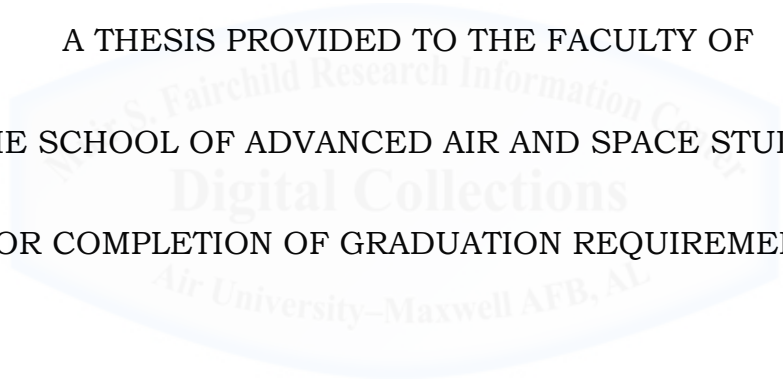


“RETHINKING THE UNTHINKABLE”:
SELECTIVE PROLIFERATION AND US NUCLEAR STRATEGY

BY

MAJOR JASON B. TERRY

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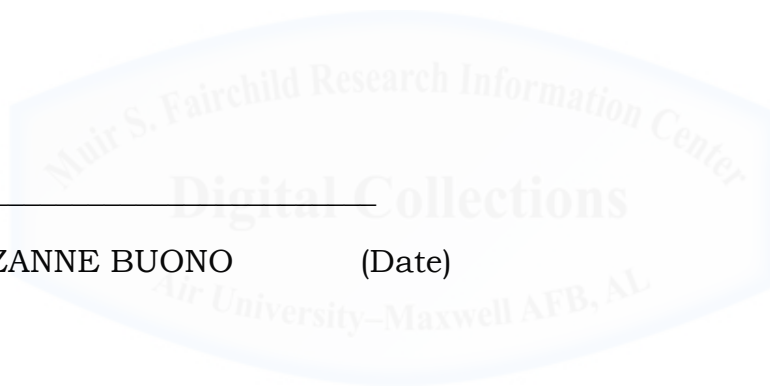


APPROVAL

The undersigned certify that this thesis meets master's-level standards of research, argumentation, and expression.

Dr. JAMES W. FORSYTH Jr. (Date)

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DISCLAIMER

The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the US Government, Department of Defense, the United States Air Force, or Air University.



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I have the deepest gratitude for the relentless efforts of those statesmen, academics, and patriots who have successfully employed the finest nuclear deterrent for over 65 years. They are to be commended for their relentless endeavors to keep the world safe and free. Their task is one too often taken for granted despite the great benefits we inherit from them every day.

Most importantly, I want to express my sincere appreciation of my family. My children deserve more time with their father than they receive. I sincerely hope that the time stolen from them now will result in them receiving a better world in the future. My wife is the rock upon which my house is built. There are no words that will suffice, but a "thank you" is well deserved.

ABSTRACT

This study comprises an analysis of US strategy and the need to improve global nuclear surety through selective proliferation of nuclear weapons technology and expertise. The author assesses the greatest threat to the US to be an attack from a terrorist organization using a nuclear weapon and the resultant implications such an attack has on globalization. The author concludes the US needs to be prepared to lead global nuclear surety efforts, and these efforts should include the selective proliferation of the more than 65 years of hard earned expertise and technology. The US is the standard for nuclear surety, and it is only through partnership that global nuclear surety can be obtained in a world where states continue to proliferate and increase the size of their arsenals regardless of global pressure to the contrary. The writer evaluates three cases of states, France, India and Pakistan, which have chosen to proliferate. He then applies the lessons learned from these cases to a hypothetical case of a new state, Turkey, choosing to proliferate nuclear weapons. The final section of the study includes a discussion of key areas where the US can be prepared to partner to enhance global nuclear surety in the future.

CONTENTS

Chapter	Page
DISCLAIMER.....	ii
ABOUT THE AUTHOR.....	iii
ACKNOWLEDGMENTS	iv
ABSTRACT	v
INTRODUCTION	1
1. UNDERSTANDING THE MERITS OF SELECTIVE PROLIFERATION .	21
2. THE MISSED OPPORTUNITIES.....	41
3. FUTURE MISSED OPPORTUNITIES	79
4. CONCLUSION.....	107
BIBLIOGRAPHY.....	1148

Illustrations

Figure	Page
1. Current Debate Concerning Nuclear Proliferation.....	37
2. Proper Debate Concerning Nuclear Proliferation.....	38

Introduction

There are many people who reach their conclusions about life like schoolboys; they cheat their master by copying the answer out of a book without having worked out the sum for themselves.

Soren Kierkegaard

We can't solve problems by using the same kind of thinking we used when we created them.

Albert Einstein

The words of 19th century philosopher Soren Kierkegaard challenge us to examine life for ourselves rather than copy the answers previously put before us by others. The challenge we are given is to work out the solution of the old problems of yesterday within the new context of today. It is to that end that this thesis examines selective proliferation. Rather than copy the conclusion out of a book, I intend to consider the merits of selective proliferation and today's security environment.

Selective proliferation refers to a policy of cooperation among states within the area of nuclear weapons technology. In thinking about the problem of proliferation this way, one makes three assumptions. First, selective proliferation assumes that the active and controlled proliferation of nuclear technology and expertise increases the quality of weapons programs. Second, selective proliferation enhances nuclear surety.¹

¹ Nuclear Weapons Surety is the materiel, personnel, and procedures that contribute to the safety, security, reliability, and control of nuclear weapons, thus precluding nuclear accidents, incidents, unauthorized use, or degradation in performance. Reference Office of the Deputy Assistant to the Secretary of Defense for Nuclear Matters <http://www.acq.osd.mil/ncbdp/nm/nuclearweaponssurety.html>

And, lastly, it assists in the development of responsible nuclear weapon states. Selective proliferation is an active approach to developing international relationships with regard to a subject that historically results in international condemnation.

This thesis also assumes that some states will eventually develop a nuclear weapons program with sufficient desire, latent capability, and time. The desire to develop a nuclear weapons program is a combination of stature and security issues. Perception of stature is influenced by prestige, status, prominence and integration in the international community.² Security needs addressed by nuclear weapons include a rival with nuclear weapons, threat from an overwhelming conventional force, and perception that an attack or invasion by another state is likely.³ The combination of security and stature result in a strong desire. This desire can be channeled towards a more favorable outcome or left to run amok.

The motivation to possess nuclear weapons is a powerful torrent of force. Old solutions have involved confronting that force head-on and attempting to hold it back with the buttress of a complex international regime. Selective proliferation is a solution to a problem that current solutions fail to solve in a satisfying manner.

Defining a Two-Part Problem: Proliferation and Surety

The problems of today are not the problems of yesterday. Today's problems are informed by what has occurred, and in some cases created by the solutions to the problems of old, but are distinctively different. Today's problems require reconsidering both the problems and the potential solutions. As Einstein noted, even the type of thinking that was

² Suzanne Buono, "Demistifying Nuclear Proliferation: Why States Do What They Do," (Washington DC: Johns Hopkins University, 2011), 80.

³ Buono, "Demistifying Nuclear Proliferation," 76-78.

used yesterday must be tested and proved worthy in light of today's challenges.

The Obama Administration asserts that "there is no greater threat to the American people than weapons of mass destruction, particularly the danger posed by the pursuit of nuclear weapons by violent extremists and their proliferation to additional states."⁴ Vertical proliferation within the nuclear weapons states remains a concern, but existing nuclear weapons states are deterred by the robust US nuclear force. The development of additional challengers to this existing power structure is seen in the horizontal proliferation of new nuclear weapons states. Non-state actors gaining access to nuclear weapons and the issues of actors conducting an act of global nuclear terrorism are addressed in efforts to achieve nuclear surety.

Part One: Proliferation of Nuclear Weapons States. The Manhattan Project resulted in the first nuclear weapons state. Shortly after having conducted the first nuclear detonation, the US employed two weapons against Japan in the only wartime application of this weapon. Since the destruction of Hiroshima and Nagasaki, states either address their security from this threat or accept the potential destruction of their state from nuclear weapons. States choosing to address the security dilemma presented by nuclear weapons have developed their own variant of a nuclear weapon or obtained security guarantees from nuclear weapon states.⁵ Given sufficient desire and capability, multiple states have engaged in developing nuclear weapons programs with nine states currently possessing nuclear weapons.

Part Two: The Surety of Existing Nuclear Technology and Weapons. Nuclear material proliferation has been previously identified

⁴ United States. President (2009-: Obama), *National Security Strategy* (Washington: White House, 2010), 4.

⁵ In some cases states have both developed nuclear weapons and gained security guarantees.

as the “most urgent unmet national security threat.”⁶ Extremist organizations such as Al Qaeda are assessed as possessing the intent to conduct terrorist actions utilizing a nuclear device, but currently lacking the capability.⁷ Some contend that even the most troublesome state will refrain from proliferating for fear the US will attribute the actions to their state and respond with massive nuclear retaliation.⁸ This thesis contends weapons derived from international criminal networks, similar to the types of networks AQ Kahn developed and utilized during Pakistan’s weapon development, are not attributable to an individual state. Consequently, the threat of massive US conventional or nuclear retaliation is of little consequence and not a viable deterrent to this threat. The current global threat situation results in a new assessment where nuclear weapons surety is of greater concern than the proliferation of nuclear weapons states.

Current Solutions to the Problem

Three strategies to solve the problem of the proliferation of nuclear weapon states include the non-proliferation regime, mutual defense initiatives, and the quest for global zero. The strategies are different, but not mutually exclusive as the strategies have some aspects that support each other. Areas where these strategies dovetail have been highlighted.

The Non-Proliferation Regime. Reasons for advocating non-proliferation differ, but are normally centered on the unique destructive capability of nuclear weapons. There are countless scenarios of accident, miscalculation, and madness where it becomes possible to envision things going terribly wrong, but only one example where things go right:

⁶ Graham T. Allison, *Nuclear Terrorism: The Ultimate Preventable Catastrophe*, 1st ed. (New York: Times Books/Henry Holt, 2004), 20.

⁷ Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism (U.S.) et al., *World at Risk: The Report of the Commission on the Prevention of WMD Proliferation and Terrorism*, 1st ed. (New York: Vintage Books, 2008), 20.

⁸ Keith B. Payne, *The Great American Gamble: Deterrence Theory and Practice from the Cold War to the Twenty-First Century* (Fairfax, VA: National Institute Press, 2008), 216.

never using these weapons.⁹ It is a view of the world that acknowledges the benefits and dangers from splitting of the atom cannot be undone, but would prefer to keep the genie as close to the bottle as possible.

One aspect of the argument for non-proliferation contends proliferation results in regional arms races. The US and USSR bilateral arms race might have contributed to the Cuban missile crisis and the most dangerous time in our human history. A regional multiparty nuclear arms race begins to resemble “playing Russian roulette with five bullets in a six-chamber revolver, dramatically increasing the likelihood of a regional nuclear war.”¹⁰ This argument invokes the simple math of a greater number of nuclear states resulting in a greater number of interactions that include the potential for use of nuclear weapons.

Concerns with proliferation also view emerging nuclear powers as having the least amount of security of their weapons. The concerns with security range from the established procedures for handling the weapons to the types of safeguards built into the weapons.¹¹ These concerns have implications for a state making a miscalculation in the employment of the weapons and an increased potential for accident during daily operations. Security of weapons in emerging nuclear states also contributes directly to the likelihood of a non-state actor acquiring a weapon.

The US argument for non-proliferation is further bolstered as one of the five accepted nuclear nations not allowing other nations to possess nuclear weapons. The US has invested heavily in conventional capability

⁹ Lawrence. Bender et al., "Countdown to Zero," (Los Angeles, CA:: Magnolia Home Entertainment, Magnolia Pictures and Participant Media in association with World Security Institute and the History Channel, 2010).

¹⁰ Graham T. Allison and Trilateral Commission., *Nuclear Proliferation: Risk and Responsibility: A Report to the Trilateral Commission*, The Triangle Papers; (Washington: Trilateral Commission, 2006), 13.

¹¹ Graham T. Allison, *Avoiding Nuclear Anarchy: Containing the Threat of Loose Russian Nuclear Weapons and Fissile Material*, CSIA Studies in International Security ; (Cambridge, MA: MIT Press, 1996), 21.

magnitudes larger than some states and significantly larger than all states. The possession of a small number of nuclear weapons can deter the US from utilizing the conventional capability developed at great cost. It is this very scenario that contributes to the reasons some authoritarian regimes attempt to acquire nuclear weapons.

The non-proliferation regime is the generally accepted solution to the problem of weapons proliferation. States that become signatories to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) pledge not to develop nuclear weapons in exchange for assistance with the peaceful application of nuclear technology. The NPT also requires the nuclear weapon states to avoid a nuclear arms race and to eventually disarm under a structure of international control and monitoring.¹² To this end, the nuclear weapon states have greatly decreased arsenals since the height of the Cold War and routinely reiterate their commitment to continuing disarmament.¹³ Until the elimination of nuclear weapons, the nuclear weapon states, and those signatories that rely on the assurances of the nuclear weapon states, recognize and rely on the value of deterrence to prevent a nuclear attack against the state.

States have worked within the non-proliferation regime to aid each other with securing weapons to prevent *loose nukes* and assist states like the former Soviet Republics to dismantle and secure weapons. US efforts to address these issues include advocating for the development of more effective policies to eliminate terrorist safe havens and strengthening the non-proliferation regime by galvanizing allies to stop the Iranian and

¹² IAEA, *Treaty on the Non-Proliferation of Nuclear Weapons*, London, Moscow and Washington, 1 July 1968 (London: H.M.S.O., 1970), ARTICLE VI.

¹³ John Duncan, "Statement on Behalf of China, France, the Russian Federation, the United Kingdom of Great Britain and Northern Ireland and the United States of America on the 2008 Non-Proliferation Treaty Preparatory Committee," (Geneva: 2008).

North Korean nuclear weapons programs.¹⁴ The means by which the non-proliferation regime ensures no new nuclear weapons states is probably best characterized by Graham Allison in his 2006 report to the Trilateral Commission. In this report, Allison advocates a position that “draws a bright line under the current *eight* nuclear powers and says unambiguously: ‘No more.’”¹⁵

Mutual Defense Emphasis. Mutual Defense Emphasis consists of arms control frameworks “using defensive weapons to reduce societal damage in nuclear war.”¹⁶ Initiatives to enhance mutual defense involve technological solutions to decrease the probability that an offensive nuclear strike would be successful, but also recognize technology as being only part of the solution.¹⁷ The mutual defense argument recognizes states can be deterred, but deterrence may eventually fail.¹⁸ To this end, a decrease in weapons to a number required for minimum deterrence is inherently advocated. Mutual defense uses technological solutions to hedge bets by playing classical deterrence in an arena with decreased numbers of offensive weapons and increased defensive capability.

Mutual defense efforts perceive the potential for a limited strike in a variety of delivery systems. Mutual defense also recognizes value in being able to engage in conventional conflict with a hostile small nuclear

¹⁴ Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism (U.S.), Bob Graham, and James M. Talent, *Prevention of WMD Proliferation and Terrorism Report Card: An Assessment of the U.S. Government's Progress in Protecting the United States from Weapons of Mass Destruction Proliferation and Terrorism* (Washington, DC: Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism, 2010), 3.

¹⁵Emphasis added. Allison and Trilateral Commission., *Nuclear Proliferation: Risk and Responsibility: A Report to the Trilateral Commission*, 19.

¹⁶ David Goldfischer, *The Best Defense: Policy Alternatives for US Nuclear Security from the 1950s to the 1990s*, Cornell Studies in Security Affairs (Ithaca, N.Y.: Cornell University Press, 1993), 2.

¹⁷ Goldfischer, *The Best Defense: Policy Alternatives for US Nuclear Security from the 1950s to the 1990s*, 75.

¹⁸ David Goldfischer and Thomas W. Graham, *Nuclear Deterrence and Global Security in Transition* (Boulder: Westview Press, 1992), 183.

state without feeling coerced by that state's limited nuclear arsenal.¹⁹ A small arsenal with an unsophisticated delivery system could require a great deal of national effort and time for a small state to acquire. When this small state is confronted in what is likely to be a limited conventional conflict with a larger state possessing advanced defenses such as theater missile defense, the smaller state may be less likely to escalate the conflict. Escalation when confronted with a system that may blunt your extremely difficult to acquire nuclear capability while providing retaliatory forces with an excuse to respond with higher levels of violence in response to the escalation is not a particularly attractive scenario.²⁰ This calculus is further complicated if the larger state's home territory is outside the employment envelope of the smaller state's nuclear force. Consequently, mutual defense efforts advocate for multiple defensive solutions that could be effective against any limited strike regardless if it was from a state actor, a terrorist organization, a miscalculation, or miscommunication. It is in this manner that mutual defense efforts address the nuclear surety issue. Mutual defense initiatives enhance the non-proliferation strategy by advocating for fewer nuclear weapons, and the eventual elimination of nuclear weapons.

Global Zero. The quest for zero has morphed beyond a goal to a strategy to eliminate nuclear weapons as quickly as possible. Although supporters of non-proliferation and mutual defense also appreciate and advocate for a world without nuclear weapons, global zero is a grass roots approach.²¹ The global zero campaign emphasizes public support to achieve a global realization that nuclear weapons are not within the interest of any state and present an imminent danger to humanity.

¹⁹ Goldfischer and Graham, *Nuclear Deterrence and Global Security in Transition*, 177.

²⁰ Barry R. Schneider, *Future War and Counterproliferation: US Military Responses to Nbc Proliferation Threats* (Westport, CT: Praeger, 1999), 131.

²¹ The 13 April 2011 broadcast of the documentary *Countdown to Zero* on the History Channel is one example of this broad-based media grass roots approach to building and maintaining momentum in public support for the elimination of nuclear weapons.

Incentives and punishments are recognized as having some effectiveness in influencing the decision making of states to proliferate. The education of states, and the people of the world, on the benefits of not proliferating is the catalyst needed to invoke long term change.²² Given the assumptions democratic peace theory, economic interdependence, and international norms decrease the likelihood of conflict, global zero contends security is best assured in a world where nuclear weapons have been eliminated.²³ Global zero also assumes the knowledge a state has the ability to develop a nuclear weapon quickly is just as much of a deterrent as actually possessing a weapon.

The global zero plan is a phased approach in which the US and Russia limit weapons to 1000 each by 2018, a more robust inspection regime backed by international law is created, further reductions down to 500 weapons are made by 2021, and the complete phase out of nuclear weapons is accomplished by 2030.²⁴ By eliminating all weapons and maintaining an international regime that actively monitors and ensures no weapons exist, the risk of nuclear conflict or a loose nuke are eliminated. Global zero is in step with stopping the further proliferation of nuclear weapons states and the 1986 Reykjavik Summit illustrates how a mutual defense initiative similar to the Strategic Defense Initiative would be possible in a world without nuclear weapons.²⁵

Why the Current Solutions Fall Short

Advocates of NPT recite a list of states that have departed from weapons programs as the success of the non-proliferation regimes. With

²² David Cortright et al., *Towards Nuclear Zero* (Abingdon, Oxon, U.K.: Routledge for International Institute for Strategic Studies, 2010), 69.

²³ Cortright et al., *Towards Nuclear Zero*, 160.

²⁴ Dr. Jacques Attali and et al., "Global Zero Action Plan," (Global Zero, 2010), 3.

²⁵ Cortright et al., *Towards Nuclear Zero*, 152-54.

the exception of Iraq, none of these states have eliminated the latent capability to produce nuclear weapons. In all of these cases, the desire to produce nuclear weapons has been diminished through a combination of carrots, sticks, and security guarantees.²⁶ An example of this can be seen in a generalized description of the North Atlantic Treaty Organization (NATO). As the desires of NATO and the threats to NATO have changed, the numbers of nuclear weapons and types of nuclear weapons shared by NATO members have also changed. The most recent change is reflected in discussion concerning the desire for a security guarantee in the way of the development of a ballistic missile defense shield. The mix of carrots, sticks, and security guarantees is constantly adjusted for the context of each particular state. As seen in the later discussed case of France, when this mix of carrots, sticks and security guarantees cannot be maintained to meet the desire of the state that state will eventually proliferate.

The avenues for a state that chooses to proliferate within the non-proliferation regime are limited and can result in that state contributing to the continued development of criminal networks of nuclear material suppliers. Similar to how state sponsored terrorism can be significantly more robust than traditional terrorism, state sponsored trafficking in illegal materials can be significantly more robust than normal trafficking. The oppressive watchful eye of the non-proliferation regime encourages proliferators to take greater risks in acquisition, weapons design, and nuclear surety.

Mutual defense initiatives can decrease the desire of potential nuclear weapons proliferators when defense technology is transferred to

²⁶ In the context of this classic analogy, providing a *carrot* represents a reward or incentive, where as hitting with a *stick* is a type of punishment. Withholding an incentive, or the simple threat of punishment, may also coerce action; though it is recognized the use of incentives and punishments is more complicated than this simple analogy alludes to. A security guarantee is essentially another incentive in which an offer of security is used, but this concept is delineated separately from other incentives in this discussion due to the specific relevance to the topic.

the respective state. By decreasing that state's reliance on a security guarantee from a nuclear weapon state, it may be possible to adjust the calculus that created the desire to proliferate. These same mutual defense initiatives may also prove to be an effective counter-measure to the issue of loose nukes, but as a defense they are reactive. Combating nuclear terrorism requires a zero tolerance for failure mentality. The technology developed for mutual defense will never be 100% effective and the methods of attack will continually adapt. Consequently, the reactive strategy of mutual defense is incapable of effectively addressing the problem of nuclear terrorism. Furthermore, it is only a temporary solution until the perception of the security environment changes and the desire returns.

Fundamental to global zero is the assumption the balance of power would not shift if all nuclear weapons were eliminated. This is based on the perspective of a state like the US where, given large US conventional capability, a world without nuclear weapons leaves the state in an equally strong position. This is not a true statement for states like Russia where conventional capability has been leveraged in order to maintain nuclear weapons capability.²⁷ There is an incentive for states to eliminate their nuclear arsenals only when there is more power and prestige to gain than they might lose.²⁸ Zero nuclear weapons in the world leaves Russia with significantly less power and influence than is currently possessed.²⁹ As such, zero nuclear weapons may not be in the security interests of Russia.

²⁷ See comments made by the Honorable Sergey Ivanovich Kislyak, Ambassador of the Russian Federation to the US. The Third Annual Nuclear Deterrence Summit, *A "New Start" Toward Eliminating the Threat of Global Nuclear Conflict*, 16 February 2011.

²⁸ Cortright et al., *Towards Nuclear Zero*, 57.

²⁹ Tim Below, "US Nuclear Deterrence: An Opportunity for President Obama to Lead by Example," *Air & Space Power Journal* 23, no. 4 (2009): 93.

Nuclear weapons and current US nuclear doctrine did not develop out of happenstance. Significant effort has been applied towards developing a force structure and employment doctrine that deters enemies and assures allies. Eliminating or vilifying US forces that provide this service without an acceptable other means of providing the same service entails accepting considerable risk.³⁰ Global zero attempts to address this risk through a robust international structure.

Global zero relies heavily on international organizations and laws.³¹ International organizations, like the International Atomic Energy Agency (IAEA), have consistently proven inadequate at monitoring nuclear weapons development and directly contributed to the development of Pakistan's nuclear arsenal.³² Some motivators and norms exist for state actors to abide by international law, but this strategy inadequately addresses the non-state actor's role and the threat of nuclear terrorism.

How Selective Proliferation Addresses Shortfalls

Selective proliferation accepts that nuclear weapons will continue to exist as long as the desire to possess nuclear weapons exists. As such, selective proliferation parlays this desire to create nuclear weapons programs into the development of nuclear weapons states that can responsibly operate within the international system. Selective proliferation directly addresses inadequacies and discrimination present within the NPT. By acknowledging that a particular state will create a nuclear weapon, partnering with that state ensures there are fewer opportunities for miscalculation, misperception, and accidents.

³⁰ Payne, *The Great American Gamble: Deterrence Theory and Practice from the Cold War to the Twenty-First Century*, 430.

³¹ Cortright et al., *Towards Nuclear Zero*, 144.

³² The Pakistan case study in chapter 3 of this thesis goes into great detail on the role the IAEA played in the development of Pakistan's nuclear weapons, the IAEA's failure to effectively monitor weapons development in Pakistan, the IAEA's employment, and the education of the technical father of Pakistan's nuclear program (MA Kahn).

Historical Precedence

Building the capacity of partner nations is far from a new endeavor. The mystique placed upon nuclear weapons distorts our perception of what is reasonable, but it is hardly unprecedented. When the battleship was the most dangerous weapon system known, many aspects of the technology were routinely exported. Despite perceptions of civilian vulnerability to strategic bombing following the First World War, numerous nations were willing to aid Japan with the building of a modern air force. The actions of Britain and France following the opening of Japan in 1869 through the sinking of the HMS Prince of Wales and the HMS Repulse at the end of 1941 demonstrate both precedence in the selective proliferation of advanced weapons technology and the need for ongoing partnership rather than simple foreign military sales.

Prior to the visit of Commodore Mathew C. Perry and the resultant commercial treaty with the US in 1854, Japan was technologically underdeveloped when compared to Western nations. Two centuries of isolationism and the weakening feudal rule of the Tokugawa Shogunate had greatly hindered Japan's development.³³ The Kasumigaseki, Japanese Foreign Ministry, played a significant role from the reemergence of a consolidated Japanese nation in 1869 to the transfer of power to the Army General Staff, or Miyakezaka, by 1937.³⁴

An examination of the works of Foreign Ministers of this time, combined with additional resources, describes a rural society with burgeoning industry transitioning to a modern nation with ever

³³ John Curtis Perry, "Great Britain and the Emergence of Japan as a Naval Power," *Monumenta Nipponica* 21, no. 3/4 (1966): 305.

³⁴ Reference the works of Ian Nish for additional information on this complex subject. Ian Hill Nish, *Japanese Foreign Policy, 1869-1942: Kasumigaseki to Miyakezaka* (London ; Boston: Routledge & K. Paul, 1977).and Ian Hill Nish, *Japanese Foreign Policy in the Interwar Period*, Praeger Studies of Foreign Policies of the Great Powers (Westport, CT: Praeger Publishers, 2002).

increasing demands for imported resources.³⁵ Japanese foreign policy during this time period is generally considered a failure, and by the 1930s Japan was a complex, unstable, and faction-ridden government that included the Imperial Japanese Army and Navy pursuing defense strategies neither complimentary nor at times even relevant to the other.³⁶ Britain and France provided training, including running a naval academy in Tokyo, and material, to include principle warships, used in the 1894 Sino-Japanese War.³⁷ It was within this complex environment that Britain and France determined it appropriate to selectively proliferate weapons technology and experience.

By the turn of the century, France began discussions with Britain due to concerns over growing Japanese power threatening their respective empires.³⁸ Nonetheless, in the seven years leading up to the Russo-Japanese war of 1904 an additional eight battleships built in Great Britain became part of the Japanese fleet.³⁹ France, the nation with the largest air force following the First World War, sent a training expedition of 60 plus men and a selection of the latest French military aircraft to Japan in 1919.⁴⁰ Not to be out done, the British in 1921 sent a 33 man mission with a wealth of experience in naval air operations and the design and testing of naval aircraft to enhance carrier operations.⁴¹ The result of Japan's interwar development in air and naval warfare speaks loudest to the need to develop ongoing partnerships rather than creating a capability and stepping away.

³⁵ Nish, *Japanese Foreign Policy in the Interwar Period*, 13.

³⁶ Nish, *Japanese Foreign Policy in the Interwar Period*, 176.

³⁷ Perry, "Great Britain and the Emergence of Japan as a Naval Power," 314, 20.

³⁸ C. M. Andrew and A. S. Kanya-Forstner, "The French 'Colonial Party': Its Composition, Aims and Influence, 1885-1914," *The Historical Journal* 14, no. 1 (1971): 118.

³⁹ Perry, "Great Britain and the Emergence of Japan as a Naval Power," 321.

⁴⁰ Robin D. S. Higham and Stephen John Harris, *Why Air Forces Fail: The Anatomy of Defeat* (Lexington, KY: University Press of Kentucky, 2006), 182.

⁴¹ Higham and Harris, *Why Air Forces Fail: The Anatomy of Defeat*, 186.

The US continues a long tradition of proliferating conventional weapons technology and expertise to other states. Through Building Partnership Capacity, Theater Security Cooperation, and Foreign Military Sales the US has greatly improved the ability of like minded states to secure the areas within their borders and defend themselves from potentially aggressive neighbors. As recently as 2003, the US assisted Poland in the purchase of 48 of the most advanced F-16s flown by any NATO country.⁴² This assistance includes continued partnership in how to operate the aircraft, maintain the aircraft, and sustain the force with the sale of advanced munitions and aircraft parts.

The 2010 National Security Strategy highlights the US interest in “investing now in the capable partners of the future; building today the capacity to strengthen the foundations of our common security, and modernizing our capabilities in order to ensure that we are agile in the face of change.”⁴³ These actions emphasize the need to develop long term relationships when proliferating even the most destructive conventional weapons capability, technology and expertise. The symbolic nature that surrounds nuclear weapons hinders the rationale discussion of partnership building in nuclear capability, technology and expertise.

Definitions and Assumptions

Within the context of this thesis, selective proliferation is defined as cooperation in the areas of nuclear weapons technology and expertise with states that meet an established list of criteria and possess a desire for a nuclear weapons program. This active proliferation of nuclear technology and expertise is part of a larger effort specifically designed to increase the quality of weapons programs, enhance nuclear surety, and develop states prepared to conduct themselves as nuclear weapons

⁴² Barre R. Seguin, "Why Did Poland Choose the F-16?," *The Marshall Center Occasional Paper Series* 11 (2007): 13.

⁴³ United States. President (2009-: Obama), *National Security Strategy*, 27.

states within the international community. Nuclear Weapons Surety is the materiel, personnel, and procedures that contribute to the safety, security, reliability, and control of nuclear weapons, thus precluding nuclear accidents, incidents, unauthorized use, or degradation in performance.⁴⁴ The relationship between selective proliferation and global nuclear surety drives this analysis.

The desire to develop a nuclear weapons program is a combination of stature and insecurity. States facing a security dilemma that is not solved by current force structure can address this insecurity by developing nuclear weapons. States that deem they are not projecting the degree of power commensurate with their perception of themselves can address this issue of stature by developing a nuclear weapons program. Desire to develop nuclear weapons will be a mixture of both stature and insecurity, but desire will not be enough to create a nuclear weapons program.

Capability to develop a nuclear weapons program refers to the technology, skills, and materials a state must possess in order to develop a nuclear weapons program. This concept is discussed in greater detail in the criteria for selective proliferation examined in chapter two. A state that has developed the types of infrastructure and population required to create a weapon, but does not have the desire to create a weapon, possesses a latent capability. An underdeveloped state that has the desire, but does not possess the capability, is an opportunity to partner and develop the minimum capability for selective proliferation. This opportunity to partner with developing states is a key advantage of selective proliferation.

⁴⁴ Reference Office of the Deputy Assistant to the Secretary of Defense for Nuclear Matters
<http://www.acq.osd.mil/ncbdp/nm/nuclearweaponssurety.html>

This thesis assumes that the development of nuclear weapons requires both desire and capability. Furthermore, it assumes that with sufficient desire, capability, and time, the respective state will eventually develop nuclear weapons capability. Selective proliferation is only considered if the state possesses the desire and meets the criteria established in chapter two. Selective proliferation does not advocate 'wild proliferation' or proliferation of weapons to states that possess only desire or latent capacity. The state must possess both within the context of the established criteria in order to be a candidate for selective proliferation. Furthermore, it is assumed that this desire emanates from the stature and insecurity issues previously discussed.

It is also assumed that the proliferation of nuclear technology to a selected state can occur through either an international organization within an international regime or via a bilateral agreement with the US. The concept that a selective proliferation regime could exist is acknowledged and briefly discussed in the next chapter. It is assumed, however, that differences between a US supported regime of selective proliferation and bi-lateral selective proliferation with the US are negligible. In both cases, the recipient state benefits from regulated high quality nuclear equipment, material, and over 65 years of nuclear expertise.

Limitations

This study does not examine the proliferation of nuclear weapons to states that do not possess a potential or latent capability and, hence, is limited. This author recognizes no advantages to arming states that cannot maintain their nuclear arsenal. States that have the desire and not the potential for capability are candidates for partnering in the hope of achieving candidacy for selective proliferation. The desire for nuclear weapons is a means by which to further development in underdeveloped states.

A further limitation of this thesis was the decision not to discuss in great detail the types of nuclear weapons and delivery systems that a selective proliferation regime would entail. Although this level of detail would be required in the development of such a regime, it was not deemed relevant to the larger discussion of how the selective proliferation of nuclear weapons technology changes the strategy of addressing the problems of states choosing to proliferate and the nuclear surety issues that develop as a result.

Limitations of this study also include examination of only three historical cases and application to only one hypothetical future case. The limitation to three historical cases was done in part due to resources and the scope of this paper. Volumes have been written on the reasons for each of these historical cases developing nuclear weapons capability and none is able to fully capture all the complexities of the process. This is due in part to the secrecy involved in these projects and to the loss of unbiased factual information with the passing of time. A further limitation regarding all four cases was the decision to primarily use only sources that had been translated to English. With only a few rare exceptions where the help of a translator was used, all research was done in English due to unfamiliarity with the native languages of the four cases.

The rationale for the limitation to only one hypothetical case study, Turkey, was twofold. First, this allowed for greater analysis and discussion within the scope of this limited work. Second, the intent was to develop lessons that could be applied to any future case. As such, little was to be gained by multiple hypothetical case studies at the cost of an in-depth analysis of a very difficult potential case. This did not preclude the acknowledgement of a multitude of other cases that would benefit from further in-depth analysis. As such, these cases are highlighted and recommended for additional study.

Structure of the Argument

The next chapter delves deeper into what selective proliferation might look like within the international construct of today. A construct of this nature required developing general criteria for candidacy to selective proliferation. This chapter then acknowledges some of the arguments for why selective proliferation has not been considered to include the fundamental dichotomy in attempting to normalize procedures for weapons proliferation while still advocating the benefits of non-proliferation. The chapter concludes with extensive discussion on how selective proliferation enriches the proliferation debate and provides policy makers with realistic solutions to the complex problems of nuclear proliferation and nuclear terrorism.

The third chapter of this thesis examines three cases in which states have chosen to develop a nuclear weapons program: France, India and Pakistan. Each case is filled with insight into the means by which states proliferate despite an international environment inhospitable to the idea of further proliferation. The France case demonstrates the perceived inadequacies of US security guarantees and unnecessary risks required when a state is forced to proliferate without learning from the mistakes of states that have already taken the same risks. The India case study illustrates how a selective few can steer public debate, and the power public debate has in a modern democracy. The last historical case examined is Pakistan. This case demonstrates the significant motivating force a desire for nuclear weapons can have and how this motivation can place the entire world at risk when left unchecked to develop weapons by any means available. Finally, all three cases demonstrate that despite significant strain on the international system during their transition, all three states have essentially normalized their position within the international system following their break into the

nuclear weapons club. These historical lessons are then applied to the hypothetical case of a new state pursuing nuclear weapons capability.

The fourth chapter briefly examines a few of the states that might desire candidacy into a selective proliferation regime and what some of the implications of that application might be. This chapter also conducts an in-depth analysis of a case in which Turkey is no longer satisfied with the security guarantees provided by NATO weapons sharing and requests assistance with the development of nuclear weapons in the same manner France requested assistance with a nuclear weapons program half a century ago. The historical cases are applied to Turkey to gain insight into why Turkey might request capability, what the result of the current US non-proliferation stance might be, and what could hypothetically be different the Turkey case was approached from within a selective proliferation paradigm.

The thesis concludes by consolidating the data gained from the Turkish case study into a strategy for selective proliferation that addresses the current erosion of the non-proliferation regime. Where the Turkish case study provides policy implications specific to Turkey, this chapter uses this information to generate general policy suggestions for addressing any future state that desires to possess nuclear weapons capability. This chapter then examines the impacts of this strategy on current US nuclear force structure. The chapter concludes with a discussion on the implications of this strategy on US policy in the context of limited resources, force reduction and force modernization.

Chapter 2

Understanding the Merits of Selective Proliferation

Washington's non-proliferation criteria are selective, discriminatory and inconsistent. It uses non-proliferation as a weapon when that suits its short-term interests. When it doesn't, it allows nuclear weapons technologies to proliferate.

Achin Vanaik

Everyone calls barbarity what he is not accustomed to.

Michel de Montaigne

The duplicity Achin Vanaik speaks of is a common criticism of US nuclear policy.⁴⁵ The idea of publicly advocating for the proliferation of nuclear weapons technology, however, seems almost barbaric. A discussion on selective proliferation needs to consider what a selective proliferation regime might look like in today's international environment.

The Cold War paradigm assumed selective proliferation involved one of the two super powers selectively proliferating to a state that fell within their respective spheres of influence. To some extent this is what occurred within the Soviet satellite states and when the Soviets placed nuclear weapons in Cuba. To a lesser extent, a form of selective proliferation also occurred when the US partnered with Britain and France, albeit more openly with the former than the latter. Unequivocally, the US selectively proliferated in the decision to pursue weapons sharing within the NATO alliance, but under the guise of US

⁴⁵ Dr. Vanaik is the Delhi University Professor of International Relations and Global Politics and author of a multitude of books and articles concerning Indian foreign policy and both regional and global nuclear proliferation and disarmament. More information on Dr. Vanaik is available at the Delhi University webpage <http://polscience.du.ac.in/Prof.%20Achin%20Vanaik.pdf>.

possession of the weapons. Because it suits the context of the time, the historical analysis conducted in the next chapter also considers the concept of selective proliferation from a single state. Although this perspective is appropriate for the analysis of this thesis, it is not the only context under which selective proliferation can occur. It might be argued the bi-lateral proliferation between the Cold War super powers and their allies of the past is an outdated construct in today's international environment. The differences between selective proliferation by a regime or via bi-lateral proliferation are negligible to the context of this study, but the concept of an international regime of selective proliferation is briefly discussed.

An International Regime of Selective Proliferation

Inherent in the term *International Regime* is the context of cooperation amongst states. Regimes are social institutions with both implicit and explicit norms, rules, and decision-making processes within a system.⁴⁶ The realist might contend the concept of an international regime lacks merit within the anarchical international environment. The definitive work on regimes, however, goes to great lengths to demonstrate that regimes are possible with the assumptions of self-interest and rational actors.⁴⁷ The International Atomic Energy Agency (IAEA) is an example of one such regime that consists of members operating within their own self-interest.

The IAEA is dedicated to the peaceful use of nuclear energy. Established as an autonomous organization on 29 July 1957 under Eisenhower's "Atoms for Peace" program, the IAEA is a center of cooperation in the nuclear field that works with Member States and multiple partners worldwide to promote safe, secure and peaceful

⁴⁶ Robert O. Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy*, 1st Princeton classic ed. (Princeton, N.J.: Princeton University Press, 2005), 57.

⁴⁷ Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy*, 121.

nuclear technologies.⁴⁸ The IAEA is not a component of the United Nations, but it does submit annual reports to the General Assembly and to the Security Council when appropriate.⁴⁹ The IAEA recognizes the Security Council as “the organ bearing the main responsibility for the maintenance of international peace and security” and consequently briefs the Council when IAEA activities identify areas of concern.⁵⁰ Under paragraph C of Article XII, the IAEA will take “positive steps to encourage the exchange among its members of information relating to the nature and peaceful uses of atomic energy and shall serve as an intermediary among its members for this purpose.”⁵¹ Although the idea would be reprehensible to many within the IAEA, the construct of the IAEA is possible of supporting the responsible development and employment of the *military use of atomic energy* in the same manner it supports the peaceful use of atomic energy.

Article XV of the special agreement between the UN and the IAEA recognizes the desirability of co-operation with regard to technical assistance in the atomic energy field.⁵² Goals of this agreement include attempting to avoid undesirable duplication and attempting to achieve effective coordination of technical assistance activities. The IAEA further agrees to consider common use of available services when practical.⁵³ The UN in turn provides administrative services when requested. The 2009 IAEA Annual report further highlights the importance of capacity building for the agency. The IAEA views capacity building as “part of an integrated approach to develop technological, scientific and managerial

⁴⁸ IAEA, "About the IAEA: The "Atoms for Peace" Agency," International Atomic Energy Agency, <http://www.iaea.org/About/about-iaea.html>.

⁴⁹ IAEA, "Statute of the IAEA," International Atomic Energy Agency, http://www.iaea.org/About/statute_text.html.

⁵⁰ IAEA, "Statute of the IAEA." Article III, B, 4

⁵¹ IAEA, "Statute of the IAEA." Article XII, C.

⁵² IAEA, "The Texts of the Agency's Agreements with the United Nations," (International Atomic Energy Agency, 1959), 6.

⁵³ IAEA, "The Texts of the Agency's Agreements with the United Nations," 6.

competencies as well as human, organizational and institutional capabilities.”⁵⁴ Furthermore, recognizing the “major challenges for countries embarking on nuclear power for the first time as well as for countries ‘experienced’ in using nuclear power” the IAEA perceives value in global and regional information networks that share knowledge, spread expertise, and establish a platform that supports capacity building efforts.⁵⁵

A selective proliferation regime expanding upon the tasks already accomplished by the IAEA, or creating an organization that is similar to the IAEA, can build upon the existing paradigm of the IAEA being the foundation for international nuclear issues. The current capability and knowledge within the IAEA demonstrates what could be an effective international construct to the problem of spreading expertise regarding nuclear weapons as well as the peaceful use of nuclear power.

Selective Proliferation: To What End?

There are distinct benefits to selective proliferation that have consistently been ignored. These benefits include improved nuclear surety, devaluing the prestige of the weapons, and a resultant stability that develops due to the cautionary manner within which states interact with states that possess nuclear weapons. All of these benefits have been ignored due to the idea that the more states that possess nuclear weapons the greater the probability the weapons would be used. The basic idea is that more fingers with triggers increases the likelihood that a trigger will be pulled. This logic, however, fails to acknowledge that if only a few have power there are few restraints upon the use of power.

Stability. The stigma that surrounds nuclear weapons makes the idea of more states having weapons, and a perceived increase in the risk

⁵⁴ IAEA, "IAEA Annual Report 2009," (Vienna: International Atomic Energy Agency, 2010), 9.

⁵⁵ IAEA, "IAEA Annual Report 2009," 9.

that a weapon will actually be used, morally reprehensible. Nuclear weapons are the most destructive weapons ever built. Given a strong historical record of humans eventually using the weapons they build, there is a legitimate concern that nuclear weapons could eventually be used with a resultant loss of life and long term ecological consequences previously unknown to mankind. The direct correlation between the spread of nuclear weapons and the destruction of every living thing on the planet would make the suggestion of selective proliferation monstrous. This correlation, however, does not appear to exist.

The traditional logic that suggests the process of developing a weapon system results in the eventual use in a wartime application does not pertain to nuclear weapons. States enter wars with conventional weapons with a vague comprehension of the limits of destructive capability their adversary possesses. Calculations concerning adversaries that possess nuclear weapons require a different kind of reasoning due to the unlimited suffering and uncertainty of winning, losing, surviving or annihilation.⁵⁶ Nuclear weapons produce strategic effects that compel statesmen to behave cautiously and execute with restraint which in turn shores up international stability.⁵⁷

National security policy should enhance stability with the goal of general deterrence being to ensure the cost of aggressiveness outweighs the benefits.⁵⁸ The world has in fact enjoyed more years of peace, when peace is defined as a lack of general war between major states, since the

⁵⁶ Scott Douglas Sagan and Kenneth Neal Waltz, *The Spread of Nuclear Weapons: A Debate Renewed; with New Sections on India and Pakistan, Terrorism, and Missile Defense*, 2nd ed. (New York: Norton, 2003), 9.

⁵⁷ James Wood Forsyth, B. Chance Saltzman, and Gary Schaub, "Remembrance of Things Past: The Enduring Value of Nuclear Weapons," *Strategic Studies Quarterly* 3, no. 3 (2010): 75.

⁵⁸ Forsyth, Saltzman, and Schaub, "Remembrance of Things Past: The Enduring Value of Nuclear Weapons," 77.

creation of the nuclear weapon than in the rest of modern history.⁵⁹ This is in no small part due to the fact that the major states either possessed nuclear weapons or were protected by what was viewed as a legitimate nuclear umbrella from an ally. States have been found to actually take less risk when it is believed that the consequences of their actions will likely result in unacceptable losses. For example, the Japanese were not deterred from attacking the US at Pearl Harbor because the Japanese did not assess a high risk of the general destruction of sixty-nine cities and their eventual unconditional surrender.⁶⁰ Few indications from US force structure or security policy in 1941 would have driven a different assessment of US capabilities and intentions. Japan believed by the time the US could break away from Europe commitments and muster the forces for the Pacific, Japan would complete efforts in China while *sustaining acceptable losses* in the process of mounting a sufficient defense and then sue for peace. Pondering a conflict against an enemy that will use nuclear weapons essentially eliminates the potential for *sustaining acceptable losses*.

Nuclear weapon states must demonstrate that they are willing to use nuclear weapons. This demonstrated willingness is essential to effective deterrence, but it is not a guarantee that future use will occur. Although elimination of a capability ensures that the capability will not be used, causality is not attributable to capability. Since elimination of the capability has proven elusive, this author contends an examination of nuclear proliferation capability is worthy of greater discussion.

Nuclear Surety. Global terrorism is possibly the strongest rationale for considering selective proliferation. The current world order

⁵⁹ Sagan and Waltz, *The Spread of Nuclear Weapons: A Debate Renewed; with New Sections on India and Pakistan, Terrorism, and Missile Defense*, 4.

⁶⁰ Errol Morris et al., *The Fog of War: Eleven Lessons from the Life of Robert S. McNamara* (Culver City, Calif.: Columbia TriStar Home Entertainment, 2004), videorecording.

would suggest that globalization and normalization of international relations has greatly diminished the likelihood of significant state on state conflict. If global terrorism is truly the most significant threat in the current world order, than the surety of loose nukes and the potential of a terrorist organization detonating one or multiple devices in populated areas becomes the significant global threat. It is not inconceivable that an act of nuclear terrorism in a couple of capital cities would push back globalization 50 years to a much more isolationist world. Selective proliferation is a means of addressing this issue.

Nuclear weapons programs are complex systems with significant potential for catastrophic failure. The systems are required to be able to conduct complex tasks, under unthinkable pressure, on a moment's notice, with 100% accuracy. The potential for miscalculation, madness, and accidents is used as justification for the elimination of nuclear weapons.⁶¹ It is also possible to structure nuclear arsenals in a manner that greatly decreases the potential for an unintended nuclear detonation due to miscalculation, madness, and accidents.⁶² The specific details and techniques for improved structure of developing nuclear arsenals are unfortunately closely guarded under the current modus operandi.

The global community, under the current non-proliferation paradigm, effectively shuns states that decide to pursue nuclear weapons. The developing nuclear power is forced to purchase materials and expertise in secrecy through black market vendors. In addition to encouraging illegal activities, this forces the prospective nuclear power to develop weapons without the knowledge of safety measures currently possessed by existing nuclear weapon states. The exact same safety

⁶¹ Bender et al., "Countdown to Zero."

⁶² Scott Douglas Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons*, Princeton Studies in International History and Politics (Princeton, NJ: Princeton University Press, 1993). (pg 275-278)

measures that were developed to help ensure that if a weapon fell into the wrong hands it would likely not be able to be utilized to its' full capability.

There are 65 years of experience with nuclear weapons to guide emerging nuclear powers through the difficult transition phase from a non-nuclear weapons state to a nuclear weapons state. This experience has been gained at the cost of environmental catastrophes, hundreds of lives lost due to radiation poisoning, and the realistic possibility of almost destroying at least half the population of the world while attempting to resolve a force structure issue including nuclear weapons and Cuba in 1962. To withhold this knowledge and experience while being unable to stop proliferation is more apprehensible than choosing to selectively proliferate.

Devalue Nuclear Weapons. In many ways, US emphasis on non-proliferation and the NPT increases the value of the weapon. Mahmoud Ahmadinejad stated, "If it is a good thing, we should have it too. If it is bad, why do you have it?"⁶³ Sixteenth Century French essayist Michel de Montaigne voiced a similar truth almost half a millennium ago, "To forbid us anything is to make us have a mind for it."⁶⁴ This is a truth that we have recognized while facing other global problems.

In the War on Drugs, attacking producers appears to have effects, but more successful models attack the desire for the drugs through education or even pharmaceutical therapy.⁶⁵ Convincing potential users that the advantages of possessing drugs do not outweigh the disadvantages is key to solving this problem. One of the most significant

⁶³ Bender et al., "Countdown to Zero."

⁶⁴ Michel De Montaigne and Edited and Arranged by David Widger, "Quotes and Images from the Works of Michel De Montaigne," (Project Gutenberg, 2007).

⁶⁵ Richard Glen Boire, "Neurocops: The Politics of Prohibition and the Future of Enforcing Social Policy from inside the Body," *JOURNAL OF LAW AND HEALTH* 19, no. 5 (2004): 218.

obstacles to accomplishing this task is eliminating the stigma that drugs have. Furthermore, legalized marijuana allows for regulation and monitoring while decreasing illegal trafficking. Legalization of this drug greatly reduces the economic resources of large criminal syndicates and improves the public safety by regulating the quality of marijuana available to users. This is the recognition that legitimate users deserve legitimate sources. The same logic applies to proliferation of nuclear weapons. Rational discussion does not promote drug use or the proliferation of nuclear weapons, but it does recognize the value in addressing legitimate needs and not forbidding items on unfounded moral grounds.

The most common misperception with selective proliferation is that it must entail proliferating nuclear weapons to every state. As Professor Vanaik already alluded to in the epigraph that opens this chapter, US non-proliferation criteria, although contested as being discriminatory and inconsistent, are none the less *selective*. Any policy to selectively proliferate nuclear weapons would also have criteria, and these criteria would be subjugated to a similar level of criticism. The specifics of these criteria would require research and expertise in international law that is outside the scope of this thesis. Some general considerations, however, are worthy of discussion.

Criteria for Selective Proliferation

Given the assumption that possession of nuclear weapons causes governments to operate in a conservative and less aggressive manner due to the recognition that their actions can now result in catastrophic annihilation, why have criteria at all for proliferation? Kenneth Waltz presented the definitive argument that the spread of nuclear weapons

would add stability both domestically and regionally.⁶⁶ One of many areas in which this thesis diverges from Waltz's argument is that it contends the international stability can only be achieved if the states that are proliferated are internally stable. This is due to increased global interactions and the increased threat of nuclear terrorism. Furthermore, a state that develops nuclear weapons has consciously acknowledged they are susceptible to nuclear retaliation for their actions. As such, selective proliferation criteria were developed to address the risk a state assumes by developing nuclear weapons (criteria 1 and 2) and the risk the world assumes if the internal structure of the candidate state degenerates into a failed state (criteria 3, 4, and 5).

A key aspect of developing the criteria is that they can be motivators and areas for partnership for states that do not meet the minimums. As previously stated, it is assumed that a state seeking nuclear weapons capability is seeking this capability for security, stature, or both. If US security guarantees fail to meet this desire, a state would seek candidacy for selective proliferation. A state that desires to possess nuclear weapons and fails to meet the criteria can partner with other states to build capacity to meet these criteria. In an international construct like the IAEA, the states could also partner with an international organization to build capacity. A Personnel Reliability Program (PRP) provides criteria to ensure responsible individuals employ nuclear weapons, and selective proliferation criteria help ensure responsible states possess nuclear weapons. Ensuring that a state meets certain criteria ensures a proper foundation for an emerging nuclear power.

⁶⁶ Sagan and Waltz, *The Spread of Nuclear Weapons: A Debate Renewed; with New Sections on India and Pakistan, Terrorism, and Missile Defense*, 9-17.

Criteria for Selective Proliferation Candidacy

1. Liberal Democracy with Public Debate
2. Well Defined Civilian Control of Military
3. Economy Capable of Sustaining Program
4. Industrial Base Capable of Manufacturing Nuclear Weapons
5. Security of Spaces within Borders

The efforts of Meyer, Jo, and Gartzke informs the criteria developed for selective proliferation candidacy because they specify a baseline of what a state must possess in order to develop nuclear weapons.⁶⁷ If a state does not possess the baseline capability, the desire to possess nuclear weapons can be used to develop a responsible nuclear weapon state. This approach is akin to the multitude of cases where states make significant changes to their organizational structure for membership into organizations like the NATO and the European Union (EU). These baseline criteria are the entry cost for membership.

Liberal Democracy with Public Debate. The non-discriminatory destructive nature of nuclear weapons makes them a truly democratic weapon. As such, realizing that the employment of nuclear weapons would potentially result in retaliation, a basic criterion for selective proliferation is a liberal democracy. Liberal democracies consist of market and private property economies, externally sovereign polities, judicial rights, and republican representative governments.⁶⁸ The stabilizing effect of nuclear weapons is generated from leaders operating in a more cautious manner when the potential for a nuclear exchange

⁶⁷ For more information on latent nuclear weapons capacity examine Stephen M. Meyer, *The Dynamics of Nuclear Proliferation* (Chicago: University of Chicago Press, 1984). and Dong Joon Jo and Erik Gartzke, "Determinants of Nuclear Weapons Proliferation," *Journal of Conflict Resolution* 51, no. 1 (2007).

⁶⁸ Michael W. Doyle, *Ways of War and Peace: Realism, Liberalism, and Socialism*, 1st ed. (New York: W.W. Norton, 1997), 264.

exists. Leaders elected into position are more likely to be concerned with the potential destruction of the state and the population that voted the leader into office.

The determination to place the state's major cities under this level of risk is only justified by a representative government. Furthermore, the inordinate hardships that a population must endure by implementing a national project the magnitude of nuclear weapons development also requires a government responsive to their people. Once the weapons are created, the decision to employ the weapon must also reside with an individual that the representative government of the population chose to emplace with this responsibility. This criterion directly relates to the state's desire for a nuclear weapons program. A liberal democracy that desires to covertly develop nuclear weapons, without public debate, is not representative of the state's desire for nuclear weapons capability. A desire to possess nuclear capability that is not recognized by the populace fails to meet the criterion.

Nuclear states such as China and the Soviet Union would not have met this criterion. It is highly likely with the perceived threats of the Cold War both states would have been able to meet the requirement for public debate resulting in the majority of the populace being in favor of developing nuclear weapons. This is due to the perception of the population that they are already under imminent danger of being destroyed and any increased risk of nuclear retaliation is essentially negligible. The problem in these cases is the lack of republican representative government provides no manner for the desire of the population to be represented by those employing the weapons.

As for the representative government, the current Chinese single-party government would fail to meet the criteria and would require significant partnership to institute reforms required for a representative

government. If modern day Russia seeking a nuclear weapons capability, further discussion would be required to determine if today's Russia is a liberal or delegative democracy. Partnership opportunities would likely exist in incentivizing Russia to liberalize her democratic institutions within this hypothetical scenario.

Civilian Control of the Military. As the organization responsible for the employment of the weapon, the military of the candidate state would need to be clearly established as subservient to political control. Regarding the appropriate role of the military in democracies, the US military currently assists other militaries with the concept of civilian control of the military through education and interaction.⁶⁹ Even though in total war the military may run the war, these actions are conducted in the way the people and statesman want them ran.⁷⁰ Establishing a liberal democracy without this criterion misses the connection between the decision to develop the weapons and the decision to employ the weapons. Effort towards representative government is only worthwhile if the corresponding military conducts the actions of that government. These two criteria, however, only speak to the employment of nuclear weapons.

Economically Capable. Economic capability is the first criterion for hedging against a future failed state. A Brookings study in 1996 concluded the US had spent approximately \$5.5 trillion on nuclear weapons programs with approximately 57% of that amount attributed to employment vehicles.⁷¹ Few economies are capable of supporting these types of programs without significant risk of economic collapse. It is

⁶⁹ Examples of building civil-military control range from the day to day interactions of military personal with foreign militaries to the inclusion of exchange officers in schools to dedicated schools for foreign militaries, such as The Western Hemisphere Institute for Security Cooperation.

⁷⁰ Samuel P. Huntington, *The Soldier and the State; the Theory and Politics of Civil-Military Relations* (Cambridge: Belknap Press of Harvard University Press, 1957), 315.

⁷¹ <http://www.brookings.edu/projects/archive/nucweapons/figure1.aspx>

unlikely future states will spend this amount on nuclear weapons programs, but an assessment of the amount of resources required for a nuclear weapon program needs to occur. States need to demonstrate the economic capacity and organizational structure to sustain a nuclear inventory. Part of this criterion is simply education on the costs of maintaining the capability. This education is critical to the aforementioned public debate.

Developing a specific dollar amount required for a nuclear weapons program is misleading. Every program will look different dependent upon the size and quality of nuclear arsenal desired by the state. The amount of existing infrastructure will greatly influence the additional cost required. States with extensive civilian nuclear programs and an existing conventional military infrastructure capable of delivering nuclear weapons, either by free-fall bomb or rocket propulsion, are better prepared to incorporate a nuclear weapons program. More importantly, the criterion is less about the actual cost of a nuclear program and more about how much strain a specific economy can withstand. The assessment of this criterion is dependent upon determining how much of a drain on resources is acceptable in order to ensure the population does riot or the government decides to put their weapons program on the open market to shore up a failing economy.

As with the other criteria, this criterion is intended to hedge against the action of proliferating nuclear weapons creating more unstable states. Fundamental to the argument that nuclear weapons add stability to the international system is that the states with weapons themselves are stable. A stable economy is a significant part of the foundation of the state. This criterion ensures an act of proliferation does not destabilize the state while attempting to stabilize the international system.

Arguments continue to be made that once a state develops a nuclear force it can choose to hollow out conventional forces and benefit from the future cost savings. Rather than this debate occurring in an uninformed vacuum, the nuclear powers can contribute to this debate on the differences between defense and deterrence as well as demonstrate from experience cases where this proves true and where it does not.⁷² The decision to add nuclear weapons to a state's inventory is more complicated than simply placing a couple of B-61s in a hanger. The economic implications of this decision must be fully understood, and economic evaluation criteria aid in this discussion.

Capable Industrial Base. A competent industrial base is the second criterion designed as a means of protection against a failed state. It is an entirely different prospect to sustain a nuclear weapons program than to simply develop initial operating capability. The candidate state must possess the indigenous capability to produce weapons. This principle is fundamental to the ideal of self help and the realization that the cooperation that existed when the weapons were created may not exist in the future. This includes the education of a scientific community, the development of industry capable of manufacturing nuclear weapons, and the organizational structure to manage a national project of this size.

Candidates that do not possess these baseline industrial capabilities can parlay a strong desire to possess nuclear weapons towards partnering with other states to develop these baseline capabilities. Historical cases have shown states that eventually procure nuclear weapons have needed to develop industrial capability and technical expertise in order to create and maintain the weapons. Proliferating weapons technology to a state that does not acquire these

⁷² Sagan and Waltz, *The Spread of Nuclear Weapons: A Debate Renewed*; with New Sections on India and Pakistan, *Terrorism, and Missile Defense*, 5-9, 29-33.

capabilities creates a situation where a state could possess nuclear weapons without the ability to maintain them.

Security within Borders. The final criterion addresses both the premise of failed states and issues of nuclear surety. At the most basic level of governance, states attempting to gain candidacy for proliferation need to demonstrate that they are capable of maintaining law and order within their borders. The inability to do so represents the potential for civil war and an unreasonably high risk of extremist organizations operating within the uncontrolled regions in close proximity to nuclear weapons programs. States with large areas that are uncontrolled and harbor terrorist organizations would not meet this criterion.

Pakistan would not have met this criterion prior to 1998 and is another example where partnering would have been motivated by a desire to possess nuclear weapons. Partnering with other states to assist them with measures that increase security within their borders has become a core competency of the US military in recent years. The result of this partnering may not have resulted in a world where there are no nuclear weapons in Pakistan, but it could have resulted in a world where Pakistan has better security within her borders, better command and control of her nuclear arsenal, and never contributed to the development of illegal networks of nuclear material proliferation.⁷³ Even with an acceptable framework and criteria in existence, proving that a logical and responsible means of conducting selective proliferation is possible falls short of proving selective proliferation is a good idea.

Selective Proliferation: Expanding the Paradigm

Bringing selective proliferation into the debate contributes to a model that may more closely resemble the realities of our current global conditions. Debate that wanes back and forth between non-proliferation

⁷³ A more detailed account of this case is discussed in Chapter 3.

and global zero is really only arguing about timelines. That argument devolves into the details of whether nuclear weapons are eliminated by 2034 or sometime within the next 150 years. It is not a debate that really explains or recognizes data points that reflect current global realities. Data points not reflected in much of the current debate include the reluctance of recognized P-5 states to greatly reduce weapons stockpiles, non-P-5 recognized nuclear states continuing to increase stockpiles, non-nuclear weapons states insisting that alliance partners maintain weapons, and non-nuclear weapons states that do not possess acceptable assurances continuing to attempt to develop nuclear weapons of their own (See Figure 1).⁷⁴

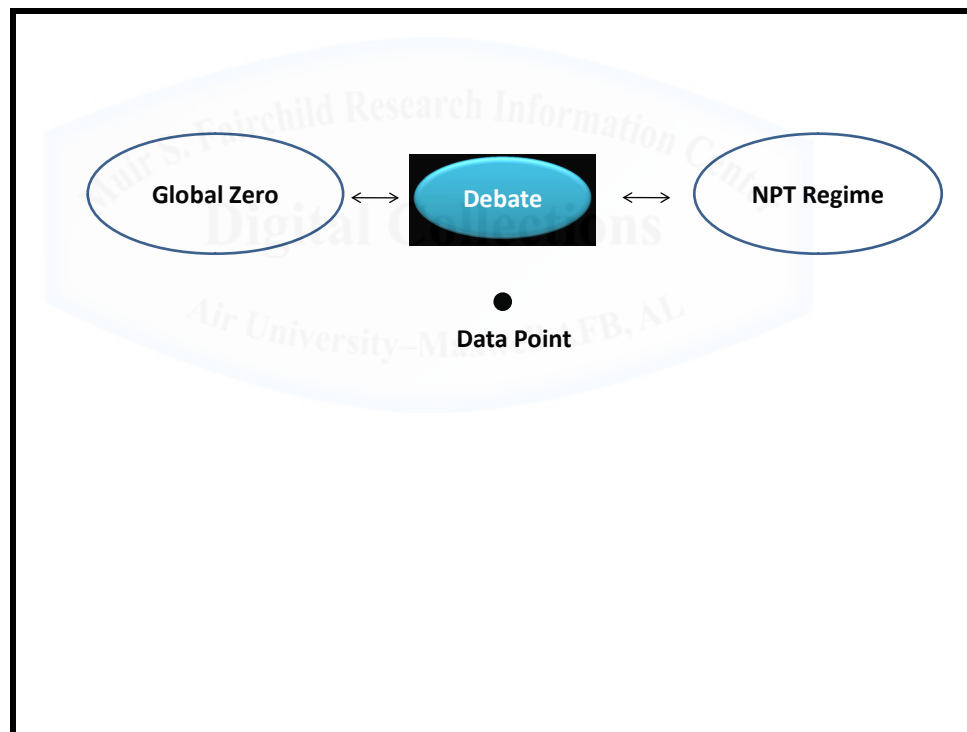


Figure 1: Current Debate Concerning Nuclear Proliferation

Source: Author

⁷⁴ The P-5 states are the five original nuclear weapons states as recognized by the NPT and include the US, Russia, Britain, France, and China. “P-5” refers specifically to the “Permanent 5” on the UN Security Council. Consequently, discussion of “P-5 status” has multiple levels of prestige issues at play.

A debate that includes selective proliferation centers the discussion. This debate acknowledges legitimate reasons states choose to develop nuclear arsenals and discusses responsible methods of addressing these concerns. It also recognizes changes in the global security structure and doesn't simply ignore problems with the non-proliferation regime by expressing altruistic desires for a nuclear free world. This is a debate that considers the advantages and disadvantages of all options available for policy makers (See Figure 2).

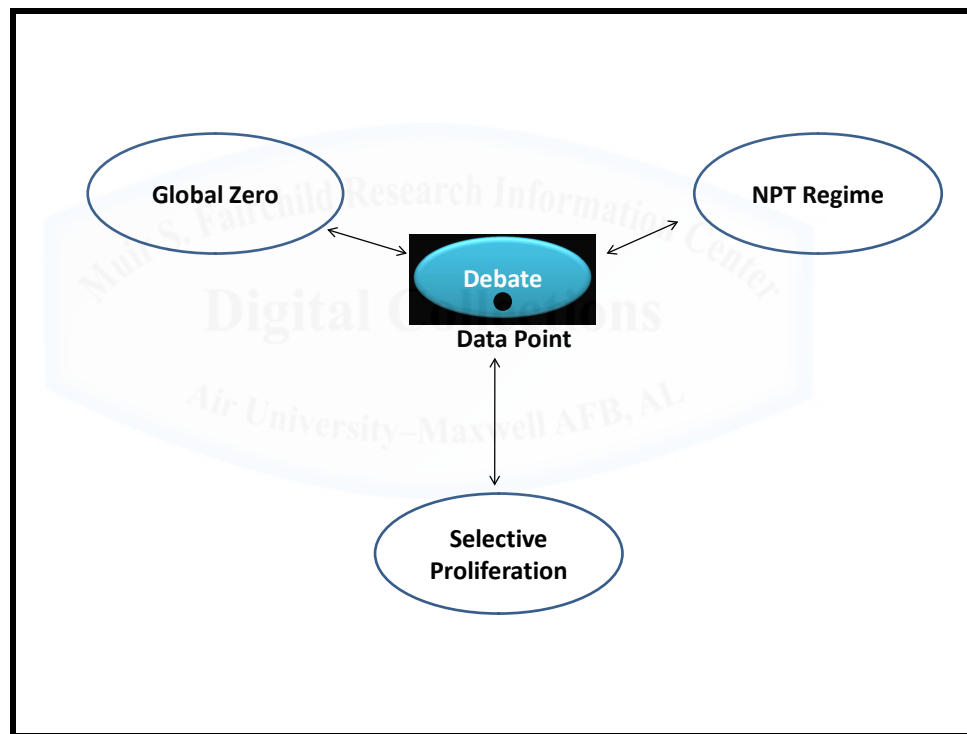


Figure 2: Proper Debate Concerning Nuclear Proliferation

Source: Author's original work, although the idea stems from a discussion concerning the weaponization of space conducted by Dr. Everett C. Dolman at the School of Advanced Air and Space Studies on 15 February 2011.

Educated debate on different approaches to the problems at hand enriches the discussion and helps to illustrate hidden costs associated with current non-proliferation strategy. A debate where the only solutions are more troops and no nuclear weapons is not truly providing a full set of solutions for policy makers. Furthermore, if the goal is truly to eliminate all nuclear weapons, all realistic options for getting there should be considered. Decreased vertical proliferation at the cost of increased horizontal proliferation should be a viable step to consider if global net nuclear weapons is significantly less, and it is a step towards eliminating nuclear weapons.⁷⁵

The most significant reason to thrash out selective proliferation is that it is missing from the mainstream discussion. Selective proliferation encourages competition with the ideas of non-proliferation and global zero. Competition can bring to light solutions previously not considered. US policy makers deserve potential solutions to respond to requests by responsible states with legitimate security concerns. A discussion on selective proliferation provides reasonable options for addressing the security needs of allies that perceive extended deterrence and US assurances to be short of their requirements. Discussion on selective proliferation explains many of the advantages and disadvantages of the requirement for a nuclear NATO Alliance.

Should a NATO member, such as Turkey, decide extended deterrence no longer meets their security needs when faced with a nuclear Iran, there should be more options than ostracize Turkey via the

⁷⁵ Nuclear weapons states since the US and USSR have opted for much smaller arsenals and arguably value minimum deterrence paradigms. A scenario where a limited number of countries choose to proliferate to minimum deterrence levels while the US and other nuclear states also choose to decrease to minimum deterrence levels is worthy of discussion and recommended for further study. Some of this study has been accomplished in Jeremy E. Olson, "The Best Defense: Making Maximum Sense of Minimum Deterrence" (School of Advanced Air and Space Studies, 2011). which builds upon some of the ideas encompassed in Jeffrey G. Lewis, *The Minimum Means of Reprisal: China's Search for Security in the Nuclear Age*, American Academy Studies in Global Security (Cambridge, Mass.: American Academy of Arts and Sciences: The MIT Press, 2007).

French model. France still acquired nuclear weapons, and this was a significant issue that contributed to the rift in US and French relations. The cost benefit analysis of policy makers needs to consider the benefits of NPT against the cost of forcing the only predominant Muslim Nation in NATO out of the Alliance. Furthermore, it will need to consider what other nations in the region we are willing to put in the “rogue” category for deeming it within their national interest to acquire nuclear weapons.⁷⁶ Part of that discussion involves challenging the predisposition that proliferation of nuclear weapons always destabilizes international order and is in fact a negative event.

It is likely selective proliferation will deter or limit conventional force intervention. The risks associated with employing conventional forces deep within the borders of another state when that state possesses nuclear weapons are high. When one or more nuclear weapon states are involved; border skirmishes, conflict over disputed territory, and operations conducted on the soil of a tertiary state are tense. These tense situations, however, have not led to nuclear conflict. Pakistan and India in fact appear to be deterred from attempting to completely overthrow the other by the likelihood that prior to existential defeat the respective state would attempt at least a limited nuclear strike. The case for selective proliferation may in fact have significant implications for those states with the largest conventional forces when they are tempted to use that large conventional force to conduct regime change. As such, selective proliferation decreases the likelihood of wars of choice rather than wars of necessity.

⁷⁶ The term “rogue state” is appropriately criticized due to ambiguous criteria as to what makes a state “rogue.” It is not the intent of this thesis to define the context in which this term will be used in the future, but rather to suggest that the use of the term has far reaching implications that will need to be considered.

Chapter 3

The Missed Opportunities

Failure is simply the opportunity to begin again, this time more intelligently.

Henry Ford

There is no security on this earth; there is only opportunity.

General Douglas MacArthur

Since the development of nuclear weapons, there have been multiple missed opportunities to partner with nations and ensure that these burgeoning nuclear powers developed weapons in a responsible manner. The three missed opportunities examined in this thesis are France, India, and Pakistan. Each case is unique and presents significantly different lessons for how the US might address the next nation that deems nuclear weapons within their interests.

A work of this length does not capture all the intricacies of decisions to develop nuclear weapons. Each case is briefly examined with the intent of understanding how increased partnership with the US and international community may have influenced the outcome. Although the complex reasons for choosing to develop nuclear weapons are not the primary concern, a brief examination of the desire, as well as the combination of stature and insecurity, of each case is discussed. With this understanding of the motivating factors for developing nuclear weapons, the manner by which the state developed nuclear weapons is examined. The examination of the development of the nuclear capability concludes with a review of the current status of the nuclear arsenal within the subject state.

The intent this examination is to highlight areas of concern that could have potentially been addressed through international cooperation and leveraging the knowledge of states that have already acquired nuclear capability. Recurring areas of concern that are often noted include the command and control of weapons, nuclear weapons surety, and the impact on the relations between the state and the international community.⁷⁷ The application of the lessons learned from these cases is then examined in the next chapter.

French Pursuit of Nuclear Capability: A Seat at the Table

Within ten years we shall have whatever is necessary to kill 80 million Russians. Well, I think one does not light-heartedly attack people who are able to kill 80 million Russians, even if one can kill 800 million French, assuming there were 800 million French.

Can the United States risk having New York or Chicago destroyed in order to save Hamburg or Copenhagen?

French President Charles de Gaulle

The French decision to develop nuclear capability occurred despite the greatest US extended deterrence assurances available.⁷⁸ Following a formal request for US weapons by the French at the May 1957 North Atlantic Council meeting, the US responded with a proposed common NATO nuclear stockpile in December 1957.⁷⁹ This proposal was rejected by the French as their need for self reliance could not be met with

⁷⁷ Nuclear Weapons Surety is the materiel, personnel, and procedures that contribute to the safety, security, reliability, and control of nuclear weapons, thus precluding nuclear accidents, incidents, unauthorized use, or degradation in performance. Reference Office of the Deputy Assistant to the Secretary of Defense for Nuclear Matters <http://www.acq.osd.mil/ncbdp/nm/nuclearweaponssurety.html>

⁷⁸ James Wood Forsyth, B. Chance Saltzman, and Gary Schaub, "Minimum Deterrence and Its Critics," *Strategic Studies Quarterly* 4, no. 4 (2010): 8.

⁷⁹ P.H. Spaak, "NATO Summit Meeting of Heads of State and Government 16 Dec. 1957 – 19 Dec. 1957 Final Communiqué," (NATO, 1957), Article 20.

weapons sharing. The US consistently denied France access to information and materials related to the development of nuclear weapons from starting in 1958.⁸⁰ The French watched the British develop nuclear capability with little condemnation and within months of being turned down by the US had begun preparations for their own weapon.

The deterioration in relations between the two former World War allies was not sudden. Franco-American ties had been weakening throughout the 1950s.⁸¹ While the French were attempting to reestablish themselves on the international stage and maintain their crumbling colonies following the defeat to Germany during the Second World War, the US was slowly gaining her footing as a new super power in a bi-polar world. US refusal to support France in Indochina without a coalition that included Britain began to delineate the limits of where France could rely on her American ally.⁸²

Franco-American ties possibly could have survived the loss of France's colonial holdings in Asia with the fall of Dien Bien Phu in 1954, but were gravely damaged by the end of the Suez crisis in 1957.⁸³ Many in France had felt that they were helplessly coerced by US refusal to support the Suez invasion and Soviet threats to attack the non-nuclear forces of France with nuclear rockets.⁸⁴ French Foreign Minister Christian Pineau succinctly established his nation's view of proliferation

⁸⁰ Llewellyn E. Thompson, "Memorandum from the Acting Deputy under Secretary of State for Political Affairs (Thompson) to the President's Special Assistant for National Security Affairs (Bundy)," ed. Secretary of State (US Department of State Office of the Historian, 1964).

⁸¹ Lawrence S. Kaplan, *NATO Divided, NATO United: The Evolution of an Alliance* (Westport, CN: Praeger, 2004), 18-24.

⁸² Bernard B. Fall, *Hell in a Very Small Place: The Siege of Dien Bien Phu* (New York, NY: Da Capo Press, 1985), 301.

⁸³ Thomas Risse-Kappen, *Cooperation among Democracies: The European Influence on U.S. Foreign Policy*, Princeton Studies in International History and Politics (Princeton, N.J.: Princeton University Press, 1995), 104, 83.

⁸⁴ Frank Costigliola, *France and the United States: The Cold Alliance since World War II*, Twayne's International History Series ; (New York: Twayne Publishers; Maxwell Macmillan Canada; Maxwell Macmillan International, 1992), 113-14.

at this time with a statement he made in July of 1957: “we do not accept the creation of a club to which the manufacture of nuclear weapons would be limited.”⁸⁵ The decade and a half following the conclusion of the Second World War presented France with an American ally that appeared less willing to come to France’s aid. France’s trust in the international construct that aided her in two World Wars had begun to wane.

The French began in earnest a plan to develop a nuclear weapon in spring 1958 with the order of French Prime Minister Felix Gaillard to detonate a bomb in early 1960.⁸⁶ The first detonation "Gerboise Bleue" was conducted on 13 February 1960 in Algeria with a Five Year Plan for the development of national defense ensuring adequate spending for further development.⁸⁷ A total of 17 tests were conducted in Algeria from 1960-1966. Similar to nations before her, France’s road to nuclear independence was strewn with a series of close call incidents that provided France with much needed nuclear experience at the cost of lives and risk to other nations.

An accident in 1962 during an underground test resulted in significant nuclear contamination to multiple individuals present. A seal on a shaft involved with the test failed during the detonation. The resulting cloud was assessed to have affected approximately 100 personnel with “a substantial contamination” (over 50 milliSievert (mSv)).⁸⁸ The French Ministry of Defence has determined some 150,000

⁸⁵ Wolf Mendl, *Deterrence and Persuasion: French Nuclear Armament in the Context of National Policy, 1945-1969* (New York: Praeger, 1970), 222.

⁸⁶ Jean Lacouture, Patrick O'Brian, and Alan Sheridan, *De Gaulle*, 1st American ed., 2 vols. (New York: Norton, 1990), 414.

⁸⁷ Mendl, *Deterrence and Persuasion: French Nuclear Armament in the Context of National Policy, 1945-1969*, 109.

⁸⁸ A milliSievert (mSv) is the international unit of measurement for a dose of radiation and the equivalent of 0.1 Roentgen equivalent man (rem). Discussions concerning radioactive contamination are concerned with time of exposure and size of the mass being exposed in addition to the amount of radiation. The 50 mSv of contamination is relatively small when exposure is limited to a short period of time. It is of greater

civil and military workers have taken part in activities linked to the nuclear tests conducted by France and has also allocated €10 Million for potential future compensation.^{89,90} Despite needing to relearn the same lessons concerning the hazards of above ground testing that other nuclear states had already learned, France's security issues of the year prior are possibly of greater concern.

The French had planned three additional tests following the first nuclear test on 13 February 1960 at the Reggane site in Algeria. The last of these, on 25 April 1961, was essentially a low yield *scuttle* of the test device in order to prevent it from falling into the hands of mutineers during the "Revolt of the Generals", set in motion three days earlier by General Maurice Challe.⁹¹ Conducting nuclear tests in the midst of a colony torn by civil war, and the destruction of a nuclear weapon to avoid the weapon from falling into the hands of rebels, is an almost unfathomable level risk by modern day nuclear surety standards.⁹² At the age of 70, however, De Gaulle demonstrated a spirit of stubbornness that would not only put down this revolt within a few days, but also shape France's view of her role in the nuclear world for decades to come.

De Gaulle's requirement for an independent nuclear capability would eventually represent non-alignment for more than just France. In a world where most nations perceived their two options to be either the US or the USSR, France gave the Third World another option. De Gaulle

concern when considering this event likely contaminated water supplies as well. A complete description of the event can be detailed in "French Nuclear Tests in the Sahara: Open the Files." Bruno Barrillot, "French Nuclear Tests in the Sahara: Open the Files," *Science for Democratic Action* 15, no. 3 (2008): 11.

⁸⁹ Aidan Lewis, "French Soldiers 'Deliberately Exposed' to Nuclear Tests," *BBC News* (2010), <http://news.bbc.co.uk/2/hi/europe/8518348.stm>.

⁹⁰ Julien Peyron, "Government Earmarks €10 Million for Nuclear Test Victims," (France 24 International News 24/7, 2009).

⁹¹ Rex Wyler, *Greenpeace: How a Group of Journalists, Ecologists and Visionaries Changed the World* (Vancouver, British Columbia: Raincoast Books, 2004), 134.

⁹² Thomas C. Reed and Danny B. Stillman, *The Nuclear Express: A Political History of the Bomb and Its Proliferation* (Minneapolis: Zenith Press, 2009), 79-80.

himself spoke of France as being the third military power.⁹³ To this end, De Gaulle led France effectively out of the NATO Alliance in March of 1966.⁹⁴ De Gaulle ultimately envisioned a European consortium that could act as a third super power between the USSR and Anglo-America.⁹⁵ Maintaining an independent nuclear force and deterrence strategy was in line with this vision. The political skill of De Gaulle may have effectively communicated the ideas of French deterrence, but another man was the father of French deterrence theory.

André Beaufre's writing defined French nuclear deterrence theory in the 1960s and 1970s. His books, "An Introduction to Strategy" and "Deterrence and Strategy," would come to encapsulate much of French thinking on the subject of nuclear deterrence.⁹⁶ "An Introduction to Strategy" provided historical context to the deterrence debate of the time.⁹⁷ In this text Beufre elaborated on the indirect strategy that can only operate within the limited space left by nuclear deterrence.⁹⁸ "Deterrence and Strategy" made the case for an independent French nuclear force.⁹⁹ For Beaufre, nuclear deterrence provided a method to both avoid and end war altogether.

Beaufre, having participated in the conventional warfare of World War II, recognized a value in nuclear deterrence that conventional deterrence failed to deliver in the previous two World Wars. Beaufre had concluded "the classical arms race creates instability, just as the nuclear

⁹³ Beatrice Heuser, *NATO, Britain, France, and the Frg: Nuclear Strategies and Forces for Europe, 1949-2000* (New York: St. Martin's Press, 1997), 104.

⁹⁴ John J. Miller and Mark Molesky, *Our Oldest Enemy: A History of America's Disastrous Relationship with France*, 1st ed. (New York: Doubleday, 2004), 219.

⁹⁵ Miller and Molesky, *Our Oldest Enemy: A History of America's Disastrous Relationship with France*, 217-18.

⁹⁶ Olivier FR LT COL Kaladjian, Interview, 8 Feb 2011.

⁹⁷ André Beaufre, *An Introduction to Strategy, with Particular Reference to Problems of Defense, Politics, Economics, and Diplomacy in the Nuclear Age* (New York: Praeger, 1965), 91-98.

⁹⁸ Beaufre, *An Introduction to Strategy, with Particular Reference to Problems of Defense, Politics, Economics, and Diplomacy in the Nuclear Age*, 107-10.

⁹⁹ André Beaufre, *Deterrence and Strategy* (New York: F. A. Praeger, 1966), Needs Page Number.

race creates stability."¹⁰⁰ By the end of the 1960s, the disparity between French conventional forces and recently developed *Force de Frappe* (French for “strike force”) had resulted in French security increasingly being characterized as deterrence without defense.¹⁰¹ Beaufre's thesis that the threat of nuclear weapons provided worldwide stabilization could be seen in France's deterrence theory as presented in the 1972 White Paper. This document contends France's nuclear arsenal supports the prevention of war, the defense of vital interests, and strict sufficiency of means.¹⁰² France would continue to attempt to represent herself as a third power in the bi-polar world and as a potentially attractive nuclear ally to Third World nations than the super powers or China.

The 1994 Defense White Paper, the first produced since the previously mentioned 1972 paper, continued to maintain dissuasion by deterrence was only attainable by punitive countervalue strikes with the French force structure favoring massive retaliation over selective limited strike.¹⁰³ The result of France's effort is approximately 1,260 weapons produced to date with a current arsenal consisting of approximately 300 weapons.¹⁰⁴ France's arsenal is made up of air and sea delivered weapons with the most recent acquisitions being the M51 submarine-launched ballistic missile (SLBM) and a new nuclear cruise missile, the Air-Sol Moyenne Portée-A.¹⁰⁵ An impressive strategic force that

¹⁰⁰ Beaufre, *Deterrence and Strategy*.

¹⁰¹ Mendl, *Deterrence and Persuasion: French Nuclear Armament in the Context of National Policy, 1945-1969*, 171 & 225.

¹⁰² Félix Arteaga, "French Nuclear Deterrence According to President Chirac: Reform, Clean Break or Reminder?," *Real Instituto Elcano* (2006): 1.

¹⁰³ Avery Goldstein, *Deterrence and Security in the 21st Century: China, Britain, France, and the Enduring Legacy of the Nuclear Revolution* (Stanford, Calif.: Stanford University Press, 2000), 231.

¹⁰⁴ Robert S. Norris and Hans M. Kristensen, "Global Nuclear Weapons Inventories, 1945-2010," *Bulletin of the Atomic Scientists* 66, no. 4 (2010): 78-80.

¹⁰⁵ Norris and Kristensen, "Global Nuclear Weapons Inventories, 1945-2010," 80.

eventually the US would not only tolerate, but also appreciate for the deterrence value it could provide.¹⁰⁶

Despite significant negative public rhetoric and consternation about the impressive inventory of nuclear weapons France has produced, covertly there has been significant US assistance over the years. During the Nixon administration, Kissinger made a covert offer to assist with spin stabilization problems French scientists were having with their SLBMs.¹⁰⁷ The relationship grew into an ongoing form of negative guidance, not unlike the popular game “20 Questions,” where US scientists would assist French nuclear scientists with questions about potential designs and problem design solutions.¹⁰⁸ Although the French would later downplay the significance of this assistance, they did not deny that the assistance did occur. Within about 15 years of having denied a public request from the French for nuclear weapons, the US was significantly assisting the development of France’s inventory.

On 5 May 1995, Paris announced that France was prepared to rejoin NATO’s Military Committee. Following the significant amount of coordination that had occurred between France and NATO during the Bosnia conflict, this move to rejoin the Military Committee was acknowledgement that France’s conventional forces need to be fully integrated into the Alliance.¹⁰⁹ France also declared, however, that any discussion on nuclear issues would occur without France joining NATO’s Nuclear Planning Group.¹¹⁰ With the much publicized and official return

¹⁰⁶ Goldstein, *Deterrence and Security in the 21st Century: China, Britain, France, and the Enduring Legacy of the Nuclear Revolution*, 198.

¹⁰⁷ Costigliola, *France and the United States: The Cold Alliance since World War II*, 160.

¹⁰⁸ Richard H. Ullman, "The Covert French Connection," *Foreign Policy* 75 (1989): 11-13.

¹⁰⁹ Goldstein, *Deterrence and Security in the 21st Century: China, Britain, France, and the Enduring Legacy of the Nuclear Revolution*, 238.

¹¹⁰ Goldstein, *Deterrence and Security in the 21st Century: China, Britain, France, and the Enduring Legacy of the Nuclear Revolution*, 238.

to NATO in 2009, little attention was given to the fact that France would still not integrate her nuclear weapons into the nuclear Alliance.

France's nuclear inventory has decreased by approximately 40 percent since the end of the Cold War.¹¹¹ In the quest for fewer weapons, France appears to be more interested in stability rather than a specific number of weapons.¹¹² At Cherbourg in 2008, President Sarkozy outlined his vision for France's nuclear deterrent. France is committed to maintaining both an air and sea-based deterrent. This capability is designed to be a strictly defensive deterrent against unknown emerging threats emanating from a state. Within the framework of nuclear deterrence, France deems it possible to send a nuclear warning that would underscore her resolve.¹¹³ As a P-5 member, France continues to support the NPT regime and has decreased the number of weapons to less than half of her peak Cold War highs. In the process of making these decreases, France continues to communicate that nuclear weapons are deemed as an essential part of French security needs.

One reason France places a high degree of emphasis on maintaining nuclear weapons is that France has always viewed the weapons as defensive. This viewpoint may stem from the fact that France developed her nuclear arsenal in a time when the idea of actually using a nuclear weapon was far less imaginable than when the US developed initial nuclear doctrine. As a purely defensive force, emphasis has been placed on survivability and second strike capability. The defensive mindset has also contributed to little rationale in France ever engaging in a nuclear arms race since there has never been a motive to

¹¹¹ Joseph Cirincione, Jon B. Wolfsthal, and Miriam Rajkumar, *Deadly Arsenals: Nuclear, Biological, and Chemical Threats*, 2nd ed. (Washington, D.C.: Carnegie Endowment for International Peace: Distributor Brookings Institution Press, 2005), 192.

¹¹² Camille Grand, "France and Disarmament from One Century to Another," (Paris: Diploweb, 2010).

¹¹³ M. Nicolas Sarkozy, "Presentation of Ssbm "Le Terrible," (Charbourg: 2008).

win a nuclear engagement. This defensive posture has contributed to France being able to partner with a traditional British rival.

Anglo-French relations have a complex history. Given this complex history, the degree to which both states continue to develop interdependence within their nuclear arsenals is noteworthy. Spurred on by a global recession and limited resources, the two states have implemented measures that allow them to share some of the burden of maintaining a sophisticated nuclear arsenal. France has also agreed to share their most recent test data required for simulation during weapons design. This decreases the likelihood that Britain will need to conduct weapons testing in the process of developing their next generation nuclear weapon. France, a state that began her quest for nuclear weapons by asking for assistance, is now partnering in the area of complex nuclear technology.

Lessons Learned from French Case. The French decision to proliferate nuclear weapons illustrates a multitude of lessons for a better approach to engaging with states that choose to proliferate. First, assurances are based upon the perception of the state being assured, not the perception of the state providing the assurance. Weapons sharing and other assurances may simply not be enough to address the perceived security dilemma a state assesses. The coercion of France by the Soviets during the Suez Crisis greatly increased France's desire to control her own destiny. There was no level of US assurances that could meet this desire.

Despite the norms that have developed around the NPT, Christian Pineau's comments in 1957 regarding a nuclear weapons club illustrate the tension that arises between the *haves* and the *have-nots*. This same tension is seen in the next two case studies with India and Pakistan as well as current rhetoric from Iran. US ability to address this grievance

due to commitment to the NPT continues to negatively impact relations between states.

Similar to the programs that came before it and that have developed since, the French program is wrought with accidents and environmental hazards. The decision to develop weapons is given such high priority that many risks are taken in order to progress the development of the weapon. The Algerian incident following the “Revolt of the Generals” further illustrates the unknowns and inherent risks when dealing with nuclear weapons. Any live nuclear weapons test has the potential for disastrous outcomes. Pressure to accomplish tasks under considerable political and economic pressure increase this potential for accidents.

Finally, the transition of France to a nuclear weapons state had few positive effects on Franco-American relations. Relations between states are complex and difficult. States rarely speak with a unified voice, and the desires of a state may be unclear. The US decision to not overtly engage with France during the development of the *Force de Frappe* has continued to have repercussions within the NATO Alliance today. The case to partner with France during her development of nuclear weapons was strong. In the context of existing difficulties with 1950’s Franco-American relations, the development of a nuclear France could have been an opportunity to improve relations rather than a negative contributor to already strained relations.

Indian Pursuit of Nuclear Capability: A Reluctant Warrior

As long as the world is constituted as it is, every country will have to devise and use the latest devices for its protection. I have no doubt India will develop her scientific researches and I hope Indian scientists will use the atomic force for constructive purposes. But if

India is threatened, she will inevitably try to defend herself by all means at her disposal.

Indian Prime Minister Jawaharlal Nehru

Those nations who have nuclear weapons are feared even by their friends.

Mahatma Gandhi

Mahatma Gandhi evoked India's early concerns with nuclear weapons, but Indira Gandhi would become India's first prominent nuclear-minded political leader.¹¹⁴ In an address to the UN General Assembly in October of 1970, Prime Minister Indira Gandhi accused the Nuclear Non-Proliferation Treaty of not stopping production of nuclear weapons or removing stockpiles, but perpetuating a division between the nuclear powers and others.¹¹⁵ She had determined that this division had created a situation where nuclear weapons were now in the vested interest of the non-nuclear states.¹¹⁶ Combined with a perception that "the world has become accustomed to nuclear arsenals," the next logical step was Indira Gandhi's direction for her country to conduct a nuclear test.¹¹⁷

India's Atomic Energy Commission successfully accomplished an underground nuclear explosion at the Pokhran site in the deserts of Rajasthan on the morning of 18 May 1974.¹¹⁸ The test was likely an implosion device utilizing approximately six kilogram of plutonium with

¹¹⁴ Singh Jasjit and Institute for Defence Studies and Analyses, *Nuclear India* (New Delhi: Knowledge World in association with Institute for Defence Studies and Analyses, 1998), 9.

¹¹⁵ Indira Gandhi, *Indira Gandhi, Speeches and Writings*, 1st U.S. ed. (New York: Harper & Row, 1975), 150.

¹¹⁶ Gandhi, *Indira Gandhi, Speeches and Writings*, 150.

¹¹⁷ Gandhi, *Indira Gandhi, Speeches and Writings*, 150.

¹¹⁸ Raj Chengappa, *Weapons of Peace: The Secret Story of India's Quest to Be a Nuclear Power* (New Delhi: Harper Collins Publishers, India, 2000), 201.

an approximate yield of 12 kilotons.¹¹⁹ Prime Minister Gandhi insisted that the test was done for peaceful purposes and that no technology in and of itself was evil, but the responsibility of the nation to determine the character of the technology.¹²⁰ Four years later, Prime Minister Desai would contend to US President Carter that it was a *blast* rather than an explosion, and that India had no interest in nuclear weapons.¹²¹ India would maintain this status as a nation that had conducted a nuclear explosion, but did not officially maintain a nuclear arsenal until 1998.¹²²

For almost a decade and a half, India kept her options open. By not closing the door on becoming a nuclear power through the signing of the Non-Proliferation Treaty, India was able to shape the perceptions of her potential adversaries. By not closing the door on eventually becoming a NPT signatory by conducting weapons tests and building a nuclear arsenal, India was able to continue to advocate for her preferred choice of global disarmament.¹²³ Given the advantages of ambiguity, reasons to conduct actual nuclear weapons tests needed to be considerable.

Throughout the late 1980s, Prime Minister Rajiv Gandhi advocated within the UN and elsewhere for the phased elimination of nuclear weapons by 2010. He considered the cooling of India-US relations, the warming of China-US relations, and the disregard for complete nuclear disarmament before deciding to authorize weapons development.¹²⁴ The assessment that Pakistan was acquiring nuclear weapons and that India

¹¹⁹ Frank Barnaby, *How Nuclear Weapons Spread: Nuclear-Weapon Proliferation in the 1990s* (London; New York: Routledge, 1993), 73-74.

¹²⁰ Pupul Jayakar, *Indira Gandhi: An Intimate Biography*, 1st American ed. (New York: Pantheon Books, 1992), 194.

¹²¹ Chengappa, *Weapons of Peace: The Secret Story of India's Quest to Be a Nuclear Power*, 222.

¹²² Hilary Synnott, *The Causes and Consequences of South Asia's Nuclear Tests* (Oxford; New York: Oxford University Press for the International Institute for Strategic Studies, 1999), 11.

¹²³ Jasjit and Analyses, *Nuclear India*, 21.

¹²⁴ Chengappa, *Weapons of Peace: The Secret Story of India's Quest to Be a Nuclear Power*, 332.

shouldn't be caught off guard pushed reluctant acceptance of the option to develop nuclear weapons rather than sacrifice national security.¹²⁵ Pursuance of a full-fledged program was the result of frustration with nuclear disarmament and greater security pressure from nuclear neighbors.¹²⁶

India's domestic politics also played a significant role in the decision to conduct a non-peaceful detonation. As opposed to states that conducted their tests in secrecy, internal rhetoric and politics were as important as perceived external security threats. There is a small population within India that is often referred to as the strategic elite. These are an upper class of individuals who generally reside in New Delhi and have a strong vision for a resurgent future India. The segment of the strategic elite relevant to this discussion generally consists of scientists, journalists, retired military officers, activists, and politicians who have a voice in the nuclear discourse of India.¹²⁷ The intense *public* debate about India's nuclear policy is exactly what allows these strategic elite to influence the decision making process.¹²⁸

Given the strategic elite consisted of most of the individuals educated on nuclear policy subjects, members of this group were also routinely advisors to the government on nuclear policy issues. The Indian population was generally domestic policy focused. Uneducated and uninterested in nuclear policy issues, this population was susceptible to influence from the strategic elite. A strategic messaging campaign eventually influenced a public who in turn began to pressure the

¹²⁵ Chengappa, *Weapons of Peace: The Secret Story of India's Quest to Be a Nuclear Power*, 332.

¹²⁶ T. V. Paul, *The Tradition of Non-Use of Nuclear Weapons* (Stanford, CA: Stanford Security Studies, 2009), 131.

¹²⁷ Karsten Frey, *India's Nuclear Bomb and National Security*, Routledge Advances in South Asian Studies ; (London ; New York: Routledge, 2006), 28.

¹²⁸ Frey, *India's Nuclear Bomb and National Security*, 29.

government for the types of actions the strategic elite was advocating.¹²⁹ The strategic messaging campaign needed a point that would be palatable for public consumption. Two ingredients that would justify the high costs of a nuclear weapons program were security and prestige.

Security arguments, particularly when they involved Pakistan, did have some influence in the public debate. New Delhi has consistently claimed that concerns about a coercive China, not Pakistan, were the primary security concerns.¹³⁰ The strategic growth of China economically and militarily in the 1980s and '90s along with the continued emphasis on a reunification of Arunachal Pradesh through military means greatly influenced strategic thinkers leading up to the 1998 decision.¹³¹ An examination of the printed media during the years leading up to and directly after the decision to become a declared nuclear power, however, present a different picture than what is traditionally accepted. Although many strategic thinkers were advocating nuclear concerns about China, there were upwards of five times as many articles that addressed the threat from Pakistan.¹³² It was directly through this printed media that the strategic elite were shaping the public debate on nuclear policy issues. The Realpolitik tone of the security debate also directly tugged at the prestige of Indians.

As a former British colony, India has struggled to take her respective place as a regional power. Despite being the most populous democracy and having a sizeable economy, India has often been viewed as a lesser tier player in the Asian region. The loss to Japan for non-permanent membership to the UN Security Council in 1996 was still fresh in the psyche of Indian officials prior to the decision to test

¹²⁹ Frey, *India's Nuclear Bomb and National Security*, 30.

¹³⁰ Synnott, *The Causes and Consequences of South Asia's Nuclear Tests*, 14.

¹³¹ Jasjit and Analyses, *Nuclear India*, 16-19.

¹³² Frey, *India's Nuclear Bomb and National Security*, 34-37.

weapons in 1998.¹³³ It is exactly this perception of exclusion that fed into India's view of the NPT regime. As a state attempting to demonstrate regional position, India had to contend with the fact her Eastern border was a P-5 nuclear state, and her Western border was an adversary that had consistently taken hostile actions since 1947. Furthermore, despite the intended claims of the NPT regime, in the mid-1990s it appeared that the NPT simply limited horizontal proliferation amongst the have-not states while allowing significant vertical proliferation amongst the P-5 nuclear states.¹³⁴

In addition to power prestige demonstrated through the ability to conduct nuclear saber rattling, there was an issue of academic prestige that needed to be addressed. Many viewed the forbiddance of nuclear weapons as an insult to the intellectual capability of India. India prided itself on a reputation that values hard work in the areas of math and science. The first head of the Indian nuclear program began promoting nuclear research prior to India's independence in 1947, and the Indian Atomic Energy Commission was established in 1948.¹³⁵ Indian scientists took direct insult to the sanction of academic endeavors that the P-5 states were allowed to participate in. Indian scientists advocated that true independence would not be possible until nuclear weapons capability was demonstrated.¹³⁶ This voice of the strategic elite also resonated well with the public. The resultant harmony convinced Prime Minister P.V. Narasimha Rao to continue preparations for nuclear tests as early as 1995.¹³⁷

¹³³ Synnott, *The Causes and Consequences of South Asia's Nuclear Tests*, 21.

¹³⁴ Synnott, *The Causes and Consequences of South Asia's Nuclear Tests*, 26.

¹³⁵ Barnaby, *How Nuclear Weapons Spread: Nuclear-Weapon Proliferation in the 1990s*, 68.

¹³⁶ Ashok Kapur, *Pokhran and Beyond: India's Nuclear Behaviour* (New Delhi ; New York: Oxford University Press, 2001), 178.

¹³⁷ Scott Douglas Sagan, *Inside Nuclear South Asia* (Stanford, CA: Stanford Security Studies, 2009), 176.

Rao was also faced with the possibility that the window for testing would quickly shut with the endorsement of the Comprehensive Nuclear-Test-Ban Treaty. Rao allocated funds at this time to develop procedures for dispersal of weapons parts, strict procedures for mating of parts, the requirement of three agencies to ready a weapon for use, and the strict civilian control of employment of a weapon.¹³⁸ The National Security Advisory Board's draft "Indian Nuclear Doctrine" released in 1999 further emphasized the importance of continuity of nuclear command and control and the authority of Indian nuclear weapons residing with the Prime Minister or designated successor.¹³⁹ India had placed significant forethought into the decision to develop nuclear weapons.

Although international criticism was initially quite high, the domestic perception of the 11 and 13 May 1998 detonations was quite favorable. Of particular interest was the change in attitude of the strategic elite. Prior to the detonations, the vast majority of rhetoric with regard to world nuclear order focused on the unjust and discriminatory nature of the world. Within a relatively short time, the self perception of India changed from a strongly dissatisfied power to a modest status quo power.¹⁴⁰ In short, becoming a declared nuclear power in fact met much of the difficult to measure security and prestige desires that the strategic elite were attempting to quench.

Force structure directly following the 1998 detonations focused on a minimum credible deterrent with an emphasis of No-First-Use and Non-Use against non-nuclear states.¹⁴¹ By 2003, the posture had changed to a *credible minimum* deterrent with an emphasis on

¹³⁸ Chengappa, *Weapons of Peace: The Secret Story of India's Quest to Be a Nuclear Power*, 391.

¹³⁹ Gregory S. Jones and RAND Corporation, *From Testing to Deploying Nuclear Forces: The Hard Choices Facing India and Pakistan* (Santa Monica, CA: RAND, 2000), 3.

¹⁴⁰ Frey, *India's Nuclear Bomb and National Security*, 43.

¹⁴¹ Sagan, *Inside Nuclear South Asia*, 244.

survivability through an envisaged triad.¹⁴² This credible minimum deterrent was also now considered an acceptable first use weapon in response to biological attacks, use of nuclear weapons on conventional forces outside the borders of India, and against states that were allied with nuclear states.¹⁴³ Willingness to use nuclear weapons in response to nuclear weapons being used on your conventional force while they are in the process of invading another state is a significant growth in policy for a state that started with a *peaceful* detonation.

Even with the expanding role of nuclear weapons in India's foreign policy, the initial international condemnation of India's nuclear weapons program has continued to diminish. Led by US discussions starting in 2005 to end the 30-year embargo on US nuclear trade with India, the global community has reluctantly accepted a nuclear India.¹⁴⁴ India has taken steps to establish nuclear procedures within the accepted international norms while continuing to develop her nuclear arsenal.

India has not made an official release concerning the size of her nuclear arsenal, but it is estimated to have assembled between 60–80 warheads with enough fissile material for between 60–105 nuclear warheads.¹⁴⁵ Although the weapons are assessed to not be operationally deployed, it is believed that India continues to increase her stockpile of nuclear weapons.¹⁴⁶ The no-first-use doctrine remains central to Indian policy, but it has been routinely challenged since the Kargil offensive and post-11 September 2001 fear of terrorism.¹⁴⁷ India has also become less outspoken regarding arms control and nuclear zero since becoming a

¹⁴² Rajesh M. Basrur, *Minimum Deterrence and India's Nuclear Security*, Studies in Asian Security (Stanford, Calif.: Stanford University Press, 2006), 50-51.

¹⁴³ Sagan, *Inside Nuclear South Asia*, 247-49.

¹⁴⁴ Paul I. Bernstein et al., *The Future Nuclear Landscape* (Washington, D.C.: National Defense University Press, 2007), 8.

¹⁴⁵ Norris and Kristensen, "Global Nuclear Weapons Inventories, 1945-2010," 80.

¹⁴⁶ Norris and Kristensen, "Global Nuclear Weapons Inventories, 1945-2010," 80.

¹⁴⁷ Paul, *The Tradition of Non-Use of Nuclear Weapons*, 134.

nuclear weapons state.¹⁴⁸ Clearly, the role of nuclear weapons in India has been expanding along with the arsenal.

Military literature on the use of nuclear weapons has expanded slowly in India.¹⁴⁹ India has a long history of excluding the military from policy discussions and the overall strategic decision making process. Although this practice had not proven excessively detrimental during the half of century of regionalized conventional conflict, it quickly became apparent that India's nuclear policy decisions often lacked understanding of operational employment doctrine.¹⁵⁰ India needed to quickly understand the nuances of the declared nuclear power arena it had entered. India's nuclear forces were still vulnerable to Chinese first strike capability and delivery systems were insufficient to reliably assure access to all Chinese targets.¹⁵¹ When India entered the nuclear arena on 11 May 1998, she had a declared nuclear state on her Eastern border. Within two weeks, India would be confronted with a declared nuclear state on her Western border as well.

Lessons Learned from Indian Case. India's decision to proliferate nuclear weapons was a lengthy one. As early as the leadership of Indira Gandhi, India perceived nuclear weapons to be the new norm amongst modern states. To this end, Indira Gandhi took steps to lead her people into the nuclear age with the first peaceful detonation in 1974. The people of India would lead the government to the next non-peaceful detonation in 1998.

The role that the population, public debate, and the election of a nuclear advocacy government played in the decision to conduct weapon

¹⁴⁸ Paul, *The Tradition of Non-Use of Nuclear Weapons*, 133-34.

¹⁴⁹ Raju G. C. Thomas and Amit Gupta, *India's Nuclear Security* (Boulder: L. Rienner Publishers, 2000), 32.

¹⁵⁰ Frey, *India's Nuclear Bomb and National Security*, 31.

¹⁵¹ Jones and Corporation, *From Testing to Deploying Nuclear Forces: The Hard Choices Facing India and Pakistan*, 4-5.

tests in 1998 is an important lesson when considering the desire of a state to develop nuclear weapons. Politicians will be responsive to the desires of the public. Perhaps less obvious, any assurances or security guarantees the US intends to quench the desire of a state to develop nuclear weapons capability must also speak to the same public. The decision to proliferate, or not proliferate, weapons technology and expertise has the potential to influence more than just the government of a particular state. Decisions regarding nuclear weapons proliferation influence the relationships of governments and the whole of the states involved.

The role of fear and prestige in the decision to develop nuclear weapon capability are present in the Indian case as well. Fear of the rising power in China to the east clearly influenced strategic thinking. Public fear of Pakistan and the ongoing confrontations to the West influenced public debate. The snubs of China's being allowed to be a P-5 state and of Indian scientists essentially being forbidden from engaging in nuclear science was an affront to multiple Indian sensibilities. The act of developing a nuclear arsenal has, to varying degrees, addressed all of these issues of fear and prestige.

Finally, the India case represents another lesson where opportunities to strengthen the US relationship with a state were missed. Nuclear surety, force structure, command and control, and doctrine are examples of some of the areas where partnership can continue. Building on shared values, such as democracy, it is possible to strengthen ties with an important regional partner.

Pakistani Pursuit of Nuclear Capability: Keeping Up with Joneses

If India builds the bomb, we will eat grass or leaves, even go hungry, but we will get one of our own.

Although it is probably a myth that the code phrase for India's first successful peaceful detonation was "Buddha is smiling," it is clear that Pakistan viewed that smile to have large fangs.¹⁵² Pakistan and India have shared interests in resources and territory. Competition over these interests made it impossible for Pakistan to rely upon India's assurances that their nuclear program was only for peaceful purposes.¹⁵³ The realization that India was willing to make even what was categorized as a *peaceful detonation* public greatly energized the limited effort that Pakistan had applied to a nuclear weapons capability up until that time.

The Pakistani military began examining nuclear contingencies well before India's 1974 peaceful detonation. Air and land exercises were conducted under theoretical nuclear war conditions as early as 14 December 1956.¹⁵⁴ Although reports were quick to point out that no actual nuclear weapons would be used, the exercises were conducted with a "nuclear bias."¹⁵⁵ The emphasis that Pakistan would not use nuclear weapons while conducting exercises supported the government's message that Pakistan's nuclear program was solely for peaceful purposes.

The Pakistan Atomic Energy Commission was established with the Atomic Energy Research Council in 1956 to oversee the peaceful development of nuclear science in Pakistan.¹⁵⁶ On 15 June of the previous year, Pakistan initialed an agreement with the US that ensured

¹⁵² Chengappa, *Weapons of Peace: The Secret Story of India's Quest to Be a Nuclear Power*, 3.

¹⁵³ Anwar Hussain Syed, *The Discourse and Politics of Zulfikar Ali Bhutto* (New York: St. Martin's Press, 1992), 155.

¹⁵⁴ Sailendra Nath Dhar, *Atomic Weapons in World Politics* (Calcutta,: D. Gupta, 1957), 150.

¹⁵⁵ Dhar, *Atomic Weapons in World Politics*, 150.

¹⁵⁶ Mansoor Ahmed and H Khan Syed A, "Timeline of Pakistan's Nuclear Programme," (2000).

construction and fuel for Pakistan's first research reactor.¹⁵⁷ Pakistan's nuclear program would remain limited and focused on scientific research throughout the next two decades due primarily to economic limitations and political perception of the security environment. It was during this timeframe that the "technical father" of Pakistan's bomb would gain experience and prominence within the Pakistani scientific community.

If Zulfikar Ali Bhutto is to be considered the "political father" of the bomb, than Munir Ahmad Khan is the "technical father" of Pakistan's bomb.^{158,159} Bhutto's interest in MA Kahn came from MA Kahn's work as a member of the IAEA in the early 1960s. Bhutto met with MA Kahn during a trip to Vienna in October of 1965.¹⁶⁰ It was at this time that MA Kahn informed then Minister of Foreign Affairs Bhutto that during a visit to Trombay, India, in 1964 he inspected a production reactor, a reprocessing plant, and all the associated facilities required to make a plutonium weapon.¹⁶¹ By December of 1965, MA Kahn was briefing President Ayun Kahn on the status of India's weapons program, but President Kahn deemed the venture into nuclear weapons as being too costly for Pakistan to pursue.¹⁶² Pakistan's nuclear weapons program would not continue significantly until Bhutto came into power.

¹⁵⁷ Dhar, *Atomic Weapons in World Politics*, 149.

¹⁵⁸ Usman Shabbir, "Remembering Unsung Heroes: Munir Ahmed Khan: The Tremendous Contribution Made by Munir Ahmed Khan in Making Pakistan Nuclear," *Defence Journal* (2004).

¹⁵⁹ Dr. Abdul Qadeer Khan, or Dr. A.Q. Khan, is also sometimes thought of as the founder of nuclear weapons in Pakistan. Much of the research done by this author asserts that the work of Munir Ahmad Khan was significantly more influential to the development of a Pakistani weapon. This may in fact have been the case and AQ Kahn's desire for fame provided the West with what on the surface appeared to be the Pakistani equivalent to Dr. J. Robert Oppenheimer. This may also be a case, however, where some of the historical record has been attempted to be revamped in light of the international condemnation of AQ Kahn's proliferation activities. Neither case is particularly pertinent to the study at hand. For clarity, Dr. Abdul Qadeer Khan will be referred to as AQ Khan and Mr. Munir Ahmad Khan will be referred to as MA Khan for the remainder of this text.

¹⁶⁰ Syed A, "Timeline of Pakistan's Nuclear Programme."

¹⁶¹ Munir Ahmad Khan, "Chaghi Medal Award Ceremony Speech," (1999).

¹⁶² Khan, "Chaghi Medal Award Ceremony Speech."

The military loss of East Pakistan (Bangladesh) helped fuel Bhutto's rise to power. Within a month he had called for a secret meeting of about seventy of Pakistan's top nuclear scientists in the city of Multan.¹⁶³ This pivotal event in the Pakistani development of nuclear weapons occurred on 20 January 1972 and would become known as the Multan Conference. Following the conference, Bhutto selected MA Kahn to be the director of Pakistan's nuclear weapons program. MA Kahn would maintain this position while also maintaining an employment relationship with the IAEA until 1987 when he retired as the Chairman of the IAEA Board of Governors.¹⁶⁴ Undoubtedly, MA Khan's intimate relationship with the IAEA assisted in his ability to organize a weapons program despite IAEA restrictions, but it was his administrative and organizational skills that would carry Pakistan's nuclear weapons program. Bhutto's rhetoric at the Multan Conference had effectively energized the scientific community of Pakistan and it was now time to provide a vector for that energy.¹⁶⁵

Within two months of the conference, a plan was submitted for the creation of the Pakistani weapons program. MA Kahn recalled later that he had approval within two hours and a direct line bypassing all bureaucratic obstacles to funding.¹⁶⁶ In comparison, it had taken 15 years from the time the Pakistan Atomic Energy Commission had been established until the Karachi Nuclear Power Plant began generating electricity on 21 October 1971.¹⁶⁷ Much of the Pakistani scientific community had felt that the lack of resources and political emphasis on nuclear science during this first 15 years had greatly hindered Pakistan

¹⁶³ William Langewiesche, *The Atomic Bazaar: The Rise of the Nuclear Poor*, 1st ed. (New York: Farrar, Straus and Giroux, 2007), 88.

¹⁶⁴ MA Kahn's obituary in the IAEA news bulletin in 1999.

¹⁶⁵ Shabbir, "Remembering Unsung Heroes: Munir Ahmed Khan: The Tremendous Contribution Made by Munir Ahmed Khan in Making Pakistan Nuclear."

¹⁶⁶ Khan, "Chaghi Medal Award Ceremony Speech."

¹⁶⁷ Syed A, "Timeline of Pakistan's Nuclear Programme."

and placed them well behind their enemy to the East that had started nuclear experiments as early as 1947.¹⁶⁸ MA Kahn was about to attempt to make up for almost 25 years of lost time.

MA Kahn's ability to administer a large and diverse program is probably his greatest contribution to Pakistani nuclear development. MA Kahn oversaw a parallel approach in which multiple facilities were created and efforts begun along multiple tracks that would all lead to the development of nuclear weapons.¹⁶⁹ Work was being accomplished on everything from plutonium and uranium enrichment, to weapons design, to digging the tunnels in the side of the mountain at Chagai.¹⁷⁰ It was a massive undertaking for MA Kahn to balance while also employed by the IAEA, and it was about to become significantly more difficult.

One of the results of India's peaceful detonation in 1974 was a resurgence of emphasis on the NPT and scrutiny of those countries that had refused to sign. Although Pakistan had refused to sign the NPT in 1968, she had continued work with first the Atoms for Peace program and then the IAEA to develop nuclear capability.¹⁷¹ As the international community continued to review the building evidence that Pakistan was enroute to completing a bomb, support for *peaceful* nuclear programs began to dwindle.

In December of 1976, Canada refused to continue supplying heavy water, fuel and parts for the reactor Canada built for Pakistan in 1972. It was thought that the reactor would have to cease operations within six months, but Pakistan was able to find the required resources to keep the

¹⁶⁸ Khan, "Chaghi Medal Award Ceremony Speech."

¹⁶⁹ Samar Mubarakmand, "A Science Odyssey: Pakistan's Nuclear Emergence," (1998).

¹⁷⁰ Rai Muhammad Saleh Azam, "Where Mountains Move: The Story of Chagai," *Defence Journal* (2000).

¹⁷¹ Syed A, "Timeline of Pakistan's Nuclear Programme."

reactor on line.¹⁷² The US suspected that along with the acquisition of a reprocessing plant contracted from France, the plutonium from this reactor would be used to build bombs. It was estimated that by 1985 there would be enough material to create more than 100 weapons.¹⁷³ Although Bhutto had promised to fully accept the IAEA safeguards and open his facilities to international inspection, these efforts were insufficient and Carter administration continued to attempt to shape Pakistani discourse on the acquisition of nuclear weapons by postponing the delivery of 110 A-7 fighter-bombers on 3 June 1977.¹⁷⁴ Pakistan, however, was not detoured.

In parallel to plutonium enrichment was a program to enrich uranium.¹⁷⁵ The first step was to find uranium, a relatively abundant mineral, in Pakistan. At the same time, Pakistani scientists needed to master the technology for mining and refining uranium, making it into a pure oxide gas and metal, and then produce the nuclear minerals required.¹⁷⁶ Uranium metal would in fact be the first metal produced from an indigenous ore.¹⁷⁷ One of Pakistan's most controversial scientists, AQ Kahn, would lead the organization responsible for uranium enrichment.

AQ Kahn was working in Amsterdam on nuclear technology involving uranium enrichment during the 1972 Multan Conference where Bhutto promised to develop the first Muslim nuclear weapon. In December of 1974, during AQ Kahn's annual vacation back to Pakistan,

¹⁷² Khan, "Chaghi Medal Award Ceremony Speech."

¹⁷³ Syed, *The Discourse and Politics of Zulfikar Ali Bhutto*, 166.

¹⁷⁴ Syed, *The Discourse and Politics of Zulfikar Ali Bhutto*, 167.

¹⁷⁵ Shabbir, "Remembering Unsung Heroes: Munir Ahmed Khan: The Tremendous Contribution Made by Munir Ahmed Khan in Making Pakistan Nuclear."

¹⁷⁶ Khan, "Chaghi Medal Award Ceremony Speech."

¹⁷⁷ Although it is clear that Pakistan has gone to great lengths, and is very proud of its efforts, to mine uranium from within her borders, there are also reports that some uranium came from other countries such as Nigeria. Bhumitra Chakma, *Pakistan's Nuclear Weapons* (London ; New York: Routledge, 2009), 25.

he met with Bhutto and discussed the advantages of a uranium weapon over a plutonium weapon.¹⁷⁸ By February 1975, Bhutto had a \$450-million dollar uranium enrichment plan that dovetailed nicely with his promises to the Ford and Carter administrations to allow international inspection of plutonium facilities in exchange for conventional military aide that included the aforementioned A-7s.¹⁷⁹ Pakistan would in fact to various degrees attempt to continue development of both plutonium and uranium enrichment facilities.

AQ Kahn continued to work in Holland gaining knowledge and experience in the nuclear enrichment fields while also developing a network of supplies from which to purchase the technology required to enrich uranium. When AQ Kahn finally resigned from the Dutch engineering firm, Physical Dynamics Research Laboratory, in March 1976, he possessed significant knowledge of Western nuclear technology and discreetly took with him the plans for some of the most advanced centrifuge technology of that time.¹⁸⁰ With this knowledge and blueprints, AQ Kahn developed a network where parts purchased in one country were shipped through another country, assembled in a tertiary country and finally delivered to Pakistan.¹⁸¹ AQ Kahn also found that purchasing parts, and not complete centrifuges, was an effective and ridiculous loophole to existing regulations that Western corporations were willing to exploit in order to fill Pakistani purchasing requests.¹⁸² AQ Kahn's network of suppliers included companies from Switzerland, West Germany, Belgium and his former Dutch employer FDO who, in 1977, gladly sidestepped export laws in an equally ridiculous manner by selling AQ Kahn complete units rather than simply the banned parts of a

¹⁷⁸ Langewiesche, *The Atomic Bazaar: The Rise of the Nuclear Poor*, 90.

¹⁷⁹ David Armstrong and Joseph John Trento, *America and the Islamic Bomb: The Deadly Compromise*, 1st ed. (Hanover, N.H.: Steerforth Press, 2007), 52-53.

¹⁸⁰ Armstrong and Trento, *America and the Islamic Bomb: The Deadly Compromise*, 55.

¹⁸¹ Chakma, *Pakistan's Nuclear Weapons*, 108.

¹⁸² Armstrong and Trento, *America and the Islamic Bomb: The Deadly Compromise*, 69.

computerized measuring device.¹⁸³ Production of highly enriched uranium has become and will continue to be a cornerstone of Pakistan's nuclear weapons program.

On par with the enrichment of fuel, one of the critical steps for Pakistani development of a weapon was to conduct a successful cold test. A cold test utilizes inert natural uranium in a bomb detonation to determine if all the mechanics of the weapon work correctly.¹⁸⁴ Non-enriched uranium used in a successful weapons design will not go critical, but produces a high flux of measurable neutrons that indicates the test was a success.¹⁸⁵ Pakistan's first successful cold test was accomplished on 11 March 1983.¹⁸⁶ From 1983 until 1992, Pakistan conducted 24 more cold tests in the process of developing successively more efficient and smaller weapons designs at a rate of approximately once every 18 months to 2 years.¹⁸⁷ Pakistani scientists worked extensively with Pakistani Air Force officials to develop nuclear weapons and delivery techniques for Pakistan's F-16 and Mirage-V aircraft. There was little doubt within the Pakistani scientific community that a mission capable nuclear weapon was in their possession and all but detonated.

Pakistan's reaction to India's non-peaceful detonations on 11 and 13 May 1998 was swift. The public debate and resultant pressure to respond in kind mounted quickly.^{188,189} The message heard by Pakistan was "give up your claim on Jammu and Kashmir and become forever subservient to Indian hegemony in South Asia."¹⁹⁰ Pakistani scientists

¹⁸³ Armstrong and Trento, *America and the Islamic Bomb: The Deadly Compromise*, 69-72.

¹⁸⁴ Shabbir, "Remembering Unsung Heroes: Munir Ahmed Khan: The Tremendous Contribution Made by Munir Ahmed Khan in Making Pakistan Nuclear."

¹⁸⁵ Mubarakmand, "A Science Odyssey: Pakistan's Nuclear Emergence."

¹⁸⁶ Syed A, "Timeline of Pakistan's Nuclear Programme."

¹⁸⁷ Mubarakmand, "A Science Odyssey: Pakistan's Nuclear Emergence."

¹⁸⁸ Chakma, *Pakistan's Nuclear Weapons*, 36.

¹⁸⁹ Synnott, *The Causes and Consequences of South Asia's Nuclear Tests*, 25.

¹⁹⁰ Azam, "Where Mountains Move: The Story of Chagai."

were confident that India's detonation would provide the political will to finally conduct a live test of what for many had been a lifetime's worth of achievement.¹⁹¹ When Pakistan's Defense Committee of the Cabinet convened on 15 May 1998 to discuss the appropriate response, only the Finance Minister openly objected to the detonation of a nuclear device on the grounds that it would have significant implications for the burgeoning global Pakistani economy in the process of recovering from a recession.¹⁹² When then Pakistan Atomic Energy Commission Chairman Dr. Ishfaq Ahmed was pressed by the Prime Minister as to Pakistan's capability to respond in kind, he simply replied "Mr. Prime Minister, take a decision and, Insha'Allah, I give you the guarantee of success."¹⁹³ Within a few days, the capability developed to neutralize India's edge would be demonstrated.¹⁹⁴

The following two weeks were a massive effort to relocate all required personnel and equipment to the test site at Chagai. The granite mountain site was chosen due to the ability to withstand a 20 kiloton blast and the lack of annual rainfall.¹⁹⁵ The sites had been complete since 1980 and were designed to be ready within a week's notice. Many Pakistani scientists recognized that their people had suffered greatly from both the direct diversion of national resources to their efforts and the international embargoes suffered as a consequence of their efforts.¹⁹⁶ The sacrifices of the Pakistani people would be rewarded during a time the Prime Minister would describe as an hour of need where failure would become an issue of national survival.¹⁹⁷ The young scientist who had designed the triggering mechanism was awarded the honor of

¹⁹¹ Mubarakmand, "A Science Odyssey: Pakistan's Nuclear Emergence."

¹⁹² Azam, "Where Mountains Move: The Story of Chagai."

¹⁹³ Azam, "Where Mountains Move: The Story of Chagai."

¹⁹⁴ Khan, "Chaghi Medal Award Ceremony Speech."

¹⁹⁵ Azam, "Where Mountains Move: The Story of Chagai."

¹⁹⁶ Khan, "Chaghi Medal Award Ceremony Speech."

¹⁹⁷ Mubarakmand, "A Science Odyssey: Pakistan's Nuclear Emergence."

detonating the device. After reciting the phrase "All Praise be to Allah," he pushed the button and, at exactly 3:16 pm on 28 May 1998, Pakistan became the eighth acknowledged state to possess nuclear weapons.

Pakistan claimed to have conducted five tests on 28 May and a sixth test on 30 May.¹⁹⁸ Soon after the tests, in part to address international concerns about security, Pakistan developed a Strategic Plans Division to improve control of nuclear operations.¹⁹⁹ The Chief of Army Staff initiated a study in October 1998 that would result in the creation of both the Strategic Plans Division and Army Strategic Force Command. Strategic Force Command, activated 7 March 2000, was a fully operational Corps of the Pakistani Army by 5 November 2004 with operational divisions, strategic missile groups and support assets.²⁰⁰ In conjunction with the National Command Authority, these organizations ensure that a military-political-scientific forum assists the head of government in nuclear matters.²⁰¹ In short, the goal of this organizational structure is to ensure that the head of government has the best information available and secure control when nuclear employment options are considered.

The pride of the Pakistani scientific community, similar to India, cannot be overemphasized. In order to produce Pakistani scientists with the required educational background to sustain a nuclear program, MA Kahn established the Centre for Nuclear Studies.²⁰² By 2004 the Centre for Nuclear Studies had been renamed the Pakistan Institute of Engineering and Applied Sciences, expanded into a university, and

¹⁹⁸ Synnott, *The Causes and Consequences of South Asia's Nuclear Tests*, 23.

¹⁹⁹ H Khan, "Nuclear Control in Pakistan," <http://www.pakdef.info/nuclear&missile/nuclearcontrol.html>.

²⁰⁰ Lt Gen (R) Ghulam Mustafa, "Army Strategic Force Command," <http://www.pakdef.info/nuclear&missile/armystrategiccommand.html>.

²⁰¹ Khan, "Nuclear Control in Pakistan."

²⁰² Shabbir, "Remembering Unsung Heroes: Munir Ahmed Khan: The Tremendous Contribution Made by Munir Ahmed Khan in Making Pakistan Nuclear."

produced over 2,000 experts in nuclear fields. The Pakistan Institute of Engineering and Applied Sciences currently have doctoral candidates registered in the Ph.D. programs of Nuclear Engineering, Systems Engineering, Nuclear Medicine and Computer Science.²⁰³ MA Kahn's vision for this institute was that it would become the "MIT of Pakistan."²⁰⁴ MA Kahn believed the nuclear program would be the first step towards Pakistani development in laser technology, electronics, biotechnology and other advanced fields.²⁰⁵ As such, the nuclear program is a crown jewel in Pakistan's efforts to be recognized as a technology peer with their regional competitors to the East.

It is in part due to this pride that the Pakistani's have had a mixed reaction in their dealings with AQ Kahn. AQ Kahn was dismissed as director of the Kahn Research Laboratories in 2001 when evidence emerged of a scheduled unauthorized visit to Iran.²⁰⁶ He was then placed under house arrest in 2004 when it became apparent that he had cut a deal with Libya for nuclear technology in exchange for \$100 million.²⁰⁷ If one could believe that incidents like this could solely be attributed to a single greedy and egotistical individual, they would raise much less concern.²⁰⁸ Unfortunately, following reports of other nuclear scientists having met with terrorist organizations like Al Qaeda, it becomes more difficult to believe that this is a problem limited to just one individual.²⁰⁹ AQ Kahn may have in fact bred a culture of either accepting, or at least not acknowledging, proliferation activities within

²⁰³ PIEAS, "PIEAS - History of Development," <http://www.pieas.edu.pk/about/genesis.php>.

²⁰⁴ Khan, "Chaghi Medal Award Ceremony Speech."

²⁰⁵ Khan, "Chaghi Medal Award Ceremony Speech."

²⁰⁶ Hilary Synnott, *Transforming Pakistan: Ways out of Instability* (Abingdon: Routledge for the International Institute for Strategic Studies, 2009), 96.

²⁰⁷ Langewiesche, *The Atomic Bazaar: The Rise of the Nuclear Poor*, 74.

²⁰⁸ Langewiesche, *The Atomic Bazaar: The Rise of the Nuclear Poor*, 154.

²⁰⁹ Chakma, *Pakistan's Nuclear Weapons*, 124.

the Kahn Research Laboratories and the greater Pakistani nuclear science community.

Despite these feelings of betrayal by AQ Kahn, it must also be recognized he is viewed domestically as a Pakistani involved in maintaining the security of his homeland against an existential threat. The backstabbing West is not viewed in such favorable light.²¹⁰ In spite of embargos on nuclear technology, denial of other forms of economic aide, and every type of carrot and stick the Non-Proliferation Regime could imagine, a poor and desolate Pakistan still prevailed.²¹¹ MA Kahn developed a massive self-sustaining industry that is reportedly in the process of completing tritium production that would boost warhead yields to 100-180 kilotons.²¹² Pakistan has also not released official accounts concerning the size of her nuclear arsenal, but she is estimated to have assembled between 70 and 90 warheads with enough fissile material for upwards of 90 warheads.²¹³ Although also not operationally deployed Pakistan, like India, is believed to be increasing the size of her current stockpile.²¹⁴ The achievements of Pakistan are impressive when considering the relatively weak economy and small percentage of educated individuals within the population, but arguing that these achievements were accomplished without help from the West may be overstating the case.

It is clear and well publicized that AQ Kahn benefited from design technology he stole from his Dutch employers.²¹⁵ What is often less well publicized is the amount of assistance Pakistan receives from the West.

²¹⁰ Shabbir, "Remembering Unsung Heroes: Munir Ahmed Khan: The Tremendous Contribution Made by Munir Ahmed Khan in Making Pakistan Nuclear."

²¹¹ Khan, "Chaghi Medal Award Ceremony Speech."

²¹² Shabbir, "Remembering Unsung Heroes: Munir Ahmed Khan: The Tremendous Contribution Made by Munir Ahmed Khan in Making Pakistan Nuclear."

²¹³ Norris and Kristensen, "Global Nuclear Weapons Inventories, 1945-2010," 80.

²¹⁴ Norris and Kristensen, "Global Nuclear Weapons Inventories, 1945-2010," 80.

²¹⁵ Chakma, *Pakistan's Nuclear Weapons*, 107.

In addition to the previously discussed examples of nuclear technology that were sold to Pakistan, a recount of the conventional technology used to prepare for the May 1998 test is illustrative of a recurring point. On 19 May, a dedicated Boeing 737 flew 140 scientists to the Chagai test site. The nuclear devices were flown in a sub-assembly form on two flights of Lockheed C-130 Hercules aircraft escorted by General Dynamic F-16 Fighting Falcons armed with air-to-air missiles.²¹⁶ Additional equipment larger than available airlift capability was convoyed by road escorted by Bell AH-1 Cobra Attack helicopters.²¹⁷ The day that Pakistan detonated a nuclear weapon involved a significant amount of equipment that was built by US and other Western countries hands.

The day after Pakistan detonated a nuclear weapon began significantly more investment from the West. Recognition of nuclear surety issues has contributed to over \$18 billion in US aid to Pakistan from 2002 to 2010 with fiscal year 2011 and 2012 aid shaping up to be \$1.2 billion and \$1.1 billion respectively.²¹⁸ Aid delivered to Pakistan relevant to nuclear surety has ranged from helicopters to night-vision goggles to nuclear detection equipment.^{219,220} Probably in part facilitated by the international embarrassment of the AQ Kahn incident, Pakistan

²¹⁶ The Pakistani Air Force also ran a Combat Air Patrol of F-7P air defense fighters due in part to concerns about an attack from India during this extremely intense two-week period. The F-16s were required to fly with their radios off and instructed to ignore any inbound radio calls. In addition to engaging any aircraft seen approaching the C-130 transports, the F-16s were reportedly instructed to engage the C-130 aircraft should they choose to divert to any field other than the scheduled destination at Chagai.

²¹⁷ Azam, "Where Mountains Move: The Story of Chagai."

²¹⁸ Michael Johnson and Asif A. Kahn, "Accountability for U.S. Equipment Provided to Pakistani Security Forces in the Western Frontier Needs to Be Improved," ed. Government Accountability Office (Government Accountability Office, 2011), 1.

²¹⁹ David E. and Broad Sanger, William J., "U.S. Secretly Aids Pakistan in Guarding Nuclear Arms," *The New York Times* 2007.

²²⁰ As demonstrated in the previous paragraph with the description of US built aircraft utilized to conduct the 28 and 30 May 1998 tests, dual-use equipment is difficult to account for as being used for a specific capability. The author is not attempting to contend that all funds are used solely to assist in the proliferation of the Pakistani nuclear weapons arsenal. The author is attempting to demonstrate that some amount of aid is being used for nuclear surety and some amount of aid is being used for reconstitution of conventional forces.

has also been working with the US to develop a Personnel Reliability Program (PRP) and solutions to the problem of employment for scientist who leave the Pakistani nuclear program.²²¹ Semantically, one could argue that more recent resources provided to Pakistan have been allocated for fighting the Taliban along the Afghanistan border and ensuring surety of their nuclear arsenal. Regardless of where the accountants contend the money ended up, Pakistan has continued to increase the size of their nuclear arsenal while accepting US tax dollars.

As with all nations that choose to proliferate, the problems following proliferation are complex at best. MA Kahn, the “technical father of the Pakistani bomb,” wanted to ensure the industrial base he built would be the industrial base for a future Pakistan.²²² It is this vision for the betterment of Pakistan that is either a dream or nightmare scenario depending upon your analysis of how Pakistan will use and safeguard this technology.

Lessons Learned from Pakistani Case. The case of Pakistan developing nuclear weapons is particularly insightful given the relative limited resources available to Pakistan. Although it is unclear if Pakistan received assistance from China, Saudi Arabia, or another state, it is clear that Pakistan developed a weapon with little regard for global security from the nuclear threat. It is not unreasonable to assume that other states with limited resources and a high desire to possess nuclear weapons will not also increase the risk global nuclear terrorism in their efforts to acquire nuclear capability.

Pakistan’s desire to develop nuclear weapons was fueled by the same fear and prestige issues addressed in the Indian case. Pakistan feared the prospects of a nuclear India and resented the contention that

²²¹ Kenneth N. Luongo and Brig. Gen. (Ret.) Naeem Salik, "Building Confidence in Pakistan's Nuclear Security," *PakDef* (2007), http://www.pakdef.info/nuclear&missile/building_confidence.html

²²² Khan, "Chaghi Medal Award Ceremony Speech."

nuclear science was beyond their grasp. The Pakistan case also demonstrates how a conventional loss, in this case East Pakistan, can fuel prestige arguments for the development of nuclear weapons. The stigma of nuclear weapons provided a means for Pakistan to regain some of the prestige loss due to this military defeat.

The Pakistani case also reinforces the lesson of states feeling betrayed by an unjust non-proliferation system. Pakistan was heavily invested in the Atoms for Peace program and some of their brightest scientists had active roles in the IAEA. Although the embargos and cancelations of weapons sales due to proliferation activities were legitimate through Western eyes, the perception from Pakistan was that they were once again stabbed in the back by the West. Furthermore, as evident by the amount of equipment made by the West used in both the development and testing of Pakistan's nuclear weapons, the assumption that some technology can be proliferated without enhancing other technologies is flawed. The West directly contributed to the material and intellectual development Pakistan required to develop a nuclear weapon.

The detonation of a nuclear weapon only increased the amount of investment from the West. After having provided just enough technology and expertise for Pakistan to develop a nuclear weapon, the West has poured significant resources into attempting to address the nuclear surety issues that resulted from Pakistan developing nuclear weapons. In addition to the opportunity missed to partner with a developing state, the opportunity to avoid an increase in underground nuclear material trafficking was also missed.

Taking Advantage of Opportunity

I was seldom able to see an opportunity until it had ceased to be one.

Mark Twain

Opportunities are never lost; someone will take the one you miss.

Author Unknown

When written in Chinese the word "crisis" is composed of two characters - one represents danger and the other represents opportunity.

John F. Kennedy

Each case discussed in this chapter demonstrates missed opportunities. As Mark Twain noted, it is much easier to identify the missed opportunity after it has occurred than when the opportunity is present. The slope of counterfactuals is a slippery one, and very little academic value is found at the bottom of that slope. The intent of these cases is not to suggest that selective proliferation in these instances would have solved the world's problems. Applying the construct of selective proliferation to these cases, however, does provide insight into other opportunities that could be available to strategists in the future. The value comes in discussing what these opportunities might be and recognizing that simply because there are opportunities that the US chooses not to take does not mean that another state will not take advantage of the opportunity.

President Kennedy's recognition that every crisis has both danger and opportunity is particularly apropos to this subject. Too often the emergence of a new nuclear state is viewed as a crisis. The effort is overwhelmingly placed on minimizing the danger that this potential new

threat presents. The time to discuss the potential opportunities presented when a new nuclear state emerges is well before the US is faced with this *crisis*. President Kennedy's statement recognizes the dual nature of a crisis, and he had begun seeking opportunities to address these crises early in his short administration.

President Kennedy spoke to the General Assembly of the United Nations on 25 September 1961 of his concern about a "nuclear sword of Damocles....capable of being cut at any moment by accident, or miscalculation, or by madness" a full year before the Cuban Missile Crisis.²²³ Significant concerns have continued to exist with regard for the potential of an accident, miscalculation or misperception concerning nuclear weapons. Starting with the 1971 Accident Measures Agreement, the US and former Soviet Union, along with other nations, have continued to update and revise agreements intent on limiting the potential for miscalculation or misperception with regard to nuclear weapons employment.²²⁴ The US and other states partnering to improve the security of weapons is a natural progression of a well established norm of partnership concerning nuclear weapons.

The creation of programs specifically designed to assist governments like Pakistan with their nuclear surety issues are tacit approval of the program. President Obama's statement to the Pakistan's Dawn newspaper in June of 2009 is further recognition of Pakistan as a nuclear state: "I have confidence that the Pakistani government has safeguarded its nuclear arsenal. It's Pakistan's nuclear arsenal."²²⁵ Similar messages have been sent in the West's ongoing relations with

²²³ John F. Kennedy, *J F K Address at U.N. General Assembly, 25 September 1961* (John F. Kennedy Library Foundation, Inc., 1961).

²²⁴ Richard A. Falk and David Krieger, *At the Nuclear Precipice: Catastrophe or Transformation?*, 1st ed. (New York: Palgrave Macmillan, 2008), 195-97.

²²⁵ David Ignatius, "To Pakistan, Almost with Love," *Washington Post*, 4 March 2010.

India, and recognition of France as a nuclear state is unchallenged.²²⁶ The historical record is failing to support arguments that states determined to possess nuclear weapons will not eventually be accepted by the international community.

This phenomenon is in part due to the US failing to understand, at least initially, the types of states that have been capable of producing nuclear weapons. Pakistan, a nuclear weapons state that is routinely viewed as almost failing or on the verge of rolling over in the midst of a murderous insurgency backed by Islamic fundamentalism, is possibly one of the more blatant cases of the US failing to understand an emerging nuclear power. Pakistan has proven in reality, to be a state with a significant military and civilian bureaucracy stronger than often acknowledged.²²⁷ This is the exact type of civilian and military bureaucracy all states that have developed nuclear weapons have had to possess in order to take on the significant challenges involved with developing nuclear weapons. Unfortunately, these significant challenges are becoming less significant as technology improves. The US and other Western states should absolutely be concerned with states that choose to proliferate, but if the end results will continue to be eventual acceptance and partnership after the fact than the prudent step would be to seize the opportunity to partner throughout the process.

The timeframe immediately preceding a nuclear detonation is likely to be the time of greatest potential risk. Having potentially created a weapon without developing surety procedures presents significant opportunities for errors to occur. In addition to having underdeveloped surety procedures and failsafe designs within the weapon, the time

²²⁶ Siddharth Varadarajan, "In P-5 Statements, Gradual Recognition of India's Nuclear Status," *The Hindu*, 23 December 2010.

²²⁷ Imtiaz Gul, *The Most Dangerous Place: Pakistan's Lawless Frontier*, 1st American ed. (New York, N.Y.: Viking, 2010), 222.

directly before the detonation of a weapon can be some of the highest tensions for a state. The Pakistan case demonstrates an extremely tense two week period where the Pakistani's feared both a conventional strike on their nuclear facilities and a conventional invasion backed with a nuclear deterrent.²²⁸ Partnership from outside parties had the potential to add transparency during the time of transition to nuclear weapons states and stability in a potentially chaotic time. The opportunity to partner with Pakistan and India between the mid 1980s and 1990s, when it was clear that both states either possessed or were on the verge of possessing nuclear weapons, was missed.

Finally, it is clear in all three cases that the states desired independence within their nuclear programs and were willing to dedicate the appropriate level of resources to the endeavor to ensure that it was achieved. France's quest for an independent nuclear force was largely driven by political and status goal while India envisioned enhancing her economy and academic/industrial strength. Pakistan was driven by both of these motivators. Resources dedicated through a bureaucratic French Five Year Plan, through public discourse in India, or by the sacrifices of the Pakistani people, were consistently available to the corresponding programs. Recognizing when another state has both the desire and dedication to develop a nuclear weapon needs to be a core competency of the US. The three cases presented demonstrate the US will eventually accept and normalize relations with partners that develop nuclear weapons. The US should not miss the opportunity to strengthen relationships and improve global nuclear security by partnering with allies that possess the desire and determination to acquire nuclear weapons.

²²⁸ Azam, "Where Mountains Move: The Story of Chagai."

Chapter 4

Future Missed Opportunities

It is better to be prepared for an opportunity and not have one than to have an opportunity and not be prepared.

Whitney M. Young, Jr.

We are all faced with a series of great opportunities brilliantly disguised as impossible situations.

Charles R. Swindoll

The social reformer Whitney Young's words are particularly apropos to the discussion of selective proliferation. It would be preferred that the world not face another situation where a state that meets the aforementioned criteria for selective proliferation would choose to develop nuclear weapons. Since, however, there is little that can be done to ensure we are not confronted with this situation, it is better to be prepared for the possible occurrence than not. Simply relegating the reality that responsible states and allies may choose to develop nuclear weapons to an impossible situation denies the benefit of a potential great opportunity.

The potential opportunity examined in this case is Turkey. Turkey represents a case that meets the afore mentioned criteria and one whose desire, stature, and security is most likely to change with the development of a nuclear Iran. Turkey is also a case that effectively illustrates the positive potential for selective proliferation. Other potential opportunities worthy of additional research include Germany, Japan, Saudi Arabia, South Korea and Taiwan.²²⁹ Extensive security

²²⁹ The collection of essays in "The Nuclear Tipping Point" examines these and other case studies with regard to what events may cause a state to develop a nuclear arsenal. Kurt M. Campbell, Robert J. Einhorn,

guarantees from the US have traditionally convinced these states to not develop nuclear weapons by diminishing their desire.²³⁰ Should the US no longer be able to quench their desires, the issue of selective proliferation would need to be addressed for each of these cases. The criteria developed within this thesis and the application in development of policy relevant to that particular state is examined here. Although it is outside the scope of this effort to examine each case to the depth the Turkish case, a brief discussion on each case is relevant.

Germany

Nuclear weapons are not in Germany's long term or short term interests.²³¹ The threat posed to Germany by a nuclear Iran is significantly less than the threat posed by the Soviet Union when US assurances were sufficient. NATO's weapon sharing arrangement has also ensured that the Luftwaffe is well trained in the employment of free fall nuclear weapons from modern aircraft. Germany possesses both the intellectual and industrial capability should the German's ever develop the desire. A significant hindrance to Germany developing this desire is reluctance by both Germany and other states for Germany to once again possess a strong military capability in part due to the historical memory of German military activities in the first half of the 20th Century.²³² Should future generations of Germans assess the threats differently and deem it once again within their national interest to possess a nuclear arsenal, Germany as it is today would meet the criteria for selective proliferation.

and Mitchell Reiss, *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices* (Washington, DC: Brookings Institution Press, 2004).

²³⁰ Gawdat Bahgat, *Proliferation of Nuclear Weapons in the Middle East* (Gainesville: University Press of Florida, 2007), 14.

²³¹ Lothar Sauermann, "The Test of Strength: Explaining Germany's Reluctance Towards Nuclear Weapons 1945-2011" (Air University, 2011), 93.

²³² Campbell, Einhorn, and Reiss, *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, 185.

Japan

Similar to Germany, Japan has no significant economic or industrial limits to developing a weapon, but an even stronger historical adverse position on nuclear weapons.²³³ In addition to the similar limitations on the development of a militaristic society, Japan is particularly sensitive to the development of nuclear weapons in light of the events of Hiroshima and Nagasaki. These same events have also traditionally given Japan a significant voice within the constructs of the non-proliferation regime. The development of nuclear weapons would be a significant change in policy for Japan and a significant change in national identity for the Japanese people. When in 1999 the Vice-Defense Minister stated Japan should at least consider if they would be better off with nuclear weapons, the resultant public outcry resulted in his resignation. Pro-nuclear statements made by government officials in 2003 were considered more tolerable, particularly by the younger foreign policy elite.²³⁴ The 2011 tsunami and the resultant nuclear catastrophe may also shape the Japanese public's view of nuclear weapons. Given the emergence of a nuclear North Korea did not significantly challenge US assurances to Japan, it is likely that Japan will continue to be satisfied with the assurances for the foreseeable future. Regardless of where Japan's desire to have nuclear weapons resides, the capability to develop nuclear weapons is present.

Saudi Arabia

Saudi Arabia could potentially represent the hard case intersecting US interests and US values. The economic resources available to Saudi

²³³ Andrew O'Neil, *Nuclear Proliferation in Northeast Asia: The Quest for Security*, 1st ed. (New York: Palgrave Macmillan, 2007), 4.

²³⁴ Campbell, Einhorn, and Reiss, *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, 229-30.

Arabia present a scenario where the purchase of nuclear capability without the development of infrastructure is possible. If Saudi Arabia were to purchase a nuclear arsenal from Pakistan or China, the precedent for foreign military sales of nuclear weapons does not bode well for limiting horizontal proliferation. The purchase of weapons also fails to address issues of nuclear surety, command and control, and doctrine. Although capability could potentially be purchased outright, the expertise would require development.

Saudi Arabia has generally not invested in the academic or industrial base to develop a nuclear weapons capability. As seen with the purchase of Chinese CSS-2 missiles, the Saudis often equate strategy with shopping.²³⁵ When confronted with an issue, the Saudi government will often purchase a material solution and hope for the best rather than examine the causes and develop an appropriate strategy to address the issue. Furthermore, the general inaccuracy of the CSS-2 intermediate range ballistic missile suggests the Saudis were interested in a chemical, biological, or nuclear warhead with which to equip the missile. In order to assure the US that Saudi Arabia was not attempting to procure nuclear capability, the Saudi government in 1988 signed the Nuclear Nonproliferation Treaty following acquisition of the CSS-2. Illustrating the previous point about education, the CSS-2 missile systems are still operated by Chinese crews. Saudi Arabia, and more importantly the House of Saud, has not shown a desire for nuclear weapons.

Saudi Arabia fails to meet the candidacy criteria for selective proliferation in that it is far from a liberal democracy. The monarch makes decisions with limited consultation from his cabinet, whom are primarily relatives. The economy, vastly dependent on oil resources, has suffered from low oil prices, competition from other producers, and shifts

²³⁵ Campbell, Einhorn, and Reiss, *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, 172-73.

in demand for cleaner energy sources. The House of Saud has also shown little interest in developing a population with the intellectual capacity to maintain the technological and industrial complex required for a nuclear weapons program. Areas where the US could partner with House of Saud include bringing democratic reform to the relatively toothless “Majlis al-Shoura,” or Consultative Assembly, and steps towards restructuring of the economy into a more robust producer of goods beyond natural resources. Failing investment in these areas, there is little opportunity for partnership.

Without the partnership aspect, the case for selective proliferation of nuclear weapons to Saudi Arabia needs to weigh US interests against US values. Part of the argument for selective proliferation is utilizing the desire for nuclear weapons to encourage change within a state. This concept will be revisited in greater detail, but changes states have made to their government and economic systems in order to gain acceptance to the European Union or NATO are examples where the desire for a capability or set of capabilities can instigate change within a potential partner nation. Since there are few indications the House of Saud is interested in making any of the democratic or economic changes previously mentioned, the decision to proliferate to Saudi Arabia is more about US interests than values. The interest of the US becoming further entangled with a non-democratic regime is beyond the scope of this work and would need to be weighed against the US interest in Saudi Arabia purchasing complex devastating weapon systems with little consideration for proper employment.

The Asian Tigers

South Korea and Taiwan have many similarities concerning the development of nuclear weapons. Both are modern liberal democracies that clearly possess the industrial infrastructure, manufacturing base, and technically sophisticated populace to support a nuclear weapons

program.^{236,237} Similar to Germany and Japan, South Korea and Taiwan possess the economic and technical resources to develop nuclear weapons, but do not maintain or act on the desire to do so.²³⁸ Unlike Germany and Japan, South Korea and Taiwan are bordered by a nuclear armed neighbor that has routinely stated the assumption of the territory Taiwan and South Korea inhabit is within the interest of the nuclear neighbor. Taiwan has lived with a nuclear China much longer than South Korea has lived with a nuclear North Korea, but both view their respective neighbor as the greatest contributing factor to their respective security dilemmas.

When considering what keeps both South Korea and Taiwan from developing nuclear weapons when they both have the capability to build and sustain a nuclear weapons program, the two Asian states may have something else in common. Both states rely heavily upon strong US ties that likely include some degree of extended deterrence.²³⁹ Recognizing the displeasure Washington would have with either state developing a nuclear weapon; it is likely that both Taiwan and South Korea have determined that their security is better served by not alienating the US and other regional allies than by developing a nuclear weapon.²⁴⁰ Given the limited number of potential threats for these states, it is unlikely that their security dilemma will drastically change in the near future.

²³⁶ Stating that Taiwan is a liberal democracy requires recognizing Taiwan as a state independent from China following Taiwan's transition to democracy in the late 1980s. Within this context, Taiwan has a sufficiently legitimate representative form of government. Doyle, *Ways of War and Peace: Realism, Liberalism, and Socialism*, 263.

²³⁷ O'Neil, *Nuclear Proliferation in Northeast Asia: The Quest for Security*, 4.

²³⁸ Campbell, Einhorn, and Reiss, *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, 258, 302.

²³⁹ Henry D. Sokolski and Army War College (US) Strategic Studies Institute, *Prevailing in a Well-Armed World: Devising Competitive Strategies against Weapons Proliferation* (Carlisle Barracks, PA: Strategic Studies Institute, U.S. Army War College, 2000), 79-81.

²⁴⁰ Campbell, Einhorn, and Reiss, *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, 260, 305-06.

Should the US decide to withdraw presence from Asia, it may become within the interest of South Korea and Taiwan to develop nuclear weapons. If this event occurs, these states would meet the criteria for the US to selectively proliferate nuclear weapons capability. The other option in this scenario, not proliferating nuclear weapons technology and expertise, would likely further alienate a traditional ally in the region. Simply because it is no longer within US interests to provide the requisite force structure for effective assurance against other nuclear states in this region does not contend that there are not still US interests in the region worthy of maintaining regional partnerships. Given the brief examinations of several potential selective proliferation partnership opportunities, the most probable selection for partnership in the near future is Turkey.

Prospects of a Nuclear Turkey

It is generally accepted that Turkey could become a nuclear weapons state, but will not in the foreseeable future.²⁴¹ The reasons for this assessment go beyond a mono-causal security dilemma. This chapter first examines the recent history of Turkey and the influence of the Cold War on Turkey's current force structure. Next, the contributing factors to the rationale for Turkey not developing a nuclear weapons capability and the corresponding changes in Turkey's perception of the international community that would likely contribute to Turkey developing a desire for nuclear weapons are examined.

The contributing factors present in Turkey are then compared to the contributing factors discussed in the historical case studies from the previous chapter and examined for potential trends that point towards a greater probability of Turkey becoming a nuclear weapons state. Next, the implications of the US taking a stance similar to the stance taken

²⁴¹ Henry D. Sokolski et al., *Getting Ready for a Nuclear-Ready Iran* (Carlisle Barracks, PA: Strategic Studies Institute U.S. Army War College, 2005), 90.

with France, India and Pakistan is considered with discussion of implications for US relations with Turkey and the region. Finally, an examination of potential US selective proliferation responses to a Turkish request for nuclear technology and how a selective proliferation may be able to assist in stabilizing the region during an extremely destabilizing transition to a region of nuclear weapon states is conducted.

Turkey as a Cross Road of Cultures

Turkey, and the previous Ottoman Empire, has a significant history as a regional power within Southwest Asia. With the defeat of the Ottoman Empire in World War I, the Allies partitioned and occupied Turkey. The Turkish national movement successfully regained territory from the Allies and, following the Treaty of Lausanne in 1923, the Republic of Turkey was recognized as the successor to the previous Ottoman Empire. Turkey has transitioned from a single-party parliament in the first couple decades to a multi-party modern parliament. The Turkey of today is a parliamentary democracy that is less prone to the military coups of its past and has a military that recognizes and respects the state's democratic principles.²⁴² Despite several tumultuous periods, modern day Turkey is a secular government that recognizes women's suffrage in a predominantly Muslim nation.

Despite long term unresolved issues with Greece, Turkish security concerns during the Cold War were predominantly focused on the Soviet Union. In addition to concerns about Soviet desires for access to the Dardanelles and influence in the Greek Communist Party, Turkey was bordered by the Georgian Soviet Socialist Republic and the nuclear armed Ukrainian Soviet Socialist Republic on the opposite side of the Black Sea.²⁴³ The Republic of Turkey became a charter member of the

²⁴² William C. Potter and Gaukhar Mukhatzhanova, *Forecasting Nuclear Proliferation in the 21st Century: Volume 1. The Role of Theory*, 2 vols. (Stanford, Calif.: Stanford University Press, 2010), 232.

²⁴³ Kaplan, *NATO Divided, NATO United: The Evolution of an Alliance*, 72.

United Nations in 1945, but it was the Truman Doctrine of 1947 that would solidify US-Turkish relations and Turkey's position in the Cold War.²⁴⁴ Although initially denied membership, the admirable actions of the Turkish Brigade in the Korean War contributed to Turkey's acceptance to the North Atlantic Treaty Organization in 1952.

Although significant military aid began with the Truman Doctrine, NATO military membership has had the greatest influence on the Turkish force structure with regard to nuclear weapons. Through the NATO Alliance Turkey has maintained weapons sharing with US nuclear weapons. This nuclear force structure previously included surface-to-surface missiles and free fall weapons delivered from Turkish aircraft. Despite multiple occasions when the placement of nuclear weapons in Turkey has been contentious, most notably during the Cuban Missile Crisis and times of heightened tension with Greece, the relationship has proven beneficial for Turkey, the US, and NATO.

Turkey's proximity to the Soviet Union established it as a key location for forward operating bases for nuclear-armed strike aircraft during the Cold War.²⁴⁵ NATO weapons sharing sufficiently strengthened NATO's southern flank while providing Turkey with a measure of nuclear deterrence without investing resources into a costly weapons program. The US control of the weapons, however, consistently gave concern to Turkey and other European nations that, at the moment of truth, the US would back down to an aggressive Soviet posture and hence leave Turkey open to nuclear blackmail. To assuage some of these concerns, the Nuclear Planning Group was established in 1965, and Turkey has continued to take an active interest in NATO nuclear

²⁴⁴ Frank C. Zagare and D. Marc Kilgour, *Perfect Deterrence*, Cambridge Studies in International Relations ; (Cambridge, UK New York, NY: Cambridge University Press, 2000), 177.

²⁴⁵ Paul Rogers, *Guide to Nuclear Weapons* (Oxford England; New York: Berg; Distributed exclusively in the US and Canada by St. Martin's Press, 1988), 108.

policy.²⁴⁶ With the end of the Cold War, it had been wondered if the weapons sharing relationship would end. NATO and Turkish relations with the US have evolved, but NATO weapons sharing continues to this day.

Turkey's 2000 Defense White paper established the importance Turkey places on participation in international organizations, and particularly security organizations such as NATO.²⁴⁷ This position addresses Turkish security concerns by first ensuring Turkey remains a regional player in a strategic location of the world. Second, with recognition that Turkey's ultimate security depends on confidence in allies, a policy of international integration helps to ensure that allies will remain committed to the region.²⁴⁸ To this end, it is assessed that there are dozens of tactical nuclear weapons in Turkey with some Turkish aircraft able to employ these weapons.²⁴⁹ Turkey's confidence in Western allies, however, has begun to decrease since the commencement of the new century.

During the 2003 invasion of Iraq, Turkey had concerns about the security of its southern border with Iraq.²⁵⁰ As such, Turkey advocated for, but was denied, the Article 4 provision of the North Atlantic Treaty that "The Parties will consult together whenever, in the opinion of any of them, the territorial integrity, political independence or security of any of the Parties is threatened."²⁵¹ Article 4 discussions would have facilitated

²⁴⁶ Campbell, Einhorn, and Reiss, *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, 149.

²⁴⁷ Sabahattin Çakmakoglu, "Defense White Paper," (Turkey, 2000), 4.

²⁴⁸ Campbell, Einhorn, and Reiss, *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, 152.

²⁴⁹ Robert J. Art and Robert Jervis, *International Politics: Enduring Concepts and Contemporary Issues*, 9th ed. (New York: Pearson/Longman, 2009), 253.

²⁵⁰ Potter and Mukhatzhanova, *Forecasting Nuclear Proliferation in the 21st Century: Volume 1. The Role of Theory*, 236.

²⁵¹ Article 4 of the treaty available on the NATO website
http://www.nato.int/cps/en/natolive/official_texts_17120.htm

enactment of Article 5 had Iraq crossed Turkey's border during the 2003 invasion as some thought might have occurred during the 1991 invasion.²⁵² The decision by NATO not to act decisively when called upon led many within Turkey to question the credibility of this alliance.

The events of 2003 are but one example of continued Turkish concerns the US and NATO will not act decisively concerning Turkish security issues involving the Middle East states.²⁵³ Strained relations with both the US and Europe at the same time places Turkey in slightly unfamiliar territory.²⁵⁴ As a generation of young Turks who grew up under the Global War on Terrorism rather than the Cold War become politically active, the calls for an independent nuclear arsenal in Turkey will continue to grow.²⁵⁵

Why Not and Why Now?

There are multiple reasons to be considered as to why Turkey has not developed a weapon. At the most basic level, extended deterrence through NATO weapons sharing has effectively met the security needs of Turkey to date. Because Turkey values the NATO/US security guarantee, it is likewise a significant constraint against proliferation, albeit a constraint under previously noted significant pressure.²⁵⁶ Prospective membership to the EU provides a similar constraint.

While implementing a nuclear weapons program would make Turkey an outcast of NATO, it would effectively end any bid for

²⁵² Mustafa Kibaroglu, "Beyond Iran: The Risk of a Nuclearizing Middle East," (Washington DC: 2005), 6.

²⁵³ Sokolski et al., *Getting Ready for a Nuclear-Ready Iran*, 236.

²⁵⁴ F. Stephen Larrabee and Project Air Force (U.S.), *Troubled Partnership: U.S.-Turkish Relations in an Era of Global Geopolitical Change* (Santa Monica, CA: RAND, 2010), 71.

²⁵⁵ Mustafa Kibaroglu, "Iran's Nuclear Program May Trigger the Young Turks to Think Nuclear," *Proliferation News and Resources*, Carnegie Endowment for International Peace, 20 December 2004.

²⁵⁶ Potter and Mukhatzhanova, *Forecasting Nuclear Proliferation in the 21st Century: Volume 1. The Role of Theory*, 236.

membership into the EU.²⁵⁷ The Justice and Development Party (AKP) government has invested a significant amount of political clout towards restructuring Turkey for membership to the EU. Although the continued denial by the EU has lessened enthusiasm within Turkey, the potential for accession as a full member remains a significant constraint on any considerations to develop a nuclear weapons program.²⁵⁸

Finally, Turkey is not as immediately threatened by the prospect of a nuclear Iran as some observers in the West contend. A public declaration of intent to build a nuclear weapons program by Iran may change this perception, but Turkey has a relatively stable relationship with Iran. Turkey and Iran have maintained a peaceful border for more than 300 years. Although a regional competitor, Turkey may not automatically perceive the same security threats from Iran the West often observes. Under the current context, the status quo of a nuclear NATO alliance appears to suffice.

The strength of these reasons may be weakening. The most significant potential driver for reassessing this security dilemma is the *perception* of erosion in the credibility of US security assurances.²⁵⁹ This perception affects the security calculus of Turkey in two significant ways. First, it decreases the confidence that the US will meet Turkey's security needs. Second, it decreases the constraint placed on developing nuclear programs because Turkey is primarily constrained by not wanting to lose the aforementioned security guarantees. Likewise, the failure of the EU to present the perception that membership is attainable further

²⁵⁷ Sokolski et al., *Getting Ready for a Nuclear-Ready Iran*, 106.

²⁵⁸ Potter and Mukhatzhanova, *Forecasting Nuclear Proliferation in the 21st Century: Volume 1. The Role of Theory*, 237.

²⁵⁹ Potter and Mukhatzhanova, *Forecasting Nuclear Proliferation in the 21st Century: Volume 1. The Role of Theory*, 216.

decreases constraints upon Turkey to develop nuclear weapons.²⁶⁰ These events, however, are not the only events occurring within the region that may influence Turkey in the future.

The development of a nuclear Iran places significant pressure on Turkey to respond in kind, but this is only the most immediate event that might influence Turkey to develop a nuclear weapon capability.²⁶¹ Turkey would also have concerns about Iran's ally, Syria. Syria and Turkey share an extensive border and have a historically strained relationship. Other significant regional concerns include Russian expansion, as seen in Georgia in the summer of 2008, and the potential for a Kurdish neostate forming in northern Iraq.²⁶² All of these events, however, are simply contributing factors to what would need to be the most significant change: a shift in Turkish domestic policy.

Modern decisions in Turkey are a decidedly democratic process as the influence of the military continues to wane.²⁶³ Should Turkey become decidedly inward looking, an event probably exasperated by EU exclusion, then it becomes more likely that there would be significant public debate on the development of a nuclear weapons program.²⁶⁴ Polls have shown that as many as 48% of the Turkish public would prefer that Turkey act in a more unilateral manner with regard to international affairs.²⁶⁵ In 2003, an inexperienced Turkish parliament voted in support of their constituencies despite significant effort by the

²⁶⁰ Potter and Mukhatzhanova, *Forecasting Nuclear Proliferation in the 21st Century: Volume 1. The Role of Theory*, 240-45.

²⁶¹ Bernstein et al., *The Future Nuclear Landscape*, 8.

²⁶² Campbell, Einhorn, and Reiss, *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, 146.

²⁶³ Potter and Mukhatzhanova, *Forecasting Nuclear Proliferation in the 21st Century: Volume 1. The Role of Theory*, 234.

²⁶⁴ Potter and Mukhatzhanova, *Forecasting Nuclear Proliferation in the 21st Century: Volume 1. The Role of Theory*, 52.

²⁶⁵ Mehmet Kalyoncu, "[Getting Realistic About Iran] Why, When and How Turkey Becomes a Nuclear Power (1)," *Today's Zaman*, 18 September 2008.

US to demonstrate the benefits of partnering during the planned use of Turkey as a transition point for a Northern invasion into Iraq.²⁶⁶ In addition to long standing security guarantees and billions of dollars in foreign assistance, the Turkish parliament knowingly passed on an opportunity to strengthen ties with the US.²⁶⁷ Should an overwhelming amount of support within the Turkish population deem it within their national interest to develop an independent nuclear weapons capability, it is not at all unlikely that a parliament would exist that was capable of representing the desires of their constituency.

Criteria for Selective Proliferation: Does Turkey Meet It?

Turkey meets the criteria for selective proliferation should the desire come to exist. The advantages of a predominantly Muslim NATO ally and a likeminded democracy in the Middle East place a relationship with Turkey in US interests. The strength of Turkish-American relations contributes to US access to a strategically important region of the world and should be highly valued.

Criteria for Selective Proliferation Candidacy

1. Liberal Democracy with Public Debate
2. Well Defined Civilian Control of Military
3. Economy Capable of Sustaining Program
4. Industrial Base Capable of Manufacturing Nuclear Weapons
5. Security of Spaces within Borders

Turkey has been a liberal democracy at various times within the 20th Century and has remained since 1984.²⁶⁸ As evident with the

²⁶⁶ Campbell, Einhorn, and Reiss, *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, 155.

²⁶⁷ Campbell, Einhorn, and Reiss, *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, 155.

²⁶⁸ Doyle, *Ways of War and Peace: Realism, Liberalism, and Socialism*, 264.

multiple media sources already cited, the public debate on the role of nuclear weapons within Turkey is currently robust and expected to remain so. In part due to desire to receive admittance to the European Union, civil-military relations have been restructured to further ensure that Turkey civil-military control is aligned with other Western states. There is little reason for the state of Turkey to not be fully aware of the risk and the potential consequences being assumed by becoming a nuclear weapons state.

The risks of Turkey becoming a nuclear weapons state are also acceptable. Turkey's economy is capable of sustaining a nuclear weapons program if the population deems it is worth the cost. The diversified economy, integration with European markets, consistent economic management, and structural reform drive positive long-run prospects.²⁶⁹ Turkey currently maintains the capability to employ nuclear weapons through NATO weapons sharing agreements and would be capable of building upon this expertise in development of an indigenous employment capability. Development of an industrial base capable of manufacturing and sustaining nuclear weapons would require a commitment to further expansion of Turkey's nuclear program.

The June 2, 2008, U.S.-Turkey Agreement for Peaceful Nuclear Cooperation (123 Agreement) demonstrates strong commitment to the development civil nuclear energy in a safe and secure manner.²⁷⁰ The agreement sets the conditions for transfers to Turkey of US civil nuclear technology, equipment, and material - including nuclear power reactors and their low enriched uranium fuel - that will assist Turkey with goals

²⁶⁹ Turkey, "Turkey Country Brief 2010," The World Bank, <http://go.worldbank.org/VQSCYP1Y50>.

²⁷⁰ Sean McCormack, "Statement by Sean McCormack, State Department Spokesman, Regarding U.S.-Turkey Agreement for Peaceful Nuclear Cooperation (123 Agreement)," US State Department website, http://turkey.usembassy.gov/123_agree.html.

to complete the construction of three nuclear power stations by 2015.²⁷¹ Investment would include facilities to produce highly enriched uranium and education of scientists to operate the facilities. The security of these facilities needs to be an area of emphasis.

Ongoing conflict with the Kurdish people presents some concern regarding the security of space within the borders criterion. Continued partnership that facilitates the resolution of this complex issue is in the interest of all involved. The Turkish desire for selective proliferation can energize the process for effectively resolving Kurdish disputes in the same manner desire for EU admittance has energized other reforms. Given the historical basing and employment of nuclear weapons in Turkey, an acceptable means of securing a Turkish nuclear program exists. Observations of how other states have addressed the issue of security will assist the Turkish people in addressing this issue.

What Have We Observed?

Multiple lessons were outlined following each of the French, Indian and Pakistani case studies. Aspects of these lessons apply to developing policy for engaging with Turkey should a decision to develop nuclear weapons be made. Assuming that although history does not repeat itself, it does often rhyme, there are some specific lessons observed from the historical case studies that are relevant to the discussion at hand. Aspects of each of these lessons are present in all the cases and multiple lessons could be derived from each case. Indicators from previous cases include: security guarantees, the power of a strategic elite in a democracy, and the development of a scientific bureaucracy.

1. France: Security Guarantees. A clear indicator that France would embark upon a nuclear program was the continued failure of the

²⁷¹ Mohamed Kadry SAID, "Civil Nuclear Energy Proliferation: Challenges and Implications for the Middle East," (Al-Ahram Center for Political and Strategic Studies, 2009), 14.

alliance with the US to meet France's security needs. The rationales for the US not to intervene in the Suez Crisis on the side of France were legitimate. Part of the analysis for these decisions should have recognized that not partnering with France in times such as this provides France with greater desire to develop their own security guarantees. Once France was coerced by a nuclear Soviet Union, the development of a significant French nuclear arsenal should have been a foregone conclusion.

The rationale for the US or NATO not getting involved in a conflict between Turkey and one of her potential regional adversaries are equally legitimate. Many of the grievances between states in the Middle East have convoluted histories with religious ties that are far from within the national interest of the US and security of Europe. Turkey's current force structure, however, is based upon confidence in specific security guarantees. Failures to support Turkey's perception of these security guarantees, such as the failure of NATO to recognize Article 4 negotiations Turkey requested in 2003, influences Turkey's confidence in these security guarantees. Turkey making adjustment to their force structure based upon a lack of confidence in security guarantees should be no less of a foregone conclusion than France making changes to their force structure following the Suez Crisis.

2. India: A Vocal Few Matter. Within all populations, there are groups of individuals who will endeavor to shape public debate. As seen in India, with the right message and appropriate means, this *strategic elite*, will influence the public debate and the decisions of the elected government officials. In India, messages related to a return to former greatness and security concerns due to a nuclear rival in China and the immediate concern of Pakistan resonated with the people. These voices shaped nuclear policy and were instrumental in India developing into a nuclear weapon state.

As demonstrated by the actions of the Turkish parliament in 2003, modern-day Turkish government officials are no less susceptible to the will of the people. Within Turkey there are equally strong groups attempting to shape policy that could become the single *strategic elite*, if they have not already done so.²⁷² The security messages about a resurgent Russian Bear, a nuclear Iran, a disputed border with Syria and the ongoing Kurdish problem have legs. When combined with a message about a resurgent great Ottoman Empire, that message can run away with an election. Should these same forces turn their attention towards nuclear policy, it is possible for them to be as instrumental as the voices in India.

3. Pakistan: Bureaucracies Work. Pakistan clearly demonstrates the required institutions a state starting from essentially nothing must create in order to develop nuclear weapons. Pakistan built multiple atomic agencies, partnered in the IAEA, fully invested in *peaceful* nuclear energy programs and completed significant covert construction while underneath the watchful eyes of Western surveillance and targeted embargos. This complex bureaucracy effectively developed the greatest technological marvel of Pakistani history. It is both a testament to the effectiveness of a well developed bureaucracy and an indicator of nuclear weapons development in current non-weapons states.

Turkey has just begun to invest in peaceful nuclear energy programs. By even the most optimistic of accounts, Turkey will not have its first nuclear reactor running until 2015 with two more slated in 2020.²⁷³ Unlike Pakistan, which trained nuclear scientists around the world, or Iran which has sent upwards of 60 academics to Russia in

²⁷² Campbell, Einhorn, and Reiss, *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, 154-55.

²⁷³ Potter and Mukhatzhanova, *Forecasting Nuclear Proliferation in the 21st Century: Volume 1. The Role of Theory*, 249.

order to develop a nuclear faculty, Turkey has invested in training only enough individuals to operate its burgeoning nuclear power industry.²⁷⁴ Significant growth within the atomic bureaucracies of Turkey will be the same indicator that was seen in Pakistan of an emerging nuclear weapons state.

Lessons Observed

Failing to actually learn from previous experiences will result in a lesson observed, but not learned. Some would simply dismiss the likelihood of partnering on proliferation as being poorly grounded in truth due to current political realities rather than exploring the potential benefits of such partnering.²⁷⁵ Should Turkey deem it within her national interest to develop nuclear weapons, and the US is determined to take the same stance previously taken with France, India and Pakistan; it is reasonable to expect Turkey to encounter challenges similar to those encountered by previous proliferators. There are three specific predictions that can be made from the historical case studies concerning the future of a proliferated Turkey and a continuing non-proliferation stance in US policy.

1. France: The NATO Pariah. Although French relations with NATO have normalized, they have never recovered. Equally important, Franco-American relations have closely resembled Frances relationship with NATO. Should Turkey develop a nuclear weapons program under the current non-proliferation paradigm, there is no doubt that Turkey's relationship with NATO and the US would suffer. It has been argued that the shared nuclear weapons are one of the last items that actually justify the existence of NATO. A Turkey that proliferates outside of international partnership would rely less on NATO, and could possibly be

²⁷⁴ Kibaroglu, "Beyond Iran: The Risk of a Nuclearizing Middle East," 2.

²⁷⁵ Potter and Mukhatzhanova, *Forecasting Nuclear Proliferation in the 21st Century: Volume 1. The Role of Theory*, 248.

of more risk than value to NATO. Like France, the reason Turkey would develop nuclear weapons would be greatly influenced by the perception that NATO was no longer of significant value.

2. India: Empowerment of the Elite. Not acknowledging India's perceived risk only empowered her to act bolder. The Soviet Union was not in a position to address India's concerns about a rising China. The US had little interest in India following the Carter administration and was disinterested in addressing any concerns India had about Pakistan. This fed into a belief that India would be required to meet her own security needs and further empowered any debate on the development of a nuclear weapons program. The power of the message of a small group upon the population is dictated by the perception of the population. The vacuum created by a diminishing Soviet influence in face of a rising Chinese influence and a disinterested US empowered the strategic elite of India with an opportunity to press an agenda for nuclear weapons proliferation. The potential exists for a similar debate within Turkey should the population feel threatened by regional actors and not assured by the actions of the West.

3. Pakistan: All Risks Justifiable. Starvation of the people, shady international deals, and sub-optimal weapon design, as demonstrated by Pakistan, none of these factors mattered when faced with what was deemed an existential threat. Recognizing the difficulties in obtaining equipment and education from the West, states such as Russia, Pakistan, Israel, and Iran could all consider capitalizing in the economic opportunity presented by a Turkey willing to spend her last available lira on achieving this capability.²⁷⁶ These same countries may also be interested in strengthening diplomatic ties in with a country located at the strategic crossroads of Europe and Asia. Regardless of the

²⁷⁶ Mehmet Kalyoncu, "Why, When and How Turkey Becomes a Nuclear Power (2)," *Today's Zaman*, 19 September 2008.

reasons another state might assist Turkey in developing nuclear weapons capability, the Pakistani case demonstrates that a Turkey willing to sacrifice enough will develop a nuclear weapon.

Multiple, often overlooked, factors contribute to the actual amount of time required to develop a weapon being longer than having the technical capability might suggest.²⁷⁷ Estimates show that based upon ability to indigenously produce weapons grade plutonium or uranium, Turkey could not covertly produce a nuclear weapon before 2019.²⁷⁸ Some of the items that would lead to this covert program and what might occur should the US not partner in an overt program have already been discussed. There are, however, some broader picture items that have not been discussed.

Lessons Observed or Lessons Learned?

The West has traditionally had difficulty building alliances in the Middle East. Turkey is a rare exception, as demonstrated by its status as the only predominantly Muslim nation within NATO. Turkey is also the only Middle East state to have what can be considered good relations with the state of Israel. Turkey is located in the strategic position at the juncture between Europe and Southern Asia. The value of Turkey as an ally is best perceived in broader and longer terms. Selective proliferation is a long-term proactive strategy rather than a reactive one. Selective proliferation assumes states *will* proliferate rather than simply attempt to delay the short-term *when*. The historical cases studied provide useful guidance as to *how* to structure a partnership with a Turkey that desires to proliferate.

²⁷⁷ Potter and Mukhatzhanova, *Forecasting Nuclear Proliferation in the 21st Century: Volume 1. The Role of Theory*, 81.

²⁷⁸ Potter and Mukhatzhanova, *Forecasting Nuclear Proliferation in the 21st Century: Volume 1. The Role of Theory*, 249.

1. France: Actions Speak Louder than Words. Partnering with governments is essential to building relationships, but actions build credibility in security guarantees. Clearly understanding what actions the US is willing to take is fundamental to developing the appropriate security guarantees. Recognizing that France deemed their interests in North Africa as being essential, the US needed to take actions to partner with this ally. Given the US deemed conventional support as inappropriate and, clearly, France possessed both the capability and desire to develop nuclear weapons, partnering on the development of those nuclear weapons would have been a prudent next step.

2. India: Influence the National Debate. The national debate within India to develop nuclear weapons was extensive. India at times made bold foreign policy decisions based in part upon a confidence in the relationship with their Soviet ally. Post Cold War analysis has shown that a sophisticated Soviet propaganda machine was heavily engaged in the public debate and covertly funded the Communist Party in India. These are activities that the US would likely not be interested in participating in to the degree the Soviets did, but they do demonstrate the ability of an outside state to influence the public debate within a democracy.

The US has an opportunity to influence the public debate within Turkey. In 2008, only 14% of Turks viewed the US favorably.²⁷⁹ Contributing to this viewpoint is a belief that the US dictates rather than partners. Should the development of a nuclear weapons program in Turkey become a national security debate, a US that partners with Turkey to meet security needs will have opportunities to influence the debate in the same manner the Communist Soviet Union was able to influence debate in the world's largest democracy.

²⁷⁹ Kalyoncu, "[Getting Realistic About Iran] Why, When and How Turkey Becomes a Nuclear Power (1)."

3. Pakistan: Mentor the Scientific Bureaucracy. The world is just beginning to feel some of the pain that has resulted from the failure to mentor the Pakistani scientific bureaucracy in a positive manner. The AQ Kahn network has likely contributed greatly to the nuclear weapons programs of Iran and North Korea. This lack of mentorship prior to development of nuclear weapons has resulted in a costly, after-the-fact partner capacity building in nuclear surety that unduly subjected the world to greater risk than need be.

US partnership within the scientific bureaucracy could start early and often. Aiding Turkey in the development of personnel reliability programs decreases the likelihood of the scenarios like the AQ Kahn network or the Pakistani nuclear scientists that met with Al Qaeda. Sharing appropriate simulation data derived from previous tests greatly reduces the requirement for future above ground tests and potentially for future testing beyond cold tests altogether. Partnering early also assists Turkish scientists with developing weapons that include permissive action link and environmental sensing devices in weapons design. These types of measures greatly reduce the likelihood of environmental harm, the potential for accidents, and use of the weapons by individuals not intended to have access to the weapons.

Finally, Turkey recognizes that admittance to the EU would be almost impossible as a nuclear proliferator and would have at least internally given up any chance of EU membership occurring before pursuing a weapons program.²⁸⁰ A proactive US response to this and future developing situations will place the US in a far better position than should the US take the same stance with regard to nuclear proliferation that we have taken in the past.

²⁸⁰ Sokolski et al., *Getting Ready for a Nuclear-Ready Iran*, 106.

Application of Lessons Learned

The US has clearly demonstrated an interest in building partnership capacity in endeavors ranging from supplying instruction and equipment through foreign military sales to improving basic policing skills to building 4th generation air forces and modern naval armadas. A fundamental principle of these actions is that the efforts need to be in the interest of both the US and the partner nation involved in order to have long term success.²⁸¹ Given that in all three historical case studies the US eventually partnered on issues concerning that states nuclear program and acknowledge the right of that state to possess a nuclear weapons program, it is a long term interest of the US to partner on the outset with states that meet the proliferation criteria and the US deems to have both the capability and desire to develop nuclear weapons programs.²⁸²

Current US foreign policy has tended to favor international organizations. As such, a selective proliferation regime that more closely resembles the IAEA may be more in line with a discussion about proliferation than bilateral agreements. As previously noted in the assumptions, this thesis recognizes that recommendations made in a bilateral context may in reality result in a US position within a larger international regime. US policy concerning a Turkish request for nuclear technology should include the following considerations.

Command. Turkey has a history of the military being relatively more influential in government matters than some equivalent Western democracies. The West has generally accepted this condition due to the

²⁸¹ Jason B. Terry and U.S. Army Command and General Staff College., "Principles of Building Partnership Capacity" (U.S. Army Command and General Staff College, 2010).

²⁸² As alluded to earlier in this thesis, a state that does not meet the criteria, such as Saudi Arabia, is an opportunity to increase partnership in the criteria subject areas. Turkey has made significant changes to their government in order to meet the criteria of the European Union. Any state that would prefer the carrot of partnership over the stick of embargos would need to first make endways in these criteria.

military's insistence on a secular rule of Turkey. The issue of military influence in Turkey has been addressed by many of the concessions made in part to gain acceptance to the EU. These endeavors should be supported and continued in a manner that cements continued liberal democratization of the Turkish Parliament. On the surface, Iran was a democracy that chose the current regime. Although much more complicated than previously stated, the Iran case should be considered in endeavors to assist Turkey in development of a representative government. Efforts need to consider institutional checks and balances that avoid conglomeration of power in any one entity. This can prove difficult when addressing the responsiveness desired for employment of nuclear weapons.

Developing command for the employment of weapons involves delineation of responsibilities between those that employ the weapons and those that make the decisions to employ the weapons. Ensuring decision makers have the most accurate information in a timely manner has continually presented nuclear states with challenges. Effectively communicating these decisions in a secure manner can prove equally difficult. The consequences of miscommunication or misperception are too severe to not partner with a developing nuclear weapon state.

Recognizing that every organization will be slightly different dependent upon the history and culture of that state, there is also a history between Turkey and the US of developing compatible military organizations. The NATO standard allows for military units within NATO to operate equipment with shared logistics and similar training proficiencies despite some significant differences within their military cultures. Development of nuclear capabilities would continue along this well established norm. Furthermore, there exists the potential to increase partnership in intelligence pictures that further increase the accuracy of the information the decision makers receive and hence

decrease potential for miscalculation. Finally, assistance with secure communication protocols and equipment further decreases the potential for miscommunication.

Control. Nuclear surety is a fundamental premise of this thesis. Construction of weapons storage facilities and techniques and procedures for manning these facilities should build upon the well established weapons sharing norms within NATO. The personnel involved with all aspects of the nuclear weapons program will need to be part of a personnel reliability program that ensures the highest degree of individual reliability for allegiance, trustworthiness, conduct, behavior, and responsibility are continuously evaluated.²⁸³ Permissive action links and environmental activation devices are basic control elements that need to be built into every nuclear weapon design. These are a few of the many core competencies of the premier US nuclear enterprise that are in the US interest to ensure our allies do not stumble in.

Nuclear Education. Every state to date that has developed a nuclear weapons program has also developed a significant cadre of academic professionals with nuclear experience. The US has the finest schools and programs for partnering with Turkey in the development of an academic cadre. This partnership would assist in responsible weapons design and support the first steps of a personnel reliability program. The partnership could also include the transfer of previous nuclear test data that eliminates the need for conducting tests beyond cold tests.

Second Strike Gap. A contributing factor in the instability of emerging nuclear weapon states is the time frame from when the state first develops a nuclear capability and when the capability is robust

²⁸³ USAF, "DoD 5210.42-Regulation: Nuclear Weapons Personnel Reliability Program (PRP)," ed. US Air Force (DOD, 2010), 19.

enough to deter potential adversaries. During this time, a potential adversary might consider a pre-emptive strike on the up-and-coming nuclear capability justifiable. Although none of the research conducted within this thesis suggested India considered this option, multiple actions taken by Pakistan demonstrate that Pakistan was significantly convinced this was a possibility.²⁸⁴ Pakistani fear of a preemptive or preventative strike during the Kargil conflict contributed to decisions to take risk in nuclear surety for the benefit of the greater likelihood of the survivability its nuclear capability.²⁸⁵ This timeframe of vulnerability promotes greater risk in the areas of command and control previously discussed and is therefore an area of serious concern.²⁸⁶ Partnering in this area could range from assisting with techniques to disperse capability to allowing Turkey to develop weapons within a US security umbrella until a sufficient capability exists.

Strategy, Doctrine, and Policy. The development of strategy, doctrine, and policy are a complicated process. With regard to nuclear weapons, the misapplication of these items can place the world at significant risk. Understanding how to effectively communicate a state's deterrence position requires close coordination between the political and military elements of the state. Pakistan found itself in a position where the capability had outrun the strategy, doctrine and policy. The observable result was a significant reorganization of the military and command authority as noted in the chapter three case studies. The more difficult to quantify result is exactly how much jeopardy resulted from the high-risk loosely coordinated strategy of attempting to mix the nuclear deterrence and coercion with conventional conflict during the

²⁸⁴ The Israeli 2007 strike on Syria and 1981 strike on Iraq would be additional case studies demonstrating this principle.

²⁸⁵ Art and Jervis, *International Politics: Enduring Concepts and Contemporary Issues*, 223.

²⁸⁶ Graham T. Allison and Trilateral Commission., *Nuclear Proliferation: Risk and Responsibility: A Report to the Trilateral Commission*, The Triangle Papers ; 60 (Washington: Trilateral Commission, 2006), 13.

1999 Kargil crisis.²⁸⁷ A Turkey that develops a nuclear capability should have the proper organization for communicating strategic messages before the completion of the first cold test.

There are most certainly other areas where the US could partner with Turkey concerning issues of nuclear weapons capability. Recognizing that the areas for partnership exist is not the same as advocating a position. At no point has this case study demonstrated that it is within US interests for Turkey to develop their own nuclear weapons capability. The current cost of weapons sharing is well within the interest of the US as long as it meets the security needs of Turkey. Should the US, however, fail to consistently find it within US national interest to take actions in the Middle East that build confidence in Turkey's perception of US security guarantees, US policy should not be handicapped from effectively maintaining a partnership. Within the context of weapons sharing and other security guarantees not meeting the security needs of Turkey due to future regional proliferation and a lack of US interest in committing to involvement in wars between Middle East states, the US should be prepared to proliferate nuclear weapons technology in a manner that is more effective than the manner accomplished with France, India and Pakistan.

²⁸⁷ T. V. Paul, Teleglobe Raoul-Dandurand Chair of Strategic and Diplomatic Studies., and Université du Québec à Montréal. Centre d'études des politiques étrangères et de sécurité., *Power Versus Prudence: Why Nations Forgo Nuclear Weapons*, Foreign Policy, Security, and Strategic Studies (Montreal; Ithaca, N.Y.: McGill-Queen's University Press, 2000), 136.

Chapter 5

Conclusion

The American people face no greater or more urgent danger than a terrorist attack with a nuclear weapon.

President Barack Obama

The above statement from the Obama Administration's National Security Strategy reflects a significant change in threats to the US.²⁸⁸ An update in the threat requires and update in the thinking about how threats are addressed. The traditional concerns about proliferation were based upon the fear that states with nuclear weapons would eventually use them against the US. The more likely threat is now a terrorist attack with a nuclear weapon. This new threat assessment warrants a change to traditional thinking concerning nuclear proliferation.

The Acid Test for Deterrence. The possession of nuclear weapons by India and Pakistan, states with histories of high tension and multiple conflicts, could greatly change the potential for destruction in regional conflicts.²⁸⁹ Why then has conflict and disputes between Pakistan and India since 1998 not devolved into nuclear war as many American analysts would predict?²⁹⁰ The straightforward answer is that

²⁸⁸ Barack Obama, *National Security Strategy* (Washington: White House, 2010), 23.

²⁸⁹ S. Paul Kapur, "Revisionist Ambitions, Conventional Capabilities, and Nuclear Instability." Sagan, *Inside Nuclear South Asia*, 184.

²⁹⁰ For greater discussion on the role of deterrence regarding conflict between Pakistan and India since 1998 review "Nuclear Stability in South Asia" by Kenneth Waltz. Art and Jervis, *International Politics: Enduring Concepts and Contemporary Issues*, 228-37. Also available at Sagan and Waltz, *The Spread of Nuclear Weapons: A Debate Renewed; with New Sections on India and Pakistan, Terrorism, and Missile Defense*, 109-24.

nuclear weapons deter escalation.²⁹¹ India and Pakistan rightfully fear escalation to nuclear catastrophe and deterrence has once again passed the test. Terrorism utilizing weapons of mass destruction (WMD) has failed the test multiple times.

Four instances of “significant attacks by terrorists using poison, disease, or radioactive material as weapons” have occurred since 1984.²⁹² Of these, only the 1995 Tokyo attack with sarin and the 2001 Washington DC attack with anthrax utilized methods not easily obtained.²⁹³ The terrorist organization responsible for the Tokyo attack only settled for the sarin attack after failed attempts to procure a nuclear weapon. Although access to weapons of mass destruction (WMD) is limited, interest in WMD by terrorists is growing and willingness to use WMD is evident.²⁹⁴ The few short years since WMD have been available to terrorist organizations have resulted in multiple incidents of use. There are no indications of restraint by terrorist organizations should they acquire a nuclear weapon similar to the restraint observed by states possessing nuclear weapons over the past six decades. When the threat is assessed based upon the potential to obtain a capability *and* the demonstrated willingness to use that capability, the threat of extremist organizations obtaining and utilizing a nuclear weapon far exceeds the threat of a state utilizing a nuclear weapon.

²⁹¹ Forsyth, Saltzman, and Schaub, "Remembrance of Things Past: The Enduring Value of Nuclear Weapons," 75.

²⁹² John Parachini, "Putting WMD Terrorism into Perspective," *The Washington Quarterly* (2003): 39.

²⁹³ The other incidents being the 1984 Oregon salmonella poisoning and the 1990 chlorine attack in Sri Lanka. Although chlorine was used as a weapon in the First World War, the commercial availability of chlorine as compared to sarin, which was outlawed in 1993, greatly distinguishes these two cases. Anthrax is relatively easy to create, but the 2001 anthrax attack utilized an extremely pure material with an electrostatic charge to increase the vaporization qualities. Anthrax of this quality is much more difficult to obtain and specifically suited as a WMD.

²⁹⁴ Steve Bowman, "Weapons of Mass Destruction: The Terrorist Threat," ed. CRS Report for Congress (The Library of Congress, 2002), 2.

More importantly, many of the norms that create the international system of today would be eliminated by nuclear terrorist incident. Globalization has resulted in states that are no longer self sufficient. The isolationism that would result from the US effectively shutting down borders to decrease the likelihood of an additional attack would tumble the global economy. A return to isolationist policies would negate the hundred fold increase seen in international trade since 1955 and a return to shifting horticulture, pastoralism, hunting, and gathering. Instability and deaths resulting from famine during this transition could equal or exceed the immediate impacts of the terrorist nuclear attack. As states accomplished the agonizing process of regaining self dependency, confidence in the US and international system would be painfully slow to return.

The combination of terrorist willingness to use a nuclear weapon and the resulting impact on globalization makes no greater or more urgent danger than global nuclear terrorism. Improving nuclear surety is the only immediately actionable method to confront this most likely and increasingly dangerous scenario. Sufficient nuclear surety needs to consist of the materiel, personnel, and procedures that contribute to the safety, security, reliability, and control of nuclear weapons. Efforts to eliminate nuclear weapons are commendable, but fail to properly address the immediate nuclear surety issues of states increasing the size of their nuclear weapon stockpiles and the emergence of new nuclear states. The world must consider how to selectively proliferate expertise and technology to states choosing to develop nuclear weapons. Selective proliferation of the technology and expertise that make modern arsenals secure is the actionable means of enhancing global nuclear surety. Nuclear surety is of greater importance than non-proliferation.

The Way Ahead

Where possible, U.S. strategy is to employ indirect approaches—primarily through building the capacity of partner governments and their security forces—to prevent festering problems from turning into crises that require costly and controversial direct military intervention. In this kind of effort, the capabilities of the United States' allies and partners may be as important as its own, and building their capacity is arguably as important as, if not more so than, the fighting the United States does itself.

Secretary of Defense Robert Gates

Thomas Barnett's 2004 book, *The Pentagon's New Map*, contended the US and other states would benefit from America's "capacity to export security around the planet." Central to Barnett's idea is the US partnering with states that have been unable to provide security within their region and assisting in building their capacity to secure territory within their borders. The United States military has been part of a whole of government approach to this concept that is often referred to as Building Partnership Capacity (BPC). Although significant amounts of military aid may be required to achieve the capacity being built, often the most valuable aspect of US partnering is the expertise the whole of government agencies provide. The US gains better understanding of the security needs of other states and the partnering state gains knowledge ranging from methods to organize, train, and equip a force to leadership techniques and effective civil-military relations.

BPC is traditionally envisioned as state building efforts in areas such as training police forces, improving infrastructure, and decreasing poverty. Tasks may appear similar to "nation building," but BPC is increasing the capacity of an existing state rather than attempting to create a new state. BPC strategy is a recognized method to tackle US security needs to address the proliferation of hostile non-state actors and terrorist organizations in a resource constrained environment. BPC

provides a method to assist a state with security within their borders without the US needing to expend the level of resources required to deploy large number of forces to conduct the same security measures.

This thesis has considered the viability of building nuclear capacity of partner states through selective proliferation to address the spread of nuclear weapons to non-state actors in a resource constrained environment. Building nuclear capacity of partner states also provides options for addressing the security needs of states that are not satisfied by US assurances without increasing the divides that exist within the international system. These two advantages of selective proliferation make this strategy worthy of greater discussion.

The Turkish case study into a strategy for selective proliferation addresses the current erosion of the non-proliferation regime. Non-nuclear states continue to attempt to proliferate while nuclear weapon states that are not the recognized P-5 increase the size of their arsenal. Within this environment of an eroding non-proliferation regime the Turkish case study provides policy implications specific to Turkey. This chapter will utilize this information to generate general policy suggestions for interacting with all states that meet the criteria for selective proliferation and the impacts of this strategy on current US nuclear force structure.

Command. Command remains about understanding the environment and operating within the environment. On a technical level, the US can continue to invest in efforts that enhance global understanding of nuclear threats. This involves the very complicated task of properly combing and disseminating complex information

systems.²⁹⁵ Increasing situational awareness is critical to decreasing the potential for misperception and miscalculation.

The structure of nuclear weapons organizations, delineation of responsibilities between those that will employ the weapons and those that will make the decisions to employ the weapons, are not all created equal. Organization will be different dependent upon the history and culture of the state, but disseminating accurate information in a timely and secure manner presents challenges to all. Developing technology based on US knowledge that can be exported and sharing valuable expertise acquired in this area addresses many of these challenges. Miscommunication and misperception are rarely positive attributes in the command of nuclear weapons.

Control. The control of nuclear weapons by the individuals with the delegated responsibility to employ the weapons was a driving factor throughout this analysis. Nuclear surety consists of the materiel, personnel, and procedures that contribute to the safety, security, reliability, and control of nuclear weapons. These efforts assure no nuclear accidents, incidents, unauthorized use, or degradation in performance. Material solutions involve partnering on weapons storage design and weapons employment features like permissive action links and environmental activation devices. Personnel solutions involve education on personnel reliability programs and sharing of global information that ensures the world is not placed at risk by a future AQ Kahn. Procedural solutions include the continued development of centers of excellence on the proper employment of nuclear weapons. Building on the experience of shoring up former Soviet stockpiles and a reckless Pakistani nuclear program, these are relatively low-cost ways the US can take a proactive solution to the control of nuclear weapons.

²⁹⁵ An example of this task would be finding ways to share sensitive radar picture information from multiple sources between multiple states.

Nuclear Education. Individuals will always be the most significant factor in complex human endeavors. The relationships that form between individuals continue to have effects far outreaching the cost of the efforts. Leveraging this relatively simple concept, the US goes to great lengths to bring exchange students to military schools and programs in the US. A significant cadre of academic professionals with nuclear experience will need to be developed to institute a nuclear weapons program and the US possesses the finest academic institutions in the world. The marriage of these two ideas is obvious.

Of equal importance is the environmental damage that occurs due to nuclear testing. There are significant steps that can be taken to limit the environmental damage done by nuclear testing and this information should clearly be disseminated in great detail with little potential for loss of security to the state releasing the information. Education in weapons design and the data from previously conducted nuclear tests is a much more difficult issue. Efforts should be taken today to begin to examine means in which this information can be disseminated. France's ability to disseminate nuclear test data to Britain may prove a useful example. A partnership that eliminates the need for conducting testing beyond cold tests would be the desirable standard of merit.

Second Strike Gap. The second strike gap, that time within which a state possesses nuclear weapons but does not possess the ability to guarantee a retaliatory strike on an aggressor, is an area of momentous concern. If handled poorly, it provides incentive for regional competitors to conduct preemptive strikes. Ensuring the US retains the ability to provide a nuclear umbrella during this time offers some assurance. States that have effectively mastered minimum deterrence can also provide techniques for quickly bridging this gap. US partnership in dual capable weapon systems can provide further options for the emerging nuclear weapons state. These options, and others, will be dependent

upon the partner state. The most significant assistance the US can provide in this area is expertise in the employment of nuclear weapons.

Strategy, Doctrine, and Policy. US excellence in nuclear strategy, doctrine and policy is unsurpassed. It is critical the US continue to examine ways to share with emerging nuclear powers an understanding of the risk poor or misapplied strategy, doctrine and policy. The US and USSR at times placed the world at significant risk while learning current strategy, doctrine, and policy. To encourage other states to face the same learning curve due to a reluctance to engage in discussion of what is considered a forbidden topic is an archaic form of logic. Deterrence involves effectively communicating a position through close coordination between the political and military elements of the state. Some aspects of this art are impossible to teach, but it should not be for a lack of effort.

Beyond the hypothetical case of Turkey, the research as a whole pointed to three poignantly relevant facts. First, given time states will proliferate nuclear weapons when they have sufficient desire, a composite of stature and security issues, and the capability. Second, the decision to proliferate nuclear weapons provided opportunities for other states to partner. France partnered with the US covertly while Pakistan continues to partner after the fact, but partnering does occur. Finally, partnering throughout the journey to become a nuclear weapon state has the potential to greatly enhance global nuclear surety. States that have skin in the game are surprisingly willing to participate in partnership activities. Examples include significant painful changes made to gain acceptance to organizations such as the EU, NATO and others. There is no evidence to point towards states not making equally painful changes in order to gain admittance to the league of nuclear weapons states.

Final Thoughts

The laws that forbid the carrying of arms are laws of such a nature. They disarm only those who are neither inclined nor determined to commit crimes....Such laws make things worse for the assaulted and better for the assailants; they serve rather to encourage than to prevent homicides, for an unarmed man may be attacked with greater confidence than an armed.

Thomas Jefferson²⁹⁶

Strategy is the craft of creating a favorable future in large-scale activities of broad scope and significant consequence.

Dr. Harold R. Winton

The United States continues to take the lead in a kind of nuclear gun control in the form of non-proliferation strategy. While it is generally assumed that non-proliferation is a positive outcome, little discussion has taken place concerning the negative implications of this strategy. We have seen the creation of a world where the armed are perhaps too confident to attack the unarmed because they can rather than because they should. This occurs in part due to not fully recognizing the implications of a non-proliferation strategy.

Active enforcement of the non-proliferation regime contributes to greater threat of criminal elements trafficking nuclear technology and inadequate state run programs for monitoring individuals with nuclear expertise. This fact is used by some to contend that no new nuclear states should exist and nuclear weapons should be eliminated. The problems are caused by states wanting to have nuclear weapons so the solution is to not allow them to have nuclear weapons. It is a circular argument with no favorable future potentials. Sometimes, when

²⁹⁶ From Thomas Jefferson's "Commonplace Book," 1774-1776, quoting 18th century criminologist Cesare Beccaria in Chapter 40 of "On Crimes and Punishment", 1764.

presented with a multitude of bad options, the best strategy is the option that provides the most opportunities for additional options with favorable futures.

Another state will eventually proliferate. Debates abound as to whether states should proliferate individually or in pairs, but historically there have been about one to two new nuclear states every ten years. It is likely that unless the desire changes Iran will be the next state to proliferate, but more important that a solid strategy exists for dealing with all future proliferation issues. Each nation within Iran's sphere of influence will need to reassess their view of the balance of power. Whether motivated by fear of a nuclear capable Iran, the prestige of being a nuclear capable state within the region, or simply that it is within their own interest to be a nuclear state; other states may also decide to proliferate.

The Chief of Staff of the United States Air Force has challenged Airmen to think broadly about deterrence and assurance, and how they relate to US policy and the US Air Force contribution to twenty-first century national defense.²⁹⁷ Selective proliferation provides US policy options in the context of limited resources, force reduction and force modernization. Domestic constraints and non-nuclear commitments will continue to limit resources available for US nuclear weapons programs. Economic and political forces will continue to drive force reduction and delay force modernization.

States currently satisfied by US assurances will reassess confidence in these assurances as US capability diminishes and potentially threatening states proliferate. This reality presents the US with a choice of contributing to the likelihood of a terrorist nuclear

²⁹⁷ Anthony C. Cain, Air University (US) Air Force Research Institute, and Royal United Services Institute for Defence and Security Studies, *Deterrence in the Twenty-First Century: Proceedings* (Maxwell Air Force Base, AL: Air University Press), 41.

incident by forcing allies to develop nuclear programs without the extensive technology and expertise of the finest nuclear program in the world, or partner with these allies to embrace opportunities in a less than favorable situation. This author contends that a favorable future to the US and the world is more likely achieved by partnership.



Bibliography

Academic Papers

Buono, Suzanne. "Demistifying Nuclear Proliferation: Why States Do What They Do." 230. Washington DC: Johns Hopkins University, 2011.

Cain, Anthony C., Air University (US) Air Force Research Institute, and Royal United Services Institute for Defence and Security Studies. *Deterrence in the Twenty-First Century: Proceedings*. Maxwell Air Force Base, AL: Air University Press.

Olson, Jeremy E. "The Best Defense: Making Maximum Sense of Minimum Deterrence." Maxwell AFB, AL: School of Advanced Air and Space Studies, Air University, 2011.

Sauermann, Lothar. "The Test of Strength: Explaining Germany's Reluctance Towards Nuclear Weapons 1945-2011." Maxwell AFB, AL: School of Advanced Air and Space Studies, Air University, 2011.

Sokolski, Henry D., Patrick Clawson. Strategic Studies Institute and Nonproliferation Policy Education Center. *Getting Ready for a Nuclear-Ready Iran*. Carlisle Barracks, PA: Strategic Studies Institute U.S. Army War College, 2005.

Sokolski, Henry D. *Prevailing in a Well-Armed World: Devising Competitive Strategies against Weapons Proliferation*. Carlisle Barracks, PA: Strategic Studies Institute, U.S. Army War College, 2000.

Terry, Jason B. "Principles of Building Partnership Capacity." US Army Command and General Staff College, 2010.

Articles

Andrew, C. M., and A. S. Kanya-Forstner. "The French 'Colonial Party': Its Composition, Aims and Influence, 1885-1914." *The Historical Journal* 14, no. 1 (1971): 99-128.

- Arteaga, Félix. "French Nuclear Deterrence According to President Chirac: Reform, Clean Break or Reminder?" *Real Instituto Elcano* (2006): 6.
- Attali, Dr. Jacques, and et al. "Global Zero Action Plan." 11: Global Zero, 2010.
- Azam, Rai Muhammad Saleh. "Where Mountains Move: The Story of Chagai." *Defence Journal* (2000).
- Below, Tim. "US Nuclear Deterrence: An Opportunity for President Obama to Lead by Example." *Air & Space Power Journal* 23, no. 4 (2009): 8.
- Boire, Richard Glen. "Neurocops: The Politics of Prohibition and the Future of Enforcing Social Policy from inside the Body." *JOURNAL OF LAW AND HEALTH* 19, no. 5 (2004): 43.
- Bowman, Steve. "Weapons of Mass Destruction: The Terrorist Threat." edited by CRS Report for Congress, 10: The Library of Congress, 2002.
- Forsyth, James Wood, B. Chance Saltzman, and Gary Schaub. "Minimum Deterrence and Its Critics." *Strategic Studies Quarterly* 4, no. 4 (2010): 10.
- . "Remembrance of Things Past: The Enduring Value of Nuclear Weapons." *Strategic Studies Quarterly* 3, no. 3 (2010): 16.
- Grand, Camille. "France and Disarmament from One Century to Another." Paris: Diploweb, 2010.
- Ignatius, David. "To Pakistan, Almost with Love." *Washington Post*, 4 March 2010.
- Jo, Dong Joon, and Erik Gartzke. "Determinants of Nuclear Weapons Proliferation." *Journal of Conflict Resolution* 51, no. 1 (2007): 29.
- Kalyoncu, Mehemet. "[Getting Realistic About Iran] Why, When and How Turkey Becomes a Nuclear Power (1)." *Today's Zaman*, 18 September 2008.
- . "Why, When and How Turkey Becomes a Nuclear Power (2)." *Today's Zaman*, 19 September 2008.

- Khan, H. "Nuclear Control in Pakistan."
<http://www.pakdef.info/nuclear&missile/nuclearcontrol.html>.
- Kibaroglu, Mustafa. "Beyond Iran: The Risk of a Nuclearizing Middle East." 9. Washington DC, 2005.
- . "Iran's Nuclear Program May Trigger the Young Turks to Think Nuclear." *Proliferation News and Resources, Carnegie Endowment for International Peace*, 20 December 2004.
- Luongo, Kenneth N., and Brig. Gen. (Ret.) Naeem Salik. "Building Confidence in Pakistan's Nuclear Security." *PakDef* (2007),
http://www.pakdef.info/nuclear&missile/building_confidence.html
- Lewis, Aidan. "French Soldiers 'Deliberately Exposed' to Nuclear Tests." *BBC News* (2010),
<http://news.bbc.co.uk/2/hi/europe/8518348.stm>.
- Mubarakmand, Samar. "A Science Odyssey: Pakistan's Nuclear Emergence." 1998.
- Mustafa, Lt Gen (R) Ghulam. "Army Strategic Force Command."
<http://www.pakdef.info/nuclear&missile/armystrategiccommand.html>.
- Norris, Robert S., and Hans M. Kristensen. "Global Nuclear Weapons Inventories, 1945-2010." *Bulletin of the Atomic Scientists* 66, no. 4 (2010): 7.
- Parachini, John. "Putting WMD Terrorism into Perspective." *The Washington Quarterly* (2003): 14.
- Perry, John Curtis. "Great Britain and the Emergence of Japan as a Naval Power." *Monumenta Nipponica* 21, no. 3/4 (1966): 305-21.
- Peyron, Julien. "Government Earmarks €10 Million for Nuclear Test Victims." *France 24 International News* 24/7, 2009.
- PIEAS. "PIEAS - History of Development."
<http://www.pieas.edu.pk/about/genesis.php>.

SAID, Mohamed Kadry. "Civil Nuclear Energy Proliferation: Challenges and Implications for the Middle East." 18: Al-Ahram Center for Political and Strategic Studies, 2009.

Sanger, David E. and Broad, William J. "U.S. Secretly Aids Pakistan in Guarding Nuclear Arms." *The New York Times* 2007.

Syed A, Mansoor Ahmed and H Khan. "Timeline of Pakistan's Nuclear Programme." 2000.

Seguin, Barre R. "Why Did Poland Choose the F-16?" *The Marshall Center Occasional Paper Series* 11 (2007): 38.

Shabbir, Usman. "Remembering Unsung Heroes: Munir Ahmed Khan: The Tremendous Contribution Made by Munir Ahmed Khan in Making Pakistan Nuclear." *Defence Journal* (2004).

Ullman, Richard H. "The Covert French Connection." *Foreign Policy* 75 (1989): 31.

Varadarajan, Siddharth. "In P-5 Statements, Gradual Recognition of India's Nuclear Status." *The Hindu*, 23 December 2010.

Books

Allison, Graham T. *Avoiding Nuclear Anarchy: Containing the Threat of Loose Russian Nuclear Weapons and Fissile Material*, CSIA Studies in International Security; Cambridge, MA: MIT Press, 1996.

———. *Nuclear Terrorism: The Ultimate Preventable Catastrophe*. 1st ed. New York: Times Books/Henry Holt, 2004.

Allison, Graham T., and Trilateral Commission. *Nuclear Proliferation: Risk and Responsibility: A Report to the Trilateral Commission*, The Triangle Papers ; 60. Washington: Trilateral Commission, 2006.

———. *Nuclear Proliferation: Risk and Responsibility: A Report to the Trilateral Commission*, The Triangle Papers;. Washington: Trilateral Commission, 2006.

- Armstrong, David, and Joseph John Trento. *America and the Islamic Bomb: The Deadly Compromise*. 1st ed. Hanover, N.H.: Steerforth Press, 2007.
- Art, Robert J., and Robert Jervis. *International Politics: Enduring Concepts and Contemporary Issues*. 9th ed. New York: Pearson/Longman, 2009.
- Bahgat, Gawdat. *Proliferation of Nuclear Weapons in the Middle East*. Gainesville: University Press of Florida, 2007.
- Barnaby, Frank. *How Nuclear Weapons Spread: Nuclear-Weapon Proliferation in the 1990s*. London; New York: Routledge, 1993.
- Barrillot, Bruno. "French Nuclear Tests in the Sahara: Open the Files." *Science for Democratic Action* 15, no. 3 (2008): 16.
- Basrur, Rajesh M. *Minimum Deterrence and India's Nuclear Security*, Studies in Asian Security. Stanford, Calif.: Stanford University Press, 2006.
- Beaufre, André. *Deterrence and Strategy*. New York,: F. A. Praeger, 1966.
- . *An Introduction to Strategy, with Particular Reference to Problems of Defense, Politics, Economics, and Diplomacy in the Nuclear Age*. New York,: Praeger, 1965.
- Bender, Lawrence., Lucy. Walker, Graham T. Allison, James Addison Baker, 1930- , Bruce G. Blair, 1947- , Tony Blair, 1953- , Matthew. Bunn, Participant Media., World Security Institute., History Channel (Television network), Magnolia Pictures (Firm), and Magnolia Home Entertainment (Firm). "Countdown to Zero." Los Angeles, CA:: Magnolia Home Entertainment, Magnolia Pictures and Participant Media in association with World Security Institute and the History Channel, 2010.
- Bernstein, Paul I., John P. Caves, John F. Reichart, and National Defense University. Center for the Study of Weapons of Mass Destruction. *The Future Nuclear Landscape*. Washington, D.C.: National Defense University Press, 2007.

- Campbell, Kurt M., Robert J. Einhorn, and Mitchell Reiss. *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*. Washington, DC: Brookings Institution Press, 2004.
- Chakma, Bhumitra. *Pakistan's Nuclear Weapons*. London ; New York: Routledge, 2009.
- Chengappa, Raj. *Weapons of Peace: The Secret Story of India's Quest to Be a Nuclear Power*. New Delhi: Harper Collins Publishers, India, 2000.
- Cirincione, Joseph, Jon B. Wolfsthal, and Miriam Rajkumar. *Deadly Arsenal: Nuclear, Biological, and Chemical Threats*. 2nd ed. Washington, D.C.: Carnegie Endowment for International Peace: Distributor Brookings Institution Press, 2005.
- Cortright, David, Raimo Väyrynen, International Institute for Strategic Studies., Ulkopoliittinen Instituutti (Finland), and Joan B. Kroc Institute for International Peace Studies. *Towards Nuclear Zero*. Abingdon, Oxon, U.K.: Routledge for International Institute for Strategic Studies, 2010.
- Costigliola, Frank. *France and the United States: The Cold Alliance since World War II*, Twayne's International History Series ;. New York: Twayne Publishers; Maxwell Macmillan Canada; Maxwell Macmillan International, 1992.
- Dhar, Sailendra Nath. *Atomic Weapons in World Politics*. Calcutta,: D. Gupta, 1957.
- Doyle, Michael W. *Ways of War and Peace: Realism, Liberalism, and Socialism*. 1st ed. New York: W.W. Norton, 1997.
- Falk, Richard A., and David Krieger. *At the Nuclear Precipice: Catastrophe or Transformation?* 1st ed. New York: Palgrave Macmillan, 2008.
- Fall, Bernard B. *Hell in a Very Small Place: The Siege of Dien Bien Phu*. New York, NY: Da Capo Press, 1985.
- Frey, Karsten. *India's Nuclear Bomb and National Security*, Routledge Advances in South Asian Studies ;. London ; New York: Routledge, 2006.

- Gandhi, Indira. *Indira Gandhi, Speeches and Writings*. 1st U.S. ed. New York: Harper & Row, 1975.
- Goldfischer, David. *The Best Defense: Policy Alternatives for US Nuclear Security from the 1950s to the 1990s*, Cornell Studies in Security Affairs. Ithaca, N.Y.: Cornell University Press, 1993.
- Goldfischer, David, and Thomas W. Graham. *Nuclear Deterrence and Global Security in Transition*. Boulder: Westview Press, 1992.
- Goldstein, Avery. *Deterrence and Security in the 21st Century: China, Britain, France, and the Enduring Legacy of the Nuclear Revolution*. Stanford, CA: Stanford University Press, 2000.
- Gul, Imtiaz. *The Most Dangerous Place: Pakistan's Lawless Frontier*. 1st American ed. New York, N.Y.: Viking, 2010.
- Heuser, Beatrice. *NATO, Britain, France, and the FRG: Nuclear Strategies and Forces for Europe, 1949-2000*. New York: St. Martin's Press, 1997.
- Higham, Robin D. S., and Stephen John Harris. *Why Air Forces Fail: The Anatomy of Defeat*. Lexington, KY: University Press of Kentucky, 2006.
- Huntington, Samuel P. *The Soldier and the State; the Theory and Politics of Civil-Military Relations*. Cambridge: Belknap Press of Harvard University Press, 1957.
- Jasjit, Singh, and Institute for Defence Studies and Analyses. *Nuclear India*. New Delhi: Knowledge World in association with Institute for Defence Studies and Analyses, 1998.
- Jayakar, Pupul. *Indira Gandhi: An Intimate Biography*. 1st American ed. New York: Pantheon Books, 1992.
- Jones, Gregory S., and RAND Corporation. *From Testing to Deploying Nuclear Forces: The Hard Choices Facing India and Pakistan*. Santa Monica, CA: RAND, 2000.
- Kaplan, Lawrence S. *NATO Divided, NATO United: The Evolution of an Alliance*. Westport, CN: Praeger, 2004.

- Kapur, Ashok. *Pokhran and Beyond: India's Nuclear Behaviour*. New Delhi ; New York: Oxford University Press, 2001.
- Keohane, Robert O. *After Hegemony: Cooperation and Discord in the World Political Economy*. 1st Princeton classic ed. Princeton, NJ: Princeton University Press, 2005.
- Lacouture, Jean, Patrick O'Brian, and Alan Sheridan. *De Gaulle*. 1st American ed. 2 vols. New York: Norton, 1990.
- Langewiesche, William. *The Atomic Bazaar: The Rise of the Nuclear Poor*. 1st ed. New York: Farrar, Straus and Giroux, 2007.
- Lewis, Jeffrey G. *The Minimum Means of Reprisal: China's Search for Security in the Nuclear Age*, American Academy Studies in Global Security. Cambridge, Mass.: American Academy of Arts and Sciences: The MIT Press, 2007.
- Mendl, Wolf. *Deterrence and Persuasion: French Nuclear Armament in the Context of National Policy, 1945-1969*. New York: Praeger, 1970.
- Meyer, Stephen M. *The Dynamics of Nuclear Proliferation*. Chicago: University of Chicago Press, 1984.
- Miller, John J., and Mark Molesky. *Our Oldest Enemy: A History of America's Disastrous Relationship with France*. 1st ed. New York: Doubleday, 2004.
- Montaigne, Michel De, and Edited and Arranged by David Widger. "Quotes and Images from the Works of Michel De Montaigne." Project Gutenberg, 2007.
- Morris, Errol, Michael Williams, Julie Bilson Ahlberg, Robert S. McNamara, Philip Glass, @Radical.media (Firm), Globe Department Store (Firm), SenArt Films (Firm), Columbia TriStar Home Entertainment (Firm), and Sony Pictures Classics (Firm). *The Fog of War: Eleven Lessons from the Life of Robert S. McNamara*. Culver City, Calif.: Columbia TriStar Home Entertainment, 2004. videorecording.
- Nish, Ian Hill. *Japanese Foreign Policy in the Interwar Period*, Praeger Studies of Foreign Policies of the Great Powers. Westport, CT: Praeger Publishers, 2002.

- . *Japanese Foreign Policy, 1869-1942: Kasumigaseki to Miyakezaka*. London ; Boston: Routledge & K. Paul, 1977.
- O'Neil, Andrew. *Nuclear Proliferation in Northeast Asia: The Quest for Security*. 1st ed. New York: Palgrave Macmillan, 2007.
- Paul, T. V. *The Tradition of Non-Use of Nuclear Weapons*. Stanford, CA: Stanford Security Studies, 2009.
- Paul, T. V., Teleglobe Raoul-Dandurand Chair of Strategic and Diplomatic Studies., and Université du Québec à Montréal. Centre d'études des politiques étrangères et de sécurité. *Power Versus Prudence: Why Nations Forgo Nuclear Weapons*, Foreign Policy, Security, and Strategic Studies. Montreal; Ithaca, N.Y.: McGill-Queen's University Press, 2000.
- Payne, Keith B. *The Great American Gamble: Deterrence Theory and Practice from the Cold War to the Twenty-First Century*. Fairfax, VA: National Institute Press, 2008.
- Potter, William C., and Gaukhar Mukhatzhanova. *Forecasting Nuclear Proliferation in the 21st Century: Volume 1. The Role of Theory*. 2 vols. Stanford, Calif.: Stanford University Press, 2010.
- Reed, Thomas C., and Danny B. Stillman. *The Nuclear Express: A Political History of the Bomb and Its Proliferation*. Minneapolis: Zenith Press, 2009.
- Risse-Kappen, Thomas. *Cooperation among Democracies: The European Influence on U.S. Foreign Policy*, Princeton Studies in International History and Politics. Princeton, N.J.: Princeton University Press, 1995.
- Rogers, Paul. *Guide to Nuclear Weapons*. Oxford England; New York: Berg; Distributed exclusively in the US and Canada by St. Martin's Press, 1988.
- Sagan, Scott Douglas. *Inside Nuclear South Asia*. Stanford, CA: Stanford Security Studies, 2009.
- . *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons*, Princeton Studies in International History and Politics. Princeton, NJ: Princeton University Press, 1993.

- Sagan, Scott Douglas, and Kenneth Neal Waltz. *The Spread of Nuclear Weapons: A Debate Renewed; with New Sections on India and Pakistan, Terrorism, and Missile Defense*. 2nd ed. New York: Norton, 2003.
- Schneider, Barry R. *Future War and Counterproliferation: US Military Responses to Nbc Proliferation Threats*. Westport, CT: Praeger, 1999.
- Syed, Anwar Hussain. *The Discourse and Politics of Zulfikar Ali Bhutto*. New York: St. Martin's Press, 1992.
- Synnott, Hilary. *The Causes and Consequences of South Asia's Nuclear Tests*. Oxford; New York: Oxford University Press for the International Institute for Strategic Studies, 1999.
- . *Transforming Pakistan: Ways out of Instability*. Abingdon: Routledge for the International Institute for Strategic Studies, 2009.
- Thomas, Raju G. C., and Amit Gupta. *India's Nuclear Security*. Boulder: L. Rienner Publishers, 2000.
- USAF. "DoD 5210.42-Regulation: Nuclear Weapons Personnel Reliability Program (PRP)." edited by US Air Force, 75: DOD, 2010.
- Wylar, Rex. *Greenpeace: How a Group of Journalists, Ecologists and Visionaries Changed the World*. Vancouver, British Colombia: Raincoast Books, 2004.
- Zagare, Frank C., and D. Marc Kilgour. *Perfect Deterrence*, Cambridge Studies in International Relations ;. Cambridge, UK New York, NY: Cambridge University Press, 2000.

Government Documents

- Çakmakoglu, Sabahattin. "Defense White Paper." Turkey, 2000.
- IAEA. "Statute of the IAEA." International Atomic Energy Agency, http://www.iaea.org/About/statute_text.html.
- . "The Texts of the Agency's Agreements with the United Nations." 16: International Atomic Energy Agency, 1959.

———. *Treaty on the Non-Proliferation of Nuclear Weapons, London, Moscow and Washington, 1 July 1968*. London,: H.M.S.O., 1970.

Obama, Barack. President United States (2009-). *National Security Strategy*. Washington: White House, 2010.

Thompson, Llewellyn E. "Memorandum from the Acting Deputy under Secretary of State for Political Affairs (Thompson) to the President's Special Assistant for National Security Affairs (Bundy)." edited by Secretary of State: US Department of State Office of the Historian, 1964.

Personal Communications Interviews/E-Mails

Blackwell, James A. (Special Advisor to the Assistant Chief of Staff, Strategic Deterrence and Nuclear Integration Headquarters, US Air Force Pentagon) in discussion with author, February 18, 2011.

Bowen, LtCol Mark E. (US Air Forces Europe) in discussion with author, December 6, 2010.

Chambers, Maj Gen William A. (Assistant Chief of Staff, Strategic Deterrence and Nuclear Integration) in discussion with author, February 18, 2011.

Gjone, LtCol Kenneth D. (Olmstead Scholar – Turkey 2007-2010) e-mail message to author, multiple dates.

Hesterman, Col Thomas P. (Vice Commander, 2d Bomb Wing) e-mail message to author, multiple dates.

Hustus, Hunter (HQ USAF/A10 - Strategic Deterrence and Nuclear Integration) in discussion with author, February 18, 2011.

Kaladjian, LtCol Olivier (French Air Force) in discussion with author, multiple dates.

Urena, Michael A. (U.S. Department of State, Office of Strategic Affairs, Strategic Engagement Division) e-mail message to author, February 16, 2011.

Vittal, WNGCMD Vinay (Indian Air Force) in discussion with author, multiple dates. It is of note that WNGCMD Vittal respectively disagreed with many of the assessments accomplished by other authors cited in this work.

Reports

Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism (U.S.), Bob Graham, and James M. Talent. *Prevention of WMD Proliferation and Terrorism Report Card: An Assessment of the U.S. Government's Progress in Protecting the United States from Weapons of Mass Destruction Proliferation and Terrorism*. Washington, DC: Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism, 2010.

Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism (U.S.), Bob Graham, James M. Talent, and Graham T. Allison. *World at Risk: The Report of the Commission on the Prevention of WMD Proliferation and Terrorism*. 1st ed. New York: Vintage Books, 2008.

Duncan, John. "Statement on Behalf of China, France, the Russian Federation, the United Kingdom of Great Britain and Northern Ireland and the United States of America on the 2008 Non-Proliferation Treaty Preparatory Committee." 4. Geneva, 2008.

IAEA. "About the IAEA: The "Atoms for Peace" Agency." International Atomic Energy Agency, <http://www.iaea.org/About/about-iaea.html>.

———. "IAEA Annual Report 2009." 129. Vienna: International Atomic Energy Agency, 2010.

Johnson, Michael, and Asif A. Kahn. "Accountability for U.S. Equipment Provided to Pakistani Security Forces in the Western Frontier Needs to Be Improved." edited by Government Accountability Office, 21: Government Accountability Office, 2011.

Larrabee, F. Stephen, and Project Air Force (US). *Troubled Partnership: U.S.-Turkish Relations in an Era of Global Geopolitical Change*. Santa Monica, CA: RAND, 2010.

Turkey. "Turkey Country Brief 2010." The World Bank,
<http://go.worldbank.org/VQSCYP1Y50> .

The Third Annual Nuclear Deterrence Summit. *A "New Start" Toward Eliminating the Threat of Global Nuclear Conflict*, 16 February 2011.

Speeches

Kennedy, John F. *J F K Address at U.N. General Assembly, 25 September 1961* John F. Kennedy Library Foundation, Inc., 1961.

Khan, Munir Ahmad. "Chaghi Medal Award Ceremony Speech." 1999.

Kislyak, Sergy Ivanovich, Ambassador of the Russian Federation to the US. "A 'New Start' Toward Eliminating the Threat of Global Nuclear Conflict." In *The Third Annual Nuclear Deterrence Summit*. Washington DC, February 2011.

McCormack, Sean. "Statement by Sean McCormack, State Department Spokesman, Regarding U.S.-Turkey Agreement for Peaceful Nuclear Cooperation (123 Agreement)." US State Department website, http://turkey.usembassy.gov/123_agree.html.

P.H. Spaak. "NATO Summit Meeting of Heads of State and Government 16 Dec. 1957 – 19 Dec. 1957 Final Communiqué." NATO, 1957.

Sarkozy, M. Nicolas. "Presentation of SSBM "Le Terrible." Charbourg, 2008.