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## **The Influence of Atmospherics on Nuclear Deterrence**

### **Research Question**

To what degree does an actor's information environment (the totality of information available to an actor) influence their decision as to how to respond to a deterrence signal? Mainstream nuclear deterrence theory postulates that states are capable of dissuading an adversary from employing nuclear weapons against them or their allies through communication either by words or actions. More generally, deterrence entails the use of threats to convince an adversary from taking a particular action or to compel them to take an action in order to alleviate a nuclear threat. Most research on nuclear deterrence is based on the assumption that rational actors are making decisions based on perfect information and logical decision-making, as exemplified by game theory models of decision making.<sup>12</sup> Yet, some research points to the reality that decisions are seldom made on a purely rational basis, but more often than not at least influenced by psychological factors including cognitive biases, such as anchoring, confirmation bias, and self-serving bias, among others.<sup>34</sup>

These psychological factors in turn are often influenced by “atmospherics” which is a construct often associated with business and marketing.<sup>5</sup> Within the business realm, it is used to describe the entirety of stimuli used to affect a buyer's propensity to consume. Moreover,

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<sup>1</sup>Schelling, T. (1956). An Essay on Bargaining. *The American Economic Review*, 46(3), 281-306.

<sup>2</sup>Huth, P. (1999). Deterrence and International Conflict, Empirical Findings and Theoretical Debates. *Annual Review of Political Science*, 2(1), 25-48.

<sup>3</sup>Tetlock, P., McGuire, C., Mitchell, G. (1991). Psychological Perspectives on Nuclear Deterrence. *Annual Review of Psychology*. V42n1(199101): 239-276

<sup>4</sup>Schaub, G. (2004). Deterrence, Compellence, and Prospect Theory. *Political Psychology*, 25(3), 389-411.

<sup>5</sup>Eroglu, S., Machleit, K., & Davis, L. (2003). Empirical testing of a model of online store atmospherics and shopper responses. *Psychology & Marketing*, 20(2), 139-150.

research suggests the tangible product itself plays only a small part in a consumer's decision to make a purchase, leaving out other influencing factors such as the display and packaging of the product and the service associated with selling the product. In a similar vein in the context of nuclear deterrence theory, this paper endeavors to show that actors do not make decisions based purely on the deliberate messaging from an adversary, but on the entirety of the information available to them at the time they are making a decision as to how to respond to the deliberate message.

### **Literature Review**

The majority of research related to nuclear deterrence theory rests on the assumption that actors are rational. Thomas Schelling made significant contributions to the field of game theory analysis, which assumes rational actors see conflicts as essentially bargaining situations in which they attempt to maximize their own outcomes.<sup>6</sup> Moreover, rational deterrence theory assumes that actors make decisions based on a consistent value and decision system, which leads to predictable behavior. He asserts that cooperation is always temporary and essentially superficial in that actors engage in it only to the degree that it fulfills their own requirements. Before publishing his more famous *The Strategy of Conflict* in 1960, Schelling addressed various aspects of bargaining, including the effect of bargaining secretly or publicly, the effect of bargaining with multiple parties simultaneously, the effect of bargaining over multiple concerns at once, the effect of having a restrictive agenda, and the possibility of concessions during negotiations.<sup>7</sup> All of these aspects are important, but essentially do not address research, much of

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<sup>6</sup>Schelling, T. C. (2011). *The strategy of conflict*. Whitefish, MT: Literary Licensing.

<sup>7</sup>Schelling, T. (1956). An Essay on Bargaining. *The American Economic Review*, 46(3), 281-306.

it later that talks to psychological factors that influence human behavior during conflict or heightened tension.

Other work related to how people make decisions expands the scope beyond the strictly rational decision maker. Herbert Simon (1985) coined the term *bounded rationality*, which recognizes the reality that actors do not have access to perfect information, and also have limited cognitive ability to process information.<sup>8</sup> Additionally, people have limited time and attention. Recognizing these realities, Simon proposed that people make decisions through a process he termed *satisficing*, whereby decision makers review possible alternatives sequentially until an option that meets some minimal criterion is met.

Other research points to the reality that people make decisions not based on rational analysis of all available data, but through mental shortcuts. Tversky and Kahneman (1973, 1974) demonstrate that people often make decisions based on heuristics, including the availability heuristic (making decisions based on what is immediately available in memory), or the representative heuristic (making decisions based on how much one event resembles another event).<sup>9,10</sup> Research also suggests that emotions also influence how people make decisions.<sup>11</sup> These may be integral to the decision being made, or importantly may only be incidental to the decision being made. That is to say that the cause of the emotion is unrelated to the decision, yet has an effect.

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<sup>8</sup> Simon, H. (1985). "Human Nature in Politics: The Dialogue of Psychology with Political Science." *American Political Science Review* 79 (2), 293-304

<sup>9</sup> Tversky, A., Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, 5, 207-232

<sup>10</sup> Tversky, A., Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 185, 1124-1131

<sup>11</sup> Han, S., Lerner, J. (2009). Decision making. *Oxford Companion to the Affective Sciences*. New York: Oxford University Press

Outside of the peculiarities with which people make decisions, research also highlights the effects of how information is presented to people and its effect on those decisions. De Martino et al (2006) put forward the idea that human choices are susceptible to the manner in which options are presented.<sup>12</sup> These scholars assert that the so-called “framing effect” was specifically associated with amygdala activity, suggesting a role in the emotional system and influence decision processes. Scholars in business and marketing have piggy-backed off of this research and looked at how this framing effect can be used to influence the behavior of consumers, as noted above.

In summary, research underscores the reality that the assumption of a rational actor is outdated and of limited value in prediction of future behavior. Payne (2011) makes this explicit by highlighting the multitude of factors that affect behavior.<sup>13</sup> Payne highlights a spectrum of factors that influence an actor’s decision calculus, including religion, ideology, geopolitics, culture, evolutionary psychology, domestic politics, government structure and authority of power, and a government’s possession or lack of nuclear weapons. Some of the factors are inherent to the actor’s mental processes, and others are inherent to the actor’s situation. However, what they highlight is that there is much more than an actor takes into consideration outside of the messaging coming from an adversary attempting to deter their behavior. They also point to the difficulty of developing an all-encompassing model to take them into account and why the rational actor model, with its relative simplicity has such appeal.

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<sup>12</sup>De Martino, B., Kumaran, D., Seymour, B., Dolan, R. (2006). Frames, biases, and rational decision-making in the human brain. *Science(New York, N.Y.)*, 313(5787), 684-7.

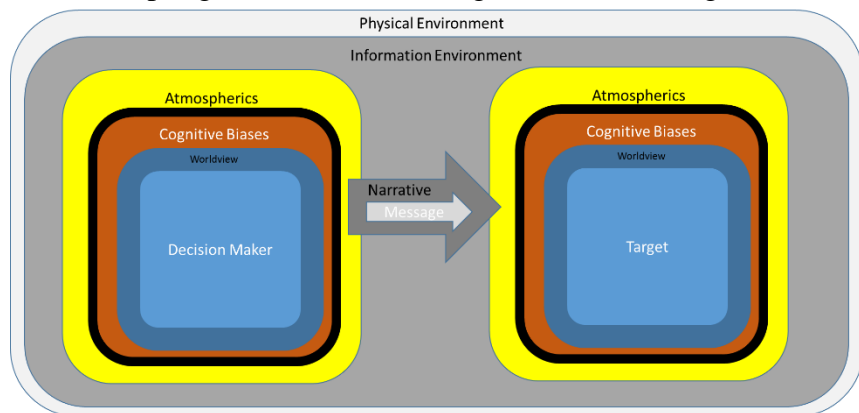
<sup>13</sup> Payne, K. (2011). Understanding Deterrence. *Comparative Strategy*, 30(5), 393-427.

## Defining Atmospheric

The dictionary defines atmospheric as “features, events, or statements intended to create a particular mood or attitude.” Within the U.S. military, the term is not listed in the Department of Defense Dictionary of Military and Associated Terms (the DoD Dictionary).<sup>14</sup> However, military leaders have used the term in military publications, primarily at the tactical level of warfare, to describe the importance of understanding conditions on the ground. Flynn, Pottinger, and Batchelor (2010) describe the importance of intelligence professionals understanding not only the disposition of enemy forces, but the totality of conditions on the ground being experienced by the enemy.<sup>15</sup> For example, Flynn et al, writing on the United States’ engagement in Afghanistan highlight the importance of understanding factors such as tribal hierarchies, local problems and grievances, and cultural issues that are all part of an adversary’s “atmosphere” or information environment. They highlight the reality that humans are not one dimensional actors that respond to actions in a vacuum, even in wartime, but that they continually have a range of concerns outside of the immediate actions of their adversaries.

This paper proposes a conceptual model to illustrate how atmospheric might influence both the decision maker (the actor attempting to deter) and the target (the actor being deterred).

Although it is recognized that actors almost always operate within an organizational bureaucracy



<sup>14</sup>Retrieved October 23, 2017, from [http://www.dtic.mil/doctrine/dod\\_dictionary/](http://www.dtic.mil/doctrine/dod_dictionary/)

<sup>15</sup> Flynn, M., Pottinger, M., Batchelor, P. (2010). Fixing Intel: A Blueprint for Making Intelligence Relevant in Afghanistan. Center for a New American Security publication.

within their respective states to make decisions regarding deterrence signaling, it is assumed that a single actor (head of state, autocrat, etc.) has outsized authority to respond to the signal.

Accordingly, this model is focused on the individual level of analysis, assuming a single actor as the target of influence.

The model starts with the reality that both actors (decision maker and target) reside in the physical environment, which is interpreted through an information environment. Actors get their information about what is happening in the physical environment through various media or through direct contact with the physical environment. The totality of information that an actor perceives are the atmospherics, which intuitively means the information environment in which the actor resides. Each actor has his/her own set of atmospherics which are connected to the wider information environment. However, they are separate, because each actor can access only a portion of the total information environment.

The dark black line represents the boundary between the internal thought processes of the actor and the external information available to the actor. While information is available to the actor, it is always filtered by the actor's cognitive biases, which in turn influence the actor's worldview, which is the actor's fundamental cognitive orientation and not easily altered. Likewise, the actor's psychological needs have an influence in how the actor makes decisions and interprets information, and although not included in the model, would reside be centralized with the actor or decision-maker. Greg Cashman (2014) highlights the assertion among psychologists that most political actors are motivated by three primary needs – power, achievement, and affiliation.<sup>16</sup>

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<sup>16</sup> Cashman, G. (2014). *What Causes War?: An Introduction to Theories of International Conflict*. Lanham: Rowman & Littlefield, pg. 53

Finally, the model portrays how messaging occurs. The objective of the decision maker is to deter an action on the part of an adversary through messaging. The messaging may be in the form of words or actions, but importantly, it originates from the decision maker's own information environment (his/her atmospherics). This information environment informs his/her message as well as the associated narrative that normally goes along with a deterrence message. The narrative is the rationalization or justification for the message and provides context as derived from the decision maker's information environment. The message and narrative then are filtered through the adversary's own information environment (his/her atmospherics), as well as their cognitive biases, worldview, and psychological needs.

Given this background, my hypothesis is thus: Atmospherics affect an adversary's receptiveness to being deterred. I will not attempt to characterize how atmospherics influence an adversary's receptiveness to being deterred, only that they have an effect.

### **Research Design:**

The study will employ causal-comparative research to assess the effects of atmospherics on an actor's response to nuclear deterrence signal. The dependent variable in this study is the response to a deterrence signal. The independent variables will include multiple factors that may have influenced the actor in response to the deterrence signal. These factors taken together comprise the atmospherics in which the actor resides.

This study will show that actors do not respond to deterrence messaging based solely on the intended signal of the sender, but on the entirety of the information available to them. This information may or may not be relevant to the deterrence signal from an adversary, but nonetheless may play a role in the decision making process of an actor being deterred. The challenge of examining the effects of atmospherics, which is the information environment in

which the actor resides, is that the totality of information available to an adversary is almost unlimited. Moreover, it is challenging to discern what information may influence an actor's decision-making process as it relates to being deterred.

In order to assess the effects of atmospherics on an actor's decision making with respect to being deterred, this paper reviewed the historical record and identified eight cases where nuclear weapons use was threatened or contemplated. To be included in as a relevant case, the series of events of concern must have met all three of the following criteria:

1. The potential for a nuclear confrontation existed
2. A signal(s) was received by the actor
3. The actor's information environment plausibly played a role in the actor's decision to act or not act

This paper defines a "signal" as an intentional or unintentional message, event, or action that an adversary could have plausibly interpreted as threatening or leading to the use of nuclear weapons. This paper only looked at cases where one of two states interpreted the signals of the other as potentially leading to a nuclear conflict, and only on immediate deterrence situations, where the objective is to deter an actor from taking immediate action or to compel an actor to take an action with the threat of nuclear use. The signal may have been intentional or unintentional. It did not consider general deterrence situations.

The paper excluded cases in which nuclear weapons use was considered internally but not signaled to an adversary (at least as far as the evidence provides). For example, the 1962 Sino-Indian War was a case, in which the Kennedy administration internally considered using nuclear weapons to defend India, was not included because this paper found no evidence that the



threat that the Chinese government was aware of this consideration.<sup>17</sup> The list of cases also did not include the much larger pool of situations where a nuclear incident occurred due to negligence or accident as there were none found in which a threat from an adversary was interpreted due to the negligence or accident.

A careful review of the historical record identified the following cases for consideration.

<b>Case #</b>	<b>Year</b>	<b>Conflict Name</b>	<b>Country A</b>	<b>Country B</b>
<b>1</b>	<b>1956</b>	<b>Suez Crisis</b>	<b>Soviet Union</b>	<b>United States</b>
<b>2</b>	<b>1962</b>	<b>Cuban Missile Crisis</b>	<b>Soviet Union</b>	<b>United States</b>
<b>3</b>	<b>1969</b>	<b>Sino-Soviet Border Conflict</b>	<b>Soviet Union</b>	<b>China</b>
<b>4</b>	<b>1969</b>	<b>Operation Giant Lance</b>	<b>Soviet Union</b>	<b>United States</b>
<b>5</b>	<b>1973</b>	<b>Yom Kippur War</b>	<b>Soviet Union</b>	<b>United States</b>
<b>6</b>	<b>1983</b>	<b>Able Archer 83</b>	<b>Soviet Union</b>	<b>United States</b>
<b>7</b>	<b>1999</b>	<b>Kargil War</b>	<b>India</b>	<b>Pakistan</b>
<b>8</b>	<b>2001-2002</b>	<b>India-Pakistan Standoff</b>	<b>India</b>	<b>Pakistan</b>

### **Assessing the Atmospherics for the Cases**

As noted, the information environment in which an actor resides is nearly limitless, and there are many factors that could potentially influence their decision with respect to a deterrence message emanating from an adversary. Hence, it is necessary to distinguish those types of information that are most likely to influence the actor's decision-making process with respect to nuclear deterrence. These could include information about their own state or about the adversary, but the most pertinent information are those that affect how they might react to deterrence signals coming from an adversary.

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<sup>17</sup>Riedel, B. (2017, August 09). JFK stopped a China-India War. Can Trump? The nuclear stakes are much higher now. Retrieved November 17, 2017, from <https://www.brookings.edu/blog/order-from-chaos/2017/08/09/jfk-stopped-a-china-india-war-can-trump-the-nuclear-stakes-are-much-higher-now/>

A review of the cases listed provided evidence that there were certain types of information available to the actor being deterred, which likely played a role in their decision-making process as to how to respond. These are listed below:

Actor’s nuclear capability

Perception of adversary’s nuclear capability

Reliability of actor’s nuclear indications and warning system

Perception of adversary’s nuclear indications and warning system

Defense readiness level of actor’s own state

Perception of defense readiness of adversary

Nuclear-related activity of adversary, such as nuclear testing

Perception of adversary intent

Adversary military exercises

Actor’s domestic popularity

Economic standing of actor’s state

In order to provide a measure of the “atmosphere” that a given actor resided when these cases occurred, the factors listed above were formatted into yes/no dichotomies to assess whether it may have played a role in the actor’s decision making process at the time. For each case, if a factor was not applicable, it was left out of the summary.

<b>Factors</b>	<b>Yes/No Dichotomy</b>	<b>Score</b>
Actor’s nuclear capability	Did the actor have a viable nuclear capability?	Yes +1, No -1
Perception of adversary’s nuclear capability	Did the actor perceive their adversary as having a credible nuclear capability?	Yes – 1, No +1
Reliability of actor’s nuclear indications and warning system	Did the actor believe their nuclear indications and warning system was viable?	Yes +1, No -1

Perception of adversary's nuclear indications and warning system	Did the actor believe their adversary's indications and warning system was viable?	Yes -1, No +1
Defense readiness level of actor's own state	Was the actor's readiness level high during the case?	Yes +1, No -1
Perception of defense readiness of adversary	Did the actor perceive their adversary's defense readiness level as high during the case?	Yes - 1, No +1
Nuclear-related activity of adversary, such as nuclear testing	Did the actor detect nuclear-related activity such as nuclear testing during the case?	Yes - 1, No +1
Perception of adversary intent	Did the actor perceive the adversary as having a hostile intent during the case?	Yes - 1, No +1
Adversary military exercises	Did the actor detect military exercises during the case?	Yes - 1, No +1
Actor's domestic popularity	Did the actor have high domestic support during the time of the case?	Yes +1, No -1
Economic standing of actor's state	Was gross domestic product of the actor's state economy stable or increasing during the case?	Yes +1, No -1

Reviewing and scoring the cases will reveal the type of atmosphere in which the actor resided at the time it occurred. A higher score would logically be favorable to the actor, making them more inclined to take aggressive action, whereas a lower score would translate to a more hostile information environment, leading the actor to act more conservatively.

## **Analysis of Cases**

### The Suez Crisis

The Suez Crisis of 1956 revolved around an effort by Israel, the United Kingdom, and France to regain control of the Suez Canal after Egypt nationalized it.<sup>18</sup> Egypt at the time was in the cross hairs of the Cold War U.S.-Soviet struggle for influence in the region. As such, Egyptian leader Gamal Abdel Nasser attempted to play both states against each other, especially after the United States reneged on a promise to provide funds for the construction of a dam. After

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<sup>18</sup>History.com Staff. (2009). Suez Crisis. Retrieved November 17, 2017, from <http://www.history.com/topics/cold-war/suez-crisis>

the Israelis, British and French seized control of the canal, Soviet leader Nikita Khrushchev threatened a nuclear strike against Western Europe if these forces were not withdrawn.

Khrushchev’s information environment contained a number of factors which may have played a role in his decision to issue the threat against the United States. The chart below represents Khrushchev’s atmospheric.

<b>Yes/No Dichotomy</b>		<b>Score</b>
Did the actor have a viable nuclear capability?	Yes. However, Khrushchev’s nuclear arsenal at the time was relatively small, about 200 weapons, compared to about 2,400 for the U.S. <sup>19</sup>	+1
Did the actor perceive their adversary as having a credible nuclear capability?	Yes	-1
Did the actor perceive the adversary as having a hostile intent during the case?	Yes	+1
Did the actor have high domestic support during the time of the case?	Yes	+1
Was gross domestic product of the actor’s state economy stable or increasing during the case?	Yes	+1
Total		+3

### Cuban Missile Crisis

The Cuban Missile Crisis is the ideal case for examining atmospheric between nuclear powers due to the wealth of reporting related to the event. During the tense 13 day standoff, multiple signals were sent between President Kennedy and Soviet leader Nikita Khrushchev through both official and unofficial channels. By most accounts this was the closest that the world has ever come to seeing an all-out nuclear exchange that would have had devastating

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<sup>19</sup>Nuclear Notebook. (n.d.). Retrieved November 18, 2017, from <https://thebulletin.org/nuclear-notebook-multimedia>

effects not only on the two states, but probably for the rest of the world. Again, the actor under consideration for this case is Soviet leader Nikita Khrushchev.

<b>Yes/No Dichotomy</b>		<b>Score</b>
Did the actor have a viable nuclear capability?	Yes, approximately 1,600 nuclear weapons <sup>20</sup>	+1
Did the actor perceive their adversary as having a credible nuclear capability?	Yes	-1
Was the actor's readiness level high during the case?	Yes	+1
Did the actor perceive their adversary's defense readiness level as high during the case?	Yes	-1
Did the actor detect nuclear-related activity such as nuclear testing during the case?	Yes	-1
Did the actor perceive the adversary as having a hostile intent during the case?	Yes	-1
Did the actor detect military exercises during the case?	Yes	-1
Did the actor have high domestic support during the time of the case?	Yes <sup>21</sup>	+1
Was gross domestic product of the actor's state economy stable or increasing during the case?	Yes <sup>22</sup>	+1
<b>Total</b>		<b>-1</b>

### Sino-Soviet Border Conflict

This case from August 1969 involved a standoff between two nuclear forces, although the Chinese nuclear capability at the time was in its infant stage. It revolved around a border dispute after Chinese forces fired on Soviet border troops patrolling Zhenbao Island on the Ussuri River, which runs between the two countries. The Soviets retaliated a few weeks later, resulting in

<sup>20</sup>Nuclear Notebook. (n.d.). Retrieved November 18, 2017, from <https://thebulletin.org/nuclear-notebook-multimedia>

<sup>21</sup>Harrison, M. (1993), "Soviet Economic Growth since 1928: The Alternative Statistics of G.I. Khanin", *Europe-Asia Studies* 45(1), 141-167.

<sup>22</sup> Harrison, M. (1993), "Soviet Economic Growth since 1928: The Alternative Statistics of G.I. Khanin", *Europe-Asia Studies* 45(1), 141-167.

heightened tensions between Moscow and Beijing. The border dispute was not an isolated incident, but was a byproduct of the larger doctrinal split between the Soviets and China about the interpretation of Marxism-Leninism that had been ongoing for years. In the midst of the standoff, reporting indicates the Soviets reached out to the United States to gauge what the U.S. reaction would be to a hypothetical attack on Chinese nuclear weapon facilities.<sup>23</sup> There is no indication of whether nuclear weapons would be used in such an attack, but it is fair to assess the Chinese would consider the use of nuclear weapons in response. Beijing was made aware of the inquiry when CIA Director, Richard Helms highlighted it to the press, making the threat of an attack more credible.<sup>24</sup> The actor under consideration for this case is Chairman Mao Zedong, who had an adversarial relationship with Soviet leader Nikita Khrushchev.<sup>25</sup>

<b>Yes/No Dichotomy</b>		<b>Score</b>
Did the actor have a viable nuclear capability?	No	-1
Did the actor perceive their adversary as having a credible nuclear capability?	Yes	+1
Was the actor's readiness level high during the case?	Yes	+1
Did the actor perceive their adversary's defense readiness level as high during the case?	Yes	-1
Did the actor detect nuclear-related activity such as nuclear testing during the case?	No (although the Soviets conducted tests throughout 1969, including in September)	+1
Did the actor perceive the adversary as having a hostile intent during the case?	Yes	-1
Did the actor detect military exercises during the case?	No	+1

<sup>23</sup>The Sino-Soviet Border Conflict, 1969: U.S. Reactions and Diplomatic Maneuvers. (n.d.). Retrieved November 19, 2017, from <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB49/>

<sup>24</sup>Gerson, M. (2010), "The Sino-Soviet Border Conflict: Deterrence, Escalation, and the Threat of Nuclear War in 1969". Retrieved November 19, 2017, from [https://www.cna.org/CNA\\_files/PDF/D0022974.A2.pdf](https://www.cna.org/CNA_files/PDF/D0022974.A2.pdf)

<sup>25</sup>Luthi, Lorenz (2008). "Historical Background, 1921-1955". The Sino-Soviet Split: Cold War in the Communist World. Princeton, NJ: Princeton University Press. p. 39-40.

Did the actor have high domestic support during the time of the case?	Yes	+1
Was gross domestic product of the actor's state economy stable or increasing during the case?	Yes <sup>26</sup>	+1
Total		+3

Operation Giant Lance

This case is a bit different from the previous ones in that it was a less explicit conveyance of a nuclear threat. Yet it meets all the criteria for analysis in the study. In October 1969, in the midst of the Vietnam War, President Nixon put U.S. nuclear bombers on a higher alert for nearly three weeks. Corresponding military actions included a squadron of 18 B-52 bombers to flying toward the Soviet Union and naval vessels conducting aggressive maneuvers in the Atlantic, Mediterranean, Gulf of Aden, and the Sea of Japan.<sup>27</sup> According to reporting, the intent of the heightened alert was to test the “Madman Theory” which the president believed would entice Moscow to use their leverage against Hanoi to cooperate in the Paris peace talks because the United States might resort to using nuclear weapons to end the conflict. The Soviets detected the heightened alert, and intercepted Soviet communications expressed “concern” but about the alert measures, but there is was no discernable reaction to the heightened alert posture. However, Soviet Ambassador to the United States, Anatoly Dobrynin met with President Nixon to discuss the heightened posture, and reported to Moscow that Nixon was “unable to control himself even in a conversation with a foreign ambassador.”<sup>28</sup> The actor under consideration for this case is Soviet leader Leonid Brezhnev.

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<sup>26</sup>China GDP 1960-2017 | Data | Chart | Calendar | Forecast | News. (n.d.). Retrieved November 19, 2017, from <https://tradingeconomics.com/china/gdp>  
<sup>27</sup>Evans, M. (n.d.). Retrieved November 19, 2017, from <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB81/index2.htm>  
<sup>28</sup>Stilwell, B. (2015, August 25). That time Nixon wanted commies to think he was crazy enough to nuke them. Retrieved November 19, 2017, from <http://www.businessinsider.com/that-time-nixon-wanted-commies-to-think-he-was-crazy-enough-to-nuke-them-2015-8>

<b>Yes/No Dichotomy</b>		<b>Score</b>
Did the actor have a viable nuclear capability?	Yes, approximately 11,600 nuclear warheads <sup>29</sup>	+1
Did the actor perceive their adversary as having a credible nuclear capability?	Yes	-1
Was the actor's readiness level high during the case?	Yes	+1
Did the actor perceive their adversary's defense readiness level as high during the case?	Yes	-1
Did the actor detect nuclear-related activity such as nuclear testing during the case?	Yes	-1
Did the actor perceive the adversary as having a hostile intent during the case?	No	+1
Did the actor detect military exercises during the case?	Yes	-1
Did the actor have high domestic support during the time of the case?	Yes	+1
Was gross domestic product of the actor's state economy stable or increasing during the case?	Yes <sup>30</sup>	+1
<b>Total</b>		<b>+1</b>

### Yom Kippur War

The Yom Kippur War (also known as the 1973 Arab-Israeli War) offers a case where the United States and Soviet Union may have escalated to a nuclear conflict as a result of support for their respective proxy states during the Cold War. While the Korean War and Vietnam War are often cited as proxy standoffs between East and West, some assert that this is the one that came closest to nuclear confrontation. The war started with an Egyptian and Syrian surprise attack on October 6th against Israeli-occupied territories on Yom Kippur, the holiest day of the year in Judaism.<sup>31</sup> After initial success for Egyptian and Syrian forces in advancing into those territories,

<sup>29</sup>Nuclear Notebook. (n.d.). Retrieved November 19, 2017, from <https://thebulletin.org/nuclear-notebook-multimedia>

<sup>30</sup>The Soviet Union: GDP growth. (2017, February 04). Retrieved November 19, 2017, from <https://nintil.com/2016/03/26/the-soviet-union-gdp-growth/>

<sup>31</sup>History.com Staff. (2009). Yom Kippur War. Retrieved November 19, 2017, from <http://www.history.com/topics/yom-kippur-war>



the conflict quickly ground to a standoff, with the United State and Soviet Union resupplying their respective allies.<sup>32</sup> On October 8<sup>th</sup> the Israelis prepared 13 tactical nuclear weapons, to be used in the event total defeat was imminent.<sup>33</sup> Upon learning this, President Nixon ordered the resupply of military equipment to alleviate the need for the Israelis to use nuclear weapons. On October 9<sup>th</sup> the Soviets began supplying Egypt and Syria, which may have included nuclear weapons.<sup>34</sup> As a result, the United States raised its defense readiness condition (DEFCON) to DEFCON 3, a readiness condition not seen again until September 11<sup>th</sup> 2001. The actor under consideration for this case is Soviet leader Leonid Brezhnev.

<b>Yes/No Dichotomy</b>		<b>Score</b>
Did the actor have a viable nuclear capability?	Yes, approximately 15,000 nuclear weapons <sup>35</sup>	+1
Did the actor perceive their adversary as having a credible nuclear capability?	Yes	-1
Did the actor believe their nuclear indications and warning system was viable?	Yes	+1
Did the actor believe their adversary's indications and warning system was viable?	Yes	-1
Was the actor's readiness level high during the case?	Yes	+1
Did the actor perceive their adversary's defense readiness level as high during the case?	Yes	-1
Did the actor detect nuclear-related activity such as nuclear testing during the case?	Yes	-1
Did the actor perceive the adversary as having a hostile intent during the case?	Yes	-1

<sup>32</sup>Quandt, William (2005). *Peace Process: American Diplomacy and the Arab-Israeli Conflict Since 1967* (Third ed.). USA: University of California Press. pp. 104–105.

<sup>33</sup>Farr, Warner D. "The Third Temple's Holy of Holies: Israel's Nuclear Weapons". Counterproliferation Paper No. 2, USAF Counterproliferation Center, Air War College, September 1999.

<sup>34</sup>Naftali, T. (2016, August 26). CIA reveals its secret briefings to presidents. Retrieved November 19, 2017, from <http://www.cnn.com/2016/08/26/opinions/secret-briefings-to-presidents-from-cia-naftali/>

<sup>35</sup>Nuclear Notebook. (n.d.). Retrieved November 19, 2017, from <https://thebulletin.org/nuclear-notebook-multimedia>

Did the actor detect military exercises during the case?	Yes	-1
Did the actor have high domestic support during the time of the case?	Yes	+1
Was gross domestic product of the actor's state economy stable or increasing during the case?	Yes <sup>36</sup>	+1
Total		-1

### Able Archer 83

This case refers to a NATO exercise that occurred in 1983, during which the Soviets were particularly fearful of U.S. intentions.<sup>37</sup> In May 1981, Soviet leader Leonid Brezhnev and Chairman of the KGB, Yuri Andropov announced in a closed door session that the United States was preparing a secret nuclear attack on the USSR.<sup>38</sup> As a result, the Russians launched Operation Ryan (Russian acronym for “nuclear missile attack”), which was the largest peacetime intelligence gathering operation in Soviet history. The intent of Operation Ryan was to monitor key U.S. figures who would implement a nuclear attack against the Soviet Union.

The Reagan presidency compounded Soviet fears. In 1982, Reagan declared “freedom and democracy will leave Marxism and Leninism on the ash heap of history.”<sup>39</sup> At the same time, the president increased military pressure against the Soviet Union through a number of actions, such as approving clandestine naval operations that stealthily accessed waters near the Greenland-Iceland-United Kingdom (GUIK) Gap, and flying bombers close to Soviet airspace. In 1983, Reagan announced the Strategic Defense Initiative (aka “Star Wars”), a proposed missile defense system designed to protect the United States from missile attacks, furthering

<sup>36</sup>The Soviet Union: GDP growth. (2017, February 04). Retrieved November 19, 2017, from <https://nintil.com/2016/03/26/the-soviet-union-gdp-growth/>

<sup>37</sup>A Cold War Conundrum: The 1983 Soviet War Scare. (2008, July 07). Retrieved November 19, 2017, from <https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/books-and-monographs/a-cold-war-conundrum/source.htm#HEADING1-08>

<sup>38</sup>Fischer, Benjamin B (1997). A Cold War Conundrum: The 1983 Soviet War Scare – Phase II: A New Sense of Urgency. CIA.

<sup>39</sup> The History Place: Great Speeches Collection. Retrieved November 19, 2017, from <http://www.historyplace.com/speeches/reagan-parliament.htm>

Soviet fears.<sup>40</sup> Reagan also referred to the Soviet Union as an “evil empire” that year.<sup>41</sup> Perhaps as an outgrowth of this fear, in March 1983 Soviets fighter jets shot down Korean Airlines Flight 007, which they interpreted as a U.S. reconnaissance aircraft.<sup>42</sup>

Within this background, NATO conducted its annual exercise called ABLE ARCHER in November 1983. This headquarters exercise simulated a Soviet attack on Western Europe, with Allied forces simulating going to DEFCON 1 and simulating a nuclear strike against the Soviet Union.<sup>43</sup> This followed the annual AUTUMN FORGE NATO exercise, involving approximately 100,000 troops, including 16,000 flown in from the United States. On November 8<sup>th</sup> Soviet double agent Colonel Oleg Gordievsky, who was serving as the KGB bureau chief in London, informed the British that the Soviets were close to using nuclear weapons in response to perceived preparations for an attack.<sup>44</sup> The actor under consideration for this case is Soviet leader Yuri Andropov.

<b>Yes/No Dichotomy</b>		<b>Score</b>
Did the actor have a viable nuclear capability?	Yes	+1
Did the actor perceive their adversary as having a credible nuclear capability?	Yes	-1
Did the actor believe their nuclear indications and warning system was viable?	No	-1
Did the actor believe their adversary’s indications and warning system was viable?	Yes	-1

<sup>40</sup> The Cold War Museum, The Strategic Defense Initiative (SDI): Star Wars. Retrieved November 19, 2017, from <http://www.coldwar.org/articles/80s/SDI-StarWars.asp>

<sup>41</sup> Reagan, "Evil Empire," Speech Text. (n.d.). Retrieved November 20, 2017, from <http://voicesofdemocracy.umd.edu/reagan-evil-empire-speech-text/>

<sup>42</sup> Patterson, Thom. (2013, August 31). The downing of Flight 007: 30 years later, a Cold War tragedy still seems surreal. Retrieved November 20, 2017 from <http://www.cnn.com/2013/08/31/us/kal-flight-007-anniversary/index.html>

<sup>43</sup> Barrass, G. (2016). Able archer 83: What were the soviets thinking? *Survival*, 58(6), 7-30.

<sup>44</sup> Sean Gallagher - Nov 25, 2015 2:30 pm UTC. (2015, November 25). WarGames for real: How one 1983 exercise nearly triggered WWII. Retrieved December 03, 2017, from <https://arstechnica.com/information-technology/2015/11/wargames-for-real-how-one-1983-exercise-nearly-triggered-wwiii/3/>

Was the actor's readiness level high during the case?	Yes	+1
Did the actor perceive their adversary's defense readiness level as high during the case?	Yes	-1
Did the actor detect nuclear-related activity such as nuclear testing during the case?	No	+1
Did the actor perceive the adversary as having a hostile intent during the case?	Yes	-1
Did the actor detect military exercises during the case?	Yes	-1
Did the actor have high domestic support during the time of the case?	Yes	+1
Was gross domestic product of the actor's state economy stable or increasing during the case?	Yes <sup>45</sup>	+1
Total		-1

### Kargil War

India became a nuclear weapon state in 1974 and Pakistan 1998. The next year, armed conflict arose between the two states, resulting in a potential nuclear conflict.<sup>46</sup> Relations between the two states have been largely hostile since the partition of India in 1947, with numerous military conflicts occurring since then. The war took place between May and July 1999, with Pakistan initiating conflict with the infiltration of soldiers into Kashmir. On 31 May 1999, Pakistan's foreign minister stated that Pakistan may use "any weapon" in its arsenal to resolve the crisis, while the leader of the Pakistani Senate declared that the purpose of nuclear weapons becomes meaningless if they are not used when they are needed.<sup>47</sup> At the same time, Pakistan

<sup>45</sup>The Soviet Union: GDP growth. (2017, February 04). Retrieved November 19, 2017, from <https://nintil.com/2016/03/26/the-soviet-union-gdp-growth/>

<sup>46</sup>Kargil War: All you need to know about Kargil War. (2017, July 26). Retrieved November 20, 2017, from <https://economictimes.indiatimes.com/news/defence/all-you-need-to-know-about-kargil-war/how-when-and-where/slideshow/59772216.cms>

<sup>47</sup>Henderson, E. (2015, December 03). Kargil war: Pakistan planned to drop nuclear bomb on India during conflict, former CIA officer claims. Retrieved November 20, 2017, from <http://www.independent.co.uk/news/world/asia/pakistan-india-nuclear-bomb-kargil-war-former-cia-officer-sandy-berger-bruce-riedel-a6758501.html>

moved nuclear weapons to forward deployed locations, signaling the potential for nuclear use. In response, India readied at least five nuclear ballistic missiles. The actor under consideration for this case is Indian Prime Minister Atal Bihari Vajpayee.

<b>Yes/No Dichotomy</b>		<b>Score</b>
Did the actor have a viable nuclear capability?	Yes	+1
Did the actor perceive their adversary as having a credible nuclear capability?	Yes	-1
Was the actor's readiness level high during the case?	Yes	+1
Did the actor perceive their adversary's defense readiness level as high during the case?	Yes	-1
Did the actor detect nuclear-related activity such as nuclear testing during the case?	No	+1
Did the actor perceive the adversary as having a hostile intent during the case?	Yes	-1
Did the actor have high domestic support during the time of the case?	Yes <sup>48</sup>	+1
Was gross domestic product of the actor's state economy stable or increasing during the case?	Yes <sup>49</sup>	+1
<b>Total</b>		<b>+2</b>

### India-Pakistan Standoff

Although the Kargil War was resolved when Pakistani forces vacated the Kargil area in Kashmir, tensions persisted. In 2001 tensions flared again when India built up military forces in Kashmir following a terrorist attack on the Indian Parliament on December 13, 2001, that the government blamed on the Pakistani-based Lashkar-e-Tayiba terrorist group.<sup>50</sup> As tensions heightened, Pakistani President Musharraf refused to rule out the use of nuclear weapons,

<sup>48</sup>Anand, K. (2016, November 30). Retrieved November 20, 2017 from <https://www.indiatimes.com/news/india/on-good-governance-day-here-are-7-achievements-of-atal-bihari-vajpayee-we-need-to-remember-229047.html>

<sup>49</sup> Retrieved November 20, 2017 from <https://tradingeconomics.com/india/gdp>

<sup>50</sup> Retrieved November 21, 2017, from <http://www.rediff.com/news/2001/dec/14par112.htm>

whereas Indian Prime Minister Vajpayee indicated India would not use them first. The actor under consideration for this case is Pakistani President Musharraf.

<b>Yes/No Dichotomy</b>		<b>Score</b>
Did the actor have a viable nuclear capability?	Yes	+1
Did the actor perceive their adversary as having a credible nuclear capability?	Yes	-1
Was the actor's readiness level high during the case?	Yes	+1
Did the actor perceive their adversary's defense readiness level as high during the case?	Yes	-1
Did the actor detect nuclear-related activity such as nuclear testing during the case?	No	+1
Did the actor perceive the adversary as having a hostile intent during the case?	Yes	-1
Did the actor have high domestic support during the time of the case?	Yes	+1
Was gross domestic product of the actor's state economy stable or increasing during the case?	Yes <sup>51</sup>	+1
Total		+2

## Conclusions

The cases scored between +3 and -1. For each case, a number of factors were omitted because there was no information to confirm or deny that the factor played a role. Additionally, some of the scores were subjective, because they were based on the perceptions of the actor. While evidence supports that the actor perceived an action or signal from an adversary, it cannot always be confirmed that they actually did.

<sup>51</sup> Retrieved November 21, 2017, from <https://tradingeconomics.com/pakistan/gdp-growth>

Based on this analysis, the Suez Crisis of 1956 (Khrushchev) and the Sino-Soviet border conflict in 1969 (Mao Zedong) provided the information environment most conducive for their respective actors to have acted proactively, yet neither actor initiated nuclear strikes. This is undoubtedly a reflection of the reality that actors understand that the nuclear threshold, once crossed, may lead innumerable unforeseen circumstances and repercussions. Conversely, based on these scores, the most threatening information environments for actors were the Cuban Missile Crisis (Khrushchev), the Yom Kippur War (Brezhnev), and Able Archer 83 (Andropov). While nuclear conflict was averted in each of these cases as well, they do support historical accounts that these were probably the cases in which the respective actors came closest to initiating nuclear weapons use.

This study provided limited insight into the hypothesis that an actor's information environment influence their decision-making with respect to how to respond to an adversary, due to the limited amount of information that was observed. It also underscores the complexity of attempting to examine from a historical perspective all the information that could have played a role in an actor's decision-making process. The factors identified in this study are undoubtedly only a handful of the actual factors that influenced the actor in the given environment. Additionally, the analysis did not take into consideration the internal motivations of the actors, which almost certainly played into their decision-making as well.

The current situation in North Korea underscores the importance of understanding the motivations of actors to employ nuclear weapons. Kim Jong Un to this point, appears to acting rationally, from a self-preservation perspective. Yet, there are undoubtedly a plethora of concerns, fears, and other motivations brought on by his own information environment that could conceivably influence his decision to use a nuclear weapon, especially as the United States

ramps up military pressure on him and his regime. The closed nature of the regime offers little opportunity to render judgment on what those influences are, but they almost certainly play a role, underscoring the importance of further research on this topic.