussein invades Kuwait and the United States creates economic sanctions and use

⁵² Figure 8, Christopher Cook, 2017.

⁵³ Figure 9, Christopher Cook, 2017.

military force, then Saddam Hussein would receive +1 for gaining Kuwaiti territory, -1 for use of military, and -1 for sanctions created by the United States against Kuwait. At this point, the United States would receive +1 for sanctions against Iraq since they now have leverage, -1 for military use, and -1 for oil prices due to escalation of conflict.

Based upon the decision made in Round 3 by Saddam Hussein, the United States knows where Saddam Hussein is leaning. Saddam Hussein signaled his intent to Kuwait earlier on to try and force Kuwait to stop overproducing. Hussein then followed this up with a chance for negotiations, which fell through. At this point, if Hussein backs down and does nothing, Kuwait will continue to overproduce, ultimately harming Iraq's economy. This would be detrimental for Iraq no matter what decision the United States makes. Therefore, it would make sense that Hussein would invade Kuwait, which would give an opportunity for profit and only an equal deficit if the United States decided to intervene.

From a different perspective, the individual profit outweighs the potential summed profit since Iraq would forego points for the betterment of the joint outcome. In addition, Saddam Hussein is taking a big risk by doing nothing, because of the possible response by the United States to intervene. This, however, seems unrealistic; Why would the United States intervene and create economic sanctions if Iraq backs down from their threats? In a study done by Marc Pilisuk and Paul Skolnick called "Inducing Trust: A Test of the Osgood Proposal", we can see why. These authors discuss a game of unequal power, which "tested the effectiveness of a completely pacifist strategy on the part of the player in the weaker position."⁵⁴ As it turns out, according to Pilisuk and Skolnick, "The strategy proved ineffective in generating mercy from the

⁵⁴ Marc Pilisuk and Paul Skolnick, "Inducing trust: A Test of the Osgood Proposal," *Journal of Personality and Social Psychology* 8, no. 2, Pt.1 (1968): 122.

stronger player.”⁵⁵ This type of game is common in situations with mutual distrust, or no defining trust. The Prisoner’s Dilemma is a prime example of this situation.⁵⁶ Moreover, in terms of the Prisoner’s Dilemma and unequal power, Pilisuk and Skolnick find through experimentation that “About half the subjects take continuous advantage of the stooge while the other half come to a level of complete cooperation.”⁵⁷ Hence, the United States has just as much of a reason to create economic sanctions as they do to do nothing, that is if Saddam Hussein decides to do nothing.

The United States, on the other hand, sees that they have an expected outcome for Do Nothing of $E(x) = \frac{0-2}{2} = -1$, whereas they have an expected outcome of $E(x) = \frac{1-1}{2} = 0$ if they create economic sanctions and use military force. The potential risk of continuing to do nothing skews the United States to choose economic sanctions and use of military. From another angle, the detriment of doing nothing is greater than the detriment of the alternative.

Thus, the United States would take a large risk if they continue to enact their original intentions of doing nothing. They also know that the best option for Hussein is to invade Kuwait. Therefore, the United States decides to enact sanctions and use military force, while Hussein decides to invade Kuwait. This leads to the (-2-1) outcome heading into Round 5.

The United States was aware of the consequential escalation of conflict, the increase in oil prices, and the distrust with Iraq. They also proposed some counter-measures to fight these losses, although this may not have been seen by the public due to its initial secret classification. To try and maintain oil prices, the United States reached out to other oil-producing nations and asked for an increase in production. They also reached out to oil companies and asked for them

⁵⁵ Ibid.

⁵⁶ Ibid.

⁵⁷ Pilisuk and Skolnick, "Inducing trust: A Test of the Osgood Proposal," 123.

to show some restraint on this demand opportunity, which would lead to a price increase.⁵⁸

Unfortunately for the United States, this did not pan out according to plan, as we can see in the chart in Figure 4.

The United States also proposed that the military use should be considered defense towards further aggression from Iraq and that it should be for the purpose of deterrence.⁵⁹ This was done to avoid the idea that the United States did not follow through with their stated intentions. Again, this is not how it was seen by Saddam Hussein, as we will see in Chapter 3.

In terms of the Prisoner's Dilemma, the United States must have used a TIT-FOR-TAT strategy, based on the previous iterations/rounds. In 1980, Robert Axelrod held a tournament whereby contestants would create computer programs that would dictate Prisoner Dilemma strategies. It turned out that the winner used the TIT-FOR-TAT strategy.⁶⁰ Professor Leigh Tesfatsion from Iowa State University discusses the TIT-FOR-TAT strategy, and through his analysis, it can be described as follows: 'I will cooperate with you until you defect against me. Once you defect against me, I will defect against you in every subsequent round until you start cooperating with me, then I will start cooperating with you again.'⁶¹ In terms of this conflict, the United States initially cooperated to avoid escalation, but when Saddam Hussein invades Kuwait, the United States follows suit with equal aggression.

This information came out ten years before the Persian Gulf War, suggesting that this strategy's effects were shown to be successful, but with a thin foundation. The United States

⁵⁸ United States, Department of Defense, The White House, *U.S. Policy in Response to the Iraqi Invasion of Kuwait*, by George H. W. Bush (Washington, 1990), 3.

⁵⁹ Bush, *U.S. Policy in Response to the Iraqi Invasion of Kuwait*, 3.

⁶⁰ Axelrod's Tournament, accessed October 17, 2017, <https://cs.stanford.edu/people/eroberts/courses/soco/projects/1998-99/game-theory/axelrod.html>.

⁶¹ Leigh Tesfatsion, "Notes on Axelrod's Iterated Prisoner's Dilemma (IPD) Tournaments," accessed October 10, 2017, <http://www2.econ.iastate.edu/classes/econ308/tesfatsion/axeltmts.pdf>.

might have used this newer strategy to maximize payoff at the beginning of the Persian Gulf War. The Central Intelligence Agency has even noted the use of this strategy in 1984 during the Iraq-Iran War. In a CIA memorandum, Maurice Ernst notes the TIT-FOR-TAT strategy that Iran is using against Iraq and notes its impact, despite the possible need for additional strategies.⁶² Therefore, United States officials knew of this strategy years before the Persian Gulf War.

Contrary to game theoretic predictions, this situation creates an instability between Saddam Hussein and the United States. While Saddam Hussein's decision seems obvious, the United States' decision to intervene confuses many. Although the United States' individual payoff outweighs the joint payoff, the United States has now created a level of distrust with Saddam Hussein, thus escalating the conflict and creating issues for future outcomes.

Analyzing the potential strategies noted in the above game, and the potential for the TIT-FOR-TAT strategy, the war seemed inevitable from the United States perspective. Thus, the ensuing war was going to happen, whether or not the United States cooperated at first. The potential future payoff seemed to maximize with first cooperation and later defection, if it came to it. Therefore, the United States took rational actions based upon this situation.

Likewise, Saddam Hussein was suffering from the lack of demand created by Kuwait's overproduction. Before total defection, Hussein signaled an attack, hoping for Kuwait's cooperation. Since no negotiations came to fruition, Hussein had the option to do nothing or follow through with the intent. If Hussein had done nothing, a level of distrust would have followed and an escalation of conflict would have taken place anyway, consequently affecting potential payoff prolonging the inevitable, and putting potential positive payoffs at risk.

⁶² United States, Central Intelligence Agency, *Impact of Air Attacks on Persian Gulf Tankers*, by Maurice Ernst (Washington: National Intelligence Council, 1984).

Rationally, Saddam Hussein's best decision was to follow through with his intentions. This leads to a mutual defection and, consequently, the inevitable beginning of conflict.

Chapter 3: After the Invasion and End Game Conclusions

The previous chapter left off on Round 4 with the defect/defect outcome in the Prisoner's Dilemma. The United States chose the use of military and economic sanctions against Iraq and Saddam Hussein chose to invade Kuwait in hopes of increasing oil demand, while gaining new territory for economic growth. With the strict economic sanctions that George H. W. Bush imposed on the Iraqi government, Iraq temporarily lost its oil demand and any potential economic growth. The following is presented in such a way that differs from the asymmetrical perspective that is so widely accepted by the general public. In short, after Round 4, George H. W. Bush portrayed his acts as logically rational options and rhetorically condemned Saddam Hussein's actions, which he notes as irrational behavior. As a result, the generalized perspective is that most of the irrationalities and faults lie with Saddam Hussein.

An in-depth analysis shows that the "cheap talk" strategy affected this historical perspective. In their paper "Cheap Talk," Vijay Krishna and John Morgan note that cheap talk is the communication of players, where the Expert communicates information to the Decision Maker at zero cost and it may only affect the actions of the decision maker. Their approach differs from the signaling strategy in game theory, because it is independent of any pre-existing trustworthy statuses. Instead, the credibility of such communications is the key to successful influence.⁶³

At the time of this conflict, the cheap talk strategy was not used to win over the general public's opinion, nor was it used to win over the opposing side. It was used instead by George H. W. Bush, as the Expert, to legitimize the United States' actions and to gain back any lost trust

⁶³ Vijay Krishna and John Morgan, "Cheap Talk," 1, accessed November 10, 2017, <https://faculty.haas.berkeley.edu/rjmorgan/Krishna%20and%20Morgan%20on%20Cheap%20Talk.pdf>.

from the deceptive United States signal in Round 2. Likewise, Saddam Hussein was the Decision Maker in this strategy and attempted to discredit any incoming information, thus avoiding outside influence. As noted in the previous chapter, influence pays out to the United States and costs Iraq. Yet, if George H. W. Bush communicated information that was unbiased, trustworthiness could have stabilized between the two countries, which would have benefitted both sides, because trustworthiness de-escalates conflict, allows for trusted intentions, and may lead to negotiations.

Without diving too deep into the mathematics behind the “cheap talk” strategy, let us say that there is a variable m such that $m = \theta + b$, where θ is the transmitted information and b is the weighted bias of the Expert. Also, let us note that the Decision Maker only knows the value of m and not what m is equal to. Then, we can state that if the Decision Maker believed the Expert in previous circumstances, then the Expert would naturally want to lean towards a positive weighted bias in future communications, thereby exaggerating the transmitted information, which would allow for the manipulation of the Decision Maker.⁶⁴

In the case of the United States and Saddam Hussein, we can see these communication tactics unfold in the statements made after the initial invasion of Kuwait and after the US intervention. The United States had lost trust with Saddam Hussein after not following through with their stated intentions, which involved looking past Saddam Hussein’s intended invasion. To win back this trust, George H. W. Bush needed to inform Saddam Hussein as to why the US retaliated after the invasion. However, Bush would naturally lean towards a weighted bias,

⁶⁴ Krishna and Morgan, "Cheap Talk," 2-3.

because Saddam Hussein believed the relayed information in Round 2. Thus, Bush seemed to exaggerate the relayed information in his speech of August 20, 1990.

As stated on August 20, 1990, George H. W. Bush's reason for the United States' defect against Iraq stemmed from the offensive aggression and hostage situation that Saddam Hussein had created. George H. W. Bush stated to the American people that:

“Our answer is America stands where it always has against aggression, against those who would use force to replace the rule of law and truth and who better than this group known throughout history. We've learned that we must stand up to evil. It's a truth which the past eighteen days reaffirmed.”

“And so, at the request of our friends, we have sent U.S. forces to the Middle East reluctantly, but decisively.”

“We've been reluctant to use the term hostage. When Saddam Hussein specifically offers to trade the freedom of those citizens of many nations. He holds against their will in return for concessions. There can be little doubt that whatever these innocent people are called they are in fact, hostages.”⁶⁵

However, the offensive aggression and hostage situation seemed to be more of a grey area than anything else. Although Saddam Hussein may have been the first to use true physical

⁶⁵ George H. W. Bush, "Bush VFW, Aug 20 1990 | Video," C-SPAN.org, accessed November 14, 2017, <https://www.c-span.org/video/?13609-1%2Fbush-vfw&start=439>.

aggression, the instability of the Middle East waged many other aggressive moves before that, including Kuwait's overproduction. Furthermore, in the Iraq-Iran War, Saddam Hussein made the initial aggressive move by invading Iran and the United States backed Iraq during this time. Thus, George H. W. Bush's statement on offensive aggression seems more rhetorical than objectively expository. He does this to legitimize the "reluctant" defensive aggression against Iraq in 1990—note that this is the first bias. This could be in an attempt to eliminate any distrust that Saddam Hussein had towards the United States after the United States failed to follow through with their stated intentions as seen in Round 2.

Also, the term hostage is relative to the offender/defender—note that this is the second bias. George H. W. Bush knew this however, as he noted that the United States was reluctant to call them that. We can also see this relativity when Saddam Hussein attempted to relate his situation to that of the Japanese concentration camps in World War II, asking for others to note the hypocrisy of the United States' condemnation.⁶⁶ In all, the United States used rhetorical rationalization, whether legitimate or not, to explain why they changed their intentions to competitive rather than cooperative. Although there is a raise in escalation of conflict noted in Round 4, any future stated intentions would hopefully, for the United States, be taken as trustworthy.

In terms of actions taken up to this point, Saddam Hussein's invasion now seemed null and void, since any benefit was now burdened with a countering deficit. However, as seen in first four rounds of the decision tree, Saddam Hussein was led to believe that the United States

⁶⁶ Saddam Hussein, "Excerpts from Saddam speech," United Press International, August 21, 1990, accessed November 09, 2017, <https://www.upi.com/Archives/1990/08/21/Excerpts-from-Saddam-speech/1136651211200/>.

would not intervene, as long as they stayed out of Saudi Arabia. Much to Hussein's surprise, the United States ended up intervening and caused major issues for Iraq.

In a state of desperation, and in response to the speech made by George H. W. Bush, Saddam Hussein issued an open statement on August 21, 1990, condemning the actions of the United States as immoral, noting that their statements were false, and stating that the United States only issued them to give legitimacy to their actions. Saddam Hussein covers the United States' motives by saying:

“Once again, President Bush addresses the Americans to distort words, hide the motives or part of it and mix causes with consequences. In his statement yesterday, on Aug. 20, 1990, in front of the American old warriors, he touched on the issue of the Americans present in Iraq and focused on considering them as hostages, despite the statements made by the Iraqis, which clarified without doubt that the Americans are here as a result of a real aggression against the Arab nation and Iraq and that the one initiating this aggression is President Bush himself and his ally (British Prime Minister Margaret) Thatcher...Banning some foreigners from traveling is not out of revenge, but to avert a crime of aggression that President Bush intends to commit against the people of Iraq after his crime of occupying the land of Kaaba and the prophet's grave (in the Moslem holy city of Mecca in Saudi Arabia). And if he commits this crime, a great catastrophe will befall not only on the region but

the whole world.”⁶⁷

All absolute legitimacy aside, Saddam Hussein wanted to show that the United States made the first act of aggression upon Iraq, thus victimizing Iraq. To look back at the equation, $m = \theta + b$, where Saddam Hussein is the Decision Maker, Hussein only knew the value of m —the statements made by George H. W. Bush. In other words, by default, Saddam Hussein did not know what part of the statement was credible (θ) and what part was exaggerated (b). Yet, Hussein questioned the credibility of George Bush’s statements as seen in the above excerpt. Therefore, Hussein knew that the value of b would not be equal to zero and then picks apart George H. W. Bush’s statements to assign descriptive values to θ and b .

Saddam Hussein then goes on to explain that the United States’ aggression is economic, racial, and religious, which he believes to be the true reasons for US retaliation (θ). This then assigns all other information to b , such as George H. W. Bush’s statements about Saddam Hussein being the true aggressor.

Knowing that $b > 0$, Saddam Hussein avoided rhetorical manipulation and sent out a condemnation against the United States. He noted the economic warfare that the United States tried to impose on Iraq:

“In all circumstances, the Arabs and, among them, Iraq, want to sell oil ... and not to drink it or freeze it. ...And if the one who owns oil is boycotted by the world, ...

⁶⁷ Saddam Hussein, "Excerpts from Saddam speech," United Press International, October 8, 1990, accessed November 09, 2017, <https://www.upi.com/Archives/1990/08/21/Excerpts-from-Saddam-speech/1136651211200/>.

for the same reason... the world should have boycotted America and the Saudi government. After all, is not food more vital for men than oil?"⁶⁸

At this point we can see that Saddam Hussein knew that he needed to reciprocate the escalation imposed by the United States. I. William Zartman and Guy Oliver Faure generalize such rationality in their book, "Escalation and Negotiation in International Conflicts," by stating that:

"When conflict is initiated with violence, and the opponent is strong enough to reciprocate and does so, an impasse and a negotiated settlement are more likely outcomes than when the violence is not reciprocated. Unreciprocated escalation produces no stalemates and so tends not to produce negotiated settlements."⁶⁹

Saddam Hussein also knew that his country alone could not reciprocate a similar response, despite having a large army. The goal is not to change the strategy by using brute force, therefore forcing the United States to use military force, ultimately increasing escalation. Instead, Saddam Hussein needed to get similar economic sanctions imposed on the United States.

Seeing that Iraq holds no leverage over the United States other than oil, which the United States was already prepared for, Saddam Hussein needed the help of other Arab countries. This could be a reason as to why Saddam Hussein noted the racial discrimination of the United States:

⁶⁸ Hussein, "Excerpts from Saddam speech."

⁶⁹ I. William Zartman and Guy Olivier Faure, *Escalation and Negotiation in International Conflicts* (New York, NY: Cambridge University Press, 2005), 303-304.

“President Bush knows, or I assume he knows, that America itself and during World War II had held tens of thousands of its citizens for the mere reason that they are of Japanese origin, basing itself on the formula of repulsing the biggest damage with the least one. If this precedent existed and is established in the United States' records along with others which are included in the humanitarian record, would it not be considered a kind of racial discrimination that what is allowed to other states including the Americans is not allowed to the Arabs, including the Iraqis?”⁷⁰

Furthermore, the above notes the rhetoric for which Saddam Hussein tried to convince Arab nations to turn their backs on the United States. With a need for reciprocated economic sanctions and the need for allied support, Saddam Hussein was setting Iraq up for an equal retaliation. This was not, however, how the ensuing war panned out. Reactions from other Arab countries show that they did not support the invasion of Kuwait.

This initial action to attempt reciprocation can be seen as a defensive move on Saddam Hussein's part. Zartman and Faure note that:

“It never appears to be harmful to match escalation, even though it may only restore the previous balance. Conflict escalation during negotiation can be a useful bargaining tactic only if the other party does not reciprocate, and since the

⁷⁰ Saddam Hussein, "Excerpts from Saddam speech," United Press International, October 8, 1990, accessed November 09, 2017, <https://www.upi.com/Archives/1990/08/21/Excerpts-from-Saddam-speech/1136651211200/>.

other can be expected to do so if it can, the tactic is only useful if such matching is impossible.”⁷¹

By matching what the United States had done, Saddam Hussein would not have gained anything new, but rather would have had equal leverage in future negotiations. However, the United States knew that the economic sanctions gave them leverage over Saddam Hussein and Hussein, himself, could not get this same leverage against the United States. Iraq was therefore still in a deficit, as seen at the end of the Prisoner’s Dilemma in Round 4—denoted (-2,-1).

As the war continued, the need for physical violence arose. Militarized operations and economic sanctions carried on into January, but Saddam Hussein’s first true offensive move against another country other than Kuwait happened on January 18, 1991 when Saddam Hussein attacked Israel with 38 SCUD missiles.⁷² Hours before the attack, in an Iraqi Command Council Meeting, led by Saddam Hussein, Saddam Hussein demanded that Israel should be brought into the conflict. He stated, “Let us concentrate on Israel, let us break the bone of America's daughter [*Israel*], let the entire West roar and relay the deaths that will occur.”⁷³ Although this looks like Saddam Hussein merely wanted revenge on the United States, nevertheless, Saddam Hussein seems to have figured that if they attacked Israel, Israel would fire back in retaliation. He remarked that “This will be normal. They will also reciprocate by attacking us with missiles.

⁷¹William Zartman and Guy Olivier Faure, *Escalation and Negotiation in International Conflicts* (New York, NY: Cambridge University Press, 2005), 303-304.

⁷² Steve Fetter, George Lewis, and Lisbeth Gronlund, "Why were Casualties So Low?" *Nature* 361 (January 28, 1993): 4, accessed November 08, 2017, <http://faculty.publicpolicy.umd.edu/sites/default/files/fetter/files/1993-Nature-Scud.pdf>.

⁷³ Iraq, Iraqi Council, *A Revolutionary Command Council Meeting about Coalition Operations against Iraq*, by Saddam Hussein (1991), 12, accessed November 8, 2017, <http://digitalarchive.wilsoncenter.org/document/116991>.

They have missiles.”⁷⁴ Even though he may not have known what it was called, Saddam Hussein was using the TIT-FOR-TAT strategy against Israel, as well as reciprocated escalation. He knows that the optimal option for Israel would be to reciprocate a missile attack with a missile attack. In other words, by defecting against Israel, it was in Israel’s best interest to defect—The TIT-FOR-TAT strategy.

This could lead to a disruption in the coalition forces, since a portion of this coalition consisted of Arab nations that had a strong discontent towards Israel. For instance, after Saddam Hussein’s initial attack on Kuwait in early August 1990, Palestinian Arabs were marching and chanting, “Saddam, you hero, attack Israel with chemical weapons!”⁷⁵ This was a rational option for Hussein; without completely altering his strategy, Saddam Hussein found a way to band Arab countries together, consequently destabilizing the coalition force.

In order to easily reference the following decisions, Figure 10 on the following page shows the decision tree starting at Round 5. After the United States collectively made its decision to use military force and economic sanctions, Saddam Hussein found himself in a tough position. Arab aggression towards Israel had been maximized and trade embargos hindered Iraq’s economic growth.

⁷⁴ Hussein, *A Revolutionary Command Council Meeting about Coalition Operations against Iraq*, 13.

⁷⁵ Mitchell G. Baird, "Myths & Facts," *Myths & Facts: Arab/Muslim Attitudes Toward Israel* (Chapter 17), accessed November 8, 2017, <http://www.jewishvirtuallibrary.org/myths-and-facts-arab-muslim-attitudes-toward-israel-chapter-17>.

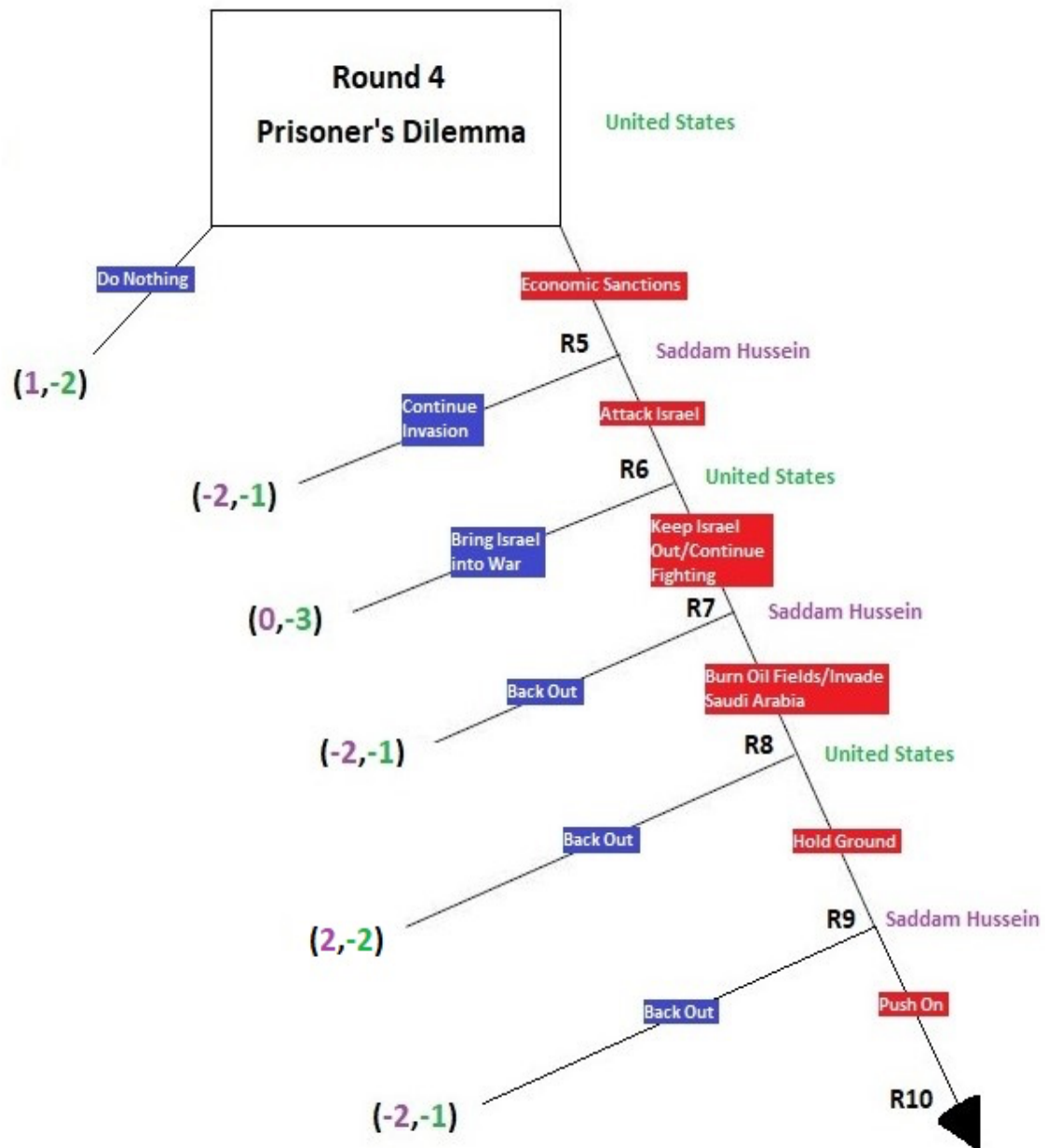


Figure 10

Saddam Hussein held one of the world's largest armies and could have damaged coalition forces, although possible negotiations from reciprocated aggression would have allowed the

⁷⁶ Figure 10, Christopher Cook, September 23, 2017.

United States' led coalition to still have the upper hand. We can see this in the status of Alt Round 6, where Iraq continues the invasion and fends off coalition forces—denoted (-2,-1). Alternatively, by attacking Israel, Saddam Hussein created a 50% chance of a better outcome—denoted (0,-3) in Alt Round 7—whereby the effects would be instantaneous and before negotiations.

The United States now had the option to let Israel in on the fight against Iraq or to keep Israel out of the conflict and continue fighting. Fortunately for the United States, George H. W. Bush planned ahead for such a situation. On January 15, 1990—three days before the attack on Israel—George H. W. Bush stated in a memorandum that:

“The United States will discourage the government of Israel from participating in any military action. In particular, we will seek to discourage any preemptive actions by Israel. Should Israel be threatened with imminent attack or by attacked by Iraq, the United States will respond with force against Iraq and will discourage Israeli participation in hostilities.”⁷⁷

These planned actions most likely stemmed from the built up Arab aggression against Israel, including the Palestinians-Arab protests.

From its own perspective, if the United States chose to bring Israel into the conflict, they could possibly lose some of the countries in the coalition force—especially Arab countries. This would lower the coalition's military influence, thus increasing the need for United States military

⁷⁷ United States, The White House, *National Security Directive 54*, by George Bush, 1991, 3.

force. Furthermore, oil prices would increase due to the escalation of conflict, i.e. bringing Israel into the war.

For Saddam Hussein, the need for oil would increase and since Saddam Hussein was in control of Iraq and Kuwait, demand would double. However, sanctions would have probably not been lifted until after negotiations had taken place. Therefore, the denoted point system at the beginning of Alt Round 7 would be (0, -3).

This would have put the United States in a poor position. After Alt Round 7, further actions would need to be taken to end the conflict. If negotiations were an option at this point, then Saddam Hussein would have the upper hand due to the unmatched escalation that Hussein caused by bringing Israel into the conflict. George H. W. Bush knew that he would be at a detriment in this scenario and kept the protection of Israel to a minimum, offering only a few Patriot anti-missile battery systems.⁷⁸ This was to avoid the destabilization of the coalition.

Despite multiple failed attempts by Saddam Hussein to bring Israel into the conflict, the United States successfully kept Israel out of the conflict, which meant that Hussein needed to change his tactic. Leading into Round 8, Saddam Hussein had some options including to back out of the conflict and retreat from Kuwait. This option did not seem viable as Saddam Hussein would have the sanctions lifted, but he would lose Kuwaiti territory and relative demand would not rise.

Alternatively, if Saddam Hussein invaded Northeastern Saudi Arabian towns, such as Khafji, Hussein could create more room for negotiation, while simultaneously driving back coalition forces. However, immediately following the 4-day offensive tactic from Iraq, the

⁷⁸ Melissa Healy, "U.S. Rushes Defenses to Israel: American Troops to Operate Two Patriot Batteries: Gulf war," Los Angeles Times, January 20, 1991, accessed November 10, 2017, http://articles.latimes.com/1991-01-20/news/mn-804_1_kuwaiti-patrol-boat-two-patriot-missile-batteries-iraqi-missile-attacks.

United States restored the Saudi Arabian area by using extensive air power to obliterate the Iraqi army.⁷⁹

In a last Hail Mary effort to harm allied forces and economic stability, Saddam Hussein lit Kuwaiti oil fields on fire and spilled nearly 240 million gallons of oil into the Persian Gulf. George H. W. Bush responded to this attack by saying "Saddam Hussein continues to amaze the world...Now he resorts to enormous environmental damage. No military advantage to him whatsoever. He clearly is outraging the world."⁸⁰ However, recalling the outcome of the Battle of Khafji, the US-led coalition won using air support, which means that Saddam Hussein needed a smoke screen. In a meeting with his council on February 24, 1991, Saddam Hussein and his committee took note of the need for this:

“Saddam Hussein: This is good, so they can use their artillery. Does our artillery have enough range?

Sabir: Yes it does, Sir. And today, the weather was on our side, thank God. They were not able to fly, the weather was so bad.

Saddam Hussein: What about the oil fields? Have we set them all on fire?

⁷⁹ Titus, James. “The Battle of Khafji: An Overview and Preliminary Analysis.” *College of Aerospace Doctrine, Research, and Education Air University*, Sept. 1996, www.dtic.mil/dtic/tr/fulltext/u2/a360696.pdf. Accessed 9 Nov. 2017, 1-2.

⁸⁰ Apple, R. "War in the Gulf; U.S. Says Iraq Pumps Kuwaiti Oil into Gulf; Vast Damage Feared from Growing Slick." *The New York Times*. January 26, 1991. Accessed November 9, 2017. <http://www.nytimes.com/1991/01/26/world/war-gulf-us-says-iraq-pumps-kuwaiti-oil-into-gulf-vast-damage-feared-growing.html?pagewanted=all>.

Sabir: Yes, Sir. They were all set on fire. Yesterday they announced that these 350 km long black clouds were obstructing their ability to fly sorties.”⁸¹

The burning of oil fields provided a thick black blanket of smoke that did not affect close combat, but did affect long range missile and aircraft attacks.⁸²

Nevertheless, the oil spills created by the Iraqi army had little to do with military tactic. This does not mean that Saddam Hussein spilled all this oil just to upset the world. All things considered, Saddam Hussein could have used the burning of the oil fields and the oil spills as a way to damage the Kuwaiti and Saudi economies. This would not only be a large detriment to these respective countries, in terms of oil production, but it could stabilize the oil demand for Iraq—even if Saddam Hussein was forced to leave Kuwait. We can see that this was an effective outcome against Kuwait, even if the United States had not backed out of the conflict. As we can

⁸¹ Iraq, Conflict Records Research Center, CRRC Record Number SH-SHTP-A-000-931, *Saddam Hussein Council Meeting*, by Saddam Hussein.

⁸² Iraq, Department of Defense, *Conduct of the Persian Gulf War: Final Report to Congress* (1992), accessed November 8, 2017, <https://archive.org/details/ConductofthePersianGulfWarFinalReporttoCongress>.

see in the following chart, Figure 11, provided by “index mundi,” the Persian Gulf War had a huge negative impact on Kuwaiti oil production.

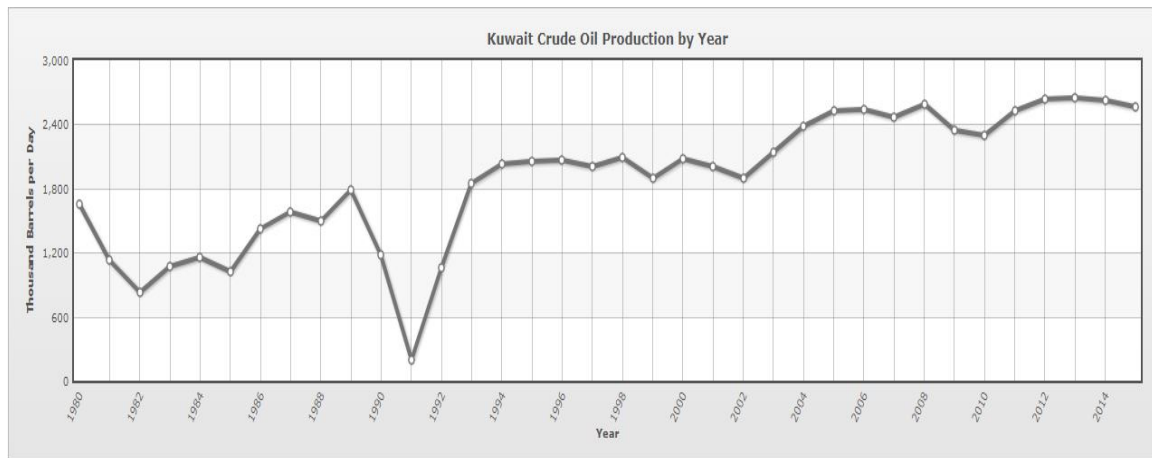


Figure 11

Saddam Hussein’s ultimate goal is to maximize his payout, focusing more on individual payoffs rather than mutual payoffs. Consequently, Hussein did this by using altruistic punishment. This is best explained in a game called the Ultimatum Game.

The Ultimatum Game gives player 1 (the proposer) the option to choose mutual maximization or individualistic maximization, but gives player 2 (the responder) the option to choose mutual maximization or mutual punishment. This slightly differs from the individualistic vs. mutual payout systems in the Extensive Form Game and the Prisoner’s Dilemma, because player 2’s decision could be based upon the punishment of the other player rather than maximization of payouts. For instance, player 1 is given \$100 dollars and can offer any portion of that money to player 2, who can accept it or reject it. If player 2 accepts the money, then they

⁸³ Figure 11, "Kuwait Crude Oil Production by Year," Index Mundi, accessed November 15, 2017, <https://www.indexmundi.com/energy/?country=kw&product=oil&graph=production>.

both get to keep their portions of the \$100, respectively. If player 2 refuses to accept the money, then neither player gets any of the money.⁸⁴

A collaborative experiment at Caltech showed that if player 1 took any more than 60% of the proportion of goods, then player 2 would reject the offer under a theorem called the selfishness axiom.⁸⁵ One player's greed affects the other player's decision, and in this case, it causes player 2 to forego any benefits just to equalize payoff. This is true even if the payoff is nothing.

James Fowler of the University of California at San Diego notes that this has less to do with the harm of the other player and more to do with a universal equilibrium. These are usually encompassed in Egalitarian ideologies. James Fowler states, "This finding is consistent with evidence that humans may have an evolutionary incentive to punish the highest earners in order to promote equality, rather than cooperation."⁸⁶ The rationality behind this way of thinking is that you are maximizing your chances by minimizing the risk of potential unmatched reciprocation, because the opponent now has the upper hand.

In regard to the Persian Gulf War, let the Kuwaiti government be player 1 and let Saddam Hussein be player 2. In 1990, Iraq had a population of 17.47 million and Kuwait had a population of 2.1 million.⁸⁷ Furthermore, in 1990, Iraq produced 2,040,000 barrels per day of oil and Kuwait produced 1,175,000 barrels per day.⁸⁸ At a nominal rate of \$23.19 per barrel, we can

⁸⁴ Johnathan Levin, "Experimental Evidence," May 2006, 2, accessed November 8, 2017, <https://web.stanford.edu/~jdlevin/Econ%20286/Experimental.pdf>.

⁸⁵ Joseph Henrich, "'Economic Man' in Cross-cultural Perspective: Behavioral Experiments in 15 Small-scale Societies," 15, accessed November 8, 2017, <http://people.hss.caltech.edu/~camerer/overviewpaper.pdf>.

⁸⁶ E. Fehr and S. Gächter, "Egalitarian Motive and Altruistic Punishment," *Nature*, January 16, 2004, 137, accessed November 8, 2017, http://fowler.ucsd.edu/egalitarian_motive_and_altruistic_punishment.pdf.

⁸⁷ "World Bank Open Data," Data.worldbank.org, accessed November 15, 2017, <https://data.worldbank.org/>.

⁸⁸ "Kuwait Crude Oil Production by Year," Index Mundi, accessed November 15, 2017, <https://www.indexmundi.com/energy/?country=kw&product=oil&graph=production>.

calculate the amount of money that each country accrued.⁸⁹ Note that the size and expenses for each country differ, so we need to use per capita data to compare oil production and income from oil. Thus:

Iraq's Oil Production Per Year =

$$2,040,000 * 23.19 * 365 = 17,267,274,000$$

Iraq's Oil Production Per Year Per Capita =

$$\frac{17,267,274,000}{17,470,000} = \$988.40$$

Kuwait's Oil Production Per Year =

$$1,175,000 * 23.19 * 365 = 9,945,611,250$$

Kuwait's Oil Production Per Year Per Capita =

$$\frac{9,945,611,250}{2,100,000} = \$4,736.01$$

Furthermore, if we take the total oil production per capita from both states, add them together, and then find the proportion each country received in oil production income, we can compare the numbers.

Total Oil Production

$$\$988.40 + \$4,736.01 = \$5,724.41$$

⁸⁹ Tim McMahon, "InflationData.com," Historical Oil Prices, August 27, 2017, accessed November 9, 2017, https://inflationdata.com/Inflation/Inflation_Rate/Historical_Oil_Prices_Table.asp.

Iraq's Proportion Per Capita

$$\frac{\$988.40}{\$5,724.41} \approx 17.27\%$$

Kuwait's Proportion Per Capita

$$\frac{\$4,736.01}{5,724.41} \approx 82.73\%$$

This means that Kuwait's proportion of 82.73% is well over the 60% threshold, as stated in the selfishness axiom, that prevents player 2 (Saddam Hussein) from punishing the other player (Kuwait). Therefore, following the standard choice that player 2 makes in this situation, it is in Saddam Hussein's best interest to use altruistic punishment. In other words, Saddam Hussein possibly had this motive, seeing as he had no other option than to allow Kuwait to attain the 82.73% proportion of oil production per capita, while he received only 17.27% of the oil production per capita in this region.

The option to destroy Kuwait's oil fields was also a sure thing, since oil is not a renewable resource and the affects were instantaneous. This is compared to the alternative option of trying to keep Kuwait, which was not looking good for Saddam Hussein. The large destruction of Kuwait's oil also could have deterred the United States from continuing with the coalition forces, inevitably withdrawing from the war.

In Round 8, the United States now had the option to continue on or back out. If the United States backed out at this round the points system would be (3,-2). Despite destroying the oil fields in Kuwait, Saddam Hussein still would have been able to rebuild oil refineries and gain demand from rich Saudi Arabian cities and Kuwait, along with his own territory after sanctions were lifted. On the other hand, the United States would have lost control over Iraq, due to lifted

sanctions. Sanctions would have most likely been imposed from other countries still in the coalition, but oil prices would have stabilized for the United States due to de-escalation of conflict.

Yet, if the United States continued on with the conflict, the point system at the beginning of Round 9 would be $(-2, -2)$. In a sense, the United States is using a similar tactic that Saddam Hussein used in the previous round—altruistic punishment. By continuing to fight, the United States does not lose anything, and neither does Iraq, at least for one round. If the United States backed out of the conflict, they would also not lose anything, but Iraq would gain $+4$. Taking an Egalitarian approach, the United States is focusing on equality for both sides. Plus, the United States sees that Saddam Hussein is losing a foothold due to the effectiveness of their air attacks.

This now comes to the final round, Round 9. If Saddam Hussein pushes on, Round 10 would initiate and the war would continue, but it is in Saddam Hussein's best interest to back out of the war and retreat. The point system at Round 10 would be $(-2, -1)$, compared to the point system at Alt Round 10, which would be $(-2, -1)$. Either way, Saddam Hussein would be in the same detriment. However, to minimize the detriments, Saddam Hussein needed to back out. Looking at the Extensive Form Game, we can see that 14 out of the 19 Iraqi statuses are less than or equal to their initial status of -1 . The odds that they will end up in a worse situation tend to grow the more rounds that they cover. Thus, on February 26, 1991, Saddam Hussein gave a speech to the world stating his withdrawal from Kuwait. In Hussein's speech, he says:

“We start by saying that on this day, our valiant armed forces will complete their withdrawal from Kuwait. And on this day our fight against aggression and the ranks of infidelity, joined in an ugly coalition comprising 30

countries, which officially entered war against us under the leadership of the United States of America -- our fight against them would have lasted from the first month of this year, starting with the night of 16-17 [January], until this moment in the current month, February of this year.”⁹⁰

Just a couple days later, the war was over, yet Kuwait’s oil production status remained at an all-time low for a few years after the conflict, as seen in Figure 10. Despite not winning the war, Saddam Hussein achieved what he set out to do, decrease Kuwaiti oil production.

The United States also temporarily stabilized the region with a minimal loss. Oil prices lowered and the only loss to the United States was the use of military. In all, the United States maintained their economic status and regional influence, without major losses. However, the regional influence and the United States’ responsibility to stabilize the Middle East—as Richard Stewart suggests—hold long-term effects that could have led to the conflicts in the early 2000’s, although further analysis and decision trees would be needed to verify this assumption.

Using Game Theory, we can understand the mindset of the leaders involved in a specific conflict. More importantly, it is a way to understand the decisions made by such leaders, while avoiding major assumptions. Much like many wars, history can hold asymmetrical biases based on which side is analyzing and interpreting the event. Rhetorical speeches and primary source documents can also create such biases, which historians can then misinterpret.

Speeches given by George H. W. Bush portray Saddam Hussein as evil, and although this analysis cannot disprove such claims, it does note the rationality behind Saddam Hussein’s

⁹⁰ "War in the Gulf: The Iraqi Leader; Saddam Hussein's Speech on the 'withdrawal' of His Army from Kuwait," The New York Times, February 27, 1991, accessed November 8, 2017, <http://www.nytimes.com/1991/02/27/world/war-gulf-iraqi-leader-saddam-hussein-s-speech-withdrawal-his-army-kuwait.html?pagewanted=all>.

decisions. Likewise, some of the decisions made by the United States, such as Ambassador Glaspie's statements to Saddam Hussein, can be seen as irrational and misleading. Yet, closer analysis reveals that these decisions could have been rational, as seen in the beginning of the Extensive Form Game.

Towards the end of the Persian Gulf War, desperation invoked a sense of irrational behavior. Although the United States saw the burning of oil fields and the oil spills as acts of random aggression and terror, Saddam Hussein used tactics, such as forward induction to predict future outcomes, which means he suspected that they were not going to win this war. In turn, Saddam Hussein needed to use altruistic punishment to minimize Kuwait's oil production. Likewise, the United States reciprocated altruistic punishment by minimizing Iraq's final payout. This matching of reciprocated aggression then led to symmetrical negotiations that eventually led to a temporary resolution, which held steady until Operation Iraqi Freedom in 2003.

To concisely sum up this analysis, war seemed inevitable for Saddam Hussein, and after the initial invasion, it seemed inevitable for the United States, as well. At each step along the way, both sides were focusing on payoff maximizations and it was not until the end of the war that altruistic punishment came to light. Both sides also attempted to minimize detriments, while rationally weighing their options. Were all the actions of Saddam Hussein and the United States completely rational? Probably not, but the overall concepts behind each major decision can be justified through logical and rational theories.

Bibliography

Images:

Figure 1. Christopher Cook. April 03. 2017.

Figure 2. Johnathan Levin. “Extensive Form Games.” January 2002.

Figure 3. Christopher Cook. 2017.

Figure 4. Williams, James L. History and Analysis -Crude Oil Prices. Accessed October 7. 2017. <http://www.wtrg.com/prices.htm>.

Figure 5. Christopher Cook. 2017.

Figure 6. Christopher Cook. 2017.

Figure 7. Christopher Cook. 2017.

Figure 8. Christopher Cook. 2017.

Figure 9. Christopher Cook. 2017.

Figure 10. Christopher Cook. September 23. 2017.

Figure 11. "Kuwait Crude Oil Production by Year." Index Mundi. Accessed November 15, 2017.

<https://www.indexmundi.com/energy/?country=kw&product=oil&graph=production>.

Literature:

"Bound Volume Hansard - Debate." House of Commons Hansard Debates for 26 Feb 1996 (pt 20). July 16, 1990. Accessed October 12, 2017.

<https://publications.parliament.uk/pa/cm199596/cmhansrd/vo960226/debtext/60226-20.htm>.

"Brief History." OPEC: Brief History. 2017. Accessed October 07, 2017.

http://www.opec.org/opec_web/en/about_us/24.htm.

"Gulf War Documents: Meeting between Saddam Hussein and US Ambassador to Iraq April Glaspie." Global Research. July 25, 1990. Accessed October 07, 2017.

<https://www.globalresearch.ca/gulf-war-documents-meeting-between-saddam-hussein-and-ambassador-to-iraq-april-glaspie/31145>.

"Iraqi invasion of Kuwait-International Response." *Keesing's Record of World Events* 36 (August 1990).

"Kuwait Crude Oil Production by Year." Index Mundi. Accessed November 15, 2017.

<https://www.indexmundi.com/energy/?country=kw&product=oil&graph=production>.

"Operation Desert Storm," Operation Desert Storm, accessed March 29, 2017,

<http://nsarchive.gwu.edu/NSAEBB/NSAEBB39/>.

"Saddam Hussein and the Revolutionary Command Council Discussing the Iraqi Invasion of Kuwait and the Expected US Attack." January 15, 1991. History and Public Policy Program Digital Archive. Obtained and translated by the Conflict Records Research Center. National Defense University.

"The World Factbook: IRAQ." Central Intelligence Agency. October 19, 2017. Accessed October 19, 2017. <https://www.cia.gov/library/publications/the-world-factbook/geos/iz.html#Econ>.

"United States Crude Oil Consumption by Year." IndexMundi. Accessed October 06, 2017.

<https://www.indexmundi.com/energy/?country=us&product=oil&graph=consumption>.

"War in The Gulf: The Iraqi Leader; Saddam Hussein's Speech on the 'withdrawal' of His Army from Kuwait." The New York Times. February 27, 1991. Accessed November 8, 2017. <http://www.nytimes.com/1991/02/27/world/war-gulf-iraqi-leader-saddam-hussein-s-speech-withdrawal-his-army-kuwait.html?pagewanted=all>.

"World Bank Open Data." Data.worldbank.org. Accessed November 15, 2017.

<https://data.worldbank.org/>.

United States. Central Intelligence Agency. *Impact of Air Attacks on Persian Gulf Tankers*. By Maurice Ernst. Washington: National Intelligence Council, 1984.

United States. Depart of Defense. The White House. *U.S. Policy in Response to the Iraqi Invasion of Kuwait*. By George H. W. Bush. Washington, 1990.

United States. The White House. *National Security Directive 54*. By George Bush. 1991.

Apple, R. "War in the Gulf; U.S. Says Iraq Pumps Kuwaiti Oil into Gulf; Vast Damage Feared from Growing Slick." The New York Times. January 26, 1991. Accessed November 9, 2017. <http://www.nytimes.com/1991/01/26/world/war-gulf-us-says-iraq-pumps-kuwaiti-oil-into-gulf-vast-damage-feared-growing.html?pagewanted=all>.

Axelrods Tournament. Accessed October 17, 2017.

<https://cs.stanford.edu/people/eroberts/courses/soco/projects/1998-99/game-theory/axelrod.html>.

Baird, Mitchell G. "Myths & Facts." *Myths & Facts: Arab/Muslim Attitudes Toward Israel* (Chapter 17). Accessed November 8, 2017. <http://www.jewishvirtuallibrary.org/myths-and-facts-arab-muslim-attitudes-toward-israel-chapter-17>.

Binns, James. "Gulf War Illness and the Health of Gulf War Veterans." *Research Advisory Committee on Gulf War Veterans' Illnesses*. November 2008.

Burdick, Josh. YouTube. September 30, 2015. Accessed October 07, 2017.
<https://www.youtube.com/watch?v=Vi9dCvFugMo>.

Bush, George H. W. "Bush VFW, Aug 20 1990 | Video." C-SPAN.org. Accessed November 14, 2017. <https://www.c-span.org/video/?13609-1%2Fbush-vfw&start=439>.

Collins, Joseph. "Desert Storm and Lessons of Learning." *Parameters*. Autumn 1992. 83-95.

Cruden, Alex. *The Persian Gulf War*. Farmington Hills, MI: Greenhaven Press. 2011.

Daponte, Beth Osborne. "A Case Study in Estimating Casualties from War and Its Aftermath: the 1991 Persian Gulf War." *The PSR Quarterly* 3. no. 2 (June 1993): 63-65.

Drezner, Daniel. "Serious About Sanctions - Positive and Negative Aspects of Economic Sanctions." 2004. Accessed October 06, 2017.

- Fehr, E., and S. Gächler. "Egalitarian Motive and Altruistic Punishment." *Nature*, January 16, 2004, 137-40. Accessed November 8, 2017.
http://fowler.ucsd.edu/egalitarian_motive_and_altruistic_punishment.pdf.
- Fetter, Steve, George Lewis, and Lisbeth Gronlund. "Why were Casualties so Low?" *Nature* 361 (January 28, 1993): 293-96. Accessed November 08, 2017.
<http://faculty.publicpolicy.umd.edu/sites/default/files/fetter/files/1993-Nature-Scud.pdf>.
- Gawne, Jonathan. *Ghosts of the ETO: American Tactical Deception Units in the European Theater 1944-1945*. Havertown, PA: Casemate, 2014.
- Ghosh, Sujata, Aviad Heifetz, and Rineke Verbrugge. "Do Players Reason by Forward Induction in Dynamic Perfect Information Games?" *Electronic Proceedings in Theoretical Computer Science* 215 (2016): 159-75.
- Healy, Melissa. "U.S. Rushes Defenses to Israel: American Troops to Operate Two Patriot Batteries: Gulf war." *Los Angeles Times*. January 20, 1991. Accessed November 10, 2017. http://articles.latimes.com/1991-01-20/news/mn-804_1_kuwaiti-patrol-boat-two-patriot-missile-batteries-iraqi-missile-attacks.
- Henrich, Joseph. "'Economic Man' in Cross-cultural Perspective: Behavioral Experiments in 15 Small-scale Societies." Accessed November 8, 2017.
<http://people.hss.caltech.edu/~camerer/overviewpaper.pdf>.

Hussein, Saddam. "Excerpts from Saddam speech." United Press International. August 21, 1990.

Accessed November 09, 2017. <https://www.upi.com/Archives/1990/08/21/Excerpts-from-Saddam-speech/1136651211200/>.

Hussein, Saddam. "Excerpts from Saddam speech." United Press International. October 8, 1990.

Accessed November 09, 2017. <https://www.upi.com/Archives/1990/08/21/Excerpts-from-Saddam-speech/1136651211200/>.

Iraq. Conflict Records Research Center. CRRC Record Number SH-SHTP-A-000-931. *Saddam Hussein Council Meeting*. By Saddam Hussein.

Iraq. Department of Defense. *Conduct of the Persian Gulf War: Final Report to Congress*. 1992.

Accessed November 8, 2017.

<https://archive.org/details/ConductofthePersianGulfWarFinalReporttoCongress>.

Iraq. Iraqi Council. *A Revolutionary Command Council Meeting about Coalition Operations against Iraq*". By Saddam Hussein. 1991. Accessed November 8, 2017.

<http://digitalarchive.wilsoncenter.org/document/116991>.

Karsh, Efraim. *Saddam Hussein: A Political Biography*. New York: New York: Free Press. 1991.

Krishna, Vijay, and John Morgan. "Cheap Talk." Accessed November 10, 2017.

<https://faculty.haas.berkeley.edu/rjmorgan/Krishna%20and%20Morgan%20on%20Cheap%20Talk.pdf>.

Levin, Johnathan. "Experimental Evidence." May 2006. Accessed November 8, 2017.

<https://web.stanford.edu/~jdlevin/Econ%20286/Experimental.pdf>.

McMahon, Tim. "InflationData.com." Historical Oil Prices. August 27, 2017. Accessed

November 9, 2017. https://inflationdata.com/Inflation/Inflation_Rate/Historical_Oil_Prices_Table.asp.

Pilisuk, Marc, and Paul Skolnick. "Inducing trust: A Test of the Osgood Proposal." *Journal of Personality and Social Psychology* 8, no. 2, Pt.1 (1968): 121-33.

Post, Jerrold M. *Leaders and their Followers in a Dangerous World*. Ithaca: Cornell University Press, 2004.

Rapaport, Anatol. "Three and Four Person Games." *University of Toronto and University of Michigan*: 191-226.

Rosenau, William. *Special Operations Forces and Enemy Ground Targets: Lessons from Vietnam and the Persian Gulf War* (Santa Monica, CA: Project Air Force/Rand. 2002).

Levin, Johnathan. "Extensive Form Games." January 2002.

Schneider, Barry R. *Deterrence and Saddam Hussein: Lessons from the 1990-1991 Gulf War*.

Maxwell Air Force Base. Ala.: USAF Counterproliferation Center. Air University. 2009.

Sethi, Rajiv. "Nash Equilibrium." *International Encyclopedia of the Social Sciences*, 2nd Edition, April 12, 2007, 540-42.

Slantchev, Branislav. "Game Theory: Dominance, Nash Equilibrium, Symmetry." University of California San Diego. May 23, 2008. Accessed March 1, 2017.
<http://slantchev.ucsd.edu/courses/gt/04-strategic-form.pdf>.

Stewart, Richard W. and Center of Military History. *War in the Persian Gulf: Operations Desert Shield and Desert Storm. August 1990-March 1991*. Cmh Pub. 70-117-1. Washington. D.C.: Center of Military History. U.S. Army. 2010.

Tesfatsion, Leigh. "Notes on Axelrod's Iterated Prisoner's Dilemma (IPD) Tournaments." Accessed October 10, 2017.

<http://www2.econ.iastate.edu/classes/econ308/tesfatsion/axeltmts.pdf>.

Titus, James. "The Battle of Khafji: An Overview and Preliminary Analysis." *College of Aerospace Doctrine, Research, and Education Air University*, September 1996. Accessed November 9, 2017. <http://www.dtic.mil/dtic/tr/fulltext/u2/a360696.pdf>.

Zartman, I. William, and Guy Olivier Faure. *Escalation and Negotiation in International Conflicts*. New York, NY: Cambridge University Press, 2005.