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Honors Thesis Prospectus

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Introduction

Since the rise of the industrial nation state, conventional military strategy has narrowly defined a security threat as a foreign country's relative military force. In the first half of the 20th century, academics and policymakers passively adopted and institutionalized this definition as a response to "expanding military demands on society": most importantly WWI and WWII.[1] With the invention of nuclear weapons and the rise of the Cold War, these agents actively applied and reinforced strategic military doctrine under the logic of deterrence. However, with the fall of the Berlin Wall (and more recently, the Twin Towers), security theory has evolved to question the "givens" of the dominant realist/neorealist paradigm: (1) that the state is the primary object to be secured; (2) that foreign military force is the principal threat; and (3) that security is an objective condition distinct from the groups of human beings who perceive, design and study it.

Security strategy is rooted in understanding the "threats states (or other political entities) face and the responses they can and should adopt to defend themselves,"[2] yet operative definitions of security threats have only recently expanded past technical calculations of relative military power between sovereign nations. Security experts and international relations (IR) scholars have begun to incorporate findings from anthropology, psychology, and sociology (along with other disciplines) into their research, using new tools to more accurately explain how people relate across borders. One of these tools is concept of risk.

The diffusion of risk into IR is not surprising, as "governments and international organisations have over the past two decades made risk management a leading policy paradigm

[1] Wolf Mendl. "Strategic Thinking in Diplomacy: A Legacy of the Cold War." In *New Perspectives on Security*, edited by Michael Clarke. (Brassey's: London, 1993). Pg. 10.
[2] Barry Buzan and Lene Hansen. *The Evolution of International Security Studies*. (Cambridge University Press: Cambridge, 2009). Pg. 30

in areas as disparate as counter-terrorism, financial regulation and public health."[3] Risk has functioned as a common metric used across disciplines for comparing a diverse range of hazards to national wellbeing. However, within IR, the discussion of risk and risk perception as a variable of state behavior has thus far limited itself to a basic ontological debate about whether risk is real or imagined.

According to William Clapton, this argument has grown stale.[4] Acknowledging the fact that some risks may be measurably more probable, urgent and damaging than others does not require us to turn a blind eye to the norms and value systems that shape these measurements. Instead, new ways for explaining risk identification, assessment and management – what could be called "riskisation" – are needed to more accurately evaluate the influence of risk perception on state/decision-maker behavior. As Clapton writes, "the perception of risks that are increasingly capable of circumventing and transcending territorial boundaries poses the question of how states will respond. This leads to further questions such as what effects risk will have for domestic politics and governance within states, and how this will be reflected in their interstate conduct."[5]

In an effort to more clearly understand how risk perception affects state/decision-maker behavior, for my senior honors thesis I intend to examine the only two definable periods in human history when decision-makers (and the states they represent) have confronted the legitimate "possibility of the destruction through decision-making of all [human] life on this planet": the Cuban Missile Crisis (1962) and the Montreal Protocol (1989).[6] By applying secondary research on risk construction and classification to primary sources from each time-

[3] Hameiri, S., and F. P. Kuhn. 2011. "Introduction: Risk, Risk Management and International Relations." *International Relations* 25 (3) (September 5): 275-279.
[4] William Clapton. "Risk in International Relations." *International Relations* 25 3 (2011): 280–295.
[5] Ibid.
[6] Ulrich Beck. *World Risk Society*. (Malden, MA: Blackwell Publishers, 1999). Pg. 53.

period, I hope to analyze how U.S. policymakers understood (or failed to understand) nuclear war and stratospheric ozone depletion as threats to *homo sapien* existence, and how these perceptions influenced U.S. military and diplomatic strategy. Based on my findings, I aim to address the question: how has state behavior in response to global existential risks affected (1) the accuracy of conventional security theory in describing international relations and (2) the operative scope and focus of U.S. security strategy?

In this prospectus, I will attempt to map my plan for investigating and analyzing how nation states (the U.S. in particular) have interacted when confronting risks of *homo sapien* extinction, and what this behavior means for security theory and military strategy. I will start by reviewing the literature on threats and risks within IR, examining how conceptions of threats to national security have evolved in scope (from military to non-military hazards) and focus (from state to individual objects). After defining my research methodology, I will discuss how my proposed project adds to the present discussion on security threats, risk perception, and state behavior. I will then evaluate the body of primary sources available for each of my case studies (the Cuban Missile Crisis and the Montreal Protocol), and offer a preliminary hypothesis of what I will find. I will conclude by considering the potential implications of my research for security policy and IR theory.

Evolution of Security Threats

Contemporary theories of IR are rooted in the analysis of external military threats to territorially sovereign borders. Principles of threat assessment in military strategy can be traced as far back as 6th century B.C., in Sun Tzu's comments on intelligence in *The Art of War*. "To gauge the outcome of war," he explained, "we must compare the two sides by assessing their

relative strengths. This is to ask the following questions: Which ruler has the way? Which commander has the greater ability? Which side has the advantage of climate and terrain?... Which army has superior strength?"[7]

Classical assumptions of international anarchy, rational state-interest and territorial-sovereignty evolved from the writings of Thucydides, Niccolo Machiavelli and Thomas Hobbes to powerfully shape academic understanding of how states behave.[8] These realists saw systemic conflict at the international level as a product of human biological and psychological impulses.[9] Models of individual decision-making based purely on mathematical calculations of rational self-interest[10] justified broader conclusions about how territorially sovereign states behaved in the international arena: the state could be isolated and examined as a rational "black box" that operated exclusively in its calculated self-interest.[11] Looking out at an international environment void of any higher authority, leaders and scholars saw that of these interests, survival was preeminent.

The founder of modern strategic theory, Carl von Clausewitz, argued that an understanding of comparative advantage between individual states formed the basis of sound military strategy.[12] In his cornerstone publication *On War*, he emphasized the importance of accurately evaluating the enemy's center of gravity, "the hub of all power and movement, on

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[7] Sun Tzu. *The Art of War*, translated by Roger Ames. (Ballentine Books: New York, 1993). Pg. 103-104.
[8] See the writings of Alfred Thayer Mahan, Karl Earnst Haushofer, Lewis Fry Richardson, and Theodore Roosevelt. See also: Michael Howard. "The classical strategists." In *Problems of Modern Strategy: Part* I, London: Institute for Strategic Studies, Adelphi Paper 54, (February 1969); and Michael Handel. *Masters of War: Classical Strategic Thought.* (Frank Cass Publishers: Portland, OR, 1992).
[9] Michael Sheehan. *International Security: An Analytical Survey*. (Lynne Rienner: Boulder CO, 2005). Pg. 17.
[10] See Auguste Comte. *A General View of Positivism*, translated by J.H. Bridges (Trubner and Co., 1865) Reissued by Cambridge University Press, 2009.
[11] See Hans Morgenthau. *Politics Among Nations: The Struggle for Power and Peace*. (Alfred A. Knopf: New York, 1948); and E.H. Carr. *The Twenty Years' Crisis, 1919-1939*. (Perennial: New York, 2001).
[12] Thomas G. Mahnken. "Strategic Theory." *Strategy in the Contemporary World*, edited by John Baylis, James J. Wirth, and Colin S. Gray. (Oxford University Press: London, 2007).

which everything depends. That is the point against which all our energies should be directed."[13] Under this logic, ensuring state security required identifying and measuring the relative military power between states.

Throughout the late 19th and early 20th centuries, expanding military demands on society led foreign policy decision-makers, analysts, and scholars to passively adopt the assumptions inherent in classical military strategy.[14] National interest was the rule and the survival of the nation state was pre-eminent. Throughout the West,[15] state leaders invested heavily in military (and later civilian) institutions designed specifically to defend their territory from other nation states by expanding and updating military force. As Wolf Mendl writes:

> The strategic method of handling problems stems from the emergence of modern military institutions in the nineteenth century and is intimately bound up with the rise of the industrial nation-state. Indeed, the military establishment became the first modern organization and as such served as the role model. Mass armies preceded mass production in factories employing large numbers of works; the military staff college preceded the business school; the Schlieffen Plan preceded the Marshall Plan.[16]

The military-industrial state institutionalized strategic studies as a core tool for understanding foreign affairs and directing foreign policy. Policymakers, analysts, and scholars worked under heavy influence of traditional military doctrine, picturing states as monolithic units led to amass power to ensure security in a "strategic chess game with other states."[17] The dominance of inter-state war, most significantly World War I and World War II, justified defining threats to national security exclusively in terms of relative military power between states. These threats could be isolated and examined in terms of naval power, air power, and eventually, the number of nuclear warheads.

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[13] Carl von Clausewitz. *On War*, edited and translated by Michael Howard and Peter Paret. (Princeton University Press: Princeton, 1989). Pg. 595-596.
[14] Wolf Mendl. Pg. 10.
[15] By "Western" I mean Europe, North America, and Australia.
[16] Wolf Mendl. "Strategic Thinking in Diplomacy: A Legacy of the Cold War." In *New Perspectives on Security*, edited by Michael Clarke. (Brassey's: London, 1993). Pg. 9.
[17] Harold H. Saunders. Pg. 5

IR as a sub-discipline of politics distinct from military strategy emerged out of the ruins of World War I.[18] The horrors of the War led many to question the accuracy of the positivist model of progress in describing their environment. As Phillip Windsor explains, "these reasonable, rational, human beings for whom progress had been a self-evident fact… had been betrayed by events and it became rather important to question why."[19] In an effort to understand how societies had been led down the path to war, private endowments installed the first academic positions dedicated to IR, marking the formal entry of civilian scholars into the study and formulation of military strategy and diplomacy.[20]

Despite notable efforts to rethink the logic of traditional, military-based foreign policy, up until the end of the World War II, political policies dedicated to winning "total wars" progressively expanded military strategy to encompass and influence all spheres of civilian life.[21] Although military institutions developed strong methodological tools for identifying, assessing, and responding to potential threats, they applied them to solve a limited scope of problems. Those who cared to investigate how different societies related across space and time ended up studying "*the threat, use, and control of military force*," exploring the "conditions that make the use of force more likely, the ways that the use of force affects individuals, states and societies, and the specific policies that states adopt in order to prepare for, prevent, or engage in war."[22]

However, as civilians began to play a more active role in designing military technologies

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[18] Phillip Windsor. "The Evolution of the Concept of Security in International Relations." In *New Perspectives on Security*, edited by Michael Clarke. (Brassey's: London, 1993). Pg. 62.
[19] Ibid.
[20] Ibid. Pg. 63. Windsor describes how World War I represented an anomaly within traditional epistemologies of social science: "International relations, in other words, began as the study of society and of the relations of states in the context of a phenomenon which had been in a literal sense, incredible."
[21] For an approachable explanation of "total war" as it relates to other types of organized violence, see Michael Sheehan. "The Evolution of Modern Warfare." In *Strategy in the Contemporary World*, edited by John Baylis, James J. Wirth, and Colin S. Gray. (Oxford University Press: London, 2007).
[22] Stephen Walt. "The Renaissance of Security Studies." *International Studies Quarterly, Vol. 35, No. 2* (June 1991). Pg. 212. His italics.

and strategies, the military monopoly on security and IR began to erode. Most notably, civilian involvement in nuclear weapons development brought military experts into direct conversation with university-based physical and social scientists, leading to new conceptions of strategy and security.[23]

The emergence of civilian experts in security, from nuclear physicists to social scientists, widened the discipline of IR to encompass non-military elements of statecraft and led to new discussions about the normative assumptions underlying state security doctrines. Karl Deutsch introduced the concept of "security communities" to describe how groups of states with historic trends of economic and cultural interaction "reject the use or threat of force as a mechanism for resolving disputes."[24] Students of European regional integration described the growing cooperation that developed under military stalemate as "rising interdependence,"[25] challenging traditional "givens" of state security policy: (1) that states behave based on rational calculations of self-interest, (2) that the international system is dominated by natural anarchy, and (3) that within this environment, the only rational way to insure survival is to amass more military force than any other state.

In a seminal 1952 article entitled "National Security as an Ambiguous Symbol," Arnold Wolfers argued that the "demand for a policy of national security is primarily normative in character. It is supposed to indicate what the policy of a nation should be in order to be either expedient – a rational means toward an accepted end – or moral, the best or least evil course of

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[23] Barry Buzan and Lene Hansen. Pg. 66. See also: W. W. Rostow. "The planning of foreign policy." Cited in Wolf Mendl. Pg. 10. Rostow describes the "intensification of contact and co-operation between the Department of State and the Pentagon," which represents how the "the traditional sharp distinction between diplomacy and the application of military power has ended."

[24] Michael Sheehan. *International Security: An Analytical Survey*. Pg. 25. See also Karl Deutsch and others. *Political Community and the North Atlantic Area*. (Princeton University Press: Princeton, 1957).

[25] Phillipe C. Schmitter. "Change in Regime Type and Progress in International Relations." In *Progress in Postwar International Relations*, edited by Emanuel Adler and Beverly Crawford. (Columbia University Press: New York, 1991). Pg. 91.

action."[26] Wolfers, Deustch and others challenged the narrow military scope and positivist epistemology of early 20th century IR, insisting that national security is something citizens construct, not an independent, objective condition that could be realized with enough military force and expertise. These scholars began to question how states defined national security in terms of foreign military threats. As Wolfers explained, "while wealth measures the amount of a nation's material possessions, and power its ability to control the actions of others, security in an objective sense, measures the absence of threats to acquired values, in a subjective sense, the absence of fear that such values will be attacked."[27] Andrew Wolfers' comments illustrate an early attempt to separate the concept of security from the balance (or imbalance) of state military power and introduce notions of reflexivity into the IR debate.

Although new conversations about the scope and focus of national security continued to take place, as the military stalemate between the United States and the Soviet Union evolved into the dominant force shaping world events, IR became "almost exclusively devoted to the study of nuclear weapons and bipolar rivalry."[28] Under deterrence theory, the most reliable and effective way to prevent foreign aggression and ensure national security was to amass nuclear weapons and maintain the credible threat of massive retaliation.[29] Thus the operative notion of threat maintained its exclusive focus on relative military power between states.

Throughout the Cold War, politicians, technicians and administrators largely adopted and perpetuated the classical assumptions of natural anarchy, rational self-interest and power-based security that structured traditional definitions of security. These non-military security agents pursued "strategies" that promoted "pure and applied nuclear research in the civilian sphere with

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[26] Arnold Wolfers. "National Security as an Ambiguous Symbol." *Political Science Quarterly,* Vol. 67, No. 4 (December 1952). Pg. 483.
[27] Arnold Wolfers. Pg. 485.
[28] Barry Buzan and Lene Hansen. Pg. 67.
[29] Phillipe C. Schmitter.

the intention of using it for military purposes."[30] Employing system and game theories, the RAND Corporation and other contractors designed complex models of nuclear confrontation to accurately "measure" the Soviet threat.[31] Instead of evaluating the assumptions inherent in conventional military strategy, discussions of national and international security channeled them. As Mendl explains, "the post-1945 era has been marked by the active adoption of strategic thinking under the influence of nuclear armament and the doctrines associated with it."[32]

Within academic debate, neo-realists distinguished themselves from classical realists by rejecting the traditional positivist assumption that all types of human social interaction (and consequently all theories of IR) could be reduced to the biological study of human nature.[33] In his influential 1979 book, *Theory of International Politics*, Kenneth Waltz presented his vision of IR, which investigated the essentially static *structural* constraints that compelled state actors to behave the way they do. Employing recent advances in microeconomics and rational choice theory, Waltz argued that that state behavior was driven by "rational calculations about their positions in the system."[34] This assumption justified attributing "variations in state behavior to variation in characteristics of the international system,"[35] essentially ignoring unit-level factors like leadership or ideology.[36] While neo-realists adopted new directions of causation (it was the anarchic international environment, not human biology, that governed state behavior) they retained the same operative principles put forth by classical realists, defining "international

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[30] Wolf Mendl. Pg. 9.
[31] Barry Buzan and Lene Hansen. Pg. 89. See also Ole Wæver and Barry Buzan. "After the Return to Theory: The Past, Present and Future of Security Studies." In *Contemporary Security Studies*, edited by Alan Collins. (Oxford University Press: Oxford, 2007): 383-402.
[32] Ibid. Pg. 10.
[33] Steve Smith. "Positivism and beyond." In *International theory: positivism and beyond*, edited by Steve Smith, Ken Booth, and Marysia Zalewski. (Cambridge University Press, 1996).
[34] Robert C. North. *War, Peace, Survival: Global Politics and Conceptual Synthesis*. (Westview Press: Boulder, CO, 1990). Pg. 136.
[35] Robert Keohane. *Neorealism and Its Critics*. (Columbia University Press: New York, 1986). Pg. 167.
[36] Barry Buzan and Lene Hansen. Pg. 70.

relations in a way that was identical to the core assumptions of strategic studies."[37] Under the neo-realist label, old notions of natural anarchy, rational self-interest, and power-based security were simply repackaged and redistributed.

Although the geopolitical reality of the Cold War reflected and substantiated neo-realism's narrow vision of international politics, a few academics questioned the paradigm's core assumptions, especially the notion that the states act rationally to pursue their objective self-interests. In his groundbreaking work, *Perception and Misperception of International Politics*, Robert Jervis argued, "it is often impossible to explain crucial decisions and policies without reference to the decision makers' beliefs about the world and their images of others," many of which are not the product of conscious or rational cognition.[38] Jervis's analysis opened up the "black box" of the state to consider the psychosocial forces that its behavior, and offered one of the first comprehensive discussions of risk perception and uncertainty in foreign policy decision-making.

Other critics attempted to redefine and reprioritize national security concerns to include non-military dangers. In 1977, the prominent environmentalist Lester Brown published a Worldwatch Paper entitled "Redefining National Security." Evaluating the potential consequences of non-renewable energy depletion, ecological degradation, climate change, and food insecurity, Brown argued:

> The overwhelmingly military approach to national security is based on the assumption that the principal threat to security comes from other nations. But the threats to security may now arise less from the relationship of nation to nation and more from the relationship of man to nature. Dwindling reserves of oil and the deterioration of the earth's biological systems now threaten the security of nations everywhere. …In effect,

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[37] Steve Smith. "The Increasing Insecurity of Security Studies: Conceptualizing Security in the Last Twenty Years." In *Critical Reflections on Security and Change*, edited by Stuart Croft and Terry Terriff. (Frank Cass: London, 2000).

[38] Robert Jervis. *Perception and Misperception of International Politics*. (Princeton University Press: Princeton, 1976). Pg. 28, 119, 128.

> the traditional military concept of "national" security is growing ever less adequate as nonmilitary threats grow more formidable.[39]

Richard Ullman echoed Brown's argument in his seminal 1983 *International Security* article, similarly titled "Redefining Security." As Ullman explained, "defining national security merely (or even primarily) in military terms conveys a profoundly false image of reality."[40] By focusing on military threats, states ignored other potentially more harmful dangers and contributed to a pervasive and unsustainable militarization of IR.[41]

Evolving out of these concerns, a new sub-field of security studies known as the Copenhagen school grew to broaden and deepen what's considered security and security threats. In his groundbreaking 1983 book *People, States and Fear* (now considered the founding text of the Copenhagen school), Barry Buzan argued that changes in the policy environment facing states justified expanding the security agenda from the tradition single sector, military security, to include four others: political, economic, societal and ecological security.[42] Buzan also sought to deepen discussions about security to focus on three levels: the sub-state, the state, and the international system. While Buzan maintained that the state was the still the referent object of analysis in IR, he accepted the individual as the "irreducible base unit" for discussions about security.[43] Scholars of the Copenhagen school have since advanced the notion of "securitization": the discursive process by which certain problems and not others become security priorities.[44] This subfield attempts to understand "who securitizes, on what issues (threats), for whom (referent objects), why, with what results, and, not least, under what

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[39] Lester Brown. "Redefining National Security." Worldwatch Paper 14. *Worldwatch Institute* (October 1977).
[40] Richard H. Ullman. "Redefining Security." *International Security* 8 (1) (July, 1983): 129-153.
[41] See Barry Buzan. *People, States & Fear: The National Security Problem in International Relations*. (Harvester Wheatsheaf: Brighton, 1983).
[42] Steve Smith. "The Increasing Insecurity of Security Studies: Conceptualizing Security in the Last Twenty Years."
[43] Ibid.
[44] See Ole Wæver. "Securitization and Desecuritization." In *On Security*, edited by Ronnie Lipschutz. (Columbia University Press: New York, 1995): 46-86.

conditions (that is, what explains when securitization is successful)."[45]

Although attempts to redefine the scope and focus of security threats were largely hampered by the military reality of the Cold War, when the Soviet Union imploded in the late 1980s, these efforts gained traction.[46] The peaceful disintegration of the bipolar military stalemate that had defined and validated (neo-)realist conceptions of state behavior left a powerful vacuum within IR. Throughout most of the 20th century, the study of military problems between states had developed deep institutional roots and grew to dominate discussions of state behavior and world politics. As Michael Clarke wrote in 1993, the Cold War and its operative policy of nuclear deterrence had defined "what was seen as important, what was ignored, what motives to conflict were assumed to exist, what constituted significant conflict, and even more what constituted a risk of conflict."[47] However, with the fall of the Berlin Wall, the core problem that IR was supposed to understand and solve – the military standoff between the United States and the Soviet Union – was no longer there.[48]

Throughout the 1990s, new academic disciplines, including the Copenhagen school, social constructivism and critical security studies, among others,[49] rose to identify "the unexamined assumptions that guide traditional modes of thought, and [expose] the complicity of traditional modes of thought in prevailing political and social conditions."[50] As scholars and policymakers critically evaluated the holes in (neo-)realist theory (i.e. natural international anarchy, the rational self-interested state, and power-based security) they began to acknowledge

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[45] Barry Buzan, Ole Waever, and Jaap de Wilde, *Security: A New Framework for Analysis* (Lynne Rienner: Boulder Publishers, 1998). Pg. 32.
[46] See Jessica Tuchman Mathews. "Redefining Security." *Foreign Affairs*, Vol. 68, No. 2. (1989): 162-177; Helga Haftendorn. "The Security Puzzle: Theory-Building and Discipline-Building in International Security." *International Studies Quarterly*. Vol. 35, No. 1 (1991): 3-17.
[47] Michael Clarke. "Introduction." In *New Perspectives on Security*, edited by Michael Clarke. (Brassey's: London, 1993). Pg. 2.
[48] Barry Buzan and Lene Hansen. Pg. 98.
[49] For a thorough map of current security paradigms, see Barry Buzan and Lene Hansen. Pg. 35.
[50] Richard Devetak. *Theories of International Relations*. (Palgrave MacMillan: New York, 2005). Pg. 143.

the inherently normative process that defined, and continues to define, the scope and focus of IR. In his introduction to a two volume series titled *The Psychodynamics of International Relationships*, Harold Saunders described how IR experts began to "look beyond an abstract state system and question the proposition that states are to be analyzed as institutions quite different from the groups of human beings who influence, make, implement, and sustain their policies."[51]

According to Stefano Guzzini, social constructivism emerged out of a "growing awareness of the inherent limits and ambiguities of technical and social progress" – what Ulrich Beck has labeled "reflexive modernity"[52] – and the "*certitude of possible change* that swept over Europe" with the end of the Cold War.[53] Enshrined in Alexander Wendt's famous phrase "anarchy is what states make of it," constructivists examined security not as an objective element to be discovered, but something that is defined by evolving human perception and intersubjective understanding.[54] They argued that, while an agent's external environment structured its behavior (as neo-realists proposed), the agent's behavior simultaneously transformed its environment. Constructivists elevated "socially constructed variables – commonly held philosophic principles, identities, norms of behavior, or shared terms of discourse – to the status of basic causal variables that shape preferences, actors, and outcomes."[55] In more recent years, IR scholars have advanced constructivist debate by emphasizing how norms and culture produce a group's

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[51] Harold H. Saunders.
[52] See Ulrich Beck. *Reflexive Modernization: Politics, Tradition and Aesthetics in the Modern Social Order*. (Stanford University Press: Stanford, 1994).
[53] Sefano Guzzini. *A Reconstruction of Constructivism in International Relations*. *European Journal of International Relations*. Vol. 6, 147 (June 1, 2000).
[54] Alexander Wendt. "Anarchy is what states make of it: the social construction of power politics." *International Organization* Vol. 46, No. 2 (Spring 1992): 391-425.
[55] Martha Finnemore. *National Interests in International Society*. (Cornell University Press: Ithaca, 1996). Pg. 15.

"identity" as a people or nation, and consequently play important roles in international affairs.[56]

Similar to constructivism, critical security theory rose to challenge the "givens" of the (neo-)realist paradigm, specifically its exclusive focus on the state as the securer and the thing to be secured. Applying Robert Cox's distinction between problem-solving and critical theory, critical security scholars argued that traditional security doctrine takes "the existing social and political relations and institutions as the given starting point for analysis and then sees how the problems arising from these can be solved or ameliorated."[57] In contrast, self-defined critical theorists examined how the existing relations and institutions came to be, how they have changed, and how they continue to evolve. Under this logic, specialists dismissed realism and neo-realism as "self-replicating, self-fulfilling, and literally self-explanatory."[58]

Efforts to deconstruct the state as the main referent of security have inspired new agendas that take individual emancipation to be the ultimate focus of security studies.[59] Shifting the focus of security to the individual has also encouraged "engagement with the broadest global threats," allowing "issues such as environmental security to emerge from the neorealist shadows as threats to the security of humankind, … (common) threats to individuals that transcend particular states and exclusive conceptions of national security."[60] By focusing on individuals and/or social groups as the objects to be secured, they also challenge (neo-)realism's emphasis on external and military threats. However, adherents to traditional strategic theory reply that refocusing IR to

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[56] John Moore and Jerry Pubantz. *The New United Nations: International Organization in the Twenty-First Century*. (Pearson Prentice Hall: London, 2006). Pg. 5.
[57] Steve Smith. "The Increasing Insecurity of Security Studies: Conceptualizing Security in the Last Twenty Years."
[58] Ken Booth. "Critical Explorations." In *Critical Security Studies and World Politics*, edited by Ken Booth. (Lynne Rienner: Boulder CO, 2005). Pg. 4.
[59] See Ken Booth. "Security and Emancipation." *Review of International Studies*, Vol. 17, No. 4 (1991). Pg. 317.
[60] Keith Krause and Michael C. Williams. "From Strategy to Security: Foundations of Critical Security Studies." In *Critical Security Studies: Concepts and Cases*, edited by Keith Krause and Michael C. Williams. (University of Minnesota Press: Minneapolis, 1997).

address anything other than military relations between states destroys its coherence and utility.[61]

While scholars from the Copenhagen school, social constructivism, and critical security studies (among other disciplines), have broadened and deepened the security debate to address non-state actors and non-military threats, little progress has been made toward reconstructing functional definitions of security and security threats. While the lack of a common, functional definition of security within post-Cold-War IR debates has inspired worthwhile reflection about the scope and focus of security, as Keith Krause and Michael C. Williams write, "simply articulating a broad range of newly emerging or newly recognized threats to human survival or well-being will not in itself move security studies away from its traditional concerns."[62]

Evaluating the implications of IRs expansion and fragmentation since the end of the Cold War, Steve Smith concludes, "the concept of security is now genuinely contested."[63] New tools are needed to construct a workable methodological framework for analyzing how states (and the individuals that their composed of) perceive and respond to different threats within their socio-material environment. One of these tools is the concept of risk.

From Threats to Risks in IR

As I explained in the previous section, IR as a subfield of political science evolved out of the military strategies of industrial war machines. Early civilian IR scholars and foreign-policy makers adopted traditional military doctrine as the logical response to a world dominated by interstate war and territorial conquest. Military investment in response to foreign military threats drove U.S. industrial and technological development, and its ideological tenets pervaded much of

[61] See Daniel Deudney. "The Case Against Linking Environmental Degradation and National Security." *Millennium*, Vol. 19, No. 3. (1990): 461-76.
[62] Keith Krause and Michael C. Williams.
[63] Steve Smith. "The Increasing Insecurity of Security Studies: Conceptualizing Security in the Last Twenty Years."

social activity.

The geopolitical realities of World War I, Pearl Harbor, World War II, the Cuban Missile Crisis and the Cold War justified defining national security threats essentially, if not exclusively, in terms of relative military capacity. To measure a security threat, analysts calculated a states offensive military capability (how many guns they had and how close they were to U.S. borders), and then made some "rational" judgment about their intentions (the U.K. was less considered threatening than the USSR). With the advent of nuclear weapons, policymakers actively institutionalized this definition under the logic of deterrence. The military insured U.S. national security by staying one nuclear warhead ahead of the Soviet Union. While scope and focus of security threats was consistently contested, the debate "evolved around the threat in terms of what could be measured; in other words, the threat in the form of actor, intention and capability was known or at least knowable. In addition, there was a belief that it was possible to defeat the threat and achieve security through known measures."[64]

However, the changing nature of military conflict throughout the second half of the 20th century has forced security scholars and policymakers to rethink what was actually a threat to national security, and whether traditional definitions were even applicable. Ethnic and intrastate violence grew to replace organized interstate warfare as the dominant pattern of global violence. By the 90s, ten of the 118 documented armed conflicts in the world could be strictly classified as interstate conflicts.[65] As Gearóid Tuathail writes:

> Pentagon planners began to conceptualize and operationalize how they should be dealing with informal warfare, failed states, proliferating toxic substances and peacekeeping

[64] Myriam Dunn Cavelty. "From Threats to Risks in International Security – and Subsequent Challenges for 'Knowing' the Future." *International Relations and Security Network*. November 16, 2011. http://www.isn.ethz.ch/isn/Current-Affairs/Special-Feature/Detail?lng=en&id=134110&contextid774=134110&contextid775=134111&tabid=134111

[65] Dan Smith. "Trends and Causes of Armed Conflict." *Berghof Research Center for Constructive Conflict Management*. August 2004. http://www.berghof-handbook.net/all/

> operations in environmentally stressed regions… De-territorialized threats were modified traditional national security threats, so-called "hard" threats involving weapons and violence posed by transnational networks of terrorists and cyber-criminals, or threats posed by proliferating weapons of mass destruction. "Global dangers" comprised "softer" less traditional national security threats posed by global environmental problems (access to scarce resources, population pressures and environmental stress), international migration and violent ethnic nationalism.[66]

In this sense, the traditional "threat," understood as a military problem deliberately created by one state for another, grew progressively less useful for describing and managing violence. As Cavelty explains, "Several of the new challenges that security policy started to focus on in the post-Cold War world – global health issues, financial stability, critical infrastructure protection, but also terrorism to some extent – seemed much better captured by the concept of risk."[67] IR scholars and policymakers have since begun to incorporate risk into discussions of security, using new frameworks to include both "hard" and "soft" security threats.[68]

In comparison to the long discussion of security threats in IR, the broader notion of risks has only recently entered the discussion. As Yaacov Vertzberger writes:

> It is surprising that while the construct of risk and its behavioral implications have been singled out for extensive study in most areas of current social science research, relating to a broad range of human activities such as medicine, economics, industry, technology, environmental studies, and others, it has been practically ignored in that domain of human affairs where risk is perennial and has a most critical relevance – international politics and, specifically, international security issues.[69]

Like IR, over the course of 20th century the concept of risk evolved from an analytical tool into a self-defined process of critical reflection.[70] Frank Knight originally distinguished

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[66] Gearóid Tuathail. "De-territorialized Threats and Global Dangers: Geopolitics, Risk Society and Reflexive Modernization." *Geopolitics* 3 (1) (1998): 17-31.
[67] Myriam Dunn Cavelty.
[68] Gearóid Tuathail.
[69] Yaacov Y. I. Vertzberger. "Rethinking and Reconceptualizing Risk in Foreign Policy Decision-Making: A Sociocognitive Approach." *Political Psychology*, vol. 16, no. 2 (June 1995): 347-380.
[70] I do not assume "critical" to necessarily imply progress, and use it only as a benchmark of change. See Bruno, Latour. "Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern." *Critical Inquiry* 30 (Winter 2004): 225-

between economic risk and uncertainty in his 1921 book *Risk, Profit and Uncertainty*. For Knight, risk represented "objective observation of events and phenomena, from observable causalities whose frequency, severity and magnitude of impact or consequences can be reasonably assessed. It is a measurable entity whose magnitude can be inferred through formal inductive logic."[71] Bankers, financiers and insurers measured risk as a function of probability and expected harm,[72] employing rational choice theory to design complex models for assessing potential ventures. These industries arguably would "not have existed in their current form if it were not for the ability to make potential future dangers – risks – 'knowable' through statistical calculation and mathematical modelling."[73]

Since risk was objective, analysts considered it possible to discover all the possible outcomes and the percentage likelihood of each occurring. As Vertzberger explains:

> "The classical distinction found in economics between risk and uncertainty postulates that risk exists when decision-makers have perfect knowledge of all possible outcomes associated with an event and the probability distribution of their occurrence; whereas uncertainty exists when a decision-maker has neither the knowledge of nor the objective probabilities distribution of the outcomes associated with an event."[74]

Traditional attempts to study risk approached it as an element to be isolated or a code to be cracked – a real thing that existed independent from our perception and structured our environment. Within Cold-War-IR debates, the few studies that emphasized risk adopted and implemented the classic technical definition that viewed risk as a "product of the probability and

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248.
[71] Darryl S. L. Jarvis. "Theorising Risk and Uncertainty in International Relations: The Contributions of Frank Knight." *International Relations* 25 (3) (September 5, 2011): 296-312.
[72] Scott Campbell and Greg Currie. "Against Beck: In Defence of Risk Analysis." *Philosophy of the Social Sciences* 36, no. 2 (June 1, 2006): 149-172.
[73] Shahar Hameiri and Florian Kühn.
[74] Yaacov Y. I. Vertzberger. "Rethinking and Reconceptualizing Risk in Foreign Policy Decision-Making: A Sociocognitive Approach."

consequences of a potentially adverse event."[75] While these technical efforts produced valuable methods for identifying and assessing latent hazards, they ignored the strong influence of subjective, non-rational forces that shape how we perceive and prioritize different risks.

The study of risk as a social phenomenon has been largely defined and popularized by sociologists Ulrich Beck.[76] In 1992, Beck published his groundbreaking book, *Risk Society: Towards a New Modernity*, in which he discussed the implications of "new forms of temporally and spatially de-bounded risks that transcend geographic boundaries and calculable timeframes and thus escape established mechanisms of insurance and control."[77] Beck claimed that risk was a relatively recent product of human development that evolved out of industrialization and the growing influence societies had on their material environment. As Anthony Elliot explains:

> No notion of risk is to be found in traditional culture: pre-industrial hazards or dangers, no matter how potentially catastrophic, were experienced as pre-given. They came from some 'other' – gods, nature or demons. With the beginning of societal attempts to control, and particularly with the idea of steering towards a future of predictable security, the consequences of risk become a political issue. This last point is crucial. It is societal intervention – in the form of decision-making – that transforms incalculable hazards into calculable risks.[78]

Beck's approach to risk marked a clear break from traditional measurement and management, focusing instead on what he has termed "reflexive modernity": a growing awareness of how the institutions created to insure people from hazards have become active manufacturers of such hazards. Expanding on his thesis in his 1999 work *World Risk Society*, Beck argued that since the middle of the 20th century, industrial societies "have been confronted with the historically unprecedented possibility of the destruction through decision-making of all

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[75] Ibid. See for example H. Adomeit. "Soviet risk-taking and crisis behavior: From confrontation to coexistence?" *The International Institute for Strategic Studies* Adelphi papers no. 101, 1973; H. Adomeit. *Soviet risk-taking and crisis behavior: A theoretical and empirical analysis*. (London: George Allen & Unwin, 1982); Bruce Bueno de Mesquita. "Risk , Power Distributions , the Likelihood of War." *International Studies* 25 (4) (Dec., 1981): 541-568.
[76] Anthony Giddens and Scott Lash have also contributed substantially to social risk theory.
[77] William Clapton. "Risk in International Relations." *International Relations* 25 3 (2011): 280–295.
[78] Anthony Elliot. "Beck's Sociology of Risk: A Critical Assessment."

life on this planet."[79] The inability of traditional institutions – state governments, insurance companies, medical systems etc. – to manage these risks and insure human resilience has grown to define post-industrial societies.

Bridging the gap between positivism and constructivism, Beck – a self-defined critical realist – argued that risks are both materially grounded and socially embedded.[80] As he explained, "Risk science without the sociological imagination of contested and constructed risk is blind. Risk science that is not informed about the technologically manufactured nature of risk is naive."[81] Beck's definition has since inspired heated academic debate about the ontological and epistemological nature of risk.

Within IR, critics of Beck fell into two camps. Constructivists asserted that risk isn't an objective "thing" waiting to be discovered, but a subjective construction that is shaped by social norms, values, and ideas. [82] Post-structuralists provided a stronger critique, arguing for a stronger emphasis on how risk has been used by ruling parties as a mechanism of social control. Channeling Foucault's work on governmentality, post-structuralists claimed that risks are not real, but are developed as calculated tools for maintaining order, reinforcing social cohesion and directing public policy.[83]

For their September 2011 publication, the prominent academic journal *International Relations* printed a special issue entitled "Risk, Risk Management and International Relations." The edition explored what the diffusion of risk and risk perception studies into IR means for theories of state security, territorial sovereignty, and international cooperation. In their introduction, Shahar Hameiri and Florian Kühn argued that "the current centrality of risk

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[79] Ulrich Beck. *World Risk Society*. (Malden, MA: Blackwell Publishers, 1999). Pg. 53.
[80] Ibid. Pg. 4.
[81] Ibid.
[82] William Clapton.
[83] Ibid.

management activities for the world's major governments and international organizations demands that we give some consideration to the way risk and its management affect government, governance and the conduct of global politics more broadly."[84]

The concept of risk offers IR a useful tool for examining both the objective nature material threats (their probability, scope, intensity, etc.) and the normative factors that largely explain how societies perceive, construct and respond to those threats within the international arena. However, as William Clapton asserts, before risk can be employed as a functional concept, scholars of risk and IR eventually must move past the classic ontological debate over whether risks are real or constructed. While Clapton argues that Beck's critical realist approach "does not allow for an examination of the norms and values underpinning risk perception and definition, as risks are supposedly objectively real and identifiable," I don't consider these two visions of risk to be mutually exclusive.[85] Rather, it's possible to understand risk perception as a constant interplay between physical threats presented by our material environment and the cognitive processes that humans have developed to avoid or manage these threats.

While academia has the luxury to be able to debate this question into a paralyzing stupor, policymakers attempting to mitigate unnecessary loss of civilian life are not as fortunate, and must approach problems of risk using the best material evidence available. Constructivists and post-structuralists validly assert that risk identification, assessment, and management are all activities that are imbedded in and inextricable from social norms, values, and assumptions, but the material elements that justify (or are used to justify) these activities cannot be ignored. Although risks may not be objectively examinable (after all, what is?), in the spirit of moving this debate forward, I assume that some definitions/typologies of risk are more comprehensive

[84] Shahar Hameiri and Florian Kühn. "Introduction: Risk, Risk Management and International Relations." *International Relations* 25 (September 5, 2011): 275-279.
[85] Ibid.

and accurate than others.

The importance of the concept of risk lies not in the ontological debate, but in the prospects of integrating risk studies and IR to better understand how states and state decision-makers behave. As Clapton concludes, "The perception of risks that are increasingly capable of circumventing and transcending territorial boundaries poses the question of how states will respond. This leads to further questions such as what effects risk will have for domestic politics and governance within states, and how this will be reflected in their interstate conduct."[86]

Definitions

Considering the various and contested definitions of threat and risk, before I go any further, I would like to make some effort to define them for myself. I will then use these definitions to discuss my research methodology.

-Threat

I consider a security threat to be an immediate, measurable danger to something of value. Threats are intrinsically subjective: I can't threaten a chair with destruction, but I can threaten to destroy *your* chair. Threats also refer to events causing potential damage in the future: the realized threat of war is simply war. This makes it difficult to accurately measure the perceived level of a threat, that is, until it actually happens.

However, defining a danger as a threat implies a relatively high degree of certainty about the cause, probability, and scope of future harm. Security analysts classify the level of a threat by examining the "capability of the enemy and their intent or motivation, in addition to one's own vulnerability."[87]

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[86] Ibid.
[87] Myriam Dunn Cavelty.

Defining a danger as a threat also implies a known source and direction of causality. According to traditional military/diplomatic logic, states use threats as political tools to compel other states to do what they otherwise would not want to do.[88] In this case, the source of the threat is a territorial sovereign nation and its military capacity. However, it's easy to imagine other obvious and immediate sources of damage: Al-Qaeda, the AIDS virus, Hurricane Katrina, or malware. A threat essentially suggests that some agent or process is actively moving to overcome the subject's defenses and cause direct harm.

-Vulnerability

To perceive something as threatening, the subject must also feel a sense of vulnerability. Vulnerability has been technically measured as the probability that an activated threat will successfully bypass the subject's defenses and causes damage. These points of vulnerability can be calculated by examining the subject's "susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt."[89] In essence, I am vulnerable to a bullet fired at my head because it is extremely likely that I will not be able to survive that type of assault.

-Resilience

The opposite of vulnerability is resilience. Resilience measures the capability of an object to regain shape and function after experiencing an impact or modification. Branching out of ecological and environmental research from the 1960s and 1970s, resilience emphasizes "non-linear dynamics, thresholds, uncertainty and surprise, how periods of gradual change interplay with periods of rapid change and how such dynamics interact across temporal and spatial

[88] See Peter J. Anderson. *The Global Politics of Power, Justice and Death: An Introduction to International Relations*. (Routledge: New York, 1996). Pg. 12.
[89] Adger, W. Neil."Vulnerability." *Global Environmental Change* 16 (3) (August, 2006): 268-281.

scales."[90]

-Risk

While threats imply a high degree of certainty about the cause, probability and scope of future harm, the idea of risk is predicated upon uncertainty. In some cases, the possible outcomes and their respective probabilities are known – the uncertainty is described, or structured. In other cases of risk, the probability distribution of outcomes is ambiguous - the uncertainty is unstructured. Either the percentage chance that each outcome will occur is uncertain, or there is a lack of information even regarding which outcomes should be included as possibilities.[91] This most extreme form of uncertainty is what Donald Rumsfeld has called "unknown unknowns."[92]

Like threats, risks denote the possibility of losing something of value. Unlike threats, risks don't imply any point source or active cause of harm. Risks are multivariable, indirect, and unintended.[93] For example, when I drive a car, I put myself at risk of injury or death from a car accident. However, just because one car might hit me X percent of the time, it doesn't mean that any time I drive, all the cars on the road are threats. Another car on the road only becomes a threat when it's clearly about to crash into me.

Threats and risks exist on opposite sides of a continuum of certainty, ranging from clearly visible, direct and immediate threats to risks that no one has ever even considered. However, while traditional evaluations of risk focus primarily on measuring the probability of possible outcomes, recent research on risk perception and decision making has concluded that "people tend first to associate risks with the content and nature of outcomes, that is with outcome

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[90] C. Folke. "Resilience: The emergence of a perspective for social–ecological systems analyses." *Global Environmental Change* 16 (3) (August, 2006): 253-267.
[91] Yaacov Y. I. Vertzberger. *Risk Taking and Decision Making: Foreign Military Intervention Decisions.* (Stanford University Press: Stanford, 1998).
[92] Yaacov Y. I. Vertzberger. "Rethinking and Reconceptualizing Risk in Foreign Policy Decision-Making: A Sociocognitive Approach"; Donald Rumsfeld. DoD News Briefing - Secretary Rumsfeld and Gen. Myers. News Transcript. February 12, 2002
[93] Myriam Dunn Cavelty.

ambiguity (whether the full range of outcomes is known or unknown) and outcome value (whether positive or negative, desirable or undesirable)."[94] Based on a wide variety of conscious and sub-conscious, rational and non-rational factors, decision-makers judged whether a risk is acceptable or unacceptable. Acceptable risk represents "the net costs that decision-makers perceive as sustainable, and are willing to bear, in pursuit of their goals."[95]

As a perceived risk becomes more definite, likely, and urgent, it may gain the status of an unnacceptable "threat," along with all the attention that comes with it. For example, since the emergence of climate change as a scientific phenomenon, research about its impact and probability has grown progressively more accurate, shifting perception of climate change from benign weather changes to what the Pentagon has declared "the mother of all security problems."[96] However, just as a risk may evolve into an immediate threat, if a perceived threat becomes less likely, damaging and urgent, decision-makers may begin to consider it more of a risk to manage than a threat to act against.

Research Methodology

For my project, I would like to examine the process by which previously unknown existential risks become accepted as threats that require immediate mitigatory or adaptive action. Threats and risks are subjective, and therefore difficult to measure. However, that's not to say there aren't better and worse ways to study and classify different forms of danger:

> It is simply to say that here, as elsewhere, there is (or can be) a difference between what we think and what is the case. Ordinary people can be wrong about risk; so can science.

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[94] Yaacov Y. I. Vertzberger. "Rethinking and Reconceptualizing Risk in Foreign Policy Decision-Making: A Sociocognitive Approach"
[95] Ibid.
[96] P. Schwartz and D. Randall. *An abrupt climate change scenario and its implications for United States national security*. (New York: Environmental Defense, 2003). See also D. Stipp, 'The Pentagon's weather nightmare: the climate could change radically, and fast. That would be the mother of all national security issues." *Fortune*. February 9, 2004.

> What the distinction forces us to accept is not the infallibility of science but the difference between belief and truth.[97]

For my research, I intend to use the value of survival to examine how societies identify and respond to risks of extinction. The main benefit of looking at survival is that it offers a clear metric for centering my discussion of risk perception. Evading death is a core biological instinct that arguably all individuals and societies share. Survival (and its counterpart, extinction) provides an excellent base value to compare different perceptions of risk because it reflects the dynamic relationship between external, physical threats and the cognitive processes that humans have developed to avoid or manage these threats.

To guide my research, I intend to survey the only two definable periods in history in which humans have confronted and recognized the legitimate risk of *homo sapien* extinction through decision-making. Nick Bostrom defines an existential risk as "one where an adverse outcome would either annihilate Earth originating intelligent life or permanently and drastically curtail its potential."[98] As a species, humans have been lucky enough to avoid or survive natural existential threats – supervolcanic eruptions, large asteroid impacts, gamma-ray bursts, nearby supernova explosions, etc. – without any awareness, recognition or conscious mitigatory action on our part. Only with the successful detonation of the atomic bomb have humans begun to grapple with anthropogenic existential risk as a topic deserving serious political consideration, in part because the global consequences of a nuclear war were so obvious, and in part because our agency in creating and perpetuating it was so clear. This category of risk to human security and

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[97] Scott Campbell and Greg Currie. "Against Beck: In Defence of Risk Analysis." *Philosophy of the Social Sciences* 36, no. 2 (June 1, 2006): 149-172.
[98] Bostrom, Nick. "Existential Risks: Analyzing Human Extinction Scenarios and Related Hazards." *Journal of Evolution and Technology*, Vol. 9, March 2002. <http://www.nickbostrom.com/existential/risks.html>

wellbeing has emerged so recently that "we have not evolved mechanisms, either biologically or culturally, for managing [it]."[99]

The benefit of studying species extinction in comparison to the extinction of discreet societies or nation states is that species extinction is much easier to define. Regional extinction would imply that a territorially defined group of peoples ceased to survive within that region, but this definition quickly gets messy. For example, if all of Bangladesh flooded and all the Bangladeshis migrated into India, integrated over a period of generations and became "Indians," does that mean the Bangladeshis went extinct? In an effort to bypass the nuances presented by local or regional extinction scenarios, I will take *homo sapiens* as my reference point. Not only is this strategy theoretically practical, but there's also a large body of literature within conservation biology that has developed to measure and quantify risks of species extinction.[100]

Studying the risk of *homo sapien* extinction also carries the advantage of exploring how policymakers manage "irreducible uncertainty," the notion that there's no way to verify scientific models of global catastrophe without triggering the catastrophe in real life.[101] With regional extinction scenarios, it's still possible for other humans to confirm the accuracy of scientific predictions of damage and build an "objective" typology of risk. However, with risks of species extinction, there's no one left behind to verify and improve the models. The pervasive, insurmountable uncertainty generated by existential risks has challenged traditionally "certain" definitions of security threats, opening them up to critical revision.

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[99] Ibid.
[100] See M.A. Burgman, S. Ferson, and H.R. Akcaya. *Risk Assessment in Conservation Biology*. (Chapman & Hall: London, 1993).
[101] Naomi Oreskes and Erik Conway. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming.* (New York, NY, Bloomsbury Press, 2010). Pg. 52.

Sources

For this investigation, the challenge will not be finding an adequate scope and quality of evidence, but categorizing the massive amounts of primary source date for each case study and effectively applying current psychological and sociological research to evaluate trends in risk perception. From preliminary surveys of newspaper articles, interviews, speeches, and hearing meetings from the years surrounding the Cuban Missile Crisis and the Montreal Protocol, it's clear that in both cases, much of the public and some of the policymakers perceived nuclear war and stratospheric ozone depletion as existential threats. The question then becomes: how and why did the threats of human extinction posed by nuclear war and ozone depletion evolve from "unknown unknowns" to become legitimate and urgent problems shaping international affairs? How did certainty in the scope, intensity and probability of harm from nuclear war and ozone depletion change over time? How did public perceptions of these dangers contest or accept scientific evidence about these risks?

The intensity of the Cuban Missile Crisis and it's legacy as a defining moment in world history has left a wealth of in-depth reports, first hand accounts, and declassified primary documents that I will draw on to evaluate how U.S. citizens and decision-makers perceived the risk of a nuclear war with the USSR.

In the aftermath of Hiroshima and Nagasaki, President Truman commissioned an investigation of the effects of the detonations. Starting with the *U.S. Strategic Bombing Survey* completed in 1946, the U.S. military performed repeated studies to measure immediate infrastructural damage and human casualties.[102] Many of these studies are now declassified and available to the public, offering me critical insight into what information was available to

[102] Samuel Glasstone ed. *The Effects of Nuclear Weapons*. (Washington D.C.: United States Atomic Energy Commission, 1957).

decision-makers about the impact of nuclear detonations. These investigations focused mainly on the effects of the initial blast damage, and used the material evidence from Hiroshima and Nagasaki to predict the consequences of a sustained nuclear conflict. Although they didn't claim that nuclear war represented a global existential risk, they did establish the foundation for future work that would substantiate such a claim.

As the nuclear arms race picked up speed, scientists and policymakers began to worry about larger-scale and longer-term problems associated with nuclear war. Investigations began to take into account the secondary effects of the fire-storms and radioactive fallout that followed nuclear detonations.[103] While critical holes and uncertainties remained in the science, by the time of the Cuban Missile Crisis in 1962, enough evidence existed to inspire widespread dread and consequential debate. Strategic theorists like Herman Kahn posited that thermonuclear war was winnable, but it would create a world antithetical to 1950s prosperity. His pivotal book, *On Thermonuclear War*, introduced many civilians and policymakers to the potential reality, and uncertainty, of a post-nuclear world.[104]

While public primary sources (books, newspapers, magazines) will be useful for evaluating whether the American voter viewed nuclear war as an existential risk, the most important source material will come from the declassified statements and letters of John F. Kennedy and Nikita Krushchev. All of these documents have been collected in *The Cuban Missile Crisis, 1962: A National Security Archive Documents Reader*, making it extremely convenient to find and compare them. These sources offer clear evidence that both decision-makers acknowledged high levels of uncertainty in the scope and intensity of a nuclear exchange, and therefore the potentially terminal consequences for human life on Earth. Bobby

[103] See Dr. Clayton S. White. "Biological Effects of Blast," report DASA-1271, 1961, pp. 32-36.
[104] Herman Kahn. *On Thermonuclear War*. (Princeton University Press: Princeton, 1960).

Kennedy, one of the Presidents most trusted confidants, confirmed this in his 1968 memoir *13 Days*.[105] Neither leader had any illusions about their ability to "win" a nuclear war. Instead, the leaders' behavior throughout the Cuban Missile Crisis suggest that they did everything in their power to prevent a nuclear exchange and reduce the risk of human extinction, even if it was at the cost of traditional security doctrine. As Krushchev told his ministers, they had to end "the danger of war and nuclear catastrophe, with the possibility of destroying the human race. To save the world, we must retreat."[106]

While the events surrounding the Montreal Protocol may not have been as nail-bitingly intense as the Cuban Missile Crisis, a similar narrative of potentially existential consequences also defined the evolution of risk perception surrounding stratospheric ozone depletion.

Starting in 1974, the debate over chlorofluorocarbon emissions (CFCs) and damage to the ozone layer exploded onto the public stage as the Spray Can War. The chemicals used in aerosol cans had been proven to directly contribute to depleting stratospheric ozone, and for every one percent reduction in ozone concentration, skin cancer rates were predicted to rise six percent.[107] Media coverage was rife with apocalyptic references and suggestions of existential threat. As Dotto and Schiff report in their detailed 1978 book describing the debate, one article went so far as to claim that aerosols had doomed more people than those killed at Hiroshima, while another stated that the "earth may have committed partial suicide."[108] However, possibly the most important journalistic voice in the discussion was Walter Sullivan, the famed science editor for the New York Times. As an authority on scientific research and innovation, Sullivan covered the

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[105] Kennedy, Robert. *13 Days: A Memoir of the Cuban Missile Crisis*. (London: Macmillan, 1968).
[106] Michael, Dobbs. *One Minute to Midnight: Kennedy, Khrushchev, and Castro on the Brink of Nuclear War*. 1st ed. (New York: Alfred A. Knopf, 2008). Pg. 322.
[107] James McDonald testified in front of Congress in March 1970. Citing Frederic Urback, ed. *The Biological Effects of Ultraviolet Radiation, with Emphasis on the Skin* (New York: Pergamon Press, 1969). Found in Naomi Oreskes and Erik Conway. Pg. 108
[108] L. Dotto, and H. Schiff. *The Ozone War*. (New York, N.Y.: Double Day, 1978).

developing science of ozone depletion and its implications for humanity in multiple pieces throughout the decade. Quoting Dr. Frank S. Rowland, one of the original discovers of the problem, he clearly articulated how "if the rising trend in spray can use of the 1972-1974 period continues, within 50 years or less the ozone will have been reduced from 10 to 40 percent. This, in its effect on skin cancer, climate and agriculture… would be 'catastrophic.'"[109] Sullivan and others' coverage generated widespread discussion around the need to mitigate CFCs.

In response to public outcry for action, in January 1975 the Ford administration set up a task force to study the issue and put forth a recommendation. In a stunning announcement, the task force (called IMOS – Inadvertence Modification of the Stratosphere) concluded that unless new evidence emerged to refute the current scientific consensus condemning CFCs, CFC emissions should be restricted to closed capture systems and eventually eliminated.[110] Despite the slow onset of predicted consequences and the small body of scientific research substantiating them, over the next decade leading up to the international negotiations, policymakers and scientists developed a wide body of scientific knowledge about stratospheric ozone depletion that justified precautionary action.

While not as blatant as the Cuban Missile Crisis, the scope and intensity of the risk posed by stratospheric ozone depletion actively spurred the negotiations to a remarkably rapid close. As Richard Benedick, the head U.S. negotiator for the Montreal Protocol, reflected, all of the potential effects of ozone depletion – major agricultural damage, massive increases in skin cancer, disruption of aquatic food chains, etc. – "were known to the negotiators… and they were never seriously contested. It was generally accepted that changes in the ozone layer would pose

[109] Walter Sullivan. "Ozone Depletion Seen as a War Tool. *New York Times*. Febuary 28, 1975.
[110] Edward Parson. *Protecting the Ozone Layer: Science and Strategy*. (Oxford University Press: New York, 2003).

serious risks to human health and the environment."[111] Benedick's first-hand account of the negotiations, along with newspaper articles and transcripts from U.S. scientific hearings, will provide the evidence to investigating how the perceived risk of ozone depletion evolved from an "unknown unknown" into an immediate threat to global health and long-term human well-being.

Conclusion

Based on preliminary surveys of primary source material from the Cuban Missile Crisis and the Montreal Protocol, I think it's clear that policymakers and the public approached nuclear war and stratospheric ozone depletion as existential risks. The shocking images of nuclear detonation and the expanding ozone hole incited gut reactions of dread that motivated both policymakers and the public to take action. As scientific research slowly confirmed these intuitions with progressively more accurate models, the possibility of human extinction by decision-making became an active component of international politics.

For international security theory and military strategy, the implications of anthropogenic existential risk have been profound. At a fundamental level, nuclear weapons and stratospheric ozone depletion have pushed us to acknowledge that the U.S. might be the U.S.'s greatest threat. As Ulrich Beck has argued, industrial societies have clearly created many, if not most, of the biggest problems they now confront. Existential risks require that we recognize the true impact that we have on our own wellbeing. We can no longer worry only about foreign military threats, but are forced confront a wide variety of multivariable problems that won't be solved through traditional military/diplomatic strategy.

Despite the difficulties that existential risks create for future national and human security,

[111] Richard Benedick. *Ozone Diplomacy: New Directions in Safeguarding the Planet.* (Harvard University Press: Cambridge, 1991). Pg. 22.

my research has so far given me cause for hope. If my methods stand up to scrutiny, and the negotiations during the Cuban Missile Crisis and the Montreal Protocol truly are the first periods in history in which decision makers carried the fate of human survival in their hands, then we're two for two. In both cases, human aversion to existential risks has led us to some of the most inspiring examples of international cooperation in human history.

Bibliography

Adams, Ruth and Cullen, Susan ed. *The Final Epidemic: Physicians and Scientists on Nuclear War*. (Chicago, IL: Educational Foundation for Nuclear Science, 1981).

Adomeit, H. "Soviet risk-taking and crisis behavior: From confrontation to coexistence?" *The International Institute for Strategic Studies* Adelphi papers no. 101, 1973

Adomeit, H. *Soviet risk-taking and crisis behavior: A theoretical and empirical analysis*. (London: George Allen & Unwin, 1982).

Anderson Peter J. *The Global Politics of Power, Justice and Death: An Introduction to International Relations*. (Routledge: New York, 1996).

Aron, Raymond. *On War: Atomic Weapons and Global Diplomacy*. (Secker and Warburg: London, 1958).

Aron, Raymond. *Peace and War: a Theory of International Politcs*. (Weidenfeld Nicolson: London, 1966).

Badash, Lawrence. *A Nuclear Winter's Tale*. (Cambridge, MA: The MIT Press, 2009).

Baldwin, David. "Neoliberalism, Neorealism, and World Politics." *Neorealism and Neoliberalism*, edited by David Baldwin. (Columbia University Press: New York, 1993).

Barnett, Michael and Duvall, Raymond. "Power in International Politics," *International Organization*, Vol. 59, No. 1, (Winter 2005).

Beck, Ulrich. *Risk Society: Towards a New Modernity*. (Sage: London, 1992).

Beck, Ulrich. *Reflexive Modernization: Politics, Tradition and Aesthetics in the Modern Social Order*. (Stanford University Press: Stanford, 1994).

Beck, Ulrich. *World Risk Society*. (Malden, MA: Blackwell Publishers, 1999).

Benedick, Richard. *Ozone Diplomacy: New Directions in Safeguarding the Planet.* (Harvard University Press: Cambridge, 1991).

Blegen, Bryce. "International Cooperation in Protection of Stratospheric Ozone." *Denver Journal of International Law* Winter/Spring (1988): 413-28

Booth, Ken. "Critical Explorations." In *Critical Security Studies and World Politics*, edited by Ken Booth. (Lynne Rienner: Boulder CO, 2005).

Brians, Paul. *Nuclear Holocausts: Atomic War in Fiction, 1895-1984, First Edition*. (Kent State University Press, 1987).

Brodeur, Paul. "Annals of Chemistry: In the Face ofDoubt." *The New Yorker*, (June 9, 1986): 70-87.

Brown, Lester. “Redefining National Security.” Worldwatch Paper 14. *Worldwatch Institute* (October 1977).

Burgman, M.A., Ferson, S. and Akcaya, H.R. *Risk Assessment in Conservation Biology*. (Chapman & Hall: London, 1993).

Buzan, Barry. *People, States & Fear: The National Security Problem in International Relations*. (Harvester Wheatsheaf: Brighton, 1983).

Buzan, Barry, Wæver, Ole and Wilde, Jaap de. *Security: A New Framework for Analysis*. (Lynne Rienner: Boulder Publishers, 1998).

Buzan, Barry and Hansen, Lene. *The Evolution of International Security Studies*. (Cambridge University Press: Cambridge, 2009).

Campbell, Scott and Currie, Greg. “Against Beck: In Defence of Risk Analysis.” *Philosophy of the Social Sciences* 36, no. 2 (June 1, 2006): 149-172.

Carr, E.H. *The Twenty Years' Crisis, 1919-1939*. (Perennial: New York, 2001).

Cavelty, Myriam Dunn. “From Threats to Risks in International Security – and Subsequent Challenges for ‘Knowing’ the Future.” *International Relations and Security Network*. November 16, 2011. http://www.isn.ethz.ch/isn/Current-Affairs/Special-Feature/Detail?lng=en&id=134110&contextid774=134110&contextid775=134111&tabid=134111

Chang, Laurence and Kornbluh, Peter ed. *The Cuban Missile Crisis, 1962: A National Security Archive Documents Reader*. National Security Archive. (New York: The New Press, 1998).

Cicerone, Ralph J., Richard S. Stolarski and S. Walters. "Stratospheric Ozone Destruction by Man-Made Chlorofluorocarbons." *Science* 185 (1974):1165-68.

Clapton, William. “Risk in International Relations.” *International Relations* 25 3 (2011): 280–295.

Clarke, Michael. “Introduction.” In *New Perspectives on Security*, edited by Michael Clarke. (Brassey’s: London, 1993).

Clausewitz, Carl von. *On War*, edited and translated by Michael Howard and Peter Paret. (Princeton University Press: Princeton, 1989).

Cohen, Avner, and Lee, Steven. *Nuclear Weapons and the Future of Humanity: The Fundamental Questions*. (Totowa, N.J: Rowman & Allanheld, 1986).

Comte, Auguste. *A General View of Positivism*, translated by J.H. Bridges (Trubner and Co., 1865) Reissued by Cambridge University Press, 2009.Durkheim, Emile. *The Rules of the Sociological Method*, translated by Steven Lukes. (Simon and Schuster Inc.: New York, 1982).

Cox, Wayne S. and Sjolander, Claire T. "Critical Reflections on International Relations." In *Beyond Positivism: Critical Reflections on International Relations*, edited by Wayne S. Cox and Claire T. Sjolander. (Lynne Rienner: London, 1994).

Deutsch, Karl and others. *Political Community and the North Atlantic Area*. (Princeton University Press: Princeton, 1957).

Devetak, Richard. *Theories of International Relations*. (Palgrave MacMillan: New York, 2005).

Deudney, Daniel. "The Case Against Linking Environmental Degradation and National Security." *Millennium*, Vol. 19, No. 3. (1990): 461-76. Gilpin, Robert. *American Scientists and Nuclear Weapons Policy*. (Princeton University Press: Princeton, 1962).

Dobbs, Michael. *One Minute to Midnight: Kennedy, Khrushchev, and Castro on the Brink of Nuclear War*. 1st ed. (New York: Alfred A. Knopf, 2008).

Dotto, L., and Schiff, H. *The Ozone War*. (New York, N.Y.: Double Day, 1978).

Finnemore, Martha. *National Interests in International Society*. (Cornell University Press: Ithaca, 1996).

Folke, C. "Resilience: The emergence of a perspective for social–ecological systems analyses." *Global Environmental Change* 16 (3) (August, 2006): 253-267.

Gaberson, William. "Behind Du Pont's Shift on Loss of Ozone Layer." *New York Times*. March 27, 1988.

George, Alice L. *Awaiting Armageddon: How Americans Faced the Cuban Missile Crisis*. (Chapel Hill: University of North Carolina Press, 2003).

Glasstone, Samuel ed. *The Effects of Nuclear Weapons*. (Washington D.C.: United States Atomic Energy Commission, 1957).

Guzzini, Sefano. *A Reconstruction of Constructivism in International Relations*. *European Journal of International Relations*. Vol. 6, 147 (June 1, 2000).

Gorbachev, Mikhail. (Interview by Mark Hertsgaard at the State of the World Forum, 2000).

Haftendorn, Helga. "The Security Puzzle: Theory-Building and Discipline-Building in International Security." *International Studies Quarterly*. Vol. 35, No. 1 (1991): 3-17.

Hameiri, Shahar and Kühn, Florian. "Introduction: Risk, Risk Management and International Relations." *International Relations* 25 (September 5, 2011): 275-279.

Handel, Michael. *Masters of War: Classical Strategic Thought.* (Frank Cass Publishers: Portland, OR, 1992).

Howard, Michael. "The classical strategists." In *Problems of Modern Strategy: Part* I, London: Institute for Strategic Studies, Adelphi Paper 54, (February 1969).

IMOS. 1975. (Federal Task Force on Inadvertent Modification of the Stratosphere, 1975). Fluorocarbons and the Environment. Report of the Federal Task Force on Inadvertent Modification of the Stratosphere. Washington, D.C.: Government Printing Office.

Jarvis, Darryl S. L. "Theorising Risk and Uncertainty in International Relations: The Contributions of Frank Knight." *International Relations* 25 (3) (September 5, 2011): 296-312.

Jervis, Robert. *Perception and Misperception of International Politics*. (Princeton University Press: Princeton, 1976).

Jervis, Robert. *The Illogic of American Nuclear Strategy*. (Cornell University Press: Ithaca, 1984).

Jones, Robin Russell and Wigley, Tom ed. *Ozone Depletion: Health and Environmental Consequences*. (John Wiley & Sons: New York, 1989)

Kahn, Herman. *On Thermonuclear War*. (Princeton University Press: Princeton, 1960).

Kant, Immanuel. *To Perpetual Peace: A Philosophical Sketch*, translated by Ted Humphrey. (Hackett: Indianapolis, 2003).

Keohane, Robert. *Neorealism and Its Critics*. (Columbia University Press: New York, 1986).

Kennedy, President John F. *Commencement Address at American University*. Washington D.C. June 10, 1963.

Kennedy, Robert. *13 Days: A Memoir of the Cuban Missile Crisis*. (London: Macmillan, 1968).

Krause, Keith and Williams, Michael C. "From Strategy to Security: Foundations of Critical Security Studies." In *Critical Security Studies: Concepts and Cases*, edited by Keith Krause and Michael C. Williams. (University of Minnesota Press: Minneapolis, 1997).

Latour, Bruno. "Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern." *Critical Inquiry* 30 (Winter 2004): 225-248.

Lynch, Allen. "Political and Military Implications of the 'Nuclear Winter' Theory." *Institute for East-West Security Studies,* Occasional Paper Series 5 (1987).

Mahnken, Thomas G. "Strategic Theory." In *Strategy in the Contemporary World*, edited by John Baylis, James J. Wirth, and Colin S. Gray. (Oxford University Press: London, 2007).

Mathews, Jessica Tuchman. "Redefining Security." *Foreign Affairs*, Vol. 68, No. 2. (1989): 162-177.

Mendl, Wolf. "Strategic Thinking in Diplomacy: A Legacy of the Cold War." In *New Perspectives on Security*, edited by Michael Clarke. (Brassey's: London, 1993).

Mesquita, Bruce Bueno de. "Risk, Power Distributions , the Likelihood of War." *International Studies* 25 (4) (Dec., 1981): 541-568.

Morgenthau, Hans. *Politics Among Nations: The Struggle for Power and Peace*. (Alfred A. Knopf: New York, 1948)

Moore, John and Pubantz, Jerry. *The New United Nations: International Organization in the Twenty-First Century*. (Pearson Prentice Hall: London, 2006).

National Research Council. *Long-term Worldwide Effects of Multiple Nuclear Weapons Detonations.* (Washington, D.C.: National Academy of Sciences, 1975).

North, Robert C. *War, Peace, Survival: Global Politics and Conceptual Synthesis*. (Westview Press: Boulder, CO, 1990).

NRC. National Research Council, Committee on Chemistry and Physics of Ozone Depletion and the Committee on the Biological Effects on Increased Solar Ultraviolet Radiation. Causes and Effects of Stratospheric Ozone Reduction: An Update. (Washington: NRC, 1982)

Office of Technology Assessment. *The Effects of Nuclear War*. (Washington, D.C.: U.S. Government Printing Office, 1979).

Parson, Edward. *Protecting the Ozone Layer: Science and Strategy*. (Oxford University Press: New York, 2003).

Polmar, Norman, and Gresham, John. *Defcon-2: Standing on the Brink of Nuclear War During the Cuban Missile Crisis*. (Hoboken, N.J: Wiley, 2006).

Postel, Sandra. "Altering the Earth's Chemistry: Assessing the Risks." Worldwatch Paper 71. *World Watch Institute*, (1986).

Rumsfeld, Donald. DoD News Briefing - Secretary Rumsfeld and Gen. Myers. News Transcript. February 12, 2002

Saunders, Harold H. "An Historic Challenge to Rethink How Nations Relate." In *The Psychodynamics of International Relationships, Vol. I: Concepts and Theories*, edited by Vamik D. Volkan, Demetrios A. Julius, and Joseph V. Montville. (Lexington Books: Lexington, MA, 1990).

Schelling, Thomas C. "An Astonishing Sixty Years: The Legacy of Hiroshima." (Nobel Prize Lecture held at Beijersalen, The Royal Swedish Academy of Sciences. Stockholm, Sweden, December 8, 2005). http://www.nobelprize.org/mediaplayer/index.php?id=626

Schmitter, Phillipe C. "Change in Regime Type and Progress in International Relations." In *Progress in Postwar International Relations*, edited by Emanuel Adler and Beverly Crawford. (Columbia University Press: New York, 1991).

Schwartz, P. and Randall, D. *An abrupt climate change scenario and its implications for United States national security*. (New York: Environmental Defense, 2003).

Science News. "End of Aerosol Age? Federal Report Says Probable." Science News 21 (June, 1975).

Shea, Cynthia Pollock. Protecting Life on Earth: Steps to Save the Ozone Layer." *Worldwatch Institute*, Worldwatch Paper 87 (1988).

Sheehan, Michael. *International Security: An Analytical Survey*. (Lynne Rienner: Boulder CO, 2005).

Sheehan, Micheal. "The Evolution of Modern Warfare." In *Strategy in the Contemporary World*, edited by John Baylis, James J. Wirth, and Colin S. Gray. (Oxford University Press: London, 2007).

Smith, Dan. "Trends and Causes of Armed Conflict." *Berghof Research Center for Constructive Conflict Management*. August 2004. http://www.berghof-handbook.net/all/

Smith, Micheal E. *International Security: Politics, Policy, Prospects.* (Palgrave Macmillan: New York, 2010).

Smith, Steve. "Positivism and beyond." In *International theory: positivism and beyond*, edited by Steve Smith, Ken Booth, and Marysia Zalewski. (Cambridge University Press, 1996).

Steve Smith. "The Increasing Insecurity of Security Studies: Conceptualizing Security in the Last Twenty Years." In *Critical Reflections on Security and Change*, edited by Stuart Croft and Terry Terriff. (Frank Cass: London, 2000).

Stipp, D. 'The Pentagon's weather nightmare: the climate could change radically, and fast. That would be the mother of all national security issues." *Fortune*. Feb. 2004.

Sullivan, Walter. "Ozone Depletion Seen as a War Tool. *New York Times*. Febuary 28, 1975.

The Effects on the Atmosphere of a Major Nuclear Exchange (Washington, D.C.: The National Academies Press, 1985).

Tuathail, Gearóid. "De-territorialized Threats and Global Dangers: Geopolitics, Risk Society and Reflexive Modernization." *Geopolitics* 3 (1) (1998): 17-31.

Tzu, Sun. *The Art of War*, translated by Roger Ames. (Ballentine Books: New York, 1993). Pg. 103-104.

Tolba, Mostafa K. 1987a. "Nowhere To Hide." UNEP mimeo. Statement to the Ad Hoc Working Group for the Preparation of a Protocol on CFCs, Third Session. Geneva, April 1987.

Vertzberger, Yaacov Y. I. "Rethinking and Reconceptualizing Risk in Foreign Policy Decision-Making: A Sociocognitive Approach." *Political Psychology*, Vol. 16, No. 2 (June 1995): 347-380.

Vertzberger, Yaacov Y. I. *Risk Taking and Decision Making: Foreign Military Intervention Decisions.* (Stanford University Press: Stanford, 1998).

Voter Options on Nuclear Arms Policy. (New York, NY: The Public Agenda Foundation, 1984).

Wæver. Ole. "Securitization and Desecuritization." In *On Security*, edited by Ronnie Lipschutz. (Columbia University Press: New York, 1995): 46-86.

Wæver, Ole and Buzan, Barry. "After the Return to Theory: The Past, Present and Future of Security Studies." In *Contemporary Security Studies*, edited by Alan Collins. (Oxford University Press: Oxford, 2007): 383-402.

Walt, Stephen. "The Renaissance of Security Studies." *International Studies Quarterly, Vol. 35, No. 2* (June 1991).

White, Dr. Clayton S. "Biological Effects of Blast," report DASA-1271, 1961, pp. 32-36.

Windsor, Phillip. "The Evolution of the Concept of Security in International Relations." In *New Perspectives on Security*, edited by Michael Clarke. (Brassey's: London, 1993).

Wendt, Alexander. "Anarchy is what states make of it: the social construction of power politics." *International Organization*, Vol. 46, No. 2 (Spring 1992): 391-425.

Wolfers, Arnold. "National Security as an Ambiguous Symbol." *Political Science Quarterly,* Vol. 67, No. 4 (December 1952).