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Invisible Stop Signs: *The Impact of Secrecy on Deterrence*

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On Oct. 27, 1962, U.S. Navy vessels forced the Soviet Foxtrot-class diesel-electric submarine B-59 to the surface in the waters of the Atlantic Ocean. This action, as part of President John F. Kennedy's quarantine of Cuba, was undertaken in a relatively straightforward and almost "laconic" manner by U.S. Navy personnel.¹ The U.S. Navy destroyer *U.S.S. Beale* attempted to signal the submarine using practice depth charges, and then hand grenades, to surface and cease travel towards Cuba.² Once it had surfaced, American ships and aircraft continued to drop depth charges and strafe the water around and in front of the submarine in an effort to persuade the vessel to stop or change course.³ These activities continued intermittently until Oct. 29 when B-59 re-submerged and evaded the U.S. forces pursuing it.⁴ However, while the actions taken by the U.S. Navy units were both routine (to them) and in-line with signaling strategies previously communicated to the Soviet government, they also nearly precipitated a nuclear war.⁵

Unbeknownst to the United States government and military, B-59 and the other three Foxtrot-class submarines in its detachment each carried a 15-kiloton nuclear-tipped torpedo.⁶ These weapons were not standard for the Foxtrot-class submarines at the time, so as far as the U.S. Navy was concerned, "once the submarines were identified as Foxtrots, it was assumed that they carried no nuclear weapons, since nuclear-tipped torpedoes were not part of normal weaponry for that type of submarine."⁷

The Soviet military had loaded the nuclear weapons onto the submarines under strict secrecy. As a result, the U.S. military had no idea that their "signaling" actions functionally constituted employment of depth charges, grenades, and machine gun fire in the direction of a nuclear-armed adversary vessel.⁸ Ultimately, if not for the calm and prudent thinking of a high-ranking Soviet officer onboard the B-59 who persuaded the vessel's captain to stand down, the deterrent presented by the nuclear weapons on the submarines may have failed completely.

The B-59 scenario highlights a key point of deterrence. It relies on the aggressor knowing enough about a defender's capabilities to be deterred. In the case of B-59, the aggressor (the United States Navy) had no knowledge of the nuclear deterrent capabilities on the B-59 (the defender). Therefore, the aggressor was not effectively deterred from taking hostile action against the submarine. While the Soviet military leadership may have kept the presence of these weapons secret to prevent U.S. countermeasures from being employed, that secrecy also rendered moot the deterrent values of the nuclear weapons. This effect – secrecy or the lack thereof having an impact on deterrent value – is not unique to the B-59 incident. Some examples, such as the failure of Israeli deterrence against Egypt and Syria prior to the 1973 Yom Kippur War, demonstrate how secrecy can impede deterrence, while others, such as detailed German knowledge of the French defenses at the Maginot Line, highlight how a lack of secrecy too

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can be detrimental to deterrent value.

This paper will review several case studies and use them to analyze how deterrence and secrecy interact. It will start with background information on deterrence, game theory, and literature that applies game theory to deterrence analysis and gives the following case studies a conceptual foundation. It will then examine several cases in which secrecy had a direct impact on the deterrent value of a weapon or system intended to deter adversary attack. This paper will then rank each case by the level of secrecy and the effectiveness of the deterrent and compare these scenarios to identify the optimum level of secrecy. Finally, it will provide some policy recommendations based on these findings.

Deterrence theory is based around perceptions. In *Psychology and Deterrence*, by Robert Jervis, Richard Ned Lebow, and Janice Gross Stein, deterrence theorist Jervis states that “deterrence theory takes the perception of threat for granted,” but it follows that deterrence theory will become less applicable when perceptions are interrupted.⁹ Secrecy – the deliberate interruption of perception – would then seem to be antithetical to applied deterrence theory. However, perception of threat can be influenced in many ways, including military superiority, and theorists such as Carl von Clausewitz note how secrecy is critical to the military superiority gained by surprising an adversary.¹⁰ Thus, secrecy can clearly influence deterrence in many ways, and cannot be discounted if deterrence theory is to be applied successfully. Through historical case study analysis, it can be shown that the secrecy of a given weapon system has a direct impact on its value as a deterrent, and this impact must be balanced against other factors when leaders create policy regarding which information to release, and which to keep hidden.

— Background —

In order to ensure common understanding of the concepts and terms being discussed in this document, several definitions are included below. These definitions are not intended to compete or conflict with definitions in other documents, but simply clarify the meaning of these terms within this assessment.

Aggressor/Attacker: The nation or organization that is threatening to or considering hostile action against the owner of the deterrent system being assessed. This is typically the entity whose actions determine the deterrent value of the system being assessed.

Defender/Owner: The nation or organization that controls a deterrent, typically also the entity that a deterrent is intended to protect. This is the entity that determines the amount of secrecy of a given deterrent capability.

Secrecy: The amount of information about a given deterrent weapon or system that is deliberately concealed by the deterrent’s owner. A high level of secrecy would imply that the owner is attempting to conceal many of the characteristics of the given deterrent. A low level of secrecy would imply that the owner is attempting to conceal only a few characteristics of the deterrent, or none at all. It is important to note that the ability of an aggressor or attacker to obtain “secret” information does not raise or lower the secrecy of a given deterrent. For the purposes of this assessment, secrecy is based on the intent of the deterrent’s owner, not the capabilities of the attacker.

Deterrent Value: For the purposes of this assessment, deterrent value will be defined as the probability or demonstrated capability of a given deterrent to prevent or dissuade an aggressor from conducting or attempting to conduct hostile action. Deterrent value is assessed based on the actions of the aggressor, not the defender.

As defined by John Mearsheimer, “Deterrence, in its broadest sense, means persuading an opponent to not initiate a specific action because the perceived benefits do not justify the estimated costs and risks.”¹¹ This definition highlights key aspects of deterrence theory that will be pertinent to further discussion: capability, intentions, and perceptions.¹² For deterrence to be an effective strategy for a defender, they must possess the ability to manipulate each of these key aspects.

As noted by Bernard Brodie in 1959, deterrence requires the capability of the defender to inflict on an attacker an unacceptable cost in response to an attack.¹³ This capability (or deterrent) can take the form of a weapon, an economic sanction, or another undesirable cost, but it must be able to both impart substantial impact an attacker and have the resiliency to remain effective after an attack has occurred.

Thomas Schelling talks about a second key part of deterrence: the defenders’ intention to use their deterrent in response to an attacker’s actions.¹⁴ A defender who has a capability to respond, but is not willing to use it may as well not have it, provided an adversary is aware of that intention. Schelling notes that intent makes for one of the more difficult aspects

of deterrence. To be effective, deterrence “requires having those intentions, even deliberately acquiring them, and communicating them persuasively enough.”¹⁵

While Brodie and Schelling both focus on what a defender must have to implement effective deterrence, Jervis, Lebow and Stein turn instead to the third critical aspect shared by both the aggressor and defender: perceptions. Jervis describes how “beliefs about the other’s strength and options” (i.e., perceptions) greatly influence the likelihood that deterrence will succeed or fail.¹⁶ A great deal of deterrence theory rests, as Jervis notes, on assumptions of perception – that both sides will accurately perceive the intentions and strengths of the other side. If for example, the attacker does not perceive the capabilities or intentions of the defender to use those capabilities, deterrence may fail regardless of what the defender actually possesses or intends to do. At the same time, Jervis also notes how deterrence can fail if too much is known, as an attacker can “design around” the defender’s policy (i.e., intentions). This applies to their capability as well.¹⁷ Thus, under deterrence theory players have incentives to signal their strengths and intentions – to ensure that their adversary understands them clearly – while also having incentives to conceal their strengths and intentions – to prevent adversaries from designing around either capabilities or policies.

Game theory is referenced and used in much of the literature referenced in this study. In simple terms, “game theory attempts to model the decision-making of actors in a situation of strategic interaction.” It represents decision-makings in situations where each actor’s status at the end of the interaction depends on the choices of all involved, not just on the actor’s own choice.¹⁸ Thus, game theory is useful in that it can predict decision-making when other factors are absent. Furthermore, analysis of the interplay between secrecy and deterrence using game theory provides conceptual backing for the case study analysis.

Like any theory, game theory has limitations. The most predominant is that it is best applied in a general sense. As the scenario being predicted gets more detailed and more specific, the applicability of the model either must become equally detailed and specific or starts to become less reliable.¹⁹ Game theory is applicable when predicting what many actors will likely do in different circumstances for planning purposes. It is less so at predicting what a specific actor will do in a specific scenario.²⁰ As such, theoretic analyses of deterrence tend to reference generic

actors, not specific nations or conflicts.

Game theory is also only as good as the inputs used to create the model. Occasionally this limitation is articulated as “Game theory relies on rational actors, and not all actors are rational,” but that argument is somewhat simplistic. Game theory defines a rational actor as one who follows a set of internal logic and values in order to effectively predict an actor’s decisions. The model must accurately assign values to the actor’s internal goals and priorities.²¹ Frequently, the actors being targeted by game theory do not openly advertise their goals and priorities, so while they may act in a rational manner the model is not able to effectively duplicate their rationality.

Additionally, game theory models dealing with deterrence must deliberately account for the relative ease or difficulty of transmitting and perceiving information between actors.²² In practical terms, this means that simple models assume each actor can accurately determine what capabilities and threats are possessed by the other actors. When actors take steps to conceal their capabilities (which can be used to enhance military effectiveness by preserving the advantage of surprise and limit preplanning) and opposing actors take steps to penetrate this concealment, the models needed to replicate this become more complex as well.²³

In short, like any theory, game theory is limited by what it can model. It is not always accurate and relies on whatever inputs it is given. Nevertheless, game theory models provide at least some indication of how actors will respond to different deterrence scenarios. As such, determinations stemming from game theory models can still be included in the overall assessment of secrecy versus deterrence, provided readers take these considerations and limitations into account. Significant analysis of the interplay between secrecy and deterrence using game theory provides conceptual backing to the anecdotal information that case studies provide.

Adam Meiowitz with the University of Utah and Anne Sartori at the Massachusetts Institute of Technology are researchers specializing in the use of game theoretic methods to study politics and international communication and decision-making. Their article “Strategic Uncertainty as a Cause of War” uses game theoretics to simulate and provide reasoning behind why nations would keep their military capabilities secret, despite this leading to an increased risk of war. The game theoretical proofs used by Meiowitz and Sartori assume rational actors on both sides make decisions, which as previously discussed somewhat restricts the applicability of their models.

Nevertheless, their work provides insight into the theoretical impact of secrecy on the probability of war, and thus on effective deterrence as well. Meirowitz and Sartori describe how uncertainty (i.e., lack of clear information) generally increases the likelihood of conflict. This occurs as the expected cost of engaging a deterrent capability becomes less clear with increased secrecy.²⁴ This is backed by discussion with Dr. Sartori herself. In an interview, she described how game theory models often show disclosure of information to be the most effective at ensuring deterrence.²⁵ However, Dr. Sartori also noted that her models did not reference the increased ability to counter a deterrent that would come with increased disclosure.²⁶

Vicki Bier is professor and director of the Center for Human Performance and Risk Analysis at the Department of Industrial & Systems Engineering in the University of Wisconsin-Madison. Nikhil Dighe is a graduated researcher of the same institution. Jun Zhuang is a professor of the Department of Industrial & Systems Engineering at the University at Buffalo, State University of New York (SUNY). Their research, which was supported by the Department of Homeland Security, applies game theory to information about homeland and military defense spending. Their findings indicate that partial secrecy regarding weapons and weapon systems can be a more effective deterrent than either full disclosure or complete secrecy. They recommended disclosure of partial or specific types of information (such as overall investment allocations) as a way to display deterrent strength to an adversary without providing details that could be countered.²⁷ In an interview, Dr. Bier expanded on this idea and described how revealing generalized information about a deterrent could be more effective in situations where a capability has gaps in coverage. By describing the overall deterrent, but not where the gaps are located, the deterrer forces an adversary to either invest resources to fully overcome the deterrent or risk attacking and being defeated if they attempt to exploit a gap.²⁸

— Case Study Analysis —

Several historical case studies will be analyzed using a qualitative model that assigns values of secrecy and deterrent effectiveness to each scenario. Secrecy will be assessed based on the amount of information about a deterrent made available by the “defender” or owner of the deterrent in question. Values of secrecy range from “Very Low,” where all or almost all information about a deterrent is made

available by the owner, to “Low,” “Moderate,” “High,” and “Very High,” with the last being a case where no information about a deterrent, not even its presence, is made available by the deterrent’s owner. Deterrent effectiveness will be based on the actions discussed or taken by the attackers. Actions intended to be taken, but dissuaded by additional or outside factors will be valued as if they had been taken. Deterrent values will range from “None,” where an aggressor attacked or intended to attack, through “Low,” “Moderate,” “High,” and “Very High,” with the last being a case where no attack was attempted or intended due to the presence of the deterrent.

— Soviet Submarine B-59 —

Values <i>Scenario</i>	Secrecy	Deterrence
Soviet Sub B-59	Very High	None

Table 1 Soviet Submarine B-59

The incident surrounding the Soviet Foxtrot-class diesel-electric submarine B-59 was described above and so will be only summarized here. In short, American military forces employed weapons in what could easily have been construed a hostile manner towards a nuclear-armed Soviet submarine. The American military was unaware of the presence of nuclear weapons aboard the submarine due to Soviet secrecy efforts. Upon believing he was being attacked, the captain of B-59 stated his intent to prepare his nuclear weapons for launch and was only prevented from doing so by a high-ranking staff officer aboard his vessel.

In this scenario, the deterrent is the nuclear-tipped torpedo aboard B-59. The aggressor is the United States Navy. The level of secrecy is scored as very high. The Soviets took such measures to conceal the presence of the weapons that Navy assessments concluded that the Foxtrot-class submarines did not have nuclear weapons aboard.²⁹ The deterrent factor of the nuclear torpedoes at the time of the incident is rated as none. The U.S. Navy was not deterred from its actions, which included using weapons (depth charges and grenades) to compel the Soviet submarine to surface. Ultimately, it was not the attacker who was deterred from acting, but the defender (the Soviet submarine captain) who was deterred from expending his deterrent by an additional outside influence.

— Soviet Medium Range Ballistic Missiles (MRBMs) in Cuba —

Values	Secrecy	Deterrence
<i>Scenario</i>		
Soviet MRBMs in	High	Low

Table 2 Soviet MRBMs in Cuba

On Oct. 19, 1962, the Joint Chiefs of Staff met with President John F. Kennedy and recommended an immediate invasion of Cuba in response to reports of Soviet ballistic missiles being installed on the island. They described this option as the “lowest risk course of action” and the one most likely to succeed.³⁰ Had the president agreed with their recommendation, however, it would have likely plunged the world into nuclear war. By the next day, unbeknownst to American intelligence, eight R-12 nuclear-tipped MRBMs located in Cuba were ready for launch upon command.³¹ The Soviet military forces had taken extensive efforts to conceal the status of the missiles, and neither the Soviet nor Cuban governments informed the American government that the missiles were readied, or even that the nuclear warheads were present in Cuba. The deliberate secrecy surrounding the presence of these weapons lulled the Americans into a false sense of military superiority and nearly resulted, ironically, in an invasion of the very island the missiles were supposed to be there to protect.

In this scenario, the deterrent is the Soviet MRBMs in Cuba, and the aggressor is the United States military. This scenario is given a moderate level of secrecy, since at the time of the attack recommendation the American military was aware of the presence of Soviet missiles in Cuba and some of their locations, but not their readiness or the presence of their nuclear warheads. The Soviets’ intent was to keep information about the missiles as concealed as possible for as long as possible. The deterrent factor of the MRBMs at the time of the attack recommendation is rated as low. The American military leadership was not deterred by the presence of MRBMs. It was only due to other political concerns that the American president elected to not strike the missiles in Cuba or invade the island.³²

— Israeli Nuclear Weapons During the Yom Kippur War II —

Values	Secrecy	Deterrence
<i>Scenario</i>		
Israeli Nuclear Weapons /Yom Kippur	Very High	None

Table 3 Israeli Nuclear Weapons During the Yom Kippur War

Israel has never publicly acknowledged possessing nuclear weapons. Nevertheless, estimates place the development of Israeli nuclear weapons as early as 1967, and it is generally accepted that the Israelis possessed deployable weapons during the Yom Kippur War with Egypt, Syria and other Arab nations in 1973.³³ Yet despite possessing nuclear weapons with the capability to strike both Egypt and Syria (non-nuclear nations at the time), Israel was unable to deter their adversaries from attacking. Janice Stein describes how, in the years leading up to the Yom Kippur War, Egypt was successfully deterred from attacking Israel several times based on Israel’s conventional military capability. Clearly deterrence was not impossible, nor was the attack from Egypt and Syria inevitable.³⁴

In this scenario, the deterrents are the nuclear weapons (allegedly) possessed by Israel at the time of the Yom Kippur War.³⁵ The aggressors are the nations of Egypt, Syria and other Arab nations. This scenario ranks very high for secrecy, as Israel did not officially acknowledge even possessing nuclear weapons. The deterrent factor of the weapons in this scenario is valued at none since the nuclear weapons possessed by Israel demonstrably failed to protect the nation from attack by Egypt, Syria and other Arab nations.

— The Maginot Line During World War II —

Values	Secrecy	Deterrence
<i>Scenario</i>		
Maginot Line	Very Low	Low

Table 4 The Maginot Line During World War II

Constructed in the period between the First and Second World Wars, the Maginot Line was a French defensive fortification stretching more than 100 miles along their border with Germany.³⁶ The line consisted of forts, fortifications, tunnel systems, and supply points all designed to facilitate a French defensive response to a German invasion – as Barry Posen describes, “it would also allow the French to

fight a low-cost defensive action while negotiating the contributions of her allies.³⁷ Yet for reasons that are disputed up to this day, the fortifications of the Maginot Line stopped at the French border with Belgium. The Belgian borders with both France and Germany were much more lightly defended.³⁸ This characteristic of the Maginot Line was widely known, both among France’s allies and her enemies.³⁹ As a result, when Germany began planning for an offensive on their western front, they were well aware of the characteristics and limitations of the Maginot Line and developed their war plan to compensate for it.⁴⁰ In 1940 the Germans did attack. When they did so, the Germans proceeded to simply bypass the Maginot Line in whole by attacking through Belgium instead.

In this example the deterrent in question is the Maginot Line. The aggressor is Germany and the defender is France. Unlike several of the other scenarios, this one displays very low levels of secrecy. The French did not attempt to hide the Maginot Line and instead allowed its characteristics to become known. However, once again deterrence is ranked as low. The Germans were ultimately undeterred from attacking France by the Maginot Line, although they did at least wait until 1940 to do so. As such, this scenario illustrates another take on the interaction between secrecy and deterrence: when all of the characteristics of a deterrent are known to an adversary, they can plan around it and thus reduce its deterrent value.

— North Korean Nuclear Weapons —

Values	Secrecy	Deterrence
<i>Scenario</i>		
North Korean Nuclear	Moderate	High

Table 5 North Korean Nuclear Capabilities

North Korea conducted its first nuclear weapons test in October 2006 and has undertaken five more since then.⁴¹ While the most recent test was estimated at over 140 kilotons, but the exact yield of the North Korean nuclear weapons is unknown. Estimates on the number of warheads available to the nation range from 10 to 60.⁴² Furthermore, North Korea’s nuclear delivery capability is estimated to include the continental United States, but the specific range of its intercontinental ballistic missiles (ICBMs) has not been announced or observed.⁴³ This ambiguity on the part of North Korea has resulted in reluctance to deliberately engage them in significant

military conflict. For example, in November 2010, North Korea conducted artillery strikes against a South Korean island, killing and injuring South Korean military personnel and civilians.⁴⁴ The extent of the South Korean military response was defensive artillery fire at the time of the attack. No American military action was taken despite this being the first artillery attack by North Korea in more than 30 years and one of the most serious attacks by North Korea against South Korea since the cessation of open conflict during the Korean War in 1953.

Definitively proving that one deterrent factor prevented an action is much more difficult than showing how a deterrent factor did not prevent an action. However, in this instance, some reasonable conjecture can be made. The deterrent in question in this instance is the North Korean nuclear capability. North Korea is the defender, while South Korea and the United States are the aggressors. This scenario displays a moderate level of secrecy on the part of North Korea regarding its deterrent. North Korea announces its nuclear tests when they occur, and both their nuclear tests and ballistic missile tests give some indication of their capabilities to outside observers. At the same time, North Korea has remained silent on the number of weapons it may possess and the storage locations as well as the ranges, numbers, and storage sites of delivery platforms. In short, North Korea displays the capabilities of its deterrent while obscuring its details and characteristics. Subsequently, its deterrent appears to be effective. While the majority of its provocations prior to its 2006 nuclear test were either naval disputes, relatively minor border skirmishes or covert in nature (with some exceptions), its provocations since then have shifted to predominantly missile test launches (presumably intended to display deterrent capability) alongside more serious actions such as the aforementioned artillery bombardment. Yet despite multiple provocations and even the deaths of South Korean military personnel and civilians in open military action by conventional North Korean forces, neither South Korea nor the United States has conducted significant military action against North Korea in response.

— Iraqi Integrated Air Defense System Prior to Operation Desert Storm —

Values <i>Scenario</i>	Secrecy	Deterrence
Iraqi IADS	Low	Low

Table 6 Iraqi IADS Prior To Operation Desert Storm

Following their invasion of Kuwait in August 1990, the Iraqis believed that their Integrated Air Defense System (IADS), developed through consultation and collaboration with several different nations and companies, would be able to deter an adversary air attack against their country through the sheer number of casualties that it would inflict.⁴⁵ However, due to the relatively low level of secrecy (incurred because the system was purchased from foreign companies, making information available), United States planners were able to identify key nodes in this system and develop a plan to cripple it.⁴⁶ While this plan took time to develop, through a carefully coordinated series of attacks American forces used their knowledge of the Iraqi IADS to strike vulnerabilities and connections in the system that ultimately cut it off from the headquarters and rendered it useless in preventing the subsequent air and ground assaults that followed.⁴⁷

In this example the deterrent is the Iraqi IADS. The aggressor is the United States and coalition military forces and the defender is Iraq. This scenario displays low levels of secrecy, since the Iraqi IADS was developed in concert with outside corporations using available technology. Deterrence too is ranked low, since, while the presence of the IADS did require extensive planning to overcome, it ultimately served only to delay an attack, not prevent one.

— Pakistan’s Nasr Short-Range Ballistic Missile (SRBM) —

Values <i>Scenario</i>	Secrecy	Deterrence
Pakistani Nasr SRBM	Moderate	High

Table 7 Pakistani Nasr SRBMs

In April 2011, Pakistan first tested the Nasr SRBM. This weapon, assessed to only have a range of 60 kilometers, was also advertised by Pakistan as being nuclear-capable with the intent “to add deterrence value to Pakistan’s Strategic Weapons Development programme.”⁴⁸ It was assessed that Pakistan developed this “tactical” nuclear delivery capability

in response to India’s “Cold Start” brinksmanship policy – a doctrine whereby India could advance into Pakistan with conventional forces, but would stop short of triggering Pakistan’s nuclear thresholds.⁴⁹

Pakistan was assessed to have pursued tactical-level nuclear systems as a means of countering India’s growing conventional capabilities and deterring the outbreak of a limited conflict. India has sustained several terrorist attacks originating from Pakistani soil, and while Pakistan has denied responsibility for these events the Indian army has mobilized on several occasions.⁵⁰

India developed its “Cold Start” doctrine to address such events and provide a means of recourse short of general war with Pakistan, but Pakistan’s subsequent development of “limited” or “tactical” nuclear weapons has once again directly positioned its nuclear forces against India’s conventional ones. Pakistan has demonstrated the range of the Nasr and the fact that it has functioning nuclear weapons, but has deliberately maintained “a certain level of ambiguity ... given the prevailing asymmetries” regarding both the specific numbers and whereabouts of its weapons and the events that would trigger their use.⁵¹ As a result, this standoff has yet to be broken.

In this scenario, the deterrent is Pakistan’s Nasr SRBM. The aggressor is India and the defender is Pakistan. The level of secrecy is moderate. Pakistan has demonstrated that it has nuclear weapons, the capabilities of the Nasr to deliver small nuclear weapons over short distances, and the fact that Nasr missiles are present within the region, but it continues to conceal the number, specific locations, and specific triggers for Nasr use. Deterrence is ranked high in this scenario. India has not executed its “Cold Start” doctrine, despite having suffered terrorist attacks originating from Pakistani soil.

— Comparison of Cases —

In summary, neither scenarios with high levels of secrecy nor those with low levels of secrecy appear to be associated with effective deterrence. The Soviet submarine B-59 incident, the Soviet MRBMs in Cuba during the Cuban Missile Crisis, and the Israeli alleged nuclear weapons during the Yom Kippur War show that high levels of secrecy – where the aggressor is unaware of the presence of a deterrent – result in low or negligible levels of deterrence.

At the other end of the secrecy spectrum, too much available information also appears to reduce the effectiveness of a deterrent, as can be seen in the cases of the French Maginot Line and the Iraqi

Scenario	Values	Secrecy	Deterrence
Maginot Line		Very Low	Low
Iraqi IADS		Low	Low
North Korean Nuclear		Moderate	High
Pakistani Nasr SRBM		Moderate	High
Soviet MRBMs in Cuba		High	Low
Soviet Submarine B-59		Very High	None
Israeli Nuclear Weapons Yom Kippur		Very High	None

Table 8 Deterrence and Secrecy by Scenario

IADS. The only scenarios that reflect effective deterrence are those involving moderate or mixed levels of secrecy.

These additional tables consolidate the scenarios described above. *Table 8* takes the rankings as depicted at the end of each scenario and places them together for ease of comparison. *Table 9* provides a visual depiction of the information in *Table 8* to aid in identifying trends.

— Findings —

Analysis of the cases presented indicates that the effectiveness of a deterrent is diminished by either too much or too little information availability. Furthermore, it appears that deterrence increases along with secrecy to a point, then subsequently decreases after that point. Additionally, based on the case studies examined, the most effective mix of information for maximizing deterrent value occurs when the existence, presence, and purpose of a deterrent is acknowledged by the defender, but the details of the deterrent remain hidden.

Acknowledgement of the existence and presence of a deterrent is necessary for it to be effective. The B-59 incident and the Israeli nuclear weapons cases both illustrate how completely concealing the presence of a deterrent makes it ineffective. In the simplest terms, an adversary is not likely to be dissuaded by something that it does not know exists.

Additionally, the case of the Soviet MRBMs in Cuba shows how even if the general existence of a weapon is acknowledged, concealing its presence in a specific region directly impacts the effectiveness of its deterrent effect within that region. Because American military planners did not know of the presence

of MRBMs in Cuba, they would not have been deterred from attacking Cuba.

On the other hand, the Maginot Line and the Iraqi IADS show how too much information can allow an adversary to neutralize its deterrent effect. In the case of the Maginot Line, the critical information was the specific location of the defensive line along the border of France. For the Iraqi IADS, the critical information was the structure and connections of the system as known by the companies that built it.

When a successful deterrent case is examined, such as the North Korean nuclear weapons and the Pakistani Nasr, one can see how these competing inducements can be balanced. The North Koreans do not hide the existence of their nuclear weapons. Instead, they advertise them to the world. Additionally, each nuclear test allows foreign nations to gather information on the North Korean weapons yields and compositions.

As a result, there is no confusion regarding the presence of nuclear weapons in North Korean territory on the Korean Peninsula. Furthermore, North Korea’s missile tests openly display the general ranges and payload capabilities of the weapons. What North Korea does conceal are the exact numbers and locations of their weapons within their territory. Thus, the North Koreans reveal enough information about the existence, presence, and capabilities of their weapons to emphasize their threat while concealing the details that could make their weapons vulnerable to adversary (e.g., American or South Korean) efforts to neutralize them.

Likewise, Pakistan has broadcast the fact that its Nasr missiles are present within the country and able to strike at the border region that India would occupy for its “Cold Start,” but the specific locations of the

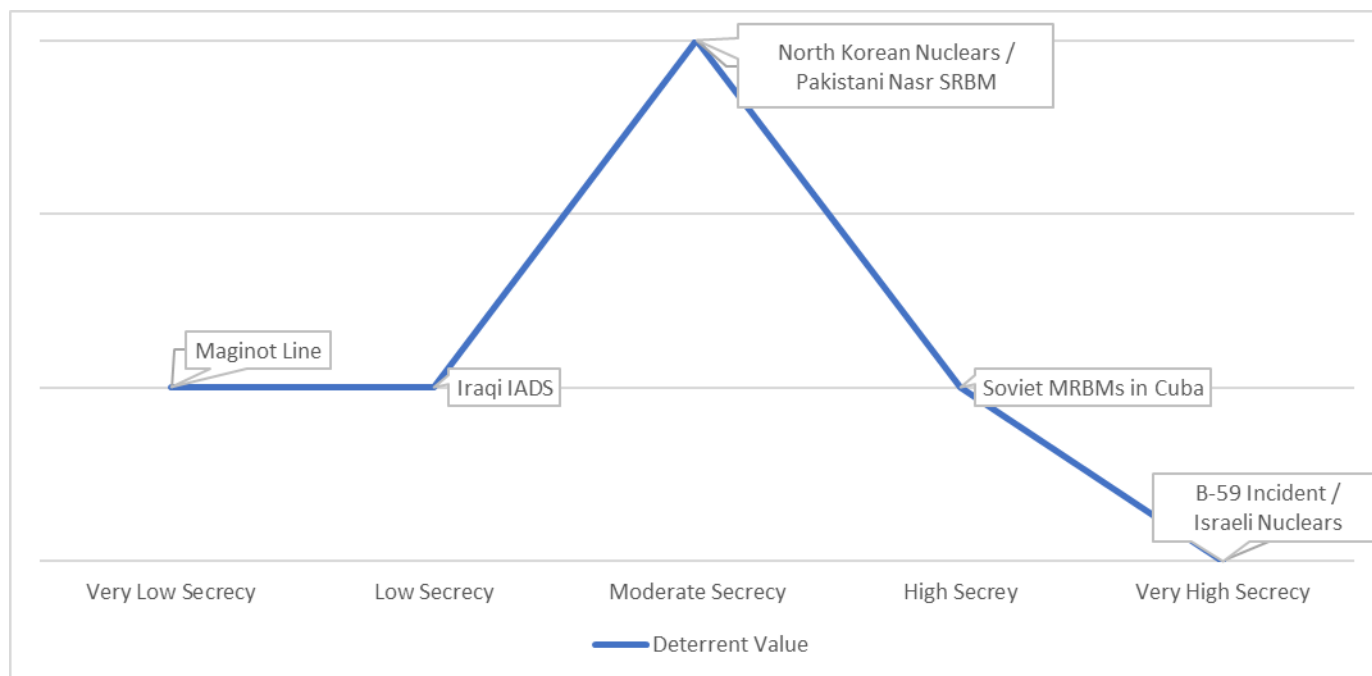


Table 9: Trending Deterrent Value Versus Secrecy

weapons and its exact numbers remain concealed. India is thus made aware that a strike into Pakistan could incur a tactical nuclear retaliation, but the critical information that would allow India to negate the Pakistani missiles remains concealed.

Based on the cases assessed, it appears that the most effective level of deterrence for a given weapon or system is achieved with a moderate level of secrecy. Specifically, this can occur when a deterrent’s overarching capabilities, existence, and presence in a region are known, but the weapon or system’s details and specific locations remain concealed.

This finding aligns partially with Meirowitz’s and Sartori’s analysis of the effects of secrecy on deterrence. Meirowitz and Sartori predicted that secrecy would increase the likelihood of conflict, which holds true in these analyses in that too much secrecy is shown to adversely affect deterrence. Dighe’s, Zhuang’s and Bier’s models align even more closely with the case study analysis. The optimum level of secrecy, as predicted in their game theory models, reveals the presence of a deterrent, but not the details that allow for it to be surmounted.

— Implications —

Despite occasional leaks and accidental disclosures, it remains U.S. and NATO policy to avoid confirming the presence of nuclear weapons within

specific European nations.⁵² While this policy may be justified as preserving military effectiveness or preventing such weapons – if they are present – from becoming targets, it also may create situations similar to the historical ones described previously.

As discussed above, Israel refused (and continues to refuse) to acknowledge or formally deny the existence of a nuclear weapons program or nuclear weapons themselves within the nation’s borders. The consequences of this are apparent from the research. Concealing the existence of nuclear weapons within the nation significantly degraded any deterrent value such weapons may have had. They did not deter an attack by Egypt, Syria and the other Arab nations. If nuclear weapons are present within NATO member states in Europe, then NATO is potentially making the same mistake that the Israelis made in 1973.

If nuclear weapons are present in Europe, the United States and NATO might be better served by taking a track similar to that of the Pakistani Nasr SRBM. Pakistan acknowledges the existence and presence of the nuclear weapons within their country, thus creating a deterrent to attack, while keeping details that could be used to circumvent or counter those weapons – such as the numbers, sizes, and characteristics – hidden. This change in policy would be supported by both the game theoretic models discussed above and the historical research in this document, which identifies the greatest level of deterrence

occurring with mixed or partial secrecy. If American nuclear weapons are, in fact, not present in European NATO countries, clear signaling of this fact could prevent adverse actions by outside states seeking to counter threats that do not exist. If nuclear weapons are present in European NATO countries, acknowledgement would enhance their deterrent value and end attempts to conceal what has been called “no surprise” – the apparent presence of nuclear weapons in NATO countries – while maintaining their combat effectiveness by concealing details necessary to effectively counter them.⁵³

In conclusion, it is clear that the relationship between secrecy and deterrence is not a simple, lateral one, but rather a complex interaction with multiple contributing factors. Secrecy enhances the value of a deterrent by preventing it from being overcome or outmaneuvered, but secrecy also decreases the very quality of a deterrent that makes it valuable in the first place: its visibility to those who a defender seeks to deter.

This conclusion is shown via analysis of case studies ranging from the Second World War to the present day. It is also backed up by game theory analysis from multiple sources. The implications of this finding are relevant to the presence of nuclear deterrents in NATO member states overseas. Ultimately, this analysis shows that the relationship between secrecy and deterrence cannot be ignored or disregarded, lest the deterrents upon which the United States and other nations rely falter or fail.



— Notes —

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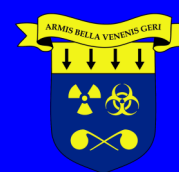
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