

THE PENNSYLVANIA STATE UNIVERSITY
SCHREYER HONORS COLLEGE

DEPARTMENT OF POLITICAL SCIENCE

Environmental Manipulation as a Tool for State-Making Activities

TRAVIS BLANCHARD
SPRING 2022

A thesis
submitted in partial fulfillment
of the requirements
for baccalaureate degrees
in Advertising/Public Relations and Political Science
with honors in Political Science

Reviewed and approved* by the following:

Gregory J. Kruczek
Assistant Teaching Professor of Political Science
Thesis Supervisor

Matt Golder
Professor of Political Science
Honors Adviser

* Electronic approvals are on file.

ABSTRACT

The Bellicose Theory, formulated by Charles Tilly, contends that wars are a great stimulus to centralizing state power and building institutional capacity. Indeed: “War and preparation for war involved rulers in extracting the means of war from others who held the essential resources- men, arms, supplies, or money to buy them- and who were reluctant to surrender them without strong pressure or compensation” (Tilly, 1992). The extraction of resources to fund war-making and state centralization, on some level, entails environmental manipulation. Yet this dynamic is almost entirely overlooked by scholars. In fact, when environmental manipulation is discussed, it is usually within the context of environmental activism. Additionally, there is seldom any discussion of the resource extraction involved. By comparing the cases of ISIS, Israel, and the United States, this project aims to provide a more nuanced view of how environmental manipulation facilitates state-making. I argue that environmental manipulation is an overlooked, yet critical tool state-makers employ to increase territorial control and, by extension, facilitates the activities that build institutional capacity: state-making, war-making, protection, and extraction.

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Figure 1: ISIS control of oil fields and refineries in 201632

ACKNOWLEDGEMENTS

I would like to thank and express my gratitude towards my professor and thesis advisor Dr. Kruczek. Without his dedication this project from its conception to completion would not have been possible. The thesis originated during the fall semester of 2020 when I took Dr. Kruczek's International Relations of the Middle East class (PLSC 467). I honors optioned the class and since Dr. Kruczek knew I was interested in sustainability and the environment recommended this topic for a case study on ISIS, Israel, and Syria under the Assad Regime. I continued onto taking State-Making (PLSC 420) with him the following semester. These two classes laid the foundation for this thesis and with Dr. Kruczek's wisdom and constant support, guided me to its completion. Additionally, I would like to express my deep gratitude and thanks to the Department of Political Science and its professors who have taught me so much. Lastly, I would like to thank my family and friends for their constant support and encouragement in all aspects of my undergraduate experience.

Chapter 1

Introduction

Environmental Manipulation

In 2006, the Israeli Air Force launched two airstrikes destroying oil storage tanks in El-Jiyeh, Lebanon. These attacks resulted in the burning of 55,000 tons of fuel oil that lasted for up to 27 days. In addition to the 55,000 tons of oil that were burned, approximately 15,000 additional tons were released into the Mediterranean Sea affecting an area of 150 kilometers or two-thirds of Lebanon's coastline (UNDP Lebanon, 2014). This had the effect of polluting the rock bed beneath the plant as well as the groundwater. Israel targeted these oil storage tanks because they knew the significant monetary and environmental damages it would incur. The attack resulted in over \$240 million in damages and approximately \$220 million in lost oil, a taxable resource for the Lebanese government, which was already in the state of economic peril. States have engaged in this type of behavior for centuries. That being the purposeful manipulation of the environment to enhance institutional capacity, or degrade an enemy's institutional capacity, and increase their territorial control, or decrease an enemy's territorial control.

Argument

In this thesis, I will discuss why state-makers utilize environmental manipulation (EM) to expand their state-making capabilities. Specifically how ISIS, Israel, and the U.S. in Vietnam has utilized environmental manipulation to increase their state-making capabilities. For the uses of

this paper, I will be employing Charles Tilly's Bellicose state-making theory which simply states, a state-maker successfully operates by engaging in four functions: state-making, war-making, protection, and extraction. State-makers engage in environmental manipulation in order to increase their ability to execute these four functions with a high degree of efficiency, which in turn increase state power and build institutional capacity. There are three main types of environmental manipulation that state-makers engage in: (1) *petroleum-based products/infrastructure*, (2) *water or water-based infrastructure*, and (3) *agriculture-based targets*. State-makers utilize these three types of environmental manipulation because of the impacts they can have. These impacts can range from generating hundreds of millions to billions of dollars in revenues for the state-maker – consequently detracting that potential revenue from the state-maker's competitors. Forcing tens to hundreds of thousands of individuals to flee an area due to lack of clean water, food, or pollution. Or creating environmental hazards that require months and millions of dollars in resources to solve only temporarily. These impacts are the main reasons state-makers choose to utilize environmental manipulation tactics.

It was these finding that led me to the conclusion that environmental manipulation does increase territorial control. As well as the discovery that environmental manipulation targeting petroleum-based products/infrastructure is the most utilized for increasing territorial control. I made these conclusions because even when a state-maker is engaging in environmental manipulation tactics and loses hold over an area, they do not lose control over that territory. Instead the state-maker transitions the environmental manipulation tactic they are using to another type of EM, which increases a different state-making capability. For example, if ISIS loses control over an oil well they are extraction oil from, they change the EM tactic and burn the oil well. This results in no longer increasing extraction capabilities, to instead increasing state-

making and war-making capabilities because they are destroying millions of dollars in oil revenues the competitor cannot use and must dedicate millions of dollars to cleaning up the mess. This is one of the reasons petroleum-based products/infrastructure EM is likely the most utilized for increasing territorial control.

Petroleum-based products/infrastructure causes immense monetary damages to the state-makers competitors, as well as creates substantial revenue sources for the state-maker. Petroleum-based products/infrastructure can also result in population displacement due to the pollution of water sources or air contamination. Similarly to how petroleum-based products/infrastructure can result in population displacement, water or water-based infrastructure and agriculture-based targets EM are frequently utilized for population displacement or targeting civilians that are not complying with the state-maker. Environmental manipulation is used to coerce civilians and governments alike, but if the state-maker desires a particular area and the people would not leave, then they employ environmental manipulation tactics to force them to leave. They can do this by cutting off water or polluting water to a town that relies on this water to survive (Lossow, 2016). Or by destroying hundreds of thousands of acres of crops and farmlands, state-makers can force tens to hundreds of thousands of civilians to flee an area due to lack of food or income they rely on to live (Al Arabiya News, 2015; Kanfash, 2019; Salerno, 2017; Salim, 2019). All of these results from environmental manipulation are employed by state-makers to increase their ability to execute the four functions of state-making successfully.

This research will be influential in the field because state-making literature has never focused through the lens of environmental manipulation. State-making has primarily tested whether or not Tilly's statement, "War made the state, and the state made war" held up outside of European states. By elaborating on the types of environmental manipulation, why state-

makers utilize it, and the outcomes from using them, will provide illuminating research to defend against it.

Conceptual Clarifications

In order to state-makers to successfully increase territorial control they must increase state-making capabilities. The four state-making capabilities that state-makers must successfully engage in are *state-making*, *war-making*, *protection*, and *extraction*. State-making is defined as attacking and checking competitors and challenges within the territory claimed by the state. War-making is attacking rivals outside the territory already claimed by the state. Protection is attacking or checking rivals of the rulers' principal allies, whether inside or outside the state's claimed territory. Lastly, extraction is drawing from its subject population the means of state-making, war-making, and protection (Tilly, 1992, p. 96). State-makers will employ three types of environmental manipulation to increase these state-making capabilities. The three types of environmental manipulations are: (1) *petroleum-based products/infrastructure*, (2) *water or water-based infrastructure*, and (3) *agriculture-based targets*.

Petroleum-based products/infrastructure is defined as the intentional destruction, repurposing, or alteration of petroleum products or machinery to alter or deteriorate the surrounding environment, or weaken a competitor. State-makers engage in this type of environmental manipulation to weaken a competitor because it increases state-making, war-making, and extraction capabilities. Utilizing this type of environmental manipulation can result in hundreds of millions to billions of dollars in lost revenue for the state-makers competitor, tens-hundreds of millions of destroyed petroleum products or petroleum-based infrastructure, or force tens of thousands of citizens to flee an area due to polluted water or air.

Water or water-based infrastructure is the intentional destruction, repurposing, or alteration of water or water-based infrastructure, such as dams, to inflict potential damage to the environment, community, or life itself. State-makers engage in this type of environmental manipulation to weaken a competitor because it increases state-making, war-making, and extraction capabilities. Utilizing this type of environmental manipulation can result in the displacement of tens to hundreds of thousands of civilians, which the state-makers can then move in and control. The destruction of tens of thousands of acres of crops, homes, and livestock. Or force hundreds of thousands to millions of citizens to rely on you for water resources that individuals require to survive and fuel agricultural sectors families rely on for income.

Lastly, agriculture-based targets are the intentional destruction or repurposing of crops or farmland, to coerce resistance into following the will of the state-maker or inflicting damage on resistant civilians or individuals of the competitor state. State-makers engage in this type of environmental manipulation to weaken a competitor because it increases state-making, war-making, and extraction capabilities. Utilizing this type of environmental manipulation can result in millions to tens of billions of dollars in lost revenue for the state-makers competitor, forcing tens of thousands of citizens to flee an area due to lack of crops that are needed to feed families and provide income for farmers, or provide tens of millions of dollars in revenue. By understanding these terms you will be able to understand how and why state-makers utilize environmental manipulation to increase state-making capabilities.

Scholarly Contributions

This thesis will greatly add to the existing literature regarding tools state-makers utilize to increase territorial control and state-making capabilities. Environmental manipulation through the lens of state-making is an extremely understudied field, and through its direct utilization and impact on state-making capabilities is practically non-existent. By establishing dozens of accounted cases where state-makers have utilized environmental manipulation, classifying them under three types of environment manipulation, discussing the impacts they had/why they were chosen, and the type of state-making capabilities they enhance, will provide a crucial platform for further research to be pursued. This will provide an important aspect that advances Tilly's Bellicose theory of state-making. It creates a fuller picture on the application of Bellicose theory outside of the European and non-European contemporary world. Researchers will thus be able to better and more fully understand the different trajectories that state-making can take. Especially depending on the region and local environmental resources that are present. For example, if a region is oil rich scholars can predict that state-maker have employed environmental manipulation tactics targeting petroleum-based products/infrastructure. Lastly, I illuminate upon the limitations with the existing research and this paper. The necessity of establishing a way to systematically quantify environmental manipulation, as well as more in-depth data on environmental manipulation cases is paramount in order to advance this field of literature.

Policy Implications

Focusing on environmental manipulation through the lens of state-making will no doubt provide insight into future policy implications. By analyzing how ISIS, Israel, and the U.S. utilized environmental manipulation against their enemies, governments will be better prepared on how to combat environmental manipulation. For example, if an oil-rich region is taken over

by a state-maker and they are targeting petroleum-based products/infrastructure, states can fortify or focus their attention towards those areas to limit and prevent the state-maker from utilizing that type of environmental manipulation. This is similar to what the Syrian, Iraqi, and U.S. governments did to combat ISIS and prevent them from continuing to extract oil, which they received hundreds of million to billions of dollars in revenue, from the wells. In addition to becoming more knowledgeable and prepared on how a state-maker can utilize environmental manipulation against you, governments will be aware of the potential outcomes these instances will result in. Retaining this information will allow states to become more stable and prepared about the threats they face, and how to combat them.

This will hopefully decrease the length and likelihood of states going to war/falling into civil war because they are already aware of the consequences that will arise from such decisions. If these acts of environmental manipulation are less utilized, then less crops/farmlands will be destroyed, oil lost, and citizens displaced will decrease. In addition, this research demonstrates how state-makers/states can utilize environmental manipulation to best combat an enemy; which specific types will work best to their advantage or result in a specific outcome that damages their enemy the most. For example, if a region is oil or agriculture rich state-makers/states will decide to employ environmental manipulation strategies targeting petroleum-based products/infrastructure or agriculture-based targets. This way the length of conflicts will be minimized so the citizens and their livelihoods are less effected, allowing them to return to their normal lives as quickly as possible.

Going Forward

This thesis has six chapters: introduction, methods, ISIS, Israel and the U.S., analysis, and the conclusion. With the first chapter being this introduction, I prepare the reader for what to expect. I discuss a specific case of environmental manipulation, my argument of this thesis, clarification of state-making functions and types of environmental manipulation, scholarly contributions, policy implications, and finally the layout of this thesis. For the second chapter, I present the methods that lay the groundwork for this thesis. These sections are the literature review, theoretical approach, hypotheses, methodology, and data accumulation. In the literature review section, I discuss the existing research on state-making and how it does not discuss environmental manipulation as a tool to increase territorial control or state-making capabilities. Additionally, I discuss the “gaps” in environmental manipulation literature and then cite specific cases that display these “gaps”. For the theoretical approach section, I present my theory behind environmental manipulation as a tool to increase state-making capabilities and territorial control. I then present and discuss my two hypotheses and how I evaluate them. I then continue on to my methodology where I discuss the main components/ideas of this thesis, as well as how I decided upon this subject. Lastly for this chapter, I discuss the data of this thesis. That being the three cases of ISIS, Israel, and the U.S. in Vietnam. When they utilized environmental manipulation tactics and the specific types that were utilized.

For my third chapter, ISIS, I discuss my main case study on ISIS. I analyze the types and cases where ISIS engaged in environmental manipulation, the outcomes it had, and which functions of state-making it enhanced. The same goes for my fourth chapter, the only difference is I am discussing my secondary and tertiary cases: Israel and the U.S. instead of ISIS. For my fifth chapter, I elaborate upon the data relating to my two hypotheses. I also go into depth about the relevant findings I discovered that pertained to this thesis, but were not address in either of

the hypotheses. Lastly, my sixth chapter is my conclusion. In my conclusion, I re-state my main argument, the findings, limitations, and two potential avenues for future research.

Chapter 2

Methods

Literature Review

Scholarly work on environmental manipulation tied to the Bellicose theory of state-making does not exist. Literature on environmental manipulation and the Bellicose theory of state-making are entirely separate. It is because of this gap that research on this subject must be conducted. Due to this I discuss the relevant research on Tilly's Bellicose theory of state-making, its shortcoming related to environmental manipulation, and the current state of literature on environmental manipulation.

State-Making Research

Charles Tilly is the predominant researcher and pioneer of the Bellicose Theory, which, in providing an alternative explanation for the emergence of the nation-state as the dominant form of political organization, contends that war is a great stimulus to institutional capacity. Indeed, the goal of a ruler is to control territory, which put simply is the monopoly on the use of force. Territorial control enables the ruler to profit from the subject population and territory, which in turn funds war/expansion and profit. Preparations for war, offensive or defensive, require a ruler to extract more resources. This dynamic is captured by *war provoking logic*:

Everyone who controls substantial coercive means tries to maintain a secure area within which they can enjoy the returns from coercion, plus a fortified buffer zone possible run at a loss, to protect the secure area. Police or their equivalent deployed force in the secure area, while armies patrolled the buffer zone and ventured outside it (Tilly, 1992).

The goal here is to turn the “buffer zone” into part of the “secure area” so that resource extraction is enhanced and, by extension, so too are state-making abilities. In other words, more territorial control means more state-making capabilities.

The range of activities undertaken by states/state-makers to achieve these ends fall under four different categories: *state-making*, *war-making*, *protection*, and *extraction*. State-making is defined as attacking and checking competitors and challenges within the territory claimed by the state. War-making is defined as attacking rivals outside the territory already claimed by the state. Protection is attacking or checking rivals of the rulers’ principal allies, whether inside or outside the state’s claimed territory. Lastly, extraction is drawing from its subject population the means of state-making, war-making, and protection. (Tilly, 1992). When all four functions are successfully executed state power and institutional capacity increase. Expansion stops when states are checked by rivals that have executed these four functions on a similar level. Ergo, any state that fails to execute these four functions successfully, will disappear.

Throughout Tilly’s theory of state-making, he does not address the role of environmental manipulation in the execution of the four functions. This is puzzling when one considers the centrality of *bargaining* to the state-making process. Tilly defines *bargaining* as,

“Authorities sought to draw resources and acquiescence from the subject population... people bargained out new agreements concerning the conditions under which the state could extract or control, and the kinds of claims that powerholders or ordinary people could make on the state” (Tilly, 1992, p. 99).

The state-makers would bargain with their subject populations in order to extract the means to wage war. They would engage in bargaining activities like sending in troops to crush a tax rebellion, the burning of crops if a person or group did not turn over quotas or pay taxes, or the capturing/execution of reluctant taxpayers to be used as an exemplary punishment. For

example, “In 1640, the crown dispatched 9,000 troops into the province (Catalonia) to enforce its claims for payment, reduce the likelihood of organized resistance, and apply a kind of blackmail” (Tilly, 1992, p. 101). By employing these bargaining tactics rulers would set an example to all citizens that if they disobeyed the state, then there would be punishments.

It is here that the question of environmental manipulation and its role in state-making activities rises to the forefront. Environmental manipulation is the intentional destruction, repurposing, or alteration of the natural environment or environment-related infrastructure. Yet this is completely absent from Tilly’s work, as well as those who sought to “test” the Bellicose theory (Atzili, 2006/2007; Ayoob, 1995; Bates, 2001; Centeno, 2002; Herbst, 2000; Leander, 2004; Sorenson, 2001; and Thies, 2006).

For example, in their analysis of why Vietnam emerged as a stronger state than Afghanistan, Taylor and Botea (2008) note that Vietnam’s state-making efforts were assisted by the presence of a core ethnic group, which heavily influences a sense of national identity, and the combination of war and revolution, which inspired state officials and facilitated a unifying national ideology. Yet there is no discussion of how the U.S. and South Vietnam engaged in a variety of environmental manipulation activities. These included widespread bombing campaigns, to chemical and mechanical forest destruction, to large-scale crop destruction through the application of Agent Orange (Westing, 1983). These tactics of environmental manipulation were employed to increase large-scale population displacement and deprive the enemy of the food, shelter, water transportation routes, and taxable resources critical to the combat activities necessary to expand territorial control.

Environmental Manipulation Types and Cases

More recent work discusses how environmental manipulation is used by contending actors in conflict, but all fail to link it to state-making activities. Rather, the focus is seemingly entirely on 1) raising awareness on the destruction of key, sometimes endangered or culturally significant, environmental areas; 2) the health risks posed by one actor's destruction of said area; or, 3) how the destruction/manipulation of said area aided in one actor's strategic military goals. In other words, no one "closes the loop," in that they do not tell us how these activities facilitate: state-making, war-making, protection, and extraction.

For example, since the 2001 U.S. invasion, American officials heavily pressured their Afghan partners to overhaul the country's agricultural sector. More specifically, to replace the reliance on poppies, which enables the manufacture of heroin, and was a key "money maker" for the Taliban and other extremist groups. To achieve this goal, the U.S. destroyed 15,300 hectares, or 10 percent, of the opium poppy crop in Afghanistan (Glaze, 2007). Despite these environmental manipulation tactics, the overall levels of opium poppy continued to increase and bring in tens to hundreds of millions of dollars to extremist groups (Felbab-Brown, 2005). Felbab-Brown and Glaze only discuss the type of environmental manipulation as a failed counter-narcotics strategy. It would have been beneficial had the author discussed how weening Afghanistan's farmers off of poppies facilitated central government control by depriving non-state actors of a valuable source of revenue. They should have developed the article further to discuss that the utilization of environmental manipulation as a tool to increase war-making and state-making capabilities for the United States counterterrorism campaign.

Secondly, Mark Bulmer's 2018 article, "Military Use of Environmental Degradation by Islamic State, Northern Iraq," discussed how the burning of oil wells and a sulfur plant in Iraq resulted in a loss of tens of billions of dollars from lost resources, combating the fires, and

repairs to the damaged infrastructure. In addition to the monetary losses, there were health effects on civilians even after ISIS had been defeated; forcing tens of thousands of families to flee, leaving them displaced and sick. In Bulmer's concluding remarks he emphasized that these actions "highlights the need to monitor environmental degradation in conjunction with accurate and timely health and environmental threat assessment in conflict areas. These must continue after the fighting ends if the true effects are to be understood" (Bulmer, 2018, p. 1). He discusses his finding regarding the type of environmental manipulation employed and the impact it had, but he fails to tie it back to state-making. He does not elaborate on the impact it had on state-making, war-making, protection, or extraction capabilities. He established the outcome that resulted from the type of environmental manipulation, but falls just short of tying it all together.

Lastly, Cara Priestly's article "We Won't Survive in a City. The Marshes are Our Life: An Analysis of Ecologically Induced Genocide in the Iraqi Marshes" (2020) discusses environmental manipulation, but fails to incorporate the state-making side of the conversation. Priestly illustrates how the Sunni dominated Iraqi government launched a coordinated counterinsurgency campaign against the "Marsh" (Shia) Arabs in the 1990s. A major component of this strategy was diverting the water from the Mesopotamian marshes, burning reed-beds, and deliberately poisoning the marsh water, which resulted in the disappearance of approximately 90% of the marshes by 1993 (Ahram, 2015; United Nations, 1993). Iraq strategically utilized environmental manipulation tactics that drained over 2 million acres of marshes and forced approximately 210,000 Marsh Arabs from their homes because the marshes were located on some of Iraq's richest oil deposits (ReliefWeb, 2003; Reuters, 2016). Priestley could have explained how the draining of the marshes was a tool to increase Iraq's state-making capabilities, and that once the people were displaced Iraq could engage the extraction of oil. This proved to be

an extremely effective utilization of environmental manipulation because fewer than 10% of the remaining Marsh Arabs returned due to the marshes' poor fishing and lack of clean drinking water, schools, and health clinics (ReliefWeb, 2003; Richardson and Hussain, 2006). While the article stated the act of environmental manipulation, and that Iraq did this to force the Marsh Arabs out and extract the oil from the marshes; it failed to bring it full circle by illuminated the effect it had on Iraq's state-making efforts.

Another article that discusses the act of environmental manipulation, but fails to incorporate the state-making side of the conversation is Felix Rembold's article "Mapping charcoal driven forest degradation during the main period of Al-Shabaab control in Southern Somalia" (2013). The article states Al-Shabaab has engaged in deforestation practices to create wood charcoal; over 90% of urban households in sub-Saharan Africa use wood charcoal as their main source of fuel for cooking (Rembold, 2013). By engaging in deforestation, Al-Shabaab uses the trees to make wood charcoal, which is a means of extraction that funds their organization and operations. This form of environmental manipulation brings in tens to hundreds of millions of dollars in resources for Al-Shabaab (Rembold, 2013). Rembold like many other scholars only discussed the act of environmental manipulation and its effect. He failed to expand beyond this and state that the form of environmental manipulation was being utilized to increase extraction capabilities for Al-Shabaab, which could be used to further their operations and state-making capabilities.

By compiling data on examples of environmental manipulation and the outcome it had/why it was chosen, I will be able to expand upon the existing research and "fill the gaps" of the current literature. Through this thesis, I do not aim to solve the problem of how and why environmental manipulation is utilization for state-making purposes. My goal is to provide a

greater understanding of state-making theory by bringing environmental manipulation into the discussion. By illuminating that environmental manipulation is employed by state-makers as a tool to enhance state-making capabilities it will provide a more complete picture of the state-making process.

Theoretical Approach

For the purposes of this project, a *state/state-maker* is defined as, “Coercion-wielding organizations that are distinct from households and kinship groups and exercise clear priority in some respects over all other organizations within substantial territories. The term therefore includes city-states, empires, theocracies, and many other forms of government, but excluded tribes, lineages, firms and churches as such” (Tilly, 1992, p. 1-2). The goal of a state-maker is to control territory, defined here as a monopoly on the use of force. This enables the extraction of resources which in turn funds war, and the centralization of state-making and building institutional capacity. This dynamic is captured by war provoking logic,

everyone who controls substantial coercive means tries to maintain a secure area within which they can enjoy the returns from coercion, plus a fortified buffer zone possible run at a loss, to protect the secure area. Police or their equivalent deployed force in the secure area, while armies patrolled the buffer zone and ventured outside it (Tilly, 1992).

The goal here is to turn the “buffer zone” into part of the “secure area” so that resources extraction is enhanced and, by extension, so too are state-making abilities. In other words, more territorial control means more state-making capabilities.

The range of activities undertaken by states/state-makers to achieve these ends fall under four different categories: *state-making*, *war-making*, *protection*, and *extraction*. State-making is defined as attacking and checking competitors and challenges within the territory claimed by the

state. War-making is attacking rivals outside the territory already claimed by the state. Protection is attacking or checking rivals of the rulers' principal allies, whether inside or outside the state's claimed territory. Lastly, extraction is drawing from its subject population the means of state-making, war-making, and protection (Tilly, 1992, p. 96). When all four functions all successfully executed state power, institutional capacity increase. Expansion stops when states are checked by rivals that have executed these four functions on a similar level. Ergo, any state that fails to execute these four functions successfully, will disappear or be "consumed" by stronger entities.

Of critical importance here is how environmental manipulation affects the four functions of state-making, and by extension, facilitates territorial control increase institutional capacity. Environmental manipulation is the intentional destruction, repurposing, or alteration of the natural environment or environment-related infrastructure. There are three main types of environmental manipulation: (1) *petroleum-based products/infrastructure*, (2) *water or water-based infrastructure*, and (3) *agriculture-based targets*. While environmental manipulation can take various forms, all are about enhancing control over territory and the populations therein.

Petroleum-based products/infrastructure is defined as the intentional destruction, repurposing, or alteration of petroleum products or machinery to alter or deteriorate the surrounding environment, or weaken a competitor. State-makers engage in this type of environmental manipulation to weaken a competitor because it increases state-making, war-making, and extraction capabilities. Utilizing this type of environmental manipulation can result in hundreds of millions to billions of dollars in lost revenue for the state-makers competitor, tens-hundreds of millions of destroyed petroleum products or petroleum-based infrastructure, or force tens of thousands of citizens to flee an area due to polluted water or air.

Examples of destruction include destroying a competitor state's oil by setting it on fire and opening oil pipelines to flood an area, which can also then be set alight. Destruction enhances territorial control in several ways. It can inflict monetary loss to the competitor state because of the oil being destroyed, but also because of the damage the burning of the oil has on the surrounding area (Tichy, 2019). If the competitor state does not have the revenue from the lost oil and has to devote millions more to cleaning up damages caused by the burning of the oil, then the state is less able and likely to engage in combatting the state-maker. Also, by burning an oil well or large amounts of oil that were released from a pipeline, it can force a group of people from an area due to the toxic smoke emitting from the burning oil (Ross, 1991). This smoke can last several weeks to a couple of months and can result in acid rain that poisons crops, farmland, and livestock. If this lasts long enough or is severe enough it causes people to leave their homes and state-makers can then more easily move in on the territory. Lastly, the smoke from the burning oil can provide cover from enemy troops – especially from aerial troops like planes, drones, and helicopters – so the state-makers can flee/operate safely (Plumer, 2016). By being able to operate or flee a burning oil well with significantly less threat of death or capture from the competitor state, the state-maker can continue engaging in state-making behaviors without losing resources, troops, or control.

As for examples of repurposing, these include utilizing the oil for yourself and opening oil pipelines to flood an area. Repurposing enhances territorial control in two main ways. Firstly, taking control of an oil well to extract the oil for monetary benefit. Enhancement facilitates territorial control because extracting oil from wells the state-maker is causing monetary loss to the competitor state. Just as, if not more importantly, they are funding their own operation and furthering their state-making capabilities (Tichy, 2019). By doing this they can simultaneously

weaken their competitor and strengthen their campaign. Another example of this is opening oil pipelines in an area. This creates an unsafe area for the people therein to live in and causes millions of dollars of lost oil and cleanup (Plumer, 2016). By doing so the state-maker can force the residents out of their homes, gaining control of the territory and inflicting monetary damages to the competitor state that they could have dedicated to combatting them.

Lastly, an example of alteration is poisoning water sources with oil. By contaminating water sources state-makers are eliminating a crucial resource that the people residing in the desired territory require (Gleick, 2019). Water is absolutely necessary for these people's survival because it can be the source of clean drinking water, water for crops, livestock, and marine life consumed as food. By poisoning a water source the state-maker is forcing the people out of a region, in turn strengthening their territorial control. By removing the people who could resist the state-makers rule, they are enhancing their control over the territory.

Water or water-based infrastructure is the intentional destruction, repurposing, or alteration of water or water-based infrastructure, such as dams, to inflict potential damage to the environment, community, or life itself. State-makers engage in this type of environmental manipulation to weaken a competitor because it increases state-making, war-making, and extraction capabilities. Utilizing this type of environmental manipulation can result in the displacement of tens to hundreds of thousands of civilians, which the state-makers can then move in and control. The destruction of tens of thousands of acres of crops, homes, and livestock. Or force hundreds of thousands to millions of citizens to rely on you for water resources that individuals require to survive and fuel agricultural sectors families rely on for income.

An example of destruction includes destroying water-based infrastructure like dykes.

Dykes can stabilize water levels during monsoon seasons that without them can flood millions of acres of land. Targeting dykes enhances state-makers territorial control because it destabilizes the water levels that result in floods forcing tens to hundreds of thousands of people to flee an area (Thuan 2018). Since these citizens homes, farmlands, and crops are destroyed or lost due to the flooding, displacing them from their areas due to the flooding. Similarly, a state-maker can utilize water or water-based infrastructure EM for repurposing means.

An example of repurposing includes taking control of water-based infrastructure like a dam. This can be done in two main ways: by providing too much water or too little water. By providing too much water, a state-maker can release an extreme amount of water to flood an area; effectively destroying houses, farmland, crops, livestock for hundreds of kilometers (Lossow, 2016). This enhances territorial control because the state-maker not only inflicted a substantial monetary loss on the people residing in the targeted region but decimates their livelihoods. These floods can demolish their houses, farmland, crops, and livestock. If the people residing in the territory desired by the state-maker lose practically everything, then many leave the area. This is one of the main intents and goals state-makers attempt to complete when engaging in this type of state-making or war-making behavior. While substantial damage can be done by the usage of too much water, the opposite is also true.

Minimal water can also be repurposed as a weapon for state-making. By blocking crucial pipes that provide water to a region a state-maker can force a group of people from that area due to a lack of access to water (Lossow, 2016). By not having access to water the people are forced to leave the area for somewhere they can survive with access to water. Once the people leave the state-maker then can move in and claimed their farms and agricultural land (Lossow, 2016).

State-makers utilize this type of environmental manipulation as a punishment to citizens who do not obey their orders or as a tool to force a people from an area they desire to control. This type of repurposing water or water infrastructure enhances territorial control because it allows the state-maker to effectively display their dominance and the potential outcome if the people of a region do not comply with their order. If the people do not obey them, then they force them to leave. Which in turn increases their control and ability to state-make effectively.

Similar to using not enough water to coerce a people into obeying your commands or forcing them to leave their land, a state-maker can engage in the alteration of water or water-based infrastructure to increase territorial control. Examples of alteration include polluting a town's source of drinking water or river (Gleick, 2019; Lossow, 2016). This type of alteration facilitates territorial control by ruining the area's clean water source, which is vital for human, livestock, and agricultural survival. If the people within the territory do not have the water necessary to survive, they will leave and find elsewhere to live. Following this, the state-maker can move in and occupy the territory. While water or water-based infrastructure is utilized to mainly force a people out of the desired area or punish them for disloyalty/disobedience, the last type of environmental manipulation: agriculture-based targets, is also utilized to punish disloyalty/disobedience.

Lastly, agriculture-based targets are the intentional destruction or repurposing of crops or farmland, to coerce resistance into following the will of the state-maker or inflicting damage on resistant civilians or individuals of the competitor state. . State-makers engage in this type of environmental manipulation to weaken a competitor because it increases state-making, war-making, and extraction capabilities. Utilizing this type of environmental manipulation can result in millions to tens of billions of dollars in lost revenue for the state-makers competitor, forcing

tens of thousands of citizens to flee an area due to lack of crops that are needed to feed families and provide income for farmers, or provide tens of millions of dollars in revenue.

Examples of destruction include destroying agriculture-based targets like crops, farmland, or fruit trees (Al Arabiya News, 2015; Salerno, 2017; Salim, 2019). Destroying these agriculture-based targets enhances territorial control by inflicting monetary loss to the citizens. Not only does it inflict a monetary loss, but millions of individuals, citizens and troops alike, rely on these crops for food. By destroying the crops the state-maker is not only hurting citizens disloyal/disobedient to them, but hurting the competitor state by forcing the citizens to choose them or face the repercussions. When confronted with this choice, citizens often choose the state-maker over the state because they believe they will suffer less hostility and loss. Effectively strengthening the state-makers territorial control.

State-makers can repurpose agricultural crops by engaging in clear-cutting of forests to create products such as wood charcoal (Rembold, 2013). Repurposing enhances territorial control because when state-makers engage in deforestation practices to create wood charcoal, they are able to sell copious amounts of said product that can fund their state-making operations. Similarly a state-maker can seize and sell agricultural products as their own for monetary profit (Fick, 2015). By creating a source of income from these extraction process, they can expand their state-making and war-making capabilities. Which in turn allows them to successfully execute state power and increase institutional capacity. Additionally, cutting down trees deprives enemies of places to hide/store weapons, the ability to use wood for fuel, or the ability to sell the agricultural product like wood. By engaging in repurposing agriculture-based targets a state-maker can enhance their own state-making capabilities, while simultaneously weakening the competitors state-making capabilities.

A key factor behind why state-makers choose to utilize environmental manipulation is because of the outcomes it can cause. While environmental manipulation can result in tens of millions to billions of dollars in revenue for the state-maker (Felbab-Brown, 2005; Rembold, 2013; Tichy, 2019) or tens of millions to billions in lost revenue/damages to the state (Ross, 1992; UNDP Lebanon, 2014), a main reason why they engage in environmental manipulation is because of the population displacement it will result in. Environmental manipulation is used to coerce civilians and governments alike, but if the state-maker desires a particular area and the people will not leave, then they employ environmental manipulation tactics to force them to leave. They can do this by blocking water pipes that go to a town that needs them to survive (Lossow, 2016). It can be done by burning an oil well or large amounts of oil that were released from a pipeline, which emits toxic smoke for days to months (Bulmer, 2018; Plumer, 2016; Ross, 1991). Or strategically destroying citizens crops so they are forced to flee to an area with food (Al Arabiya News, 2015; Kanfash, 2019; Salerno, 2017; Salim, 2019).

The state-maker either wants the citizens gone to take their land for themselves and utilize it to increase their own state-making capabilities (Lossow, 2016; Priestley, 2020) or because they do not want competition with their territory that opposes their rule or supports the state-maker's enemies. By analyzing the acts of environmental manipulation employed, the outcomes they had/why they were chosen, and the function of state-making it was, we will be able to better understand state-making theory and the tools that it is facilitated by.

Lastly, regarding the four functions of state-making, a state-maker/state can engage in a form of environmental manipulation that increase numerous types of state-making capabilities. For example, if a state-maker gains control over an oil well, they can extract and sell the oil which increases extraction capabilities, while at the same time they are preventing their

competitors from extracting and profiting from the revenues generated by the oil, so they are also increasing their state-making and war-making capabilities. In addition to this, for the purposes of this thesis state-making and war-making will be often grouped together because there is not sufficient data to distinguish whether a state-maker was checking competitors within or outside of the territory controlled when they utilized a type of environmental manipulation. State-making and war-making capabilities are the difference between checking competitors within or outside of the territory a state-maker controls. What frequently occurs is state-makers are checking competitors within a “buffer zone” where they do not have complete control over the territory, just some sections. In this buffer zone state-making and war-making capabilities are increased through the utilization of environmental manipulation.

Hypotheses

Each of the three types of environmental manipulation is applied to increase a state’s control over a territory, so they can successfully execute state power and increase institutional power. By continually engaging in the three types of environmental manipulation they not only expand their state-making capabilities but increase their territorial control. Therefore, I have developed several hypotheses relating to the independent variable: the type of environmental manipulation being employed, and the dependent variable: the type of state-making activity, which I will test.

Hypothesis 1: Environmental manipulation enhances territorial control.

Hypothesis 2A: Environmental manipulation targeting petroleum-based products/infrastructure is the most utilized for increasing territorial control.

Hypothesis 2B: Environmental manipulation targeting water or water-based infrastructure is the most utilized for increasing territorial control.

Hypothesis 2C: Environmental manipulation focusing on agriculture-based targets is the most utilized for increasing territorial control.

Methodology

For this thesis, I conducted a comparative analysis of how environmental manipulation impacts state-making capabilities. My unit of analysis is state-makers that utilize environmental manipulation. After collecting the data on cases of environmental manipulation, I classified which type of environmental manipulation each example fell under. There are three main types of environmental manipulation which these examples can fall under: (1) *petroleum-based products/infrastructure*, (2) *water or water-based infrastructure*, and (3) *agriculture-based targets*. Once the examples of environmental manipulation were classified to their respective category, I applied Charles Tilly's Bellicose theory of state-making to each example. I analyzed which function of state-making the cases impacted when utilizing environmental manipulation. The four different categories of state-making that act of environmental manipulation could fall under is *state-making*, *war-making*, *protection*, and *extraction*. Depending on the type of environmental manipulation that is employed, this could result in the environmental manipulation falling under one or several different functions of state-making. After elaborating upon which function(s) of state-making fell under the types of environmental manipulation, I discuss why the state-makers decided to utilize these specific types of environmental manipulation to enhance their state-making capabilities.

Lastly, the way I am testing my hypotheses, specifically hypotheses 2A, 2B, and 2C, is by counting a specific target of environmental manipulation as one type of environmental manipulation. So, if one of the cases continually attacks an area or type of agriculture for years, I will count that as one count of environmental manipulation; unless there are specific examples of that type of environmental manipulation. For example, Israel has destroyed hundreds of thousands of Palestinian olive trees since 1967; however, that will be counted as one act of environmental manipulation. Similarly, if a state-maker targets multiple of one type of environmental manipulation at once, I will count that as one act of environmental manipulation. For example, ISIS destroyed nineteen oil wells in the Qayyarah Oil Fields at once in August 2016, therefore I will count it as one act of environmental manipulation. Lastly, when there is insufficient data on subject and sources only disclose that “x” amount of environmental manipulation occurred, that will be counted as one act of environmental manipulation. For example, stating the U.S. destroyed millions of acres of farmland and forest in Vietnam through the application of Agent Orange, would count as one act of environmental manipulation. This is because there is often not enough data regarding individual events of one specific type of environmental manipulation. I could not find a more practical way to quantify acts of environmental manipulation, whether that is by region, year, type, or every individual acts, so I am going to follow this approach.

Data Accumulation

I selected three cases for my comparative analysis of how environmental manipulation impacts state-making capabilities of ISIS, Israel, and the U.S. in Vietnam. The main case study will be conducted on ISIS, with the supporting secondary and tertiary cases being Israel and the

U.S. in Vietnam. Regarding the sources used in this thesis, I researched specific examples of environmental manipulation carried out by the state-makers. The sources of these examples range from scholarly journal articles, to UN analysis reports, to newspaper articles. For each case study I focused on the time span when they were utilizing environmental manipulation. For ISIS, I focused on their environmental manipulation tactics in Iraq and Syria from 2014 to 2019. For Israel I focused on their environmental manipulation tactics in present day Palestine, mainly the West Bank, from 1967 to today. Lastly, for the U.S. I focused on their environmental manipulation tactics in Vietnam from 1965 to 1973.

Chapter 3

ISIS

ISIS Overview

ISIS (Islamic State of Iraq and Syria), also known as ISIL (Islamic State of Iraq and the Levant), is a Sunni jihadist group with the goal of creating a unified Islamic state through any means necessary. ISIS was originally an offshoot of Al-Qaeda but later publicly expelled from it. They rose to prominence in 2014 after launching an offensive on the Iraqi cities Mosul and Tikrit. At its height, ISIS controlled about a third of Syria and 40 percent of Iraq, roughly 20,000 square miles of territory. However, by December 2017 it had lost approximately 95% of its territory; including its two biggest cities, Mosul (Iraq's second largest city) and the northern Syrian city of Raqqa, ISIS's capital city.

ISIS's Environmental Manipulation

For ISIS, I will be focusing on their environmental manipulation tactics in Iraq and Syria from 2014 to 2019. They engaged in all three types of environmental manipulation: (1) *petroleum-based products/infrastructure*, (2) *water or water-based infrastructure*, and (3) *agriculture-based targets*. Specifically, ISIS utilized petroleum-based products/infrastructure EM 48 times, water or water-based infrastructure EM 13 times, and agriculture-based targets EM 10 times. These acts of environmental manipulation fell under three functions of state-making: *state-making, war-making, and extraction*. Regarding the type of environmental manipulation ISIS utilized, 41 acts of environmental manipulation increased state-making, war-making, and

extraction capabilities. 29 of the cases increased only state-making and war-making capabilities. Also, only one case, which employed agriculture-based targets EM, was utilized solely to increase extraction capabilities. They engaged in these types of environmental manipulation strategies to enhance these three functions of state-making, as a tool for population displacement, to increase territorial control, and to strengthen their operations. Additionally, ISIS utilized petroleum-based products/infrastructure EM the most by far because it can result in significant monetary benefits or damages. ISIS employed this type of EM because it generated hundreds of millions to billions of dollars in revenue by extracting oil from oil wells, which in turn detracts that potential revenue from its competitors. Additionally, they set afire the oil wells as they retreat to create an environmental hazard that costs tens of millions and months to put out

Petroleum-Based Products/Infrastructure

Beginning with petroleum-based products/infrastructure EM, ISIS has made targeted petroleum-based products/infrastructure a cornerstone of their campaign and operations. ISIS engaged in roughly 48 major attacks against Syrian and Iraqi petroleum-based products/infrastructure by either extraction the petroleum themselves, or destroying petroleum-based products/infrastructure. They engaged in these strategies to increase state-making, war-making, and extraction capabilities. Of those 48 cases of petroleum-based products/infrastructure EM, 39 of the instances increased extraction, state-making, and war-making capabilities, and 9 of the instances only increased state-making and war-making capabilities. The following 48 cases are as follows:

- Over the course of 2014, ISIS took control of more than 60% of the Syrian oil production and roughly 10% of the Iraqi oil production (Marcel, 2014). They

achieved this by gaining control of all oil fields concentrated in Deir ez-Zor, Hasaka, Raqqa, and eastern Homs (Syria). These fields accounted for 80% of all the oil production in Syria, the Syrian regime had only 8% of the oil production on its territory under its control, and the other 12% was dominated by the Kurdish forces in 2015 (Tichy, 2019, p. 8). This resulted in Syrian government petroleum production plunging from 383,000 bpd in 2010 to 10,000 bpd in 2015 and 2016 (Bulmer, 2018, p. 126). This was made possible after ISIS captured some of the al-Hasakan province's most southern oil fields: Margada, Al Jubaissah, Gouna, Tishreen, and Al Hol, adding roughly 20,000 bpd (Billon, 2021, p. 12). This environmental manipulation tactic was utilized to increase their extraction, state-making, and war-making capabilities. By engaging in these 10 acts of petroleum-based products/infrastructure EM, ISIS was able to fund their operations with hundreds of millions to billions of dollars; increasing their extraction capabilities. Additionally, by extracting and selling the oil, ISIS is significantly weakening Syria by eliminating a source of revenue worth billions every year. In turn increase state-making and war-making capabilities. The income generated from engaging in the type of petroleum-based products/infrastructure EM, and selling it to mainly Syrian and Iraqi traders, is crucial for ISIS to pay their fights and buy more munitions. Which allows them to continue to engage in and increase their state-making and war-making capabilities.

- Over the course of 2014, ISIS took hold of approximately 30 separate oil fields in Iraq, including the Ajil, Allas, Qayyara, and Najma oil fields; as well as the Baiji refinery, which was the nation's largest oil refinery producing more than a third of Iraq's domestic oil production (p. 10; Bulmer, 2018; Billon, 2021, Schlanger, 2018;

Tichy, 2019, p. 7). This amounted to approximately 30-40 oil fields under their control, producing up to 120,000 bpd (Harrell, 2015; Tichy, 2019) (Figure 1). These oil fields generated a peak extraction capability with an annual profit up to \$730 – \$1,460 million (Di Giovanni, 2014; Tichy, 2019). This environmental manipulation tactic was utilized to increase their extraction, state-making, and war-making capabilities. By engaging in these 30 acts of petroleum-based products/infrastructure EM, ISIS was able to fund their operations with hundreds of millions to billions of dollars; increasing extraction capabilities. As well as, significantly weakening Iraq by eliminating a source of revenue worth billions every year; in turn increasing state-making and war-making capabilities. The income generated from engaging in the type of petroleum-based products/infrastructure EM, and selling it to mainly Syrian and Iraqi traders, is crucial for ISIS to pay their fights and buy more munitions. This in turn allows them to continue to engage in and increase their state-making and war-making capabilities.

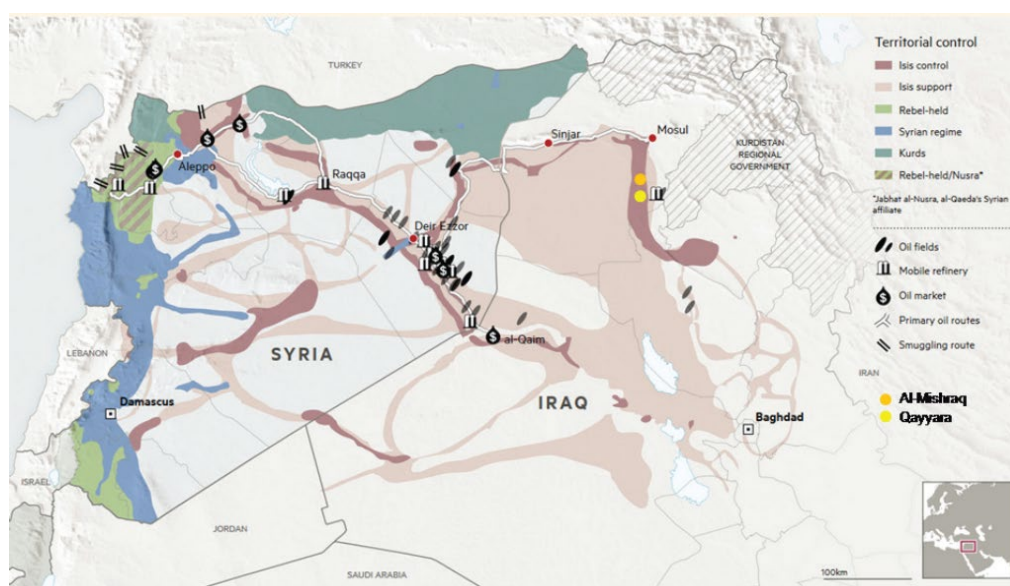


Figure 1: ISIS Control of oil fields and refineries in 2016, adapted from Solomon 2016 et. al

- June 2014: ISIS took control of the Baiji Oil refinery and Qayyarah oil field. Soon after Iraqi forces retook the facilities, but not before ISIS set fire to oil wells and pipelines as they retreated (Higginbotham, 2018; Schlanger, 2018). This caused catastrophic damage to the surrounding area because the crude oil spread into the surrounding agricultural lands and flowed into and polluted the Tigris River (Schlanger, 2018). To stop the oil from continuing to spread into the Tigris River, they had to set it on fire. These fires burnt for weeks releasing toxic chemicals into the air, that resulted in thousands of individuals from the surrounding area to suffer health-related complications and hundreds more to flee the area. ISIS utilized this environmental manipulation tactic to increase their state-making and war-making capabilities. Because they were no longer able to extract oil from the Baiji Oil refinery and Qayyarah oil field, which increased extraction capabilities, they in turn destroyed them to increase state-making and war-making capabilities. This increased state-making and war-making capabilities because the oil polluted farmlands and the Tigris River, which is the areas main source of clean water. This also forced Iraqi soldiers to deal with the on fire oil wells and leaking oil instead of pursuing ISIS.
- June 2014: ISIS attacked the gas line between the Shaer station and a gas processing plant, which caused several days of power outages all over Syria (Tichy, 2019, p. 9). This act of environmental manipulation increased state-making and war-making capabilities because ISIS cut off power to areas all over Syria, which weakened Syria's ability to effectively function temporarily.

- March 2015: ISIS blew up a gas pipeline near the town of Furqlus and set fire to the Ajil oil field (Tichy, 2019, p. 9). They set fire to the Ajil this to create a smoke wall that would block the Iraqi helicopter forces' attacks against IS positions around Tikrit (Hameed, 2015). ISIS utilized this tactic of environmental manipulation to increase state-making and war-making capabilities. This increased state-making and war-making capabilities because Iraqi forces could pursue and combat ISIS forces effectively. Additionally, they were forced to deal with the fires at the oil wells and the damages caused by the fires. They had to devote time and resources to putting out the fires that were costing them potential income from the oil currently burning and causing health issues from the smoke.
- May 2016: ISIS used improvised explosive devices (IED) to blow up three oil wells and damage one other well in the Khabaz oil field (Iraq). As well as destroying two more oil wells in the Khabaz oil field on May 12, 2016; causing a drop in production of 4,000 bpd (Tichy, 2019, p. 7). ISIS engaged in these two acts of environmental manipulation to increase state-making and war-making capabilities. This enhanced state-making and war-making capabilities because destroying the oil wells caused Iraqi forces to combat the fire at the oil wells and the damages caused by the fires. They had to devote time and resources to putting out the fires that were costing them potential income from the oil currently burning and causing health issues due to the smoke.
- August 2016: One of the most significant instances of environmental manipulation targeting petroleum-based products/infrastructure occurred in the Qayyarah oil field during late 2016. Iraqi forces were advancing on Qayyarah, Iraq – as a part of their

mission to recapture the city of Mosul – so ISIS set fire to a confirmed 19, potentially up to 34, oil wells; as well as filling trenches with crude oil and set them on fire as they retreated (Blackwell, 2016; Bulmer, 2018; Lee, 2017; Schlanger, 2018; Tichy 8). These fires resulted in approximately 5,000 barrels of oil burning every day, according to the Iraqi Oil Ministry. Additionally, they lasted roughly 267 days, which means that Iraq lost between \$26.7 - \$60 million (if the price was between \$20 - \$45 per barrel which was the current market value) (Bulmer, 2018, p. 130). Besides the millions of dollars in lost revenue from burning these oil wells had for Iraq, the money required to combat the fires and repair the damaged infrastructure ranged in the tens to hundreds of millions of dollars. On average, it took a team of 70 firefighters 30 days to extinguish one fire, in addition to 10-50 billion gallons of water (Bulmer, 2018, p. 134). During the 267 days the oil wells burned, thousands of individuals fled due to the thick black smoke and oil flooding their land, thousands sought medical attention from inhaling the toxic smoke, and at least 60 homes were destroyed because to the oil (Blackwell, 2016; Bulmer, 2018, p. 139). ISIS chose to utilize this form of environmental manipulation because it caused these outcomes, which in turn increased state-making and war-making capabilities. These outcomes included creating smoke that provided cover from warplanes, drones, and attack helicopters; increasing the difficulty of American and Iraqi forces finding and hitting targets (Plumer, 2016). They also utilized this tactic because they knew the monetary, health, and strategic impact it would have. It cost the Iraqi government tens to hundreds of millions of dollars in lost resources, clean-up, and repair efforts. As well as, cause significant enough health issues for the thousands of individuals who lived

- nearby or combatted the fires. The air was so toxic at these sites that people had to wear gas masks for months. Besides having to wear gas masks for months, locals have been suffering from burns, deformations, and countless disability cases. Human genes are also affected due to the use of chemical weapons and the burning of oil wells and military remnants, “The gene mutations will result in having more birth defects” (Higginbotham, 2018). Lastly, ISIS knew that the Iraqi government would not continue their campaign of resecuring Mosul until the oil fires in Qayyarah were dealt with, in turn further increasing state-making and war-making capabilities.
- August 2016: When Iraqi forces entered Qayyarah, ISIS opened up oil pipes in the town and flooded the streets with crude oil, which spilled in the Tigris River the next day – the Tigris is the town’s main source of drinking water (Plumer, 2016). This enhanced state-making and war-making capabilities for ISIS because opening up the oil pipelines to flood the streets with crude oil caused Iraqi forces to combat the fire at the oil wells and the damages caused by the fires caused the Iraqi troops to not be able to follow and combat ISIS. Additionally, because the crude oil polluted the Tigris River Iraqi forces had to help contain the spill, so it did not spread further.
 - February 2017: ISIS fighters blew up gas pipelines to the north, east and west of the Hayan gas field in the central province of Homs which caused a huge fire (Tichy, 2019, p. 9). ISIS engaged in this form of environmental manipulation to increase state-making and war-making efforts. This increased state-making and war-making efforts because this caused a massive fire that Syrian forces had to devote time, people, and resources to putting out that could have been dedicated to combatting ISIS.

- February 2017, ISIS fighters blew up some gas wells in the Jazal Mountains in the eastern parts of Homs. They also fired several rockets from the mountains near Palmyra, striking the Ebla gas factory and the al-Janub factory in the Furqlus area in the eastern region of Homs. The attack rendered the al-Janub plant out of service and the Ebla gas factory suffered property losses and damages to its machines (Tichy, 2019, p. 9). This act of environmental manipulation increased ISIS state-making and war-making capabilities. This increased their state-making and war-making capabilities because Syrian forces could no longer utilize the revenues from the gas factory to combatting ISIS. Additionally, in order to repair the facility it would cost millions of dollars that could be utilized elsewhere.

ISIS utilizes these strategies to weaken its competitor states: Iraq and Syria. By engaging in 48 cases of extracting oil, destroying petroleum wells/pipelines, lighting oil on fire, flooding streets with oil, and blowing up gas wells, pipelines, and factories, ISIS has increased their state-making, war-making, and extraction capabilities. Of those 48 cases of petroleum-based products/infrastructure EM, 39 of those cases increased extraction, state-making, and war-making capabilities, and 9 of those cases increased solely state-making and war-making capabilities. ISIS enhanced extraction capabilities by extraction oil from oil wells, and enhanced state-making and war-making capabilities by preventing Iraq or Syria from those streams of revenue, or by destroying petroleum-based products/infrastructure. Whenever ISIS lost control over an oil well and no longer engaged in the extraction of oil, increasing extraction, state-making, and war-making capabilities, this did not result of a loss of territorial control. They in turn transitioned their state-making efforts from mainly enhancing extraction capabilities to only enhancing their state-making and war-making activities. By checking and weakening Iraq and

Syria within and outside of the territories they controlled/desired, they were able to increase their territorial control. In ISIS' attempt to gain control of Iraq and Syria's energy sectors, they managed to severely damage their energy sectors and destabilize them.

Water or Water-Based Infrastructure

Continuing onto water or water-based infrastructure, ISIS has been known to target and use water as a weapon. The two main ways they do this is by capturing and utilizing dams, and the practice of contaminating water to increase their state-making and war-making capabilities. Regarding dams, they achieve this provide too much water by flooding, too little water by retaining, or diverting water (Lossow, 2016). ISIS launched roughly 13 major attacks against Iraqi and Syrian water or water-based infrastructure – including flooding villages, closing dams to cut off water to downstream communities and farmland, destroying crops, and allegedly poisoning water sources that towns rely on. Of those 13 cases of water or water-based infrastructure EM, all 13 of the instances increased state-making and war-making capabilities. The following 13 cases are as follows:

- January–April 2014: ISIS targeted water supplies for refugee camps holding refugees from the town of Mosul after they cut off water and power supplies there (Gleick, 2019; Vidal, 2014). This act of environmental manipulation increased state-making and war-making capabilities because it displayed to the citizens of Mosul the power ISIS wielded. It displayed the consequences that would arise if they disobeyed or challenged ISIS's rule.
- April 2014: ISIS diverted water from the Fallujah dam in Iraq to attack government forces, inundating land up to 100 km away and causing severe flooding in the city of Abu

Ghraib. Between Fallujah and Abu Ghraib, the United Nations estimates 12,000 families lost their homes and 50,000 acres of farmland are damaged along with almost the entire harvest and large numbers of livestock. These actions also cut off water for millions of people downstream in the cities of Karbala, Najaf, and Babil (Financial Action Task Force, 2015; Gleick, 2019, p. 7; Lossow, 2016, p. 88; United Nations Security Council, 2017; Vidal, 2014). ISIS utilized this form of environmental manipulation to increase state-making and war-making capabilities. This increased state-making and war-making capabilities because ISIS destroyed vital farmlands and homes that tens of thousands of people relied on. By destroying the farmlands, crops, livestock, and houses of approximately 12,000 families, in addition to cutting off water to millions of people downstream in the cities of Karbala, Najaf, and Babil, ISIS displayed the impact they can have and coerced a vast majority of these citizens into obeying their rule. Additionally, ISIS could then claim the lands if they wanted because thousands of the people who resided there no longer were there.

- April 2014: ISIS destroyed an oil pipeline near Bayji, Iraq causing an oil spill that contaminated the water supply to Baghdad, according to the Iraqi Ministry of Water Resources (Gleick, 2019; Lewis, 2014). This increased state-making and war-making capabilities for ISIS because it polluted Baghdad's clean water supply. Without this water thousands of citizens might be forced to flee or they may suffer diminished crop yields due to the lack of clean water.
- June 2014: ISIS controls Iraqi dams or areas around the dams at Fallujah, Mosul, Samarra, and Ramadi and interrupted water supplies to Shiite areas in the lower Euphrates and Tigris watersheds. ISIS stopped releases from Ramadi dam in June,

depriving Khalidiyah and Habbaniyah—cities under the control of the Iraqi government—of water (Al Marashi, 2015; Gleick, 2019). ISIS utilized this form of environmental manipulation to increase state-making and war-making capabilities. This increased state-making and war-making capabilities because the people residing in these cities were forced to suffer or flee due to a lack of water. ISIS could punish these citizens and the Iraqi government for challenging their rule and not obeying ISIS.

- June 2014: In the Shiite areas of Diyala province, ISIS wanted to expel Christian residents in the Erbil and Dohuk regions, so they blocked water pipes directed there. This forced over 50,000 residents of the town Qaraqosh to flee. After the citizens fled, they claimed their farms and agricultural land (Gleick, 2019, p. 7; Lossow, 2016, p. 87; MacKenzie, 2014; Vidal, 2014). ISIS utilized this form of environmental manipulation to increase state-making and war-making capabilities. This increased state-making and war-making capabilities because ISIS forced over 50,000 residents to flee because they desired the farmlands they resided on. ISIS cut off water to the area and because of it the residents left. ISIS enforced their will on the people and forced the people off they land they desired.
- September–October 2014: ISIS cut off water from the Sudur dam in Iraq to Balad Ruz – a predominantly Shiite part of Diyala province – for 10 days, forcing the local government to hire trucks to bring potable water to residents of villages by the towns of Mansouriya, Salam, and Sarajiq (Gleick, 2019, p. 8; King, 2015, p. 157). ISIS also uses water as a weapon in the Shirwain area of Diyala province to try to stop a military advance by Iraqi government forces. They flood nine villages, flooding 3000 donum (781 acres) of

agricultural land and inundated homes with up to two meters of water, causing hundreds of families to flee (Cunningham, 2014; Gleick, 2019, p. 8; King, 2015, p. 157).

- December 2014: ISIS deliberately contaminated drinking water with crude oil in the Balad district of the Salahaddin Governorate (United Nations Security Council, 2017; Gleick, 2019). This form of environmental manipulation increased the state-making and war-making capabilities of ISIS because it polluted the drinking water that hundreds of thousands of people rely on to survive. By contaminating the water it forces the citizens of the area to more likely obey the commands and rule of ISIS.
- January 2015: ISIS shut off water and power to the area of Deir Az-Zor south of Raqqa, Syria below the Baath dam, affecting 300,000 people (Gleick, 2019, p. 8; Hollander, 2015). This form of environmental manipulation increased the state-making and war-making capabilities of ISIS because roughly 300,000 people were without water. By cutting those people off from water it increases the likelihood that they will obey the commands and rule of ISIS. Additionally, it could potentially result in many of the individuals having to flee the area because of the lack of water, allowing ISIS to claim the land.
- May–June 2015: The Ramadi dam was captured by ISIS, which they then cut off water from the Tigris and Euphrates Rivers for the irrigation systems and treatment plants in the predominantly Shiite (Marsh Arabs) downstream agricultural provinces of Babil, Karbala, Najaf, and Qadisiya, threatening Iraq's food security (Gleick, 2019; Lossow, 2016; King, 2016; United Nations Security Council, 2017). Water flows were also cut to the Iraqi marshes, displacing local residents (Vishwanath, 2015). ISIS utilized this form of environmental manipulation to increase state-making and war-making capabilities.

This form of environmental manipulation increased state-making and war-making capabilities because they were coercing the citizens into fleeing the areas they resided. By cutting off the water the agricultural sector was threatened creating food insecurity. This forced many residents to flee the area and allow ISIS to come in and claim the lands if they desired.

- December 2016: ISIS attacked the pumping stations and distribution pipes of the major Libyan water project—the Great Manmade River (GMR)—that provides water for Benghazi, Siret, and Tripoli (Gleick, 2019; United Nations Security Council, 2017). This act of environmental manipulation increased state-making and war-making capabilities for ISIS because it limited the water to millions of people.
- August 2016: ISIS opened oil pipelines that polluted the Tigris River (Plumer, 2016). This act of environmental manipulation increased state-making and war-making capabilities for ISIS because the Iraqi government and citizens had to dedicate time, people, and resources to cleaning up the oil in the Tigris River; the areas main source of clean water.
- January 2017: ISIS controlled the Euphrates River dam in northern Syria, but because they lacked the technical experience to manage the dam the water level of the Euphrates River rose about 10 m in January 2017 (Mohamed, 2020). This caused the inundation of large areas of agricultural land on both sides of the river for a long time and the dependence on alternative sources of energy, since this crucial one was no longer available. ISIS utilized this form of environmental manipulation to increase state-making and war-making capabilities. This increased state-making and war-making capabilities

because the flooding destroyed large areas of farmlands as well as damaged a source of energy that the surrounding area crucially relied on.

- February 2017: In response to the advance of the Syrian Arab Army, ISIS floods villages Syria controls in the Deir Hafe Plain of east Aleppo by pumping water from Lake Assad into the Al-Jar channel (Fadel, 2017; Gleick, 2019, p. 9). This act of environmental manipulation increased state-making and war-making capabilities for ISIS because it flooded Syrian controlled cities. This destroys thousands of acres of farmlands, crops, and forces people to flee.

ISIS engaged in these 13 examples of environmental manipulation regarding water or water-based infrastructure to weaken the resistance within the territory they occupied or desired to occupy. Of those 13 cases of water or water-based infrastructure EM, all 13 of those cases increased state-making and war-making capabilities. They increased their state-making and war-making capabilities by engaged in these strategies of purposely flooding an area to destroy villages, crops, and farmlands, closing dams to cut off water to downstream communities and farmland, and poisoning water sources that towns rely on. ISIS expanded their state-making and war-making capabilities through water or water-based infrastructure environmental manipulation because they weakened competitor's within and outside their territory. If Iraqi or Syrian governments, or citizens within these areas disobeyed their commands ISIS would coerce them into complying or they would face the consequences. Whether this was by shutting off water to the citizens, so their crops would die and they would be forced to flee, flooding them so everything they owned was destroyed, or poisoning water so they would leave. ISIS continued this pattern until they lost the ability to do so; mainly by losing control over the dams they so often seized and utilized.

Agriculture-Based Targets

Lastly, regarding ISIS's tactics of environmental manipulation that focus on agriculture-based targets. ISIS has utilized agriculture-based targets of environmental manipulation by destroying and repurposing crops or farmlands to increase their state-making, war-making, and extraction capabilities. There are roughly 10 publicly documented attacks against Iraqi and Syrian crops and farmlands. Of those 10 cases of agriculture-based targets EM, seven of those cases increased state-making and war-making capabilities, two cases increased state-making, war-making, and extraction capabilities, and one of the cases increased just extraction capabilities. The 10 cases are as follows:

- June 2014: After ISIS took Mosul, they confiscated 1 million tons of grain, which it sent to Syria for milling. In the process, it denied payment to 400,000 farmers and led to an estimated \$200 million in lost revenue (Jaafar, 2016, p. 16; RFSAN, 2016). ISIS utilized this act of environmental manipulation increased state-making, war-making, and extraction capabilities. This increased state-making and war-making capabilities because ISIS prevented \$200 million in lost revenue to Iraqi farmers. It established that the farmers and citizens must obey ISIS because they are the ruler of their lands now, as well as demonstrated the repercussions of when you disobey their order. This also increased extraction capabilities because ISIS confiscated \$200 million worth of grain that they could sell or feed their troops/citizens with who obeyed their rule.
- August 2014: ISIS fighters setting fire to marijuana plants near Aleppo in Syria. ISIS said the farm, which also produces corn, was found when they captured the town of Akhtar in northern Syria (The Guardian, 2014). This increased state-making and war-making

capabilities for ISIS because they destroyed marijuana plants that would be used as a source of revenue for that farmer. By detracting that source of revenue from the farmer, ISIS is displaying the outcome of what will occur if someone disobeys them.

- Late 2014: The city of Kobani continue to face crop fires on their 670,000 acres of agricultural lands, which frightens the residents of Kobani and prevents them from returning. It has even led to a reverse migration from the city, especially since the residents depend on agriculture for their livelihoods, particularly wheat, barley and cotton. About 4,000 acres have been burned since the beginning of 2015, which causes severe hardship to the area's residents who depend on agriculture for survival (Hamed, 2015). This increased state-making and war-making capabilities for ISIS because they destroyed agriculture lands and crops that these farmers use as a source of revenue. Additionally, tens of thousands of citizens rely on these crops for food. By detracting that source of revenue and food from the farmers and citizens, ISIS is displaying the outcome of what will occur if someone disobeys them.
- In 2014, ISIS seized government silos and hundreds of thousands of tons of wheat from opponents, especially members of the Christian and Yazidi minorities. After they obtained the wheat, they decided to provide an early propaganda victory, by handing out milled flour in sacks stamped with the Islamic State logo in Mosul (Fick, 2015). ISIS utilized this act of environmental manipulation increased state-making, war-making, and extraction capabilities. This increased state-making and war-making capabilities because ISIS prevented tens of millions of dollars in lost revenue to Iraqi farmers. It established that the Iraqi government and citizens must obey ISIS because they are the ruler of their lands now, as well as demonstrated the repercussions of when you disobey their order.

This also increased extraction capabilities because ISIS confiscated hundreds of thousands of tons of flour that they then gave to the citizens of Mosul to gain their obedience, trust, and support.

- Early June 2015: Massive fires broke out in the agricultural areas of Kobani, Syria, affecting wheat and barley crops and fruit trees. ISIS used heavy weaponry to target these areas following its late January defeat in Kobani at the hands of Kurdish forces and the international coalition (Hamed, 2015). This increased state-making and war-making capabilities for ISIS because they destroyed agriculture lands and crops that these farmers use as a source of revenue. Additionally, tens of thousands of citizens rely on these crops for food. By detracting that source of revenue and food from the farmers and citizens, ISIS is displaying the outcome of what will occur if someone disobeys them.
- 2015: ISIS produced a surplus of 1.6 million tons of grain in the territories it holds in Iraq and Syria and may have earned tax revenue of up to \$56 million in 2015 alone (RFSAN, 2016, p. 8). ISIS utilized this act of environmental manipulation increased extraction capabilities. This increased extraction capabilities because ISIS generated a surplus of 1.6 million tons of grains, which created a revenue of \$56 million dollars.
- 2015: ISIS destroyed large amounts of barley crops in areas they controlled by ISIS. This prompted the Iraqi and Syrian governments to raise prices in the face of shortages. Overall, barley production was down 40%, which resulted in \$20 billion in lost income (RFSAN, 2016). This act of environmental manipulation increased state-making and war-making capabilities for ISIS because they caused the loss of approximately \$20 billion worth of revenue from barley production. This significantly damaged Iraq and Syria's

agriculture industry and prevented them \$20 billion they could have dedicated to combatting ISIS.

- May 2019: More than 74,000 acres of farmland in Hassakeh, Raqqa, and all the way to the Aleppo province (all Syrian cities) were burned (Salim, 2019; The Guardian, 2019). Estimates based on local farmers suggest that nearly 25,000 acres destroyed in Raqqa province were set on fire, valued at \$9 million (Salim, 2019). ISIS utilized this act of environmental manipulation to increase state-making and war-making capabilities. This increased state-making and war-making capabilities because ISIS destroyed tens of millions of dollars in farmlands and crops that Syrian farmers use as income. It established that the Syrian farmers and citizens must obey ISIS because they are the ruler of their lands now, as well as demonstrated the repercussions of when you disobey their order.
- May 2019: Hundreds of acres of wheat fields around Kirkuk in northern Iraq were set on fire. They target farms belonging to senior officials in six Iraqi provinces and in Kurdish-administered eastern Syria. Several wheat fields in the Daquq district in southern Kirkuk burned for three days straight last week (Salim, 2019; The Guardian, 2019). This act of environmental manipulation increased state-making and war-making capabilities for ISIS. This increased state-making and war-making capabilities because ISIS destroyed hundreds of acres of wheat fields that belonged to Iraqi officials. ISIS did this to display to the Iraqi senior officials and citizens that they must obey ISIS or suffer repercussions like these if you disobey their order.
- May-June 2019: Fires have consumed more than 111,000 acres of wheat and barley in farmlands in Hassakeh, Raqqa, and all the way to Aleppo province in Syria; while in Iraq,

fires have broken out across 134,000 acres of land, with 20,000 acres of crops lost (Sherlock, 2019; Sly 2019; The Guardian, 2019). The suggestion is that the largest single fire is perhaps no more than 6,000 to 7,000 acres. ISIS utilized this act of environmental manipulation to increase state-making and war-making capabilities. This increased state-making and war-making capabilities because ISIS destroyed hundreds of thousands of acres of farmlands and crops that Syrian and Iraqi farmers rely on for income and food. It established that the Syria and Iraqi farmers and citizens must obey ISIS because they are the ruler of their lands now, as well as demonstrated the repercussions of when you disobey their order.

ISIS engaged in these 10 instances of environmental manipulation because it increased their state-making, war-making, and extraction capabilities. Of those 10 cases of agriculture-based targets EM, seven of those cases increased state-making and war-making capabilities, two cases increased state-making, war-making, and extraction capabilities, and one of the cases increased just extraction capabilities. ISIS increased their state-making and war-making capabilities by burning hundreds of thousands of acres of farmlands in Iraq and Syria. Whenever ISIS retreated, they would burn thousands of acres of crops or farmland to deprive other fighters of these resources (Linke, 2021). Since ISIS would not be able to use the crops, they decided to destroy them so others could not profit from them. By implementing these "scorched earth policies" when they retreated or where were defeated, they were engaging in strategies that would enhance state-making and war-making capabilities. Before the Islamic State, Kirkuk produced 450,000 metric tons of wheat, 250,000 tons of barley, and 100,000 tons of cotton every year; due to ISIS and other reasons, it currently produces less than a quarter of that (Schwartzstein, 2016). These fires disrupted normal food production cycles and diminished food

security for months. Crop and farmland burning on this scale also damage soil and have adverse effects on the health of civilians in the province. In addition to these tactics that increased state-making and war-making capabilities, utilizing agriculture-based environmental manipulation also increased extraction capabilities.

By 2016, it was estimated that at least 30% of ISIS revenues came from selling agriculture and taxing farmers (Almukhtar, 2016; Linke, 2021). ISIS stole millions of tons of crops that provided them hundreds of millions of dollars in resources that they could feed their troops with, sell for monetary gain, or give to the public to gather public support with. Confiscating crops not only allowed them to enhance extraction capabilities, but it detracted over \$20 billion in lost revenue for Iraqi and Syrian governments. Both of these environmental manipulation types of agriculture-based targets are prime examples of how ISIS utilizing coercion-wielding tactics to expand their state-making, war-making, and extraction capabilities. Whether that is by destroying the crops and farmlands of the citizens who resist their rule by not paying taxes or supporting their enemies battling them for control over the territory. Stealing crops to fund their operations, win public support, or provide monetary damages to a competitor state-maker. Or destroying the crops and farmlands of citizens, so enemy forces cannot use them for their own benefit.

Concluding Remarks

Of the three types of environmental manipulation that state-makers can utilize: (1) *petroleum-based products/infrastructure*, (2) *water or water-based infrastructure*, and (3) *agriculture-based targets*, ISIS utilized all three. ISIS utilized petroleum-based products/infrastructure EM 48 times, water or water-based infrastructure EM 13 times, and

agriculture-based targets EM 10 times. They did this to increase their state-making, war-making, and extraction capabilities. Regarding the type of environmental manipulation ISIS utilized, 41 acts of environmental manipulation increased state-making, war-making, and extraction capabilities. Of those 41 cases, 39 instances were petroleum-based products/infrastructure EM, and the other two cases were agriculture-based targets EM. 29 of the cases increased only state-making and war-making capabilities. Of those 29 cases, nine instances were petroleum-based products/infrastructure EM, 13 were water or water-based infrastructure EM, and seven were agriculture-based targets EM. Lastly, only one case, which employed agriculture-based targets EM, was utilized solely to increase extraction capabilities. By engaging in these tactics they generated billions of dollars from oil extractions, cost Iraq and Syria billions of dollars in lost oil and crops, destroyed hundreds of thousands of acres of farmlands and crops, coerced millions of citizens into obeying their rule, and hundreds of thousands of thousands of citizens to flee their lands. These outcomes, facilitated through environmental manipulation, allowed ISIS to enhance their state-making capabilities and in turn increase territorial control.

Chapter 4

Israel and the U.S.

Israel Overview

Following WWI, hundreds of thousands of Jewish citizens began migrating to Palestine. This causes tension between the current Arab residents living there, so in 1947 the United Nations split Palestine into separate Jewish and Arab states. In 1948 after British forces left, Jewish leaders declared their state of Israel. From there two states persisted Israel and Palestine, Palestine encompassing the West Bank and the Gaza Strip. Following this several wars and discussions persisted regarding territory, borders, and resources like water. Israel has continually increased and controlled the amount of land available, in attempts to weaken and regulated the Palestinian people.

Israel's Environmental Manipulation

For Israel, I will be focusing on their environmental manipulation tactics in Palestine from 1967 to today. They engaged in all two of the three types of environmental manipulation: (2) *water or water-based infrastructure*, and (3) *agriculture-based targets*. Specifically, Israel utilized water or water-based infrastructure EM five times and agriculture-based targets EM five times. These types of environmental manipulation fell under three functions of state-making: *state-making, war-making, and extraction*. Regarding the type of environmental manipulation Israel utilized, seven acts of environmental manipulation increased state-making and war-making

capabilities. Of those seven acts, two instances were water or water-based infrastructure EM, and five instances were agriculture-based targets EM. Additionally, three of the cases, being water or water-based infrastructure EM, increased only state-making, war-making, and extraction capabilities. They engaged in these types of environmental manipulation strategies to enhance these three functions of state-making, as a tool for population displacement and to limit Palestinian's economic activity. Additionally, Israel utilized water or water-based infrastructure EM and agriculture-based targets EM equally because they can cause a similar severity of damage.

Water or Water-Based Infrastructure

Continuing onto water or water-based infrastructure, Israel has been known to control and manipulate water as a weapon to weaken its neighboring states. They have done this in several ways including controlling the amount of water – and cutting it off whenever they deem enough – that Palestinian citizens can access. Constructing deeper wells next to a competitor's already existing well to dry it out. Building dams that can be used to flood non-Israeli farmlands. Lastly, by bombing water infrastructure like wells and pipelines. Israel has launched roughly five major attacks against Iraqi and Syrian water or water-based infrastructure to increase state-making, war-making, and extraction capabilities. Of those five cases of water or water-based infrastructure EM, three of those cases increased state-making, war-making, and extraction capabilities, and two cases increased state-making and war-making capabilities. The following five cases are as follows:

- Following 1967 war, Israel has heavily regulated the flow of water into Palestinian regions because they occupied the West Bank and took control of its water resources. After Israel occupied the West Bank in 1967, authority over West Bank water resources was transferred to the area military commander (World Bank). Simply put, unlicensed construction of water infrastructure was forbidden, prior water settlements were declared invalid, and the Military Commander assumed regulatory jurisdiction over water. The 1995 Oslo Accords were designed to grant Palestinians a role in developing and regulating the use of some water resources in the West Bank. Therefore, they created a joint Israeli-Palestinian Liberation Organization (PLO) water commission with equal representation for both sides, which must approve West Bank water projects; however, this is not the case. Israel and the PLO are not equal partners. As of April 2009, the commission had approved all but one Israeli-proposed projects in the West Bank, but only half of the projects (by dollar value) proposed by the PLO for the benefit of Palestinians; of which only one-third had been implemented or begun implementation (Human Rights Watch, 2010). Israel has continually restricted Palestinian water usage and exploited Palestinian water resources. Currently, more than 85% of the Palestinian water from the West Bank aquifers is taken by Israel (Butterfield, 2000; Corradin, 2016). Israel utilized this act of environmental manipulation to increase state-making, war-making, and extraction capabilities. This increased state-making and war-making capabilities because Israel could limit how much water Palestinian citizens were allowed. If they regulate how much water Palestinians get, they control how well their agriculture sector does. Additionally, this increases their extraction capabilities because they take more water than what they are allowed. The water resources are supposed to be split

equally, but because they have control over the water resources they take more than 85% of the water.

- 1968: Israel constructed the deep well Bardala 1, a second one followed in 1968, a few hundred meters away from the existing Palestinian wells near the city of Bardala. They also implemented a pumping system that contributed to serious water shortages for Palestinian residents of the nearby villages: Bardala, Ein al Beyda, and others. Following the implementation of the Israeli wells, the water level in the Palestinian wells dropped at the rate of 2 meters a year, and salinity increased (Humans Rights Watch). Today the Palestinian wells are dry, just like most of the local springs used by Palestinian consumers for domestic and agricultural purposes. This act of environmental manipulation increased state-making, war-making, and extraction capabilities for Israel. This increased state-making and war-making capabilities because Israel limited how much water Palestinian citizens were allowed. They decreased the amount of water available to them, so they have to rely on Israel for their water; which in turn allows Israel to control how well Palestine's agriculture sector does. Additionally, this increases their extraction capabilities because Israel can take more water than what they are allowed. By drilling deeper wells close to existing Palestinian wells they can increase the control and therefore the amount of water resources they take use.
- 1979: Israel constructed a second deep well Bardala 2 and pumping system a few hundred meters away from the existing Palestinian wells near the city of Bardala. The second well intensified the serious water shortages for Palestinian residents of the nearby villages: Bardala, Ein al Beyda, and others (Humans Rights Watch). These wells eventually caused the Palestinian wells, which were crucial for Palestine's agricultural

purposes, to dry up. ISIS utilized this type of environmental manipulation to increase state-making, war-making, and extraction capabilities. This increased state-making and war-making capabilities because Israel limited how much water Palestinian citizens were allowed. They decreased the amount of water available to them, so they have to rely on Israel for their water; which in turn allows Israel to control how well Palestine's agriculture sector does. Additionally, this increases their extraction capabilities because Israel can take more water than what they are allowed. By drilling deeper wells close to existing Palestinian wells they can increase the control and therefore the amount of water resources they take use.

- July 2014: In July of 2014 Israel invaded Gaza after thousands of air strikes failed to stop Palestinian militants from showering the Israeli cities with rockets (BBC, 2015). During these air strikes, Israel targeted water wells, specifically the two near al-Maqwsi and al-Zaytoun, in different parts of Gaza City; leaving thousands of families without access to clean drinking water. Besides the thousands of civilians that will be without water, the damage to each of the water wells is \$150,000. Additionally, Israeli warplanes targeted five water pipelines that each supplied over 20,000 inhabitants with water (Omer, 2014). This act of environmental manipulation increased state-making and war-making capabilities for Israel. This increased state-making and war-making capabilities because Israel limited how much water Palestinian citizens were allowed. They decreased the amount of water available to them, so they have to rely on Israel for their water and stop the fighting. Israel knew that if they destroyed the water resources Palestinian's needed to survive, they would be forced to stop fighting or see their citizens die of dehydration.

- January 15, 2020: Israel built dams in area they controlled to block rainwater streaming through valleys crossing the Gaza Strip. On January 15, 2020, Israel has opened these dams up twice. By opening the dams Gazan farmers crops were completely flooded, destroying everything from the crops, to infrastructure, and irrigation network (Middle East Monitor, 2020). Hundreds to thousands of acres of agricultural land in the east of Al-Sheja'ea, an eastern neighborhood of the Gaza City, were completely eradicated. In one moment these farmers livelihoods were decimated, leaving them with \$500,000 to upwards of \$2 million in losses and damages (Middle East Monitor, 2020). ISIS utilized this type of environmental manipulation to increase state-making and war-making capabilities. This increased state-making and war-making capabilities because Israel limited how much water Palestinian citizens were allowed. Israel created these dams to control the level of rainwater Palestinians in the Gaza Strip had access to, so they could decrease the amount of water available to them and force the Palestinians to rely on Israel for their water. Israel then utilized these dams to flood and destroy these agriculture lands and crops that thousands of families rely on for income and food.

Israel engaged in these five examples of environmental manipulation regarding water or water-based infrastructure to control and weaken the resistance within the territory they occupied or desired to occupy. Of those five cases of water or water-based infrastructure EM, three of those cases increased state-making, war-making, and extraction capabilities, and two cases increased state-making and war-making capabilities. They engaged in these strategies of controlling the amount of water – and cutting it off whenever they deem enough – that Palestinian citizens can access. Constructing deeper wells next to a competitor's already existing wells to dry them out. Building dams that can be used to flood non-Israeli farmlands. Or, by

bombing water infrastructure like wells and pipelines, to enhance their state-making, war-making, and extraction capabilities. Israel expanded their state-making and war-making capabilities through water or water-based infrastructure environmental manipulation because they weakened competitor's within and outside their territory. They control over 85% of the water citizens in West Bank need to survive and use for agricultural purposes. They purposely would limit water whenever they felt, to disrupt daily life and the agricultural sector. They also did this by building deeper wells nearby existing Palestinian wells, to dry them and out and force Palestinians to become dependent on Israel's water sources. Additionally, they enhanced state-making and war-making capabilities because they would target and destroy citizens crops by releasing water from dams or destroying water wells and pipelines. Israel also used water or water-based infrastructure to further extraction capabilities. They did this by controlling the water within areas like the West Bank, so they can utilize more water for areas like agricultural sectors. Lastly, they utilized water or water-based infrastructure to increase extraction capabilities. By controlling the amount of water Palestinians had access to, through wells or other means, they allowed themselves to access and use as much water as they desired. It is the reason they used 85% of the water from aquifers in the West Bank, even when it was supposed to be split evenly.

Agriculture-Based Targets

Lastly, Israel has heavily employed environmental manipulation that focuses on agriculture-based targets. Israel utilized these tactics by destroying crops and olive trees, which deteriorating Palestinian agricultural sector, and as a tool for land acquisition. Engaging in these strategies allowed ISIS to increase its state-making and war-making capabilities. There are

roughly five publicly documented attacks against Palestinian crops and farmlands. Of those five cases of agriculture-based targets EM, all five cases increased state-making and war-making capabilities. The five cases are as follows:

- From 1967 to today, Israel has uprooted or destroyed over 800,000 olive trees. Israel utilized environmental manipulation tactics to destroy these olive trees as a tool for land acquisition, but also as a way to limit Palestinian economic activity. Olive trees are the main source of income for over 800,000 Palestinian families and makes up 25% of the agricultural production coming out of the West Bank (Salerno, 2017). The reason destroying olive trees is also so effective is the fact of how long they take to regrown or bear fruit; It can take up to 20 years for an olive tree to grow back, and can take many more than 20 years before the tree may begin bearing fruit. The trees are also more than just a source of income, they have a great cultural significance because for many Palestinian olive farmers the trees have been in their families for generations—some live for up to 2,000 years. It is why Palestinians and allies plant around 10,000 new olive trees every year (Salerno, 2017). Israel utilized this form of environmental manipulation to increase their state-making and war-making capabilities. They purposely targeted olive trees because they are the main source of income for 800,000 Palestinian families and makes up 25% of the agriculture production coming out of the West Bank. By destroying over 800,000 olive trees Israel is sending a message to Palestinian that they are in control and there are repercussions for disobeying their rule. Additionally, it limits their economic abilities, which Israel does not want to prosper.
- Between 1978 and 1981, about 2,700 acres of tobacco were destroyed, 750 acres of agricultural land were abandoned because of land mines, and 51,000 olive trees and

70,000 fruit trees were destroyed (Collelo, 1987). The leaving of mines in Lebanon was a strategic move done by Israel in order to minimize the amount of land available. Israel has continued targeting the olive trees today by continued destruction of them and by the creation of the Separation or Apartheid Wall. The building of the apartheid wall was strategically constructed to cut Palestinian citizens in the West Bank off from water and agricultural resources (Human Rights Watch, 2010). These Palestinian olive orchards were planted long before Israel's statehood; however, this did not matter to Israel. The trees in the way were destroyed because most of the orchards belong to Palestinian families, and the Israeli government simply claimed it was necessary for their "security". Whole areas of olive trees were cleared to construct the wall and there was little to nothing the Palestinians could do about it. This act of environmental manipulation increases state-making and war-making capabilities for Israel. They purposely targeted agricultural lands, crops, and olive trees because they are a main source of income for millions of Palestinian families. By destroying thousands of acres of farmlands, 51,000 olive trees, and 70,000 fruit trees Israel is sending a message to Palestinians that they are in control and there are repercussions for disobeying their rule. Additionally, it limits their economic abilities, which Israel does not want to flourish.

- In 2002, Jewish settlers, the land being formerly Palestinian property and gifted to them by the Israeli government, burned and destroyed some 2,000 olive trees in groves belonging to villagers from Silwad and al-Misra' al-Sharqiya (Human Rights Watch, 2010). This act of environmental manipulation increased state-making and war-making capabilities for Israel. They purposely targeted olive trees because they are the main source of income for 800,000 Palestinian families and makes up 25% of the agriculture

production coming out of the West Bank. By destroying roughly 2,000 olive trees Israel is sending a message to Palestinians that they are in control and there are repercussions for disobeying their rule. Additionally, it limits their economic abilities, which Israel does not want to prosper.

- In an attack against the farmer Abu Firas' village in 2005, Firas lost 170 olive trees and 27 acres of land from the village. In total, 650 trees were destroyed in the attack (Salerno, 2017). This act of environmental manipulation increased state-making and war-making capabilities for Israel. They purposely targeted farmlands and olive trees because they are the main source of income for that farmer. By destroying approximately 27 acres and 650 olive trees, Israel sent a message to Palestine that they were in control and there would be repercussions for disobeying their rule. Additionally, it limits their economic abilities, which Israel does not want to prosper.
- During June 2015 the largest uprooting operations in the southern West Bank occurred. The Israeli military used tractors to destroy thousands of olive trees that belonged to local farmers. In the first five months of this year, the UN recorded the uprooting or vandalizing of around 8,841 trees by Israeli settlers (Salerno, 2017). Israel utilized this act of environmental manipulation to increase state-making and war-making capabilities. They purposely targeted olive trees that belonged to local farmers because they are the farmers main source of income. By destroying approximately 27 acres and 650 olive trees, Israel sent a message to Palestine that they were in control and there would be repercussions for disobeying their rule. Additionally, it limits their economic abilities, which Israel does not want to prosper.

Israel engaged in these five acts of environmental manipulation to increase their state-making and war-making capabilities. Of those five cases of agriculture-based targets EM, all five cases increased state-making and war-making capabilities. By destroying Palestinian olive trees and crops, Israel was able to diminish the Palestinian agricultural sector, which hundreds of thousands of families rely on, and displace countless families so Jewish settlers can claim the land. Israel's ability to effectively destroy Palestinian crops, olive trees, and farmland allowed them to weaken Palestine, but also strengthen their state-making and war-making capabilities.

Summary of Israel's Environmental Manipulation

Of the three types of environmental manipulation that state-makers can utilize Israel utilized two of the three types: (2) *water or water-based infrastructure* and (3) *agriculture-based targets*. Israel utilized water or water-based infrastructure EM 5 times and agriculture-based targets EM 5 times. They did this to increase their state-making, war-making, and extraction capabilities. Regarding the type of environmental manipulation Israel utilized, seven acts of environmental manipulation increased state-making and war-making capabilities. Of those seven acts, two instances were water or water-based infrastructure EM, and five instances were agriculture-based targets EM. Additionally, three of the cases, being water or water-based infrastructure EM, increased only state-making, war-making, and extraction capabilities. By engaging in these tactics they cost Palestinian's hundreds of millions of dollars in lost crops, destroyed close to a million olive trees, and gained control over 85% of the water Palestinian citizens in the West Bank rely on. These outcomes, facilitated through environmental manipulation, allowed Israel to enhance their state-making, war-making, and extraction capabilities and in turn increase territorial control.

U.S. in Vietnam Overview

The Vietnam War was a long and costly conflict that pitted the communist government of North Vietnam against South Vietnam, South Vietnam's principal ally being the U.S. More than 3 million people (including over 58,000 Americans) were killed in the Vietnam War, and more than half of the dead were Vietnamese civilians. The U.S. pulled out of Vietnam in 1973, and by 1975 communist forces seizing control of South Vietnam, ending the war. The following year, the country was unified as the Socialist Republic of Vietnam.

U.S. Environmental Manipulation in Vietnam

For the U.S. in Vietnam, I will be focusing on their environmental manipulation tactics from 1965 to 1973. They engaged in two of the three types of environmental manipulation: (2) *water or water-based infrastructure* and (3) *agriculture-based targets*. Specifically, the U.S. utilized water or water-based infrastructure EM three times and agriculture-based targets EM three times. Of the three cases of water or water-based infrastructure EM and three cases of agriculture-based targets EM, all six of those cases increased state-making and war-making capabilities. These types of environmental manipulation fell under two functions of state-making: *state-making and war-making*. They engaged in these types of environmental manipulation strategies to enhance these two functions of state-making, as a tool for population displacement, and to increase territorial control.

Water or Water-Based Infrastructure

During the Vietnam war the U.S. employed a persistent strategy of environmental manipulation that targeted water-based infrastructure. They have done this by heavily focusing on water infrastructure like the dike systems, dams, and locks of the rivers/canals and basins. The U.S. launched three parts of one massive campaign against Vietnam's water-based infrastructure to increase state-making and war-making capabilities. Of the three cases of water or water-based infrastructure EM, all three of those cases increased state-making and war-making capabilities.

The following three cases are as follows:

- In 1965, US aircraft attacked irrigation works more than 500 times and bombarded on the important dyke sections 78 times (Thuan, 2018, p. 113). Throughout Vietnam is an extensive network of dykes, dams, and locks that control the water of the heavily populated the main rivers and deltas of Vietnam, like the Red River Delta. These major rivers and deltas form Vietnam's main transportation water ways, as well as protect delta farmland's irrigation during the dry and monsoon season months. Because of this, the pace of U.S. air and naval raids continued to rise constantly. In 1966, the bombardment to destroy the dike system was intensified and focused on the months of July, August and September when floodwaters rose. The U.S. utilized this form of environmental manipulation to increase state-making and war-making capabilities. They purposely targeted these dykes, dams, and locks because they control the water levels on the main rivers. If the water levels are not stable during monsoon season thousands of citizens would be forced to flee the rising tides and waves. The U.S. knew this and targeted it to force these citizens to flee. Additionally, these rivers were a main transportation route, so

by destabilizing the water levels they could destroy the transportation routes that millions relied on.

- By 1967, the U.S. air and naval force had set more than 368 additional targets, including 177 dykes, 48 dams, 18 pumping stations, 116 drains, 15 water troughs and 4 water reservoirs (Thuan, 2018, p. 113). Agricultural activities in North Vietnam were directly influenced by irrigation. Due to the increased bombings targeting water infrastructure, water levels continued to rise. This resulted in farmer's yearly fruits being blown away after a major flood. During this period from 1965 to 1968, paddy production, rice cultivation, and the yield of rice all decreased because of the weakened dyke system which was heavily damaged during U.S. raids (Thuan, 2018, p. 114). The U.S. utilized this form of environmental manipulation to increase state-making and war-making capabilities. They purposely targeted these dykes, dams, drain, etc. because they control the water levels on the main rivers. If the water levels are not stable during monsoon season the crops like rice that millions of citizens rely on would be destroyed. The U.S. knew this and targeted it to force these citizens to flee.
- Between April and August 1972, the U.S. air force attacked 198 times, damaging 72 dykes and 35 irrigation works in Northern Vietnam. In particular, many dyke sections were attacked several times in a short period. However, it should be noted that during the US air and naval attacks on North Vietnam, the irrigation system was not the only military target. Destroying the Northern Vietnamese economy was crucial for the U.S. plan of weakening the country to succeed (Thuan, 2018, p. 116). The U.S. utilized this form of environmental manipulation to increase state-making and war-making capabilities. They purposely targeted these dykes because they control the water levels on

the main rivers, which prevent flooding of the farmlands. If the water levels are not stable during monsoon season thousands of acres of irrigation systems for farmlands would be destroyed. The U.S. knew this and targeted it to force these citizens to flee.

In total, between 1965 and 1972, U.S. air and naval forces deployed approximately 1 million tons of bombs in Northern Vietnam, including roughly 872,471 artillery shells and mines (Thuan, 2018). These attacks targeting Vietnamese water-based infrastructure resulted in the attack of 1,500/1,600 irrigation works in the North and more than 1,000 critical dykes. The US air force bombarded the dike system, especially during flood season, to disrupt the irrigation system, which caused floods in many agricultural areas (Thuan, 2018). By utilizing these three environmental manipulation strategies of attacking the water infrastructure like dykes, dams, and locks, the U.S. was able to enhance their state-making and war-making capabilities because they were able to successfully weaken Vietnam. The U.S. was able to weaken Vietnam because for seven years they relentlessly destroyed Vietnamese water-based infrastructure that were crucial for stabilizing water levels which allowed transportation, trade, citizens who live on the banks to survive, and the agricultural sector to exist and flourish. Because the U.S. destroyed the water-based infrastructure required for these things to occur, they weakened Vietnam. In-turn strengthening their own state-making and war-making capabilities by attacking the Northern Vietnamese, who contested the U.S. and Southern Vietnam's rule, within and outside of the land they controlled.

Agriculture-Based Targets

Continuing on, the U.S. in Vietnam significantly employed environmental manipulation tactics that focused on agriculture-based targets. The U.S. utilized these tactics by destroying

millions of acres of forest through the application of Agent Orange, Napalm, munitions, and bulldozers. Engaging in these strategies allowed the U.S. to increase its state-making and war-making capabilities. There are roughly three publicly documented attacks that the U.S. engaged in Vietnam. Of the three cases of agriculture-based targets EM, all three of those cases increased state-making and war-making capabilities. The three cases are as follows:

- Between 1965 and 1973, U.S. aircraft applied 13 million gallons of Agent Orange, a powerful herbicide and defoliant chemical, and 388,000 tons of napalm across 5 million acres throughout 30 different provinces in southern Vietnam (Budanovic, 2016; Meding, 2017). This resulted in the destruction of millions of acres of jungle/forests and agricultural lands, which led to erosion because of nutrient loss in the soil. Due to this, forests in over 28 river basins were compromised, so flooding worsened in numerous watershed areas. In addition to this, nearly 1 million people suffered severe health complication and disabilities due to exposure of Agent Orange. Causing hundreds of thousands of children were born with serious birth defects (China environment new, 2021). The U.S. utilized this form of environmental manipulation to increase state-making and war-making capabilities. They destroyed approximately 5 million acres of land there were responsible for food production, the hiding of weapons and military positions, and natural vegetation. The U.S. specifically targeting these areas to destroy any area the North Vietnamese could use for coverage or hide in. They also utilized Agent Orange to destroy crops and farmlands that were feeding the citizens of Vietnam. The U.S. knew if the North Vietnamese didn't have anywhere to hid or food to eat they would eventually surrender.

- Nearly 50 percent of the country's mangroves, which protect shorelines from typhoons and tsunamis, were destroyed (Meding, 2017). Before the war, the district Can Gio had about 100,000 acres of dense mangrove forests, but by 1971 they had been almost completely destroyed (Hong, 2001). A large reason for the drastic decrease in jungle lands and mangrove forests was because of the Rome Plow. The Rome Plow was an eleven-foot wide, two and a half-ton blade attached to a 20-ton tractor. The fleet of roughly 150-200 machines were estimated to have cleared approximately 1,000 acres of land daily (Thuan, 2018, p. 91). The Rome Plow's were so effective they destroyed roughly 800,000 acres, which is about 3% of the total South Vietnamese forest lands (Thuan, 2018, p. 91; Westing, 1983, p. 375). Of the total mangrove area in southern Vietnam 750,000 acres, approximately 260,000-300,000 acres or roughly 40% were destroyed from being sprayed one or more times (Hong, 2001; Meding, 2017; Westing, 1983, p. 377). They mangrove forests were crucial in combatting rising waters during monsoon season; however due to their loss, water levels rose, so shorelines were eroded and agricultural lands and crops were destroyed. The U.S. utilized this form of environmental manipulation to increase state-making and war-making capabilities. They destroyed hundreds of thousands of acres of trees because they were eliminating areas the North Vietnamese could hide. As well as, destroy the stability they provided to water levels during monsoon season. The U.S. knew enough mangrove trees were destroyed water levels would rise, which would displace citizens and destroy farmlands that provided crops to the Vietnamese citizens.
- Between 1965 and 1973, the U.S. deployed about 10 million tons of high-explosive bombs, shells, and other explosives against South Viet Nam (Westing, 1983, p. 374).

They did this to combat enemy troops and operation, however, they also engaged in this behavior to weaken Vietnam by destroying millions of acres of forest and water-based infrastructure. This form of environmental manipulation was utilized to increase state-making and war-making capabilities for the U.S. They knew if they destroyed millions of acres of forests the North Vietnamese would not be able to hide or conceal their movements, making it easy for the U.S. to end the war quicker.

The U.S. engaged in these three types of environmental manipulation that focus on agriculture-based targets, to increase their state-making and war-making capabilities. By destroying millions of acres of Vietnam's forests, the U.S. was able to diminish the forests the enemy was using for cover and concealment. By decreasing the land available to hide in, the U.S. increased their ability to target crops, civilian shelters/homes, and hospitals that many North Vietnamese soldiers relied on. By using Agent Orange and Napalm, the U.S. was able to destroy roughly 1,000,000 acres of agricultural lands and 300,000 tons of food in South Vietnam (Westing, 1983, p. 382). A main strategy behind destroying as many acres of forests/jungles and agricultural lands was to increase large-scale population displacements.

Engaging in these widespread bombing campaigns was a key component of the U.S. strategy to defeating North Vietnam. They would target areas where they had partial control over and continually bombard the area, until they had taken control over the territory; effectively engaging in state-making and war-making activities by checking competitors within and outside the territory you control (Kocher, 2011). By following this strategy, the U.S. was able to accomplish the successful destruction of thousands of water-based infrastructures like dykes, millions of acres of land including mangrove trees, and hundreds of thousands of tons of crops.

Therefore, the U.S. was able to increase state-making and war-making capabilities by utilizing environmental manipulation tactics focusing on agriculture-based targets.

Summary of the U.S. Environmental Manipulation in Vietnam

Of the three types of environmental manipulation that state-makers can utilize, the U.S. utilized two of the three: (2) *water or water-based infrastructure* and (3) *agriculture-based targets*. Israel utilized water or water-based infrastructure EM 3 times and agriculture-based targets EM 3 times. They did this to increase their state-making and war-making capabilities. Regarding the type of environmental manipulation the U.S. utilized in Vietnam, all six acts of environmental manipulation, increased state-making and war-making capabilities. By engaging in these tactics they destroyed millions of acres of jungle/forests in Vietnam, destroyed approximately 1,500 dykes, and destroyed roughly 50% of the mangrove trees crucial in the stability of water levels. These outcomes, facilitated through environmental manipulation, allowed Israel to enhance their state-making capabilities and in turn increase territorial control.

Concluding Remarks

Of the three types of environmental manipulation, Israel and the U.S. in Vietnam engaged in two of the three types: (2) *water or water-based infrastructure* and (3) *agriculture-based targets*. Israel and the U.S. roughly engaged in the same amount of environmental manipulation, with Israel utilizing EM slightly more often. Israel engaged in water or water-based infrastructure EM 5 times and agriculture-based targets EM 5 times. Additionally, the U.S. utilized water or water-based infrastructure EM 3 times and agriculture-based targets EM 3

times. Regarding the type of environmental manipulation Israel utilized, 3 acts of environmental manipulation increased state-making, war-making, and extraction capabilities. Of those 3 cases, all 3 instances were water or water-based infrastructure EM. Also, 7 of the cases increased only state-making and war-making capabilities. Of those 7 cases, 2 instances were water or water-based infrastructure EM, and 5 were agriculture-based targets EM. As for the U.S., they utilized 6 acts of environmental manipulation to increase state-making and war-making capabilities. Of those 6 cases, 3 instances were water or water-based infrastructure EM, and 3 were agriculture-based targets EM. One thing to point out is that Israel utilized these environmental manipulation strategies to expand their state-making, war-making, and/or extraction capabilities, while the U.S. only employed these environmental manipulation tactics to increase state-making and war-making capabilities. As for the reason the U.S. never engaged in environmental manipulation that increased extraction capabilities, this could be due to the fact the U.S. was in a foreign country fighting for someone else instead of fighting in or near their home country.

Chapter 5

Analysis

Hypothesis 1

My first hypothesis is that environmental manipulation enhances territorial control. My findings support the first hypothesis that environmental manipulation enhances territorial control. There have been no examples of environmental manipulation degrading territorial control. All of the relevant case examples supported the hypothesis that environmental manipulation enhances territorial control. For example, when a state-maker engages in environmental manipulation that falls under the state-making function of extraction – i.e. extracting oil from wells – but they are forced to retreat because opposing forces are advancing on their position, this is not degrading their territorial control. In fact, the retreating state-maker transitions from utilizing environmental manipulation tactics that enhance extraction capabilities, and instead utilizes the oil wells as a tool to increase state-making and war-making capabilities by lighting the oil wells on fire.

By ending environmental manipulation that falls under one type of state-making does not mean it degrades the territorial control because you can utilize it in another way that still enhances territorial control, just in a different way. ISIS consistently employed this strategy against Iraqi and Syrian forces. For example, when Iraqi troops were advancing on the Qayyarah oil fields ISIS controlled, they stopped extracting oil from the wells and lit them on fire as they retreated. The fires burned for months resulting in millions of lost oil revenues for Iraq, millions of dollars to stopping the fires/repairing the damaged infrastructure, and thousands of individuals suffering from health-related issues because of the smoke and oil contaminated the water and soil. While, no longer enhancing extraction capabilities, it did however, enhance state-making and war-making capabilities.

Additionally, there may be examples where a state-maker employs environmental manipulation strategies that result in a loss of territorial control. For example a state-maker utilizes environmental manipulation tactics that spark a conflict or response from a state-maker that ends with them being eradicated is possible. However, I did not find any such cases or examples that resulted in a loss of territorial control from the usage of environmental manipulation. If these cases due exist, I am highly confident that this would be due to the fact there is not any existing data on the subject illuminating to examples where environmental manipulation caused a decrease in territorial control. That being said, my findings supported my first hypothesis that environmental manipulation enhances territorial control.

Hypothesis 2

My second hypothesis has three parts. Those parts being that each of the three types of environmental manipulation is most utilized for increase territorial control.

Hypothesis 2A: Environmental manipulation targeting petroleum-based products/infrastructure is the most utilized for increasing territorial control.

Hypothesis 2B: Environmental manipulation targeting water or water-based infrastructure is the most utilized for increasing territorial control.

Hypothesis 2C: Environmental manipulation focusing on agriculture-based targets is the most utilized for increasing territorial control.

Regarding my second hypothesis, I partially support my first of the three hypotheses that environmental manipulation targeting petroleum-based products/infrastructure is the most utilized for increase territorial control. Out of the three cases petroleum-based products/infrastructure was utilized 48 times, all 48 instances due to ISIS. While water or water-

based infrastructure was targeted 21 times, 13 times by ISIS, 5 times by Israel, and 3 times by the U.S.; and agriculture-based targets were engaged in 17 times, 10 times by ISIS, 5 times by Israel, and 3 times by the U.S. Therefore petroleum-based products/infrastructure was the most utilized form of environmental manipulation. However, there are several factors to take into account that could arise issue with the support of this hypothesis. First and most important, is what quantifies as an act of environmental manipulation? There is no established way to classify, let alone quantify environmental manipulation. Should an act of environmental manipulation be considered each individual act of tactics utilizing a type of environmental manipulation? For example, Israel has destroyed over 800,000 Palestinian olive trees since 1967. Should this be counted as 800,000 different cases of environmental manipulation, or should it be classified as one case? Additionally, in Vietnam the U.S. targeted over 1,500 dykes, should each dike damaged be considered a separate case of environmental manipulation? This brings me to my second factor, the data surrounding these types of environmental manipulation is very limited.

Most of the literature on environmental manipulation is news or scholarly articles focusing on a specific instance of manipulation or destruction of the environment a group or state engaged in (for example ISIS burning crops). These sources almost always discuss broad the usage of environmental manipulation with specific instances cited, instead of discussing every single case. For example, ISIS has burned millions of acres of farmland. While most instances of this are only a few thousand acres burned at a time, almost all the data discussing the overall amount of farmland destroyed. Due to this, it is difficult to obtain the complete information required to individually classify each case of environmental manipulation. If that were the case, then environmental manipulation focusing on agriculture-based targets would likely be most utilized for increasing territorial control. Lastly, not all of the cases engaged in environmental

manipulation targeting petroleum-based products/infrastructure. The U.S. did not utilize this type of environmental manipulation. While that is possible for numerous reasons, it is still worth noting.

Relevant Findings

In addition to this, I think it is important to note that of the three different types of environmental manipulation each one is often utilized for different reasons due to their different outcomes. For example, environmental manipulation targeting petroleum-based products/infrastructure has significant monetary benefits to a state-maker. This can be through enhancing extraction capabilities, which provided ISIS an annual profit between \$730 – \$1,460 million in 2014; or by enhancing state-making or war-making capabilities (lighting oil wells afire) which cause tens-hundreds of millions of dollars to the competitor state. On the other hand, water or water-based infrastructure and agriculture-based targets are utilized to increase population displacement or target civilians within a territory that are not complying with the state-maker. For example, the U.S. targeted and destroyed 1,500/1,600 dykes that were crucial to stabilizing the water levels in Vietnam especially during monsoon season, which resulted in flooding that displaced families and destroyed agricultural lands/crops. Also, since 1967 Israel has destroyed over 800,000 olive trees that are the main source of income for over 800,000 Palestinian families; olive trees make up 25% of the agricultural production coming out of the West Bank.

Another thing I want to point out is that none of the cases utilized environmental manipulation to increase protection capabilities. Protection is attacking or checking rivals of the rulers' principal allies, whether inside or outside the state's claimed territory. Now this could be

because state-makers simply do not employ environmental manipulation tactics to increase protection capabilities. It could also be due to a lack of relevant research on the subject where no one was written about an existing case. Or it could be result of state-makers not having allies in this time and age because of the disapproval from the contemporary world by engaging in state-making activities. Either way environmental manipulation does not appear to be utilized to increase protection capabilities, or at least not by the state-makers discussed in this paper.

Lastly, I want to point out is that petroleum-based products/infrastructure EM is linked to increasing extraction capabilities significantly more so than the other two types of environmental manipulation. ISIS utilized petroleum-based products or infrastructure to fund their operations with hundreds of millions-billions of dollars every year. While water or water-based infrastructure and agriculture-based targets EM were both used to increase extraction capabilities, they were marginal compared to the increase in extraction capabilities that were a result of petroleum-based products/infrastructure EM.

Chapter 6

Conclusion

Main Argument

This study examined how environmental manipulation impacts state-makers. I argued that state-makers, specifically ISIS, Israel, and the U.S. in Vietnam, employed environmental manipulation tactics to increase state-making capabilities. State-makers operate off war-provoking logic; put simply, they must gain control of an area, extract resources from that area, then expand outward to claim new territory. If state-makers successfully engage in the four functions of state-making: state-making, war-making, protection, and extraction, then they continue to increase state-making capabilities and in turn increase territorial control. I hypothesized that there are three specific types of environmental manipulation state-makers can engage in to increase state-making capabilities and territorial control: (1) *petroleum-based products/infrastructure*, (2) *water or water-based infrastructure*, and (3) *agriculture-based targets*. There is widespread coverage of instances of environmental manipulation, but they are never tied to the four functions of state-making. By analyzing specific examples of environmental manipulation I was able to compile the three types of environmental manipulation state-makers employ.

Findings

Of the three types of environmental manipulation, ISIS and Israel both utilized all three: petroleum-based products/infrastructure, water or water-based infrastructure, and agriculture-based targets. While the U.S. only utilized water or water-based infrastructure and agriculture-based targets. Additionally, ISIS and Israel employed these types of environmental manipulation

to increase state-making, war-making, and extraction capabilities, while the U.S. only employed the two types of environmental manipulation to increase state-making and war-making capabilities. Through my analysis I found evidence that supported my first hypothesis: environmental manipulation enhances territorial control. As for my second hypothesis, it has three parts:

Hypothesis 2A: Environmental manipulation targeting petroleum-based products/infrastructure is the most utilized for increasing territorial control.

Hypothesis 2B: Environmental manipulation targeting water or water-based infrastructure is the most utilized for increasing territorial control.

Hypothesis 2C: Environmental manipulation focusing on agriculture-based targets is the most utilized for increasing territorial control.

I found evidence that partially supports my first of the three options for my second hypothesis: environmental manipulation targeting petroleum-based products/infrastructure is the most utilized for increasing territorial control. Out of the three cases, petroleum-based products/infrastructure EM was utilized 48 times, while water or water-based infrastructure EM was targeted 22 times, and agriculture-based targets EM were utilized 18 times. The reason there was only partial support brings me to some of the limitations of this thesis.

Limitations

The two main factors that could arise issue with the support of my second hypothesis are the two main limitations with this thesis. Firstly, there is no established way to quantify what counts as one act of environmental manipulation. Whether one act means each individual case of environmental manipulation, or if multiple acts of one type occur simultaneously; does that count

as one count of environmental manipulation? For example, Israel will destroy hundreds or thousands of Palestinian olive trees at once. Does each olive tree count as an act of environmental manipulation, or is the act of destroying those olive trees at once count as one case of environmental manipulation? Additionally, ISIS and the U.S. destroyed thousands of acres of farmland at once. Is each acre destroyed count as a separate case of environmental manipulation, or is the act of destroying that land count as one case? My second factor is that there is not enough existing data that discusses each individual type of environmental manipulation. Most of the literature on environmental manipulation is news articles or scholarly articles focusing on a specific instance of manipulation or destruction of the environment a group or state engaged in (for example ISIS burning crops). These sources almost always discuss broad the usage of environmental manipulation with specific instances cited, instead of discussing every single case. Therefore, it is difficult to obtain the complete information required to individually classify each case of environmental manipulation.

Future Research Possibilities

There are two critical areas for future research possibilities. The first is developing an established way to quantify environmental manipulation. Whether that is by individual case, every tree destroyed or acre burned as one case each, by year, type of environmental manipulation targeted, area, etc. Setting up exact criteria that discusses how environmental manipulation will be classified and quantified is a crucial first step to expanding this field of study.

Secondly, this area of research where environmental manipulation is analyzed through the lens of state-making must be further studied. Environmental manipulation is without a doubt

a tool that state-makers utilize to increase state-making capabilities. It has been a tactic employed for thousands of years, despite it being vastly understudied. If research were to dive deep into why and how environmental manipulation is utilized by state-makers, more types of environmental manipulation and their potential outcomes are sure to arise. Additionally, in order to increase the literature in this field, there needs to be more precise data regarding the instances of environmental manipulation. Research needs to elaborate on each instance of a type of environmental manipulation instead of stating the overall utilization and discussing a few main instances. If the research goes further in-depth it will be better able to address both of these recommendations.

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ACADEMIC VITA
Travis Blanchard
E-mail: tmb6202@psu.edu

Education

The Pennsylvania State University | Schreyer Honors College **University Park, PA**
College of Liberal Arts – B.A. in Political Science
Donald P. Bellisario College of Communications – B.A. in Public Relations *Class of May 2022*

Honors

Phi Beta Kappa Honor Society Spring 2021 – Present
The Golden Key International Honour Society Spring 2022 – Present
Pi Sigma Alpha Political Science Honor Society Fall 2021 – Present

Communications Experience

The Daily Collegian- State College, PA September 2019 – Present
Marketing team representative/Business Division

- Brainstorm, organize, and oversee all events (6-8 events per semester)
- Supervised a small team of five for the distribution of 10,000 voter registration packets and 14,000 NextGen America pamphlets to State College’s businesses and citizens
- Strategize with Sales and Creative teams to develop appropriate marketing plans and interactions with local businesses and sponsors
- Manage different marketing team representatives in order to accomplish the current event
- Contribute design ideas and coordinating themes with the Creative team for marketing collateral
- Arranged an event for world-renowned author Malcolm Gladwell with hundreds in attendance

Student Sustainability Advisory Council- University Park, PA May 2020 – Present
Zero Waste Working Group

- Administer consultation and advice about university planning, educational programs, and operational initiatives related to sustainability to Penn State’s top executives
- Accumulate research for sustainable procurement policies and opportunities Penn State could implement regarding their multi-million dollar partners like PepsiCo, Dell, and Amazon
- Collaborate with several high-level stakeholders to discuss Penn State’s current sustainable initiatives and what new opportunities would be feasible
- Present months of research to Penn State’s top executives to initiate discussions on implementation

Work Experience

Penske Truck Leasing- Reading, PA May – August of 2019 – 2021
Moving Advisor / Customer Support Web Specialist

- Operated as a customer care specialist, helping customers across the country resolve any issues
- Exceeded 150% of set monthly sales goal each month, consistently performing as a top salesman
- Assisted customers in making cross-country moves as easy as possible
- Executed positive customer relationship management to retain future sales and increase brand image
- Conducted efficient phone/web chat sales calls to achieve a monthly sales goal