

Deterrence in United States Air Force Professional Military Education Curriculum

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by

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ABSTRACT

DETERRENCE IN UNITED STATES AIR FORCE PROFESSIONAL MILITARY EDUCATION CURRICULUM

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A key interest of the United States and objective of its military is deterrence of actions counter to U.S. national interests by other nations or non-state actors. Given its importance to military activities, having military members who are educated on deterrence and how to best plan actions for its accomplishment is a necessity. This thesis seeks to answer three questions: What information is presented to students in professional military educational course material about deterrence? What theories are invoked when discussing deterrence, if any? Are there potential areas to expand deterrence education that would better prepare military planners to plan successful missions? Research for the thesis consisted of a content analysis on curriculum provided to students at three US Air Force education programs. Data collection issues prevented the thesis from answering its key questions, however some noteworthy findings did come from the limited data and anecdotal information gathered while collecting data. Deterrence was found to be within the curriculum at least to some degree and it was often closely associated to the nuclear enterprise. Finally, there were indications that while deterrence was covered, its theoretical backing was not as extensively covered in the material.

CHAPTER ONE, INTRODUCTION

Introduction

A key interest of the United States and objective of its military is deterrence of actions counter to U.S. national interests by other nations or non-state actors. Prior to the outbreak of open conflict and warfare, deterrence activities are primary objectives for our nation and its military. In order to pursue and achieve objectives assigned to it by national policy, the U.S military is broken into distinct geographic commands that are the lead for military operations in their assigned area of responsibility. Each of these commands takes the lead on planning and conducting operations that deter adversaries and assure allies in their region. Additionally, the U.S. military has functional commands that span the globe. US Strategic Command, which I support in my current position within Air Force Global Strike Command, is tasked with strategic deterrence and assurance. Its focus is to deter strategic attacks, through the use of nuclear, cyber, and space capabilities, against the U.S and its interests.

The objective of deterrence has been a part of warfare since its earliest inceptions and can be seen as far back as Sun Tzu and his influential writings on war (Rose, 2011: p6). It's prominence in military grew to a central focus during the Cold War and remains a key focus to this day (Quackenbush, 2011: p1). With the large weight of effort: the time it

takes to plan these actions, the resources utilized and potential impact these actions have on international relationships, deterrence is studied by academics and military members within their professional military education. In addition to examining what deterrence is and how it works, military members study past instances in which the U.S. sought to deter an opposing actor. This is done in order to learn from their successes and failures and to apply lessons learned to future deterrence activities.

When examining deterrence, rational-actor theory is often cited as the primary underlying theoretical reasoning in which deterrence is understood to work and the foundation on which deterrence efforts are planned. When I am at work and providing informational briefings on our organization's mission of deterrence, rational-actor theory is specifically called out as the theoretical basis for how our activities are to have a deterrence effect. The problem with an over-reliance on rational-actor theory is that history shows many examples in which deterrence efforts have failed. In examining these cases, literature provides reasons for the failure to deter and even addresses instances of where rational-actor theory breaks down (discussed below in the literature review).

Despite these flaws, the theory is still the primary basis for planning operations with the intent to deter. Within my organization, I am part of a small minority of military planners with a degree in social science and exposure to theories on how people and societies operate. For the majority of planners and leadership, their only education with regard to the theory of deterrence comes from their time at professional military educational

programs. As a result, I see many plans that rely on the assumption that the planned activity will have the desired deterrence effect simply based on the idea that if you display a credible threat to impose overwhelming harm to an adversary, the adversary will refrain from pursuing the undesired action. I have heard, on numerous occasions, comments along the lines of: "By doing this, the target will get our message and our activity will have a deterrent effect." Questions on whether or not they will perceive the activity as we intended and respond how we would expect are not fully addressed.

In today's world you can see instances where the Cold War ideas on deterrence break down. The situation with North Korea is a good example of a nation that is undeterred from their pursuit of nuclear weapons despite repeated shows of force from our nation's military. Deterrence theory grew from an age of two equal super-powers in a standoff. Yet we apply the same methodology to asymmetric situations where both sides are not equal. Other theories on deterrence, and its underlying mechanisms, from the realm of psychology and sociology can aid in better understanding the complexities of deterrence in today's security environment. By having an understanding of the people and countries we seek to influence, we can be better prepared for planning and have a better understanding of how the adversary may view our actions. Additionally, familiarity with multiple theories on deterrence will allow for better assessment of our actions. The empirical evidence the adversary provides through their response to our deterrent action can be viewed through multiple lenses of understanding instead of simply making the claim that they acted irrationally.

The purpose of this thesis is to provide a content analysis of deterrence curriculum currently provided by U.S. Air Force professional military education programs with the intent to identify what is currently being presented to students regarding deterrence and what related theories are used to describe how to achieve it. By doing so, I hope to provide recommendations on how to improve deterrence curriculum so that future military planners and leaders conduct deterrence operations that are built on solid theoretical grounding.

To achieve this purpose and intent, this thesis will answer the following three questions:

What information is presented to students in professional military educational course material about deterrence? What theories are invoked when discussing deterrence, if any? Are there potential areas to expand deterrence education that would better prepare military planners to plan successful missions?

Review of the Literature:

Deterrence and its Importance

Deterrence is a prominent aspect of national and military policy. As such, there is an abundance of literature on the topic that explores what it is and how it works. This section will review this literature on deterrence in order to establish a baseline understanding of the following: what deterrence is; its methods, categories, and focus; and what directs the U.S. and its military to conduct deterrence operations.

Deterrence Defined

In an article for the NATO Review, Michael Rühle simply states that deterrence is "the threat of force in order to discourage an opponent from taking an unwelcome action"(2015). In a paper for the U.S Air Force Institute for National Security Studies, Anderson, Larson, and Holdorf state that "The strategic concept of deterrence involves the protection of the U.S. homeland, its national interests, and its freedom of action by convincing a potential adversary that any attempt to attack the United States will prompt a response imposing unacceptable costs against it and/or denying the realization of the objectives it seeks"(pXI). For the military, Joint Publication 1-02, Department of Defense Dictionary of Military and Associated Terms defines deterrence as "the prevention from action by fear of the consequences. Deterrence is a state of mind brought about by the existence of a credible threat of unacceptable counteraction." For this thesis, deterrence is defined as efforts used by a nation to prevent an opposing force from taking an action that is counter to the nation's interests. The intent is to stop these actions so that the application of force is not needed. Deterrence can be accomplished through two different methods: denial and punishment ("Sustaining U.S. Global Leadership; 2012).

Deterrence Methods

Deterrence by denial is accomplished by using defensive capabilities to "deny the adversary benefits of a successful attack" or offensive capabilities to "deny the adversary any potential gain" (Rose, p7). It seeks to "deny the opponent's war aims" (Ruhle). The intent is to cause the adversary to weigh his options and determine that they would be

denied the goal of their actions. Thus the opponents refrain from taking the action.

Deterrence by punishment focuses on "convincing the adversary decision maker that the defending nation will respond and impose severe costs associated with adversary aggression" (Rose, p7). The intent is to cause the adversary to refrain from a certain action due to perceived costs.

Both of these methods utilize a cost/benefit analysis conducted by the adversary in determining their actions. Deterrence by denial focuses on removing or reducing the benefit gained from taking action. If the adversary perceives there is no benefit from taking action, they are less likely to take that action. Deterrence by punishment focuses on the costs associated with taking an action. If the adversary is convinced that the costs outweigh the benefits they seek, they will be less inclined to act.

Deterrence Categories

Deterrence can be either general or immediate (Morgan, 1983). "General deterrence consists of a nation maintaining a formidable military capability and publicizing its commitment to deny benefits and impose punishment in response to aggression from another nation" (Rose, p7). General deterrence operates everyday and is not in response to a specific event, or potential event. It also is not directed toward a specific target audience. Immediate deterrence takes place when there is a specific threat of action by an adversary. Actions are devised to amplify the general deterrence message and convey the potential punishment if the adversary continues its course of action.

Deterrence Focus

The focus of a nation's deterrence efforts can be either central or extended. Focused centrally, deterrence efforts "threaten costs, deny benefits, or encourage restraint in regard to an adversary taking an action" against the nation itself or its vital interests (Anderson, p3). The focus is on deterring adversary actions which would directly impact the nation itself. Extended deterrence efforts are aimed at deterring adversary actions against a third party. The third party can be an ally, partner, neutral or even adversarial state actor (Anderson, p3). Anderson highlights that deterrence efforts with an extended focus lead toward terms like an "umbrella" or "shield" to describe the extended deterrence actions (p5).

National Power and Deterrence Policy

Joint Publication 1, *Doctrine for the Armed Forces of the United States* is "the capstone publication for all joint doctrine, presenting fundamental principles and overarching guidance for the employment of the Armed Forces of the United States" (p.i). It describes that "the ability of the US to advance its national interests is dependent on the effectiveness of the United States Government (USG) in employing the instruments of national power to achieve national strategic objectives." These instruments of power are referred to as DIME: Diplomatic, Information, Military, and Economic. It is important to note that deterrence efforts are not restricted to one specific instrument (military). Anderson explains that "deterrence includes the strategic use of all tools of state power, to include the use of diplomatic actions, economic sanctions, and military force" (p.4).

The United States' strategic objectives, and how the instruments of national power will be used to achieve them, can be found in the United States National Security Strategy (NSS) document.

The NSS is a document produced by the President which outlines what our nation's primary security concerns are and provides guidance on how our nation will address them. Within the NSS, deterrence is addressed on multiple occasions and in multiple ways. The document explicitly states that: "American diplomacy and leadership, backed by a strong military, remain essential to deterring future acts of inter-state aggression and provocation by reaffirming our security commitments to allies and partners, investing in their capabilities to withstand coercion, imposing costs on those who threaten their neighbors or violate fundamental international norms..."(p.10). This statement highlights a concentrated focus on extended deterrence. The NSS calls out our nation's focus on central deterrence by explicitly stating that the United States "will deter and defeat any adversary that threatens our national security and that of our allies"(p.29). It calls out the military stating that: "Our military will remain ready to deter and defeat threats to the homeland" through forward presence and engagement (p7). It refers to efforts to maintain a nuclear deterrent "that preserves strategic stability"(p11). While a majority of the deterrence language falls into the general deterrence category (communicating to a broad, non-specific audience), it does call out an instance of immediate deterrence directed toward Russia: "In lockstep with our European allies, we are enforcing tough sanctions on Russia to impose costs and deter future aggression." This statement

highlights the use of diplomatic and economic instruments of national power in an effort to immediately deter Russia through punishment. The NSS also discusses the use of military training and exercises with our allies to deter Russia.

Deterrence and Defense Policy

The NSS sets the foundation for the United States to engage in deterrence efforts.

National agencies take guidance from the NSS and provide further guidance on how each department will implement NSS direction. The Department of Defense issues the Quadrennial Defense Review which "is a legislatively-mandated review of Department of Defense strategy and priorities."(www.defense.gov). It outlines three defense strategy pillars, two of which emphasize deterrence: "Protect the homeland, to deter and defeat attacks on the United States..."and "Build security globally, in order to preserve regional stability, deter adversaries, support allies and partners, and cooperate with others to address common security challenges." (p5). Additionally, it states that: "Our nuclear deterrent is the ultimate protection against a nuclear attack on the United States, and through extended deterrence, it also serves to reassure our distant allies of their security against regional aggression." These passages highlight how prominent deterrence is to the Department of Defense and its mission.

Military Policy

In order to pursue the strategy outlined in these guidance documents, the military is tasked through the Unified Command Plan. This document outlines the responsibilities

of each specific military command (geographic and functional) and directs them to detect, deter, and prevent "attacks against the U.S., its territories, possessions, and bases, and employing appropriate force to defend the nation should deterrence fail." (p6). Each military command then builds Theater Campaign Plans that specify general deterrence objectives for their section of the world. Each command also develops tailored concept and operation plans which provide "immediate deterrence strategy directed toward a specific state or non-state actor" (Rose, p24).

Summary

Deterrence is a key concept and strategy employed by the United States. Deterrence can be general or immediate; applied by denial or punishment; centrally focused or extended. The necessity to deter adversaries by employing various methods across the nation's instruments of power is established throughout national policy down to specific military units. This section has covered what deterrence is and why it is important, but how is it understood to work theoretically?

Applicable Theories for Deterrence:

Deterrence is a key objective for a nation and its military. Given the prominence of deterrence, it is important to understand the theoretical backing behind it and how it is supposed to work, in order to ensure that operations are planned and conducted in a way that maximizes their chance of success. This understanding can also prevent operations and activities that will have no effect, or worse, escalate the situation to open conflict.

This section will discuss deterrence theory and how it theoretically works. It is important to note that deterrence theory relies on other theories-- most notably theories dealing with choice behavior. Research in this area is vast and there are numerous theories that have been connected to deterrence. To cover them all and provide a comprehensive review of deterrence related theories would be difficult and not feasible for the scope of this thesis. To answer the key questions of this thesis and meet its purpose, only the most prominent theories will be covered to demonstrate that deterrence is not a simple process and that there are multiple ways to understand how it works and how it is to be achieved. Thus, in addition to deterrence theory, I will cover rational-choice and prospect theories.

Deterrence Theory

In his review of deterrence theory, Quackenbush asserts that research on deterrence rose to prominence out of the Cold War confrontation between the United States and the Soviet Union from the 1960s to 1990s. Understanding the dynamics of deterrence was important as it was seen as a key way to avoid a nuclear holocaust. With the fall of the Soviet Union, attention shifted to other topics dealing with international relations.

Despite this shift and the importance of deterrence today discussed in the section above, scholars have continued to look at it and develop theory, analyze policy, and apply it to empirical analysis. (2011:741-742)

Kaufmann (as cited in Quackenbush, 2011, p742) states that rational deterrence theory "argues that, in order to deter attacks, a state must persuade potential attackers that: 1) it has an effective military capability; 2) that it could impose unacceptable costs on an

attacker, and 3) that the threat would be carried out if attacked." With such a large area of research and numerous contributions to it, deterrence theory can be viewed as a single theory with multiple strategies (Morgan, *Deterrence Now* ;p9)or sub-groups, such as structural deterrence theory and decision-theoretic deterrence theory (Zagare:1996, pp.365-87), or competing theories seeking to address issues with the others, classical deterrence theory versus perfect deterrence theory. It should be noted here that rationality plays a key role within these theories. Rational-Choice Theory and its impact on deterrence theory will be discussed in a following section.

Classical Deterrence Theory

Classical deterrence theory covers the earliest work on the question of deterrence, and has been amended over time to incorporate new ideas. To parse out all of the contributions over time, classical deterrence theory is composed of two subgroups: structural deterrence theory and decision-theoretic deterrence theory.

Structural deterrence theory represents some of the earliest thoughts and assumptions regarding deterrence. It claims that balance of power leads to peace since two states, equal in power, will each be deterred since neither holds an advantage (Quackenbush, 2011: p.743). This holds true for nuclear deterrence as well and it is argued that nuclear deterrence is inherently stable. A key factor is that a nation maintains second-strike capability in order to establish costs to an initial attack that would make such an attack

irrational. This theory fit well with the era of the Cold War, in which there were two state powers with nuclear capability locked in a stalemate.

Decision-theoretic deterrence theory goes beyond structural deterrence theory and utilizes utility and game theory to model the workings of deterrence and expands the notion of nuclear war as being irrational by assuming that states view conflict as the worse possible outcome (Quackenbush, 2011: p. 743). Quackenbush presents a typical classical theory model of deterrence with two actors: a challenger who looks to alter the status quo and defender who wishes to deter such actions. In the game, the challenger can choose to continue to cooperate, which would maintain the status quo, or attack. The defender than must decide to concede, which would lead to the attacker achieving its goal, or defy leading to conflict. The challenger would prefer the defender to concede, while the defender prefers the status quo. Classical deterrence theory assumes that both sides view conflict as the worst outcome. (2011:p.744)

The problem with this game model is that it leads to a situation in which deterrence efforts by the defender to convince the challenger to maintain the status quo will always fail. A challenger, who knows that a defender will opt to concede since it provides a more favorable outcome than conflict, will always attack. Quackenbush cites Zagare and Kilgour who label this the 'paradox of mutual deterrence' (2011:p744). In order to rectify this issue, classical deterrence theorists rely on two solutions.

One method is to have the defender make "an irrevocable commitment to a hard-line strategy" that would remove the option of the preferred alternative (Quackenbush citing Kahn, 2011: p.744). While the communication of the irrevocable commitment to the challenger is seen as a way to increase the likelihood they will cooperate, if they do attack, the irrational choice of conflict remains.

The second proposed solution to the paradox, suggested by Schelling, is making threats that leave something to chance (1963:p197). This strategy involves the defender taking actions and making threats that increase the risk of a war. Quackenbush clarifies how this strategy supposedly corrects the paradox and avoids irrationality by stating "rather than relying upon a threat to make an irrational choice of war, Defender can simply make a rational choice to raise the risk of war and leave the question of whether war starts or not to chance" (2011:p.745). Further, Schelling claims that in crises, one side will be more willing to accept the risk of mutual assured destruction and that credibility of threats is tied to who is more threatened by the crises and willing to take risk. Deterrence thus devolves into both sides using brinksmanship and its competition of risk taking in order to establish credibility that will cause the other side to back down (Quackenbush, 2011:p746). Credibility of a threat is necessary and in order to be credible, it must be believed. The issue with this solution is that "nuclear attack invites one's own destruction, the threat to choose to do so is not believable, and thus not credible" (Quackenbush, 2011:p.746). While Schelling concedes this fact, he proposes that a threat to increase the risk of inadvertent war can be credible since it focuses on the increasing risk, not war itself. Quackenbush disputes this, by calling out the issue with reliance on

inadvertent war by citing research showing that inadvertent war example show that conscious decisions led to them and not chance, and claims "threats that leave something to chance seem to be not credible after all" (2011:p.746).

Classical deterrence theory relies on a focus on concepts like mutual assured destruction and brinksmanship. In order to address the above issues with the theory, scholars have proposed an alternative called perfect deterrence theory.

Perfect Deterrence Theory

In an effort to address the problems with classical deterrence theory, Zagare and Kilgour proposed an adjusted theory called perfect deterrence theory. The chief differences are how credibility is conceived and the deterrence model is used.

As stated above, credibility of a threat hinges on the believability of the threat. Issues with credibility arise with classical deterrence theory due to the fact that threats of a nation choosing conflict are irrational, given the nation chooses its worst viewed alternative, and are thus not believable. Perfect deterrence theory claims that threats are credible, when they are rational to carry out. Quackenbush submits that "connecting credibility with rationality in this way is consistent with the treatment of credibility in game theory" (2011:p.746). This alone doesn't solve the paradox of mutual deterrence. It simply means that no credible threat can be made in a classical deterrence model that will lead to successful deterrence. How then can the paradox be solved?

Perfect deterrence theory differs from classical theory by altering the classical deterrence game model and eliminates the notion that states always view conflict as the worst alternative. Some states prefer to fight and view conceding as the worse outcome. Game theory models of perfect deterrence can differ depending on the nation's preference on conceding to that of defying. This differing preference thus leads to a change in which choice is the rational one. If a nation views conceding as the worse alternative, then it is rational for them to choose to defy and enter combat. Therefore, as stated by Quackenbush, "The real hallmark of perfect deterrence theory is the insistence that credibility varies, and that credibility is determined by a state's preference between conflict and backing down" (2011:p. 747). If a defender views conceding as the worst alternative, their threats will be credible. If the attacker knows this, they are confronted with a situation in which they can choose between irrationally choosing defection that will lead to the defender opting for their rational choice of defying and engaging in conflict or the rational choice of cooperating and maintaining the status quo. Rationality holds and thus deterrence works when a credible threat is made from a nation in which it is rational for them to defy and engage in combat.

Throughout the discussion above, the issue and assumption of rationality can be seen throughout. Quackenbush claims that "both classical and perfect deterrence theory are rooted in the assumption of rationality" (2011:p. 748). The next section will provide an overview of rationality and rational-choice theory and further highlight its ties to deterrence.

Rational Choice Theory

Rational choice theory's impact can be found in many academic areas. Levy claims that it "has become the most influential paradigm in international relations and political science over the last decade" (1997: p87). Herrnstein states that "it comes close to serving as the fundamental principle of the behavioral sciences" and that "no other well-articulated theory of behavior commands so large a following in so wide a range of disciplines" (1990: p. 356). Deterrence theory is just one of many that use rational choice theory and its related concepts as a basis for how decisions are made.

Rational choice theory arose as a theory of choice under uncertainty from expected-utility theory which claims that "actors try to maximize their expected utility by weighing the utility of each possible outcome of a given course of action by the probability of its occurrence, summing over all possible outcomes for each strategy, and selecting that strategy with the highest expected utility" (Levy, 1997: p.88). Rational choice is defined "more broadly to require a consistent and transitive preference order and the selection from available alternatives so as to maximize satisfaction (Riker as cited by Levy, 1997: p.89). The choice that maximizes expected utility is that rational choice. More simply, when confronted with a choice, people choose based on a cost versus benefit analysis of each option they can take. Whichever choice will lead to higher expected benefits, despite expected costs, will be the rational choice and the one they select.

Rational choice can be seen throughout the section above on deterrence. Within the game theory models of deterrence, the assumption of rationality is implied in ascribing preferences for each choice and determining which choice will be made. Classical deterrence models assume that conflict is the worst possible outcome; therefore actors will opt for the course of action that avoids it when weighing their options. To choose conflict would be irrational. This creates the paradox of mutual deterrence which classical deterrence theorists attempt to solve by suggesting rational decisions are made to escalate risk of a conflict but that conflict is left to chance. Perfect deterrence theory alters the model by acknowledging the fact that some sides would view the costs of conflict as acceptable over those of conceding. Thus for those actors, choosing conflict is rational. Despite their differences, the assumption of rationality in decision making remains within both concepts of deterrence. But what is rationality?

Rationality

Morgan (as cited by Quackenbush, 2011: p. 748) defines rationality as:

...gaining as much information as possible about the situation and one's options for dealing with it, calculating the relative costs and benefits of those options as well as their relative chances of success and risks of disaster, then selecting - in light of what the rational opponent would do - the course of action that promised the greatest gain or, if there would be no gain, the smallest loss.

The above definition of rationality contains the basic ideas I hear while at work with regard to why we employ deterrence activities and can be seen in the section above in the review of deterrence. Deterrence operations seek to alter the cost versus benefit calculus

in the mind of the opponent to where their rational decision is to cooperate and maintain the status quo.

Quackenbush expands the above definition and makes a distinction between two types of rationality. The above definition is one of procedural rationality. The focus for procedural rationality is the use of a specific way in which decisions are made. If actors deviate from the procedure they can be viewed as irrational. Instrumental rationality on the other hand is demonstrated by an actor "who, when confronted with two alternatives which give rise to outcomes [...] will choose the one which yields the more preferred outcome." If an actor chooses according to their preferences they are instrumentally rational. This leads to rationality being largely subjective for the decision maker. Further, given how it is subjective and the difficulties of determining an actor's preferences, rationality is assumed. (2011: p. 749).

Issues with Rational Choice Theory

Despite its prevalence in many different research areas, rational choice theory has a host of issues, which in turn create similar issues with theories that pull from it, deterrence theory included. While the theory is quite developed, "accumulating empirical evidence from laboratory experimentation suggests that decision makers systematically violate the strict behavioral expectations of rationality (Berejikian, 2002: p.165). The same issue can be seen with expected-utility theory which "has come under increasing attack by experimental and empirical evidence of systemic violations of the expected-utility

principle in individual-choice behavior (Levy, 1997: p. 87). With regard to deterrence, it "can fail even when states appear rational or succeed despite irrationality" (Quackenbush, 2011:p.748).

The empirical research looking at choice behavior and how it differs from predicted outcomes based on rational choice is vast. From the research, several key findings and concepts have been identified and replicated. Levy provides a listing of these findings and states that "people tend to evaluate choices with respect to a reference point, overweigh losses relative to comparable gains, engage in risk-averse behavior in choices among gains but risk-acceptant behavior in choices among losses, and respond to probabilities on a nonlinear manner" (1997:p.87). These findings lend credit to the claim "that individual choices are as much a function of consistent heuristics and biases as they are the result of calculated costs and benefits" (Berejikian, 2002: p. 166).

Quackenbush mentions these cognitive heuristic and biases when he lists "well established" factors that limit rational behavior: "decision makers lack sufficient time to analyze all alternatives in a crisis situation, they lack information about the opponent and the consequences of decisions, and/or they are affected by emotions or cognitive limitations" (2011:p.748). Berejikian references these factors as well by stating "[t]ime constraints, huge amounts of information, and uncertainty, combined with cognitive limitations, make it difficult for foreign policy actors to evaluate all possible scenarios and make a universally rational choice" (2002:p.167). Given these limitations, the resultant behavior may appear irrational. This is the reason why Quackenbush suggests

different types of rationality detailed above. These issues have an effect on procedural rationality due to its strict modeling that views deviations from the procedure as being irrational. Procedural rationality relies on a strict utility function that doesn't consider the subjective framing of the decision maker. Instrumental rationality side-steps these limitations and claims they may have an effect on how an actor views a situation, but they still act rationally as long as they pursue their more preferred outcome.

Prospect Theory

Prospect theory was developed by Kahneman and Tversky and sought to incorporate the cognitive findings mentioned above "into an alternate theory of risky choice" (Levy, 1997:p.92). While the empirically found concepts, such as reference dependence, violate assumptions in expected-utility and rational choice theory, they are incorporated into prospect theory. The theory includes two phases: editing and evaluation. During the editing phase "the actor identifies the reference point, the available options, the possible outcomes, and the value and probability of each of these outcomes" (Levy, 1997:p92). Once complete, the evaluation phase "combines the values of possible outcomes...with their weighted probabilities and then maximizes over the product" (Levy, 1997:p92). Thus prospect theory expands the base level cost versus benefit analysis of a decision maker and alters it to take in to account the user's subjectivity.

In his review of prospect theory, Berejikian states that it observes "subjectively, there is a diminishing return to continually increasing gains" and similarly for losses, which creates

an “asymmetrical relationship between gains and losses” (2002: p170). While expected-utility theory has a single utility function in which people “evaluate the desirability of outcomes against their net asset position,” prospect theory proposes that people “evaluate each situation anew and against a neutral reference point” and use two functions: one for gains, and one for losses. (Berejikian, 2002: p170). When both functions are plotted out, with losses/gains on the X-axis and subjective value on the Y-axis, an asymmetrical S-shaped curve is formed which passes through the reference point.

By utilizing the notion of two separate functions and its “central analytic assumption” of reference dependence, prospect theory aligns itself with multiple findings from empirical research (Levy, 1997:p89). Since gains and losses are viewed differently, with losses being overvalued in comparison to gains, the theory accounts for loss aversion found in research. The research finding of preference reversal (when a choice is reversed based on if it is framed in a gains frame versus a losses frame) flows from the theory's use of two functions. How a person chooses depends on if they are in a loss or gains frame.

Expected-utility theory, on the other hand, claims that the choice should remain consistent regardless of how the problem is presented. The status quo also has a large role in the fact that “[i]n a static situation that involves a well-defined status quo, for example, actors usually frame choice problems around the status quo” (Levy, 1997:p90). Given its acquisition of empirical research findings and concepts, prospect theory “models the subjectivity of actual decision making” (Berejikian, 2002:p172).

Issues for Prospect Theory

Despite prospect theory's alignment with observed empirical research, it still has some potential issues. Critics call forth internal validity issues of the research that finds anomalous results that do not conform to what rational-choice or expected-utility would suggest, and external validity problems with how the research is applicable to the real world.

Levy reviews the internal validity issues and states that opponents of the theory believe "observed anomalies are the artifacts of experimental procedure and can be explained by standard economic theory." This argument believes that given the experimental nature of early empirical tests and how they were conducted led to anomalies like reference dependence or preference reversal. Critics argued that if subjects faced real choices versus hypothetical ones in a lab experiment, the anomalies would vanish. Subjects simply didn't have a strong enough incentive to "expend the mental effort to make optimum decisions." Follow on research examined incentives to see if anomalies were removed. The results were mixed, but despite the varying levels of incentives, anomalies, like preference reversal, never fully vanished. Other suggested internal validity problems are traced to issues such as: transaction costs, task unfamiliarity, the absence of opportunities for learning, or strategic incentives. All have been looked at and controlled for in follow on research which found that "the observed anomalies, though lower in magnitude under certain conditions, do not disappear." (Levy, 1997:pp94-96).

External validity issues arise from critics' arguments that the laboratory research does not translate to the real world. Laboratory empirical research is structured to be able to easily identify choice behavior. These choices are often straight forward, made between limited options, probabilities are easier to determine (sometimes given), and the frames are often established by the researcher. This does not match the more complex world people live in. Given the high subjectivity of decisions, it is much more difficult to examine choice behavior in the real world. How these choices are made remains in the subjective view of the decision maker and being able to identify the process used (rational-choice vs prospect theory) is difficult. Another major issue with the generalizability of the theory is a majority of the research is done on individual choice behavior. Yet, little is focused on collectives such as a nation. In that area, more research and development is necessary. (Levy, 1997:pp98-102)

Prospect Theory and Deterrence

Despite its focus on individual choice, prospect theory has been used to look at deterrence. In doing so, interesting implications for how to approach deterrence are found, primarily with regard to the frame in which a nation views deterrence actions.

"The framing effect identified under prospect theory suggests that state assessments about the attractiveness of the status quo play a central role in explaining deterrence behavior" (Berejikian, 2002:p172). The chance of a state being deterred is influenced by if they are in a gains or losses frame. Berejikian differentiates the two by stating: "when the gamble contains an expected value of further gain but also some probability of loss, the state

would be in a gains frame" and "when this gamble contains an expected value of further loss, but also some probability of approaching an acceptable status quo, the state would be in a losses frame" (2002:p173). A state in a gains frame is risk-averse. The potential of a loss from their acceptable reference point of the status quo makes them more susceptible to deterrence given the loss is overvalued and they are less likely to take a risk given their subjective view of the status quo being acceptable. For a state in a losses frame, their reference point is an unacceptable status quo. They are already at a loss, so further losses are not given as much weight as the potential gains in their seeking an acceptable and new status quo. These states will be more difficult to deter and more risk-acceptant. Having an understanding of what frame the adversary is in allows a state to tailor their deterrence efforts to avoid potential escalation, or worse, pushing the adversary further into a losses frame and more likely to take a gamble on attacking.

Summary

This section covers several key theoretical points with regard to deterrence and represents a fraction of the total body of work. The key take away is not to make a claim of which theory is right or compile every single idea on deterrence. The purpose of this section was to highlight the growth of new thoughts on how deterrence activity is to have an impact on decision making. With the ever increasing body of work on deterrence, new ways of looking at deterrence, and how to plan for it, increase as well. In order for a nation's deterrence actions to be done in a manner which aims at maximizing success, we

must ensure that planners have a solid grasp on factors to be considered and not simply assume that a show of force will deter an adversary.

Methodology:

Given the purpose of this thesis and the questions proposed in the objectives section above, I employed a content analysis methodology, specifically qualitative content analysis. Specifics on how the methodology was used can be found in the methodology chapter below. This section aims at establishing the following: what content analysis is and its process; its various approaches and how each approach is best used; and how it has been used in similar research.

Content Analysis

In their journal article on the qualitative content analysis process, Elo and Kyngas discuss content analysis and its purpose. They state that "Content analysis is a method of analyzing written, verbal, or visual communication messages" and has "a long history of use in communication, journalism, sociology, psychology, and business" (2007:p. 107). It provides a method in which to describe and quantify phenomena, test theoretical issues, enhance understanding of data, and provide "knowledge, new insights, a representation of facts, and a practical guide to action"(2007:p. 108). Two major benefits for researchers are that content analysis is a content-sensitive method and has flexibility in its research design which can make the method "as easy or as difficult as the researcher determines it to be" (2007: p. 108).

Content analysis can be either quantitative or qualitative. Quantitative content analysis focuses on coding text data into explicit categories and describing the data through statistics (Hsieh and Shannon, 2005:p. 1277). Manifest content analysis falls into the quantitative category with a focus on frequency of words or content. Qualitative content analysis goes beyond simple word counts and statistics and examines the meanings, intentions, consequences and context of communication (Elo and Kyngas, 2007: p. 109).

Elo and Kyngas provide a detailed account on content analysis and how it can be used inductively or deductively. The approach used is derived from the purpose of the study. When knowledge of the area studied is limited or fragmented, an inductive approach is used in order to derive categories from the data itself. When dealing with a more developed research area that has a strong basis of previous knowledge and theory, a deductive approach should be used that uses the past research to structure the categories and analysis. (2007: p. 109)

Generally, content analysis consists of three major phases: preparation, organizing, and reporting. Preparation for both inductive and deductive approaches consists of deciding what is to be analyzed, sampling considerations and the selection of the unit of analysis (a word, sentence, pages, etc.). This unit of analysis is what the researcher will look for and be classified into the various categories that are established. Also, during the preparation, the research must determine if they will look at only the manifest content, the actual spoken or printed unit of analysis, or examine the latent content (silence points, sighs,

posture, etc.) as well. Latent content has the benefit of providing a more robust examination of content, but can give rise to validity issues due to the increased amount of interpretation of the content being categorized. (Elo and Kyngas, 2007: p. 109)

The organizing phase for inductive content analysis consists of open coding, generating categories and abstraction. Open coding involves the process of reading through the data and marking headings that describe aspects of the content or concept being explained. From these headings categories are generated from the data itself. These first set of categories are then grouped into more broad headings in an effort to reduce the total number of categories to be considered. This process opens itself to interpretation by the researcher in deciding what belongs and what doesn't within the different categories. Finally, through abstraction, the researcher seeks to form a "general description of the research topic through generating categories" and linking the categories into a hierarchy from sub-categories up to a main category.(Elo and Kyngas, 2007: p. 110)

Deductive content analysis starts with categories that are derived from knowledge on the subject that already exists. Organization of the data begins with the development of a categorization matrix and codes the data according to the previously established categories. If a structured matrix is used, the categories are set and only content that meets the criteria for a category is included. An unconstrained matrix however, starts with established categories, but allows for new ones to be created if content in the data is

pertinent but represents a new category previously not established. (Elo and Kyngas, 2007: p. 111)

Regardless of the approach used, “results are described contents of the categories.” Researches must ensure that analysis reflects the subject of study in a reliable manner. In order to increase reliability, the researcher needs to ensure that they demonstrate the link between reported results and the original data. Additionally, the analysis process must be described in as much detail as possible in order to provide the reader an adequate understanding of the process. By doing so, the researcher enables the internal validity of the study to “be assessed as face validity or by using agreement coefficients.” The use of a panel of experts to support concept production or coding issues also provides for increased content validation. (Elo and Kyngas, 2007: p. 112-113)

Qualitative Content Analysis Approaches

Content analysis, as discussed above, can be a quantitative or qualitative method and approached as inductively or deductively. In their look at qualitative content analysis, Hsieh and Shannon clarify inductive and deductive approach categories and identify three specific approaches to qualitative content analysis: conventional, directed, and summative. (2005: p. 1278)

“Conventional content analysis is generally used with a study design whose aim is to describe a phenomenon...when existing theory or research literature is limited” (Hsieh

and Shannon, 2005:p.1279). It follows the approach described above for inductive content analysis in which categories are derived from the content itself and has the advantage in the fact that data is gathered without preconceived categories or theoretical perspectives. However, the approach does have potential issues with internal validity. One is that the researcher can fail “to develop a complete understanding of the context, this failing to identify key categories” resulting “in findings that do not accurately represent the data” (Hsieh and Shannon, 2005:p.1280). To correct for this peer debriefing, prolonged engagement, persistent observation, triangulation, negative case analysis, referential adequacy, and member checks can be used (Hsieh and Shannon, 2005:p.1280).

A directed content analysis is deductive and follows the process outlined above and typically has a goal “to validate or extend conceptually a theoretical framework or theory (Hsieh and Shannon, 2005:p.1281). The results use rank order comparisons of the frequency of codes and theory from previously established research guides the discussion. It’s strength of being able to support or extend existing theory can lead to issues of bias in the fact that the researcher is primed to look for theory relevant content and miss others. In order to address this issue, researchers may use an “audit trail and audit process can be used” (Hsieh and Shannon, 2005:p.1283).

Finally, a summative content analysis starts largely as a quantitative method but takes it a step further which shifts it into the qualitative realm. It "starts with identifying and

quantifying certain words or content in text with the purpose of understanding the contextual use of the words or content" (Hsieh and Shannon, 2005:p.1283). It also includes latent content analysis. Hsieh and Shannon use a broader definition of latent content than mentioned above and state that it is "the process of interpretation of content" in order to discover "underlying meanings of the words or the content" (2005:p.1284). This is more inclusive than simply looking at the spaces between the manifest content. While applicable in a variety of ways, Hsieh and Shannon highlight that this approach can be found in research on "manuscript types in a particular journal or specific content in textbooks" (2005:p. 1284). Data analysis consists of: searches for key words within the data, either by hand or computer; counting the frequency of use in effort to "identify patterns in the data and to contextualize the codes"; and exploring how key words are used throughout the data (Hsieh and Shannon, 2005:p.1283). This approach is an "unobtrusive and nonreactive way to study the phenomenon of interest" and can provide "basic insights into how words are actually used" (Hsieh and Shannon, 2005:p.1285). With a focus on the keywords, this approach does limit itself by being inattentive to broader meaning within the data. Lastly, this approach requires that the researcher establish credibility, or internal consistency, by openly demonstrating how the "textual evidence is consistent with the interpretation" (Hsieh and Shannon, 2005:p.1285).

Qualitative Content Analysis Applied

While initially searching for research in line with the purpose of this thesis, a variety of studies that focus on analyzing curriculum were found. The most notable method utilized

in these studies was content analysis. This section will look at a few examples of how the research was conducted in order to apply a similar method and approach to my thesis.

Seker and Guney chose a qualitative directed content analysis method in their effort “to examine the alignment between history of science and the curriculum in the light of the facilitator model on the use of history of science in science teaching, and to expose possible difficulties in preparing historical materials” (2012:p.683). Instead of doing content analysis on the curriculum, they analyzed the content of historical sources available to educators. Their chosen units of analysis were a 9th grade force and motion unit and 10th grade electricity unit within the Turkish education system. For each unit, keywords were developed related to the concepts that are taught and their associated skills and knowledge objectives. These were then categorized by the different levels of the facilitator model. The keywords provided the search terms to be used in looking at historical sources in effort to determine what historical material, related to the units concepts and objectives, was available to educators. The researchers then searched historical sources utilizing electronic search engines. The search revealed “over one hundred sources” tied in some way to the unit’s concepts and objectives. Similar criteria to ensure credibility of a source was used as one would for any research paper (articles from journal publications, published conference papers, etc.). These sources were then reviewed and coded according a categorization matrix based on the facilitator model’s levels (the studies categories) and sub-levels (the studies sub-categories). By doing so, the researchers were able to: determine the amount of content available to educators with respect to each level of the facilitator’s model; recommend historical research areas

needed to support concepts that are taught; and recommend new ways to teach the history of science to students (Seker and Guney, 2012: p.683-697).

In his look at social welfare curriculum, Michael Seipel sought to describe and analyze three main policy course content areas taught in bachelor of social work (BSW) and master of social work (MSW) programs in effort to make recommendations for improving social work education. He employed a manifest (quantitative) content analysis method in order to report frequencies and tabular presentations of the data and from those, made “logical arguments and insights related to the data” (Seipel, 1986:p55). His sample was pulled from the 320 BSW and 91 MSW accredited programs by the Council on Social Work Education. Of the 320 BSW programs, he randomly selected 100 and then mailed questionnaires to each program’s policy sequence coordinators, doing the same for the full 91 MSW programs. His sample consisted of the 144 returned, completed questionnaires, 78 BSW and 66 MSW. These questionnaires requested information on each program’s curriculum and content regarding social work policy. In addition, course outlines were obtained to further validate the written responses and provide “greater insights into the course contents covered, the level at which they were covered (MSW or BSW), and the amount of emphasis placed on them”(Seipel, 1986:p55). In his analysis, Seipel initially looked at the number of hours required for each program and the number of required policy courses. After identifying this information, he tabulated it and computed percentages for each program and found that programs greatly vary in their percentage of the program devoted to policy issues. In order to focus the study and not become “logistically unmanageable,’ Seipel chose to

create three general content areas: 1) skill/analytical components; 2) substantive components; and 3) historical/philosophical components (1986:p 57). He then coded the content in the questionnaire from each program, identified the percentage of the content for each category respective of overall content at each program, grouped the programs together that had similar percentages within a range, and created a table of the results. This allows for him to discover how the content is being emphasized differently across programs. Additionally, he created categories for specific knowledge and skills to discover how “there is wide disagreement over the specific knowledge or skills that should be taught in each of the areas and the sequencing of the content” (Seipel, 1986:p57). Through the use of manifest content analysis, Seipel was able to discover little agreement among programs on appropriate requirements for policy studies and make recommendations on how to correct this.

Finally, a summative content analysis was utilized in a study by Wisnes, Kellner, Lietke, Toporowski, and Zielke “to identify major research areas and industrial branches in the sustainability literature relevant to retail supply chains, and sustainability considerations in retail practice” (2010; p.318). The researches first identified “what research areas in business and economics have considered sustainability problems” by conducting a literature search on EBSCO Host/Business Source Premier using keywords identified in the Journal of Economic Literature classification system. These terms were combined with “sustainab*” to pull only those articles connected to sustainable/sustainability. A similar process was used to identify the industrial branches. Quality was ensured by checking the content to ensure it matched the definition of sustainability tied to past

research and removed those that did not or simply used the term as a “synonym for long-term orientation.” The researchers plotted the number of hits across time to determine to what extent sustainability has been a topic within their units of analysis (major research areas, industrial branches, retail supply chain and practice). This allowed the researchers to see how the research has grown overtime. At this point, their study seems to be a manifest content analysis. However, the researchers did move a step further in looking at the articles and examined the content of how it was being discussed and then expanded their search based on this for sustainability-related keywords. This study demonstrates the fine line between quantitative manifest content analysis and that of qualitative summative content analysis.

Summary

Content analysis is a broad methodology that can be applied in a variety of ways depending on what the researcher is attempting to explain or discover. It can be a quantitative search for frequencies of the appearance of a word, thought, or theme or can be used qualitatively to examine how the content is used and what is being communicated. Regardless of the different approaches, the method shares commonalities in how they start with identifying the topic of interest, identify keywords to be searched for, classification of the content within categories or sub-categories. Any research that aims to understand what is being communicated within its content can utilize content analysis.

It is important to note the above issues and limitations with the content analysis design. One main issue that repeatedly is mentioned is that of internal validity due to the varying degree, depending on the type of content analysis used, of subjectivity used in coding and classifying the content. In order to combat this issue, clear understanding of the issue and documentation of the process utilized must be made. Despite its limitations however, content analysis appears to be an appropriate method to use when analyzing curriculum. How this thesis will utilize the content analysis design will be covered in chapter two.

Review of Literature Summary

Within this review of the literature, three key areas were explored. First, deterrence was explored and literature was looked at in order to establish a baseline understanding of deterrence and its various aspects. Additionally, literature was reviewed to establish what directs the U.S. and its military to conduct deterrence operations. Second, theory relevant to deterrence was explored and it was identified how research on the topic has developed and changed over time. While far from being all inclusive, key theoretical areas were covered to establish a starting point from which to examine what is being taught to Air Force officers within their professional military education programs. Finally, a review of the literature on content analysis was provided given the method's inherent connection to the analysis of curriculum. The various approaches to this method were explored and key steps for each were identified. Research utilizing the method was then reviewed to understand how it was employed.

From the review of literature, deterrence is a key concept employed by our nation and has been researched extensively. Despite the varying ideas and theoretical growth on deterrence, much of the language of deterrence remains rooted in cost versus risk terminology from early classical deterrence theory. Given this, and my personal experience working daily on deterrence operations, I hypothesize that much of the material on deterrence within USAF professional military education programs utilizes and teaches classical deterrence theory. I also hypothesize there will be a limited amount, if any, of material covering psychological/sociological relevant information applicable to deterrence.

CHAPTER TWO, METHOD

Research for this thesis consisted of an analysis of curriculum provided through the U.S. Air Force professional military education programs in effort to determine deterrence related content. This section will discuss the required data to answer this thesis' research questions, data availability, the research design, and the methods used to collect the data. Additionally, ethical considerations related to the collection and protecting of the data is addressed.

Research Data:

Deterrence is a topic of national interest across the instruments of national power, not just the military. To review how deterrence is presented and what content is utilized for every government and military educational program would be far too great a task for this thesis. I have made several decisions on how to focus this thesis and what educational content I would need to analyze for deterrence.

My first decision was to focus on military educational programs. The initial idea for this thesis was based on my time in the military and my job's focus on deterrence. Within the topic section above, I discussed how one key reason a nation maintains a military is to deter adversaries. Additionally, deterrence is pervasive through the military and it is a

concern of commanders who establish deterrence objectives. Given, it's importance for the military; it would be useful to understand how deterrence is presented to military members and what theoretical backing is used.

Secondly, I decided to focus on one branch of the armed forces: the U.S Air Force (USAF). While all services have deterrence concerns and objectives, The USAF's unique global strike capabilities make it an essential component in our nation's general deterrence strategy. When a deterrence message needs to be sent quickly, the USAF can quickly plan and execute a show of force. An example of this is the recent activities by North Korea and our nation's response. Soon after North Korea tested a nuclear capability, the U.S. Air Force flew a B-52 in cooperation with our allies. Also, as a member of the USAF who is involved with planning these types of operations, I question, with the intent of exploring and examining, the basis of knowledge that I and my colleagues have regarding deterrence.

The third decision I made concerns which USAF educational programs to include in my research inquiry. The Air Force offers many programs under its Developmental Education (DE) umbrella. The Air Force's DE Instruction 36-2301 "establishes education guidance and procedures for all officer and enlisted, active duty, guard and reserve components, and civilians," and states that DE programs "expand knowledge and increase understanding of the role of air, space, and cyberspace power in times of peace and war" (2010:p. 5). The large variety of courses within the DE umbrella includes

programs directed at broad or specific groups, officers or enlisted, selective courses that only a few attend each year (or, sometimes many years). To analyze them all would be overwhelming and, given the nature of many of the courses, deterrence may not even be included.

Thus, I made two further decisions. I decided to examine education courses offered to USAF Officers. While both officers and enlisted have a role in deterrence operation planning and execution, officers play a more prominent role in the planning. Officers are responsible for developing and approving all aspects of a deterrence effort. Additionally, these operations are directed by senior officers who establish guidance and the direction they would like to take. Therefore, an understanding of deterrence and relevant theory would be more beneficial to those officers involved in deterrence operational planning.

I also decided to narrow the focus to those courses that comprise Professional Military Education (PME). According to the Air Force Instruction on DE, PME programs are a critical subset of DE that:

- "1) provide the nation with skilled personnel in the employment of airpower in the conduct of war and small scale contingencies;
- 2) provide Air Force personnel with the skills and knowledge to make strategic decisions in progressively more demanding leadership positions within the national security environment;

- 3) develop strategic thinkers, planners and war fighters; and
 - 4) strengthen the ability and skill of AF personnel to lead, manage and supervise"
- (AFI36-2301, 2010: p. 5).

While some DE programs are very selective and have focused content on subject matter, PME programs are developed for Officers across the Air Force and officers are expected to complete them, either in residence or through distance learning (online) at certain points in their career. They include: Squadron Officer School (SOS), completed at the rank of Captain (O-3); Air Command and Staff College (ACSC), completed at the rank of Major (O-4); and Air War College (AWC), completed at the rank of Lieutenant Colonel (O-5). SOS is the standard for all Air Force members. However, select officers can complete other DE programs at the ACSC and AWC levels to receive credit for PME. For those that are not selected for special DE programs, they will at a minimum require ACSC and AWC through distance learning to progress in their military career.

The sample data for this thesis was sought from USAF Officer PME programs (SOS, ACSC, and AWC) and consisted of the core curriculum content for both the in-resident and distance learning options for each. While the material for in-resident and distance learning is similar, there are some differences between the two. For example, in-residence programs typically have electives while the distance learning option is a set block for all enrolled. Included in the analysis were program course syllabi, lesson objectives, desired learning objectives (the key points students are to walk away with), and course reading. Focusing on these three programs allow for an analysis of what

information, regarding deterrence, is being taught in these foundational courses. It should be noted that other DE opportunities may provide information on deterrence, or even specialize in it, and there are electives which students at ACSC and AWC may choose to take that specialize in deterrence content. My focus however is to determine what content is presented to students at the foundational levels related to deterrence. Not every officer will be exposed to the content of specialized DE or elective PME course work, nor will every officer who is involved with deterrence planning attended these special programs or electives. In his article within *Air & Space Power Journal*, Bernstein notes that PME "lags in the attention it gives to contemporary deterrence problems" (2015: p. 85). Given this claim and the importance of the concept of deterrence, this thesis explores what is being taught at the most basic and broadest levels of USAF PME.

Design

Based on the information discovered in the methodology literature review, this thesis utilized a qualitative content analysis method. This method allowed analysis of the limited curriculum data, the identification of instances in which deterrence is covered, and an examination of the context in which the term was used. Given the exploratory nature of the thesis' purpose, a summative approach was used with aspects of a conventional approach to inductively categorize the content found as a result of the keyword search.

The process for this method consists of three main phases: preparation, organization, and reporting. Much of the preparation phase was accomplished while developing the intent and direction this thesis would take. This included identification of the research purpose and questions, examining related literature, and identifying the content to be analyzed. Once the data was collected, a unit of analysis, deter*, was used to highlight content containing the root word "deter". Organization of the data then took place and analysis focused on searching for the unit of analysis within the content. Once the analysis of the content was complete, findings were recorded and are now being reported within this thesis.

Data Collection:

The USAF PME programs fall under the authority of the Air University located at Maxwell Air Force Base, Alabama. In order to obtain the data to be analyzed, I first accessed each program guide available on their respective websites. This provided a broad description of the programs courses. I then reached out to professional contacts I had at Air University and obtained the contact information for the program coordinator for each USAF PME program (SOS, ACSC, AWC). I contacted each of these individuals, via electronic mail. Within the email I introduced myself, provided details on my thesis as well as a copy of my proposal for reference. I requested their support for my thesis and asked for course material for each. Material requested was the program's syllabus, lesson objectives, and desired learning objectives. The syllabus would provide a general outline of the material covered throughout each course. Lesson objectives would

provide the key points each lesson addresses. And, desired learning objectives are specific points each student is expected to have gained as a result of the lesson. These three sources provide what the course is designed to impart to students. Additionally, I requested any required course reading. The reading material typically includes content students are intended to learn (as outlined in the objectives), but also may contain additional content. Having the opportunity to identify deterrence theory content presented in either case, was seen as being beneficial to record. Data was requested in electronic format to facilitate the use of computer word processing search functions during analysis.

Unfortunately, in the process of working with my contacts within the three programs, Air University policy changed and severely impacted the amount of data I was able to obtain. The limited data that was obtained will be detailed in the following chapter.

Ethical Consideration / Protection of Data

Given the lack of human subjects the ethical considerations and requirements for protection of data are minimal. One key aspect of data when it involves military information is its classification. The provided data for this thesis and the courses that they originate from is all at the unclassified level. No data was obtained that would require special protections for classified material

CHAPTER THREE, DATA ANALYSIS & FINDINGS

The change in Air University policy to releasing specific program course content severely impacted the amount of data I was able to obtain in an effort to answer this thesis' questions. Additionally, it impacted the amount of content available to conduct a thorough content analysis. This chapter highlights what data was obtained for each of the three Air Force PME programs and distills the findings possible despite the data limitations.

Squadron Officer School (SOS):

Content analysis of SOS's curriculum consisted solely of data within the SOS 2017 distance learning student handbook. Students must complete 16 courses in order to complete the program out of 25 courses offered (12 core to all students, 13 are elective). Conducting a search for the unit of analysis, deter*, yielded 14 returned results. Six of these returns were for words unassociated with deterrence (primarily variations of the word determine). Looking closely at the sections of the document containing content pertinent to this thesis, revealed that the SOS program consists of three courses that mention deterrence as a part of its content. One is the core course, Introduction to Security Studies. The course is an overview of multiple topics and little can be inferred to what specific content on deterrence is presented other than "concepts in deterrence."

The second course is an elective course specifically called Deterrence. Within the course description, it states outright that "the use of threat to prevent adversarial action is a fundamental construct in the United States' national strategy..." It also goes on and associates it closely with the threat of nuclear war, however it does acknowledge that deterrence is applicable in other domains such as counterterrorism, space, and cyberspace. Nowhere in the course description does it mention theories of deterrence. Limited data prevents a further examination on how deterrence is presented.

The third course containing deterrence content according to the handbook is: Unknown Unknowns, Current and Future Conflict. This course is a required follow-on elective for those who took the Deterrence course and it integrates with two other electives on the changing conceptions of warfare and the "Grey Zone" between war and peace. The description states that the course explores how to deter warfare in the changing environment. Again, no evidence explicitly states theoretical discussions on deterrence and further exploration is prevented due to lack of data.

Findings from an analysis of the SOS program are limited to confirming that deterrence is presented to some degree to SOS students. All students get some exposure to it through one core class, while others may gain more in depth discussion if they choose the two deterrence related electives. Nowhere in the content was deterrence theory mentioned, but without more specific data, it cannot be assumed the program is absent of it.

Air Command and Staff College (ACSC):

Data on course content for ACSC consisted of the student handbook for the distance learning program, a written summary of ACSC's nuclear education highlighting its inclusiveness of deterrence themes, and two course syllabi from the in-residence program.

Analysis of the ACSC distance learning student handbook informs students that the program consists of 12 courses, all of which are required. Conducting a search for the unit of analysis, deter*, however does not find any content related to deterrence. With limited data it is undermined what deterrence content, if any, is offered in the online ACSC program.

In response to my initial email to ACSC staff for data, the Vice Dean for Academic Affairs first provided me a synopsis of the nuclear deterrence education ACSC program provides. While this data summarizes the program and reveals some information on the content students are exposed to, it prevents the ability to conduct a content analysis envisioned by this thesis which would analyze the actual course materials and not be someone else's interpretation. Additionally, the data was focused on nuclear deterrence. That said, it does provide the finding that deterrence concepts are covered within ACSC course material. The synopsis establishes that students have courses that include content on nuclear deterrence. Additionally, there are multiple electives in which students may dive deeper into deterrence theory, if they so chose. However, the synopsis does not

specify which theories are presented. Most significant to this thesis is the finding that in 2018, a War Theory class will include seminars dedicated to classical deterrence theory.

Upon clarifying what data I was seeking specifically (actual course materials), the Vice Dean was only able to provide the course syllabus for the two, of the seven, core courses in which deterrence is deliberately touched. The first is the course Airpower I: Genesis of Airpower. Conducting a search for the unit of analysis returned one mention of deterrence. It falls under the course section: Building a Global Air Force: Curtis LeMay and Strategic Air Command (SAC). Analyzing how the term is used within the section overview reveals that deterrence is discussed due to its ties to SAC. It states that SAC was a key component to America's Cold War nuclear deterrence strategy. Without more data on this course, it's difficult to say for certain what, if any, theory is presented. However, the focus of the lesson is not on deterrence itself but how the Air Force postured itself in the Cold War.

The second course syllabus is for: Airpower II: Modern Airpower. Searching for deter* again reveals one hit for deterrence within the data. It falls under the section: RPAs in Irregular Warfare. The section's focus is on the use of robotics and unmanned systems and within it, the deterrent effect of these new systems is discussed. Again, there is no indication of theoretical content on deterrence.

The findings available from analysis of the ACSC data are limited. Similar to SOS, it is well established that deterrence is covered in multiple ways within the course content of ACSC. Additionally, there is evidence in the data that theory on deterrence is provided at least within some of the in residence course electives. Finally, starting in 2018, there will be a course that explores classical deterrence theory .

Air War College (AWC):

Data available for content analysis of AWC course material was limited to the distance learning programs handbook and two in-residence lesson outlines. Similar to the data from ACSC, these two lesson outlines were provided to me by the AWC contact as being the primary lessons in which deterrence is covered.

Similar to the ACSC distance learning program student guide, AWC's does not return any results when searching for the unit of analysis. It provides general course information and broad descriptions of the programs nine courses, none of which call out deterrence specifically.

The first lesson outline provided was for the lesson: Global Precision Strike. A search for the unit of analysis yielded one hit for the term deterrence. Analyzing how the term is used within the lesson introduction reveals that deterrence is discussed as a product of the nation's global strike capability. Global strike provides a significant amount of America's

deterrence capability. Or more specifically, our capabilities provide a deterrent effect toward potential adversaries.

The other lesson outline was for: Global Strike-Nuclear. Searching for deter* brings up 21 instances deterrence, or efforts to deter, is discussed. Seven of these instances are within quotations from President Obama and they highlight how our nuclear force serves as a deterrent toward potential adversaries. In one instance the definition of deterrence within military guidance is provided as the prevention of action by fear of consequences. Additionally, the evolving nature of deterrence is discussed where it calls attention to the challenge of an evolving nature of deterrence and goes on to question if it applies to supposedly irrational and/or non-state actors.

Like the other two programs, the findings from analysis of the AWC data is limited. Deterrence is a topic that is within the course content of all three programs. The data analysis also shows a strong tie to nuclear deterrence topics. Based solely on the limited data provided, how deterrence is achieved and its theoretical backing does not appear. However, this cannot be considered a finding given the lack of more specific course content. These findings will be discussed further within the next chapter.

CHAPTER FOUR, DISCUSSION

This thesis sought to answer three key questions: What information is presented to students in professional military educational course material about deterrence? What theories are invoked when discussing deterrence, if any? Are there potential areas to expand deterrence education that would better prepare military planners to plan successful missions? The scope was narrowed down to seeking data from three key programs provided to the United States Air Force by its Air University in an effort to ensure a manageable amount of data for this thesis.

Unfortunately, in the process of seeking to obtain data for the three programs, Air University policy changed and they no longer provide details on their program course work and material outside of what is available on their informational website. This change severely impacted the amount of data I was able to obtain to meet purpose and intent of this thesis. Without a comprehensive collection of data on the course materials and curriculum the ability to make claims on what is indeed presented to students is not possible.

Despite the lack of data to fully answer the key thesis questions, the limited data and other anecdotal information obtained through the course of discussing the topic with Air University faculty did yield noteworthy findings.

The content analysis of the available data did manage to confirm that deterrence is a topic that is mentioned, to some degree, within all three Air Force PME programs. This was an assumption while beginning this thesis and the data confirms the concept is presented to students at all levels of PME. The importance of deterrence within the United States' national and military policies ensures that students will at least be introduced to the concept.

Additionally, the available data showed a common trend of deterrence being referenced largely in connection to nuclear topics. While reaching out to contacts at Air University, I had to clarify on several occasions that I was looking to analyze deterrence in general and not just nuclear deterrence. This would seem to indicate that within the curriculum the two are heavily tied together and deterrence is still largely thought of as rooted in the Cold War days. However, only a more complete curriculum review would be able to confirm this or not.

With the exception of ACSC data showing some electives available that provide content on deterrence theories, no other content on the theoretical backing of deterrence was identified. While there is not enough data to make a valid claim that deterrence theory is

largely absent in the curriculum for all students within the three programs (electives aside), it does match anecdotal information I gathered in working with the Air University staff. While explaining my intent to look for theoretical discussions on deterrence, specifically theories outside of classical deterrence theory, staff at each of the three programs made comments indicating that I would not find much of any theory. If I did, it would be briefly on the more classical theories stemming from the Cold War. The reasoning often provided was that each of these programs have a multitude of topics they must cover and there simply wasn't enough space in the curriculum for much more than a nod to deterrence's theoretical roots. While I was unable to validate this claim from the data, AU staff statements would seem to lend support to my hypothesis in this thesis: much of the material on deterrence within USAF professional military education programs utilizes classical deterrence theory and there is limited amount, if any, of material covering psychological/sociological relevant information applicable to deterrence.

If future research supported this hypothesis, it would mean that USAF leaders are basing their plans on assumptions about deterrence that only applies in certain situations. Those assumptions may work for when dealing with an adversary who is on the same level as we are technologically and have a similar amount to lose as we do. However the adversaries we fight today do not fit that mold. We have terrorist organizations that span across nations, which don't view losses as we do. We also have nations like North Korea that are so dissatisfied with their current situation that for them, their only choice is to

pursue the weapons we seek to deter. By expanding how we think of deterrence and understand the psychological and sociological aspects of our adversaries, our military planners will be able to better tailor their actions to the situation at hand.

Directions for future research

In order to answer the questions of this thesis, a more comprehensive review of the curriculum is needed. Provided Air University's policy on releasing course data to the public, an internal study would be required. In the course of completing this thesis I did come across efforts to improve deterrence education from within the Air Force. I attended the Deterrence Education & Research Summit hosted by Air University. Its purpose was to identify the key questions and issues the USAF must address in its deterrence education and research efforts. I was the sole operational planner at the conference which primarily consisted of academic and research professionals. I forwarded my ideas on the need for better understanding of how deterrence works and factors that need to be considered, along with more modern theories on deterrence. Unfortunately, I was met with the response that there is not enough space in the curriculum to include it all.

An additional way that future research may take to examine deterrence education is to conduct surveys or interviews of students who recently completed the PME program. This approach would be able to examine what deterrence information students actually walked away with from the program. Given these students will go on to plan deterrence

operations, having insight into what they actually recall on the topic would inform educators on areas they may improve.

Expanding the studies scope would also provide broader future research areas. As previously discussed, each program has electives available that specify in topics such as deterrence. There is also a multitude of educational programs within the USAF beyond the PME courses. A study which looks at the curriculum across all educational opportunities would provide a much better picture of how deterrence is taught across the Air Force. If there is indeed not enough space in the PME curriculum for additional instruction on deterrence and related theories, perhaps other courses can provide that detail. Another option would be to provide a specific training program that focuses on deterrence and related theories that is available to any airman who will be involved in planning.

Broadening the scope even further, other services have their own educational programs. While at the Air University Summit on a break, a representative from the Navy approached me and said that he understood the point I had been trying to make regarding more theoretical content on deterrence in education. He said that the Navy has been teaching multiple theories, to include prospect theory, for several years. A study comparing the curriculum at Navy educational programs and the Air Force equivalent would allow several opportunities. One, it would validate this claim that the deterrence education is different and that they include in their education a broader understanding of

deterrence. If differences are indeed there, it would allow for an examination on how the expanded education impacts Navy deterrence planning and execution. Do they take different approaches on how they choose to portray force in a deterrent action? The same comparison could be done across other services to compile a comprehensive understanding of deterrence education within the Department of Defense.

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BIOGRAPHY

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