Continuity and change in U.S. nuclear nonproliferation policy: a critical analysis

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Continuity and Change in U.S. Nuclear Nonproliferation Policy: A Critical Analysis

by

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A Dissertation

Submitted to the University at Albany, State University of New York

in Partial Fulfillment of

the Requirements for the Degree of

Doctor of Political Science

Rockefeller College of Public Policy

Political Science Department

2010
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Abstract

The study of US nonproliferation policy has traditionally focused on characteristics of the proliferator to explain variations in the preferred US policy outcome: no new nuclear weapons states. Failures in achieving this goal have most often been attributed to the “roguishness” of the proliferating state, its desire for the international prestige normally associated with achieving nuclear weapon status, or intense security concerns which override its desire or ability to adhere to international and US rules governing nuclear proliferation. The argument being forwarded here is that variations within US nonproliferation policy have been the greatest influence on the attainment of US goals, not necessarily the actions of the proliferators themselves. While US policy rhetoric focuses directly on a universal approach to stopping nuclear proliferation, the application of US policy has been on a case-by-case basis with multiple factors influencing whether or not the US chooses a strong or weak response to another state’s nuclear ambitions. The result is that while some states have indeed been strongly confronted by the US (e.g. Iran and North Korea), others have received such weak responses that it amounted to tacit approval of their activities and thus contributed substantially to their nuclear weapons development (e.g. Israel and S. Africa). The question then to be asked is “under what conditions does the US respond strongly against a nuclear weapons program?”

By utilizing a focused case study comparison approach supplemented by a Boolean analysis of the conditions tempering US nonproliferation responses, this study seeks to identify the necessary and sufficient conditions for strong US responses to nuclear weapons proliferation. The generalization of these conditions will be explored
both across and within cases in order to create the most complete picture possible of the elements affecting US nonproliferation policy. While alliances, proliferator designation as a rogue state, and membership in the international nonproliferation regime are somewhat consistent indicators of US responses, the importance of these variables varies significantly across stages of nuclear development. US responses to nuclear weapons development then is dependent upon not only its perceptions of a basket of both realist and liberal characteristics of the proliferating state, but the stage of nuclear development within which it must consider those characteristics.
I. Intro

For decades the US has identified and aggressively confronted states like North Korea, Iran, and Libya as pariahs due primarily to their attempts to gain nuclear weapons outside of, or despite the international nonproliferation regime. So then how exactly do we explain the benign approaches taken toward the South African and Israeli programs which represent very similar violations of US nonproliferation policy? In the same regard, India was once seen as the symbol of proliferation fears and was the primary impetus behind the establishment of international export control systems symbolized by the creation of the Nuclear Supplier’s Group (NSG). Now it is a state towards which the US has “committed to take a series of steps to make nuclear cooperation a reality.”\(^1\) What accounts for these variations in US nonproliferation policy both across and within these cases, given the oft repeated universal US commitment to nonproliferation? The primary realist explanations are structural realism and realpolitik. More specifically, they use the concepts of the distribution of material capabilities and state perceptions of threat to argue that the US should seek to use its hegemonic position to aggressively confront any proliferation that represents a threat to the US.\(^2\) Yet there are cases such as China, Brazil, and Pakistan in which we had little or no reaction at all to their attempts to gain nuclear weapons and in some instances may have even supported their programs. Liberalism offers liberal institutionalism and democratic peace theory as alternative explanations of

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2 According to Kenneth Waltz, one of the originators of the realist position, “The strongest way for the United States to persuade other countries to forego nuclear weapons is to guarantee their security… [Thus] We should suit our policy to individual cases, sometimes bringing pressure against a country moving toward a nuclear weapons capability and sometimes quietly acquiescing.” Scott D. Sagan and Kenneth Waltz, The Spread of Nuclear Weapons: A Debate Renewed, New York: W.W. Norton & Company, 2003, p 42-43.
US foreign policy choices. Whether responding to the proliferator’s level of democracy, economic development, or institutional membership, these approaches would expect US nonproliferation policy to revolve around the proliferator’s ability to demonstrate that it is a responsible member of the international community. Further, we should see greater policy focus on both multilateral mechanisms for policy implementation, and overall progression towards pledges of disarmament. But again we find cases such as India, Israel, and South Africa where these key variables seem not to have directly impacted US policy choices.

So in addressing the question, “What accounts for variations in US nonproliferation policy?” this study seeks to critically assess the history of US nonproliferation policy in order to determine the key variables shaping its responses to states which seek to develop nuclear weapons. Using a “structured focused case comparison” approach coupled with Boolean analysis the goal will be to develop a clear model for understanding why the US chooses to condemn or condone a proliferator’s actions in a given case of nuclear proliferation. With this approach this study seeks to create a greater ability to forecast and analyze current proliferation problems, in turn leading to better policy responses to them. The mainstream understanding is that the latest statement of US nonproliferation policy represents a major shift relative to long-

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standing historical responses to proliferation.\(^5\) Some argue that the US has simply altered its policies to be more in line with current international political realities, while others see an increasingly unstable and ultimately more dangerous international environment resulting from the changes.\(^6\) It may be the case however that both understandings are biased by long held assumptions concerning US nonproliferation policy which have not been rigorously tested against the evidence. By broadening both the theoretical and methodological approaches to studying previous US responses to proliferating states it will be easier to gauge the impact of these most recent changes on the proliferation problem.

One of the primary goals then is to test the main theoretical explanations for US responses to cases of nuclear proliferation against each other in order to determine the necessary and sufficient conditions for strong US responses to nuclear proliferation. While it is easy, and probably true, to say that there is a mixture of realist and liberal variables affecting US policy, we need a deeper analysis of their interplay in particular proliferation cases in order to say we understand the problem. A second goal is the development of a more rigorous methodological approach to analyzing the independent variables affecting US nonproliferation policy. While the study of this subject naturally supports the use of a variety of case study methods, many of the studies that currently exist focus too narrowly on a small subset of cases seeking to explain the outcomes of a

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particular policy rather than the development and promotion of the US position in general. Whether focusing for example on the Indo-Pakistani relationship, or rogue states, the predominant amount of literature on US nonproliferation policy suffers from a myopic focus on a particular case, or specific US policy or program. This hampers our ability to understand the broader trends of US nonproliferation policy and as a result it seems analysts are often surprised by certain developments which perhaps should have been obvious. Thus this study seeks to utilize a much broader set of cases for analysis in order to ascertain how the US implements its policy relative to foes and friends, the developed and the developing. But the goal is not to simply improve already existing case study approaches to studying US nonproliferation policy. By basing a focused case study comparison on objective measurements of a spectrum of independent variables it is hoped that this study will provide a more nuanced structure for understanding all of the pertinent cases involved. In utilizing Boolean analysis to establish the necessary and sufficient conditions for the US to respond strongly against a proliferator, it is believed that this study will ultimately provide a clearer understanding of US nonproliferation policy across all of the cases without the need for case selectivity or extensive reliance on historical context and actor perception.

A second aspect of the methodological approach of this work is to expand the conceptualization of ‘a proliferation case’ to include the reality that there are distinct points within the progression of a nuclear program at which US policy choices are made. Beginning with the announcement or US discovery of a program, through recognition that the proliferator is developing the ability to refine their own weapons grade material, and ending with the acquisition of a nuclear weapon, there are distinct stages in nuclear
weapons development that offer the US opportunities to respond. This study seeks to examine not just variation across cases relative to the independent variables, but within them as well. How do the various stages of nuclear development affect US responses to proliferation? Does the pace of nuclear development impact the US level of aggressiveness or desire to condemn a nation’s program? These questions and others are important to understand as the US represents the primary architect of, and supporter of, the global nonproliferation regime. Because of this, the effectiveness of US policies is paramount in dealing with the overall problem. Further, we must understand that US policies are also signals to future proliferators as to what they may expect should they themselves decide to go nuclear. By examining US policy responses at these critical stages we may be able to determine whether or not policy failures and successes are due to varying understandings of the problem within the US policy establishment, inconsistent application of multilateral structures, or ultimately the inevitability of nuclear proliferation.

II. Literature Review

The study of US nonproliferation policy can be loosely categorized into four historical periods. The four general periods are the Post-WW II period from 1945 to 1953, the era of the Atoms for Peace Program stretching from 1954 to 1973, the Rise of the Export Control Regime between 1974 and 1990, and the Post-Cold War period from 1990 to the present. Each period has distinct components revolving predominantly around the central figures that were analyzing or creating the policy, what the goals of the policy were, and what mechanisms were available for the attainment of those goals. An important aspect of the study of US nonproliferation policy is that it has consistently been associated with other US nuclear policies including deterrence, arms control, peaceful nuclear energy development, and nuclear posture. While this literature review will focus on nonproliferation policy, some of the periods are partially defined by the degree to which policy overlap affected US nonproliferation efforts. This is most evident in the degree to which changes in US nonproliferation policy have often been driven by historical events and technological advancements. The result is that the study of the policy has two distinct characteristics that bear mentioning. First, the study of US nonproliferation policy perhaps more than any other area of US foreign policy analysis rests on a very close association with the creation and practice of those policies. This is due mainly to the fact that it was the military and scientific communities which served as the creators of nuclear weapons and their applications and in turn were initially responsible for considering both the impacts of proliferation as well as how the future development of nuclear weapons by other states could be resisted by the US. While the academic community would later take the lead in studying nonproliferation policy, the
scientific and military foundations of the policy have never disappeared and consequently continue to inform our study of the policy to this day.

The second characteristic of nonproliferation studies in general is the interplay between its reactive nature driven by successive nuclear crises, and its fixation on a future dominated by the specter of nuclear Armageddon. The result is a tension within nonproliferation studies most aptly symbolized by the optimist-pessimist debate between Kenneth Waltz and Scott Sagan during the latter part of the Cold War period wherein fundamental disagreements over the pace and impact of nuclear proliferation on international peace and security limited the development of a uniform US policy. Initially this debate tended to be between military officials eager to apply the new super weapon to the defense of US interests juxtaposed against scientists who were excited by the broader peaceful applications of the new technology. But as the Cold War environment evolved, in this case driven by the US-Soviet arms race, the scientists would be replaced by a growing liberal academic establishment who due to their fear of the use of nuclear weapons felt the need to not only explore deeply the consequences of nuclear proliferation, but to inform the public as to the dangers that they felt accompanied their development. While the US use of the bomb against Japan in WW II and the later development of a Soviet arsenal would initially serve as the backdrop for the study of US nonproliferation policy, the development of the Doomsday clock mirrored and eventually overtook these symbols in importance. Ultimately it still has yet to be determined whether the development of post-Cold War US hegemony and the attacks of 9/11 represent yet another shift in our understanding and analysis of this policy, but early indications would seem to support that conclusion.
II.A. Post-War Period: (1945 – 1953)

The initial study of US nonproliferation policy centers on the interaction between the scientists responsible for the development of the atomic bomb and the military and political officials tasked with creating policies for their use. The concern over the acquisition by other states of nuclear weapons was primarily driven by the context of WW II and resulted in what has been termed “The Secrecy Policy.” (Goldschmidt 1977, p 70-71) In initially laying out the foundation of US nonproliferation policy, three essential considerations combined to create the overall understanding of the issue. First was the fast paced advancement of nuclear technology itself which created within the scientific community both an excitement for the future of nuclear energy, and a fear of its potential if put to non-peaceful uses. The resulting perspective was one which focused on total nuclear disarmament and international oversight of nuclear technology to ensure that Hiroshima and Nagasaki were never repeated. Scientists such as J. Robert Oppenheimer, Niels Bohr, Vannevar Bush, James B. Conant, and Eugene Rabinowitch would come in various ways to represent this perspective and the overall scientific community’s important initial contributions to US nonproliferation policy.

The second consideration driving early understandings of US policy was purely military in form. Two distinct observations pervaded this early military understanding of nonproliferation. First, the atomic bombing of Hiroshima and Nagasaki had achieved within days what many analysts of the period believed would take months and maybe years to achieve with conventional weapons; the unconditional surrender of the Japanese. Further, and perhaps more importantly, it avoided the estimated 300,000 to 2 million
American casualties that were anticipated as a result of the need to invade. As a result many in the military saw nuclear weapons as “a royal straight flush” relative to the political and military advantages it gave the US over its enemies, namely the Soviets.

The second observation was more general in that throughout history the evolution of military technologies has engendered a race between the initiator’s ability to use the new technology to further their interests relative to their enemies or competitors, and the inevitability of their competitors acquiring the new technology for themselves. As a result of these two truisms, military men such as Major General Leslie R. Groves, General John Deane, General George C. Marshall, and Secretary of War Henry L. Stimson would advocate strongly for the maintenance of the American nuclear monopoly at all costs, as well as its use in protecting and promoting a wide variety of US interests across the globe. The problem was this stance put them in direct conflict with the scientists advocating for a more open US nuclear policy and a renunciation of nuclear weapons.

The third condition (or more aptly group of conditions) was political in nature. It rested predominantly on the desired shape of the post-WW II international environment and the role that would or should be played by the US in its creation and maintenance. Whether considering the future of a colonial periphery promised independence by the newly created UN, the development of greater internationalism focused initially on economic cooperation, or the path to be taken in reconstructing the numerous societies

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8 While estimates vary widely between military and political analysts, no one involved believed that it would be easy or quick. While debate continues to this day as to the secondary impetuses behind the use of the bomb (e.g. intimidation of the Soviets and racism being the primary arguments), the reduction of US and ultimately Japanese civilian casualties remains a mainstream and official government explanation for the choice to use the bombs. D. M. Giangreco, “Casualty Projections for the U.S. Invasion of Japan, 1945-1946: Planning and Policy Implications,” *Journal of Military History*, Vol. 61, July 1997.

which were devastated by the War, the US nuclear monopoly and its ascension to global superpower status put it in a position of leadership. Thus politicians like FDR, and Truman to follow, had to carefully calculate how to use that position for both global and US interests. The question of how nonproliferation policy would fit into those calculations was in this early stage driven by men such as US representative to the UN Atomic Energy Commission (UNAEC) Bernard M. Baruch, future Secretary of State Dean Acheson, and Chairman of the US Atomic Energy Commission (AEC) David E. Lilienthal. Their job primarily was to balance the scientific community’s fears and internationalist perspective with the singular military focus on US power and security. It is this balancing act that most characterizes the early stages of US nonproliferation policy analysis.

One of the earliest visions of the problem of nuclear proliferation came not from science, but from science fiction. H.G. Wells in his book *The World Set Free* (1914) produced an eerily accurate portrayal of the future of nuclear weapons and the scramble for power that they would engender amongst the nations of the world. After offering a speculative vision on the application of nuclear energy for transportation and industry, he focused on the development of the atomic bomb and its implication for the future of mankind. Interestingly he emphasized what he believed would be a blasé approach to atomic development on the part America as they,

…‘fooled around’ with the paraphernalia and pretensions of war. It is only by realising (sic) this profound, this fantastic divorce between the scientific and intellectual movement on the one hand and the world of the lawyer-politician on the other that the men of a later time can hope to understand this preposterous state of affairs. (Wells 1914, p 152)
He concluded that the ultimate danger for this future atomic world would be the fact that, “The power of destruction which had once been the ultimate privilege of government was now the only power left in the world – and it was everywhere.” (Ibid, p 153) While thankfully most of Well’s darker images of the twentieth century never came to pass, they certainly influenced other thinkers of the time, especially scientists, concerning the future of atomic energy.

Leo Szilard, a nuclear physicist who fled Nazi Germany in 1933 ending up as a professor at Columbia University in 1938 and a central member of the Manhattan Project team, is often credited at the first scientist to critically consider atomic weapons. Working with the key scientists of the time such as Enrico Fermi and J. Robert Oppenheimer, Szilard driven by Well’s vision represented the duality of the scientific approach to the issue of nonproliferation. On the one hand he was a central figure in exploring the technical aspects of creating a nuclear chain reaction. However, he was keenly aware as early as 1938 of the military applications of this new technology and feared greatly what a nuclear bomb could do in the wrong hands, namely Hitler’s. His work and concerns influenced perhaps the greatest mind of time, Albert Einstein, leading him to write the now well known letter to Franklin Roosevelt which urged him to establish clear governmental oversight of nuclear research.10 While the letter did not specifically introduce the concept of nonproliferation, it did present policy advice in the context of a race between allied development of the bomb and known advancements by the Germans who were also pursuing this new technology. The concerns over the spread of the

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technology predated confirmation that an atomic explosion was feasible and so set the stage for a policy of secrecy that would serve as the foundation for future US nonproliferation policy. It also created the tension between the scientists and military personal, most directly illustrated by disagreements between Oppenheimer and Manhattan Project leader General Leslie Groves, which would last for decades.11

Oppenheimer would provide one of the first comprehensive examinations of the problems confronting the Secrecy Policy, and future nonproliferation policy, in a letter to Secretary of War Henry L. Stimson dated August 17, 1945. The key points of the letter were that first, the new weapon would represent just a fraction of the potential devastation that would be held in future atomic weapons. Second, that there was not, nor would there ever be, a practical defense against atomic weapons. And third, there was no way to guarantee the American nuclear monopoly. The policy prescription he made then was that rather than engaging in what he believed would ultimately be a fruitless arms race, the post-war atomic policy should be founded on, “… making future wars impossible.” Speaking on behalf of the other Manhattan project scientists he concluded, “It is our unanimous and urgent recommendation to you that, despite the present incomplete exploitation of technical possibilities in this field, all steps be taken, all necessary international arrangements be made, to this end.” (Cantelon, et al. 1991, p 31) This could fairly be called the first recognition of the critical problems facing US nonproliferation policy and the need for the development of an international nuclear regulatory body. While this and other calls for liberal approaches to US nuclear policy

would go unheeded until the mid 1950’s, the foundations for the theories of proliferation pessimism that would dominate the discussion during the 1970s and 80s can be found in this understanding of the nuclear dilemma.

Considering these ominous predictions on the part of the scientific community, it is a testament to the impact of WW II on US nonproliferation policy formation that the Secrecy Policy continued to be the primary approach taken. In a May 1945 Memorandum to Stimson, then Undersecretary George L. Harrison supported the belief that the US could both maintain its nuclear monopoly and utilize it to promote and protect the developing post-war system.

It seems clear that some machinery is essential now to provide the way for continuous and effective controls and to insure or provide for the necessary and persistent research and development of the possibilities of atomic energy in which the United States now leads the way. If properly controlled by the peace loving nations of the world this energy should insure the peace of the world for generations. If misused it may lead to the complete destruction of civilization. (Cantelon, et al. 1991, p 38)

This statement is important because it illustrates both the similarities and the differences between the scientific and military establishment’s views concerning the future of nuclear weapons. On the one hand both sides agreed that a future filled with competing nuclear armed states could threaten all of mankind. While the scientists concluded that the only way to avoid this future was complete nuclear disarmament and international cooperation, military officials believed that maintenance of the US nuclear monopoly was both feasible and desirable as a means to guaranteeing US security. Both sides implicitly recognized that a Pandora’s Box had been opened, but the scientists like Glenn T. Seaborg tended to argue that common sense and a healthy fear of nuclear Armageddon would forestall state’s desires to acquire the new and deadly weapon. Thus he and others argued for full public and international disclosure of the secret of nuclear energy thus
maintaining the spirit of open scientific research. In turn, attempts to control proliferation could center on the international regulation of nuclear materials such as uranium which while difficult, would be preferable to the US attempts to control the technology and the international distrust that this course would engender.  

Military officials being inherently more realist and thus less trusting of their fellow man believed that it was simpler to just keep everyone else away from the box for as long as possible. While the existence of the bomb was hinted at by Truman to Joseph Stalin at the Potsdam War Conference in July of 1945, avoiding sharing the technology with anyone other than the British remained a critical component of early US nonproliferation policy. Those in favor of US control and secrecy found their voice in the May-Johnson Bill introduced in Congress in late September 1945 and calling for military oversight of US nuclear development. The bill was supported by Groves and Truman, as well as (surprisingly) Manhattan Project scientists Vannevar Bush and James B. Conant. The military and political support for the bill stemmed from their perception of nuclear energy as predominantly military in nature and thus in need of strict military oversight. Bush and Conant supported it as the development of any oversight mechanism was seen as a step in the right direction following their own call for the establishment of a civilian staffers atomic energy committee earlier in 1945. The bulk of the atomic scientists of the period however feared military oversight and lobbied heavily against the bill on the grounds that only civilian oversight would both ensure the proper development of the peaceful aspects of nuclear technology, as well as limit the weapons possible future use. (Hewlett and Anderson 1962, pp 421-455) The response to this bill and accompanying

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debate was the McMahon Bill (renamed the Atomic Energy Act of 1946 when passed in late September of that year) which established firm civilian control of nuclear energy research in the US. It marked an important step in the development of US nonproliferation policy as it was the first comprehensive public discussion of the politics behind atomic energy. Specifically, it laid out not only the rights and obligations of the Atomic Energy Commission, but for the first time created laws governing the import and export of nuclear materials and technology. Perhaps most important for the development of nonproliferation policies, it specified fines and punishments to be levied against anyone violating the new law. While they were expressly aimed at domestic actors, they would serve as a blueprint for later sanctions and punishments against international actors engaging in illegal proliferation activities.

The evolution of US nonproliferation policy next rested on the analysis of the US relationships with Britain and Canada regarding their role in the American wartime nuclear program, and the degree to which the US would pursue internationalization of nuclear technology, especially in relation to the Soviets. Regarding the former, the US had established a relatively equal relationship with the UK and Canada under the Hyde Park Agreement of 1944, an executive agreement through which FDR and Churchill, “…determined to maintain the secrecy of the project, agreed that they might, after consultation, use the bomb against Japan, and pledged ‘full collaboration…for military and commercial purposes’ in the postwar world until the agreement was terminated by mutual approval.” (Bernstein 1974, p 1007) Because this was an executive agreement and not a full treaty, Truman was not obligated to uphold it. Truman’s approach was to divide the issue of nuclear technology into theories which were already to a degree widely
known, and engineering expertise. In relation to the latter he would not share these secrets with either the British or the Russians until all efforts had been made to guarantee US security. The true implications of this decision however was the denial to the British of the information necessary to develop their own nuclear weapon, and the creation of so many caveats and restrictions regarding the sharing of technology with the Russians that all involved viewed it as a thinly veiled attempt to maintain the US nuclear monopoly.

Thus US nonproliferation policy diverged into two distinct paths that would guide it forward into the 1970’s. On the one hand was the military and security interest in maintaining the US nuclear monopoly, and absent that, its advantages in nuclear weapons development. This would lead to the withholding of material and information from ally and enemy alike in an effort to slow as much as possible the proliferation of nuclear weapons. On the other hand, the arguments forwarded by the scientific community, and supported by certain officials like Stimson, continued to make international oversight of nuclear energy an attractive option, provided the Soviets in particular abided by the strict guidelines being developed by Washington. The result would be two key documents that would come to represent the high water mark for liberal approaches to US nonproliferation policy until discussion of the Partial Test Ban Treaty some two decades later: the Acheson-Lilienthal Report and subsequent Baruch Plan.

The Acheson-Lilienthal Report was based upon the work of the Atomic Energy Advisory Committee and sought to create an Atomic Development Authority (ADA) under the auspices of the UN. The proposed program focused on developing in stages international nuclear cooperation, beginning with inspections and joint surveys of nuclear material sources and ending with the eventual sharing by the US of nuclear information
and discussions of total nuclear disarmament. (Bernstein 1974, p 1030) The report itself was expansive and if Oppenheimer’s letter to Stimson in 1945 was the first recognition of the problem of nuclear proliferation, this report was the first political attempt to address those problems. In its 61 pages it addressed many of the concerns and issues which had been raised within US circles during the development of the bomb. The key ones were the creation of safeguards for monitoring nuclear research, the easing of international rivalries as they may impact the nuclear issue, and the development of the ADA as the lynchpin for delineation between peaceful and militarized uses of nuclear technology.\textsuperscript{13}

According to his own memoirs however, Bernard Baruch, the man eventually responsible for presenting the US plan to the UN, was not happy with the proposal. In a letter to Secretary of State James Byrnes dated March 13, 1946, Baruch fumed at being handed a policy rather than having had input in its creation.\textsuperscript{14} The key modifications that Baruch would propose (and which ultimately would be accepted by Truman and presented as the Baruch Plan in June of 1946) were that the survey of raw materials should precede the finalization of the agreement and establishment of the ADA, and that punishments for violations should be increased considerably and not subject to the newly created UN Security Council veto. The result was a plan that virtually guaranteed Soviet rejection as it would have maintained the US nuclear monopoly while increasing the difficulty of all other states (especially the Soviets) to match US nuclear capabilities. As William B. Bader put it later, the Plan, “…now enjoys an exalted place in the hagiography of American disarmament tracts and speeches. No American statement on


\textsuperscript{14} Bernard Baruch Papers, 1905-1965, Princeton University Library.
disarmament and the dangers of proliferation seems complete without a reference to what might have been ‘if only’ the Soviets had accepted the Baruch Plan.” (Bader 1968, p 19) Bertrand Goldschmidt in his piece *A Historical Survey of Nonproliferation Policies* (1977) goes further and proclaims, “With the failure of this proposal disappeared the last chance for humanity to live in a world free from nuclear weapons.” (p 71) The reason for these grand pronouncements is that the Soviet rejection of the Plan allowed US officials to essentially throw their hands up with the exclamation ‘we tried!’, and place on the shoulders of the Soviets any future recriminations regarding the proliferation of nuclear weapons. While negotiations would continue within the UN Atomic Energy Committee eventually leading to the development of the UN Disarmament Commission in 1952, as its name suggests, a shift had already begun which moved US and international policies away from a nonproliferation focus to one of disarmament. (Burns 1965, p 852) Although the US and international focus would later return to nonproliferation as a necessary component of disarmament, the years that were lost allowed four additional states to acquire nuclear weapons.

The final stage in the development of US nonproliferation policy during this period arguably acted as the catalyst for the more academic treatment of the subject. With the development of Dwight D. Eisenhower’s Atoms for Peace Program, the US attempted to delineate between peaceful and militarized uses of nuclear energy in a way that both Oppenheimer and Stimson less than a decade earlier had argued was virtually impossible. Between the scientific and military considerations of nonproliferation issues that dominated immediate post-war discussions, and the rise of more academic treatments of the subject in the early and mid-1950’s, three events transpired to radically alter the
overall nature of the problem. First was the 1949 Soviet nuclear test which made the Secrecy Policy moot. When combined with the development of the British bomb in 1952 this policy was further nullified leaving the US to consider the nonproliferation issue almost solely from the perspective of their nuclear arms race with the Soviets. Second was the development of first hydrogen then thermonuclear bombs which validated Oppenheimer and other’s concerns that the pace of nuclear technological development would proceed faster than attempts to control it. The final event was the realization that the peaceful development of nuclear energy did in fact represent a major leap forward in the ability of societies to provide energy for their own economic development. The first two developments clearly elevated the issue of nuclear weapons proliferation into the realm of military expertise as evidenced by the US preoccupation with deterrence policies. The third would serve as the foundation of international cooperation on the issue and would ultimately be the primary catalyst behind the Atoms for Peace Program.

The development of a more academic treatment of US nonproliferation policy in the late 1940’s and early 1950’s was based upon a separation of the increasingly complex scientific components of nuclear development from the theoretical considerations of how the new technology would be used by states. This separation created the three tiered academic-scientific-political approach to analysis that is most common in the field today. The early academic treatment of US nonproliferation is aptly represented by such works as Hanson W. Baldwin’s *The Price of Power* (New York: Harper and Brothers, 1948), Eugene I. Rabinowitch’s edited volume *Minutes to Midnight* (Chicago: Bulletin of Atomic Scientists, 1950), and two works by Bernard Brodie, the edited volume *The Absolute Weapon: Atomic Energy and World Order* (New York: Harcourt, Brace & Co.,
1946) and the earlier and shorter piece *The Atomic Bomb and American Security* (New Haven: Yale University Press, 1945). Baldwin’s message was the need for American vigilance and commitment to maintaining its nuclear advantages within the international system. Influenced greatly by the increasing militarization of the nuclear issue he argued, “The price of power is huge; it is not ease but toil, not peace but struggle, not wealth but taxes.” (p 322) Baldwin would be consistent in this message with his other influential writings *Power and Politics: the Price of Security in the Atomic Age* (1950) and *The Great Arms Race: A Comparison of U.S. and Soviet Power Today* (1959).

Rabinowitch’s contributions to early nonproliferation literature fell somewhat to the scientific and thus pessimistic side of the proliferation issue. *Minutes to Midnight* was essentially a representation of the broader development of the anti-bomb movement begun by the scientific community and encapsulated within their establishment of the *Bulletin of Atomic Scientists* in 1945. While he was not nearly as prolific a writer on nuclear issues as Brodie, Hanson, or even some of his fellow scientists at the *Bulletin*, he does deserve credit for establishing essentially the first non-scientific periodical dealing with proliferation issues. His other works *The Atomic Age* (1963, co-written with Morton Grodzins) and *The Dawn of a New Age* (1964) offer a look back to the post-war period with a tinge of regret at what he perceives as a systematic rejection of the insights and fears of the scientists most closely associated with America’s nuclear program. His most important contributions to the development of early nonproliferation studies may in fact be the series of international scientific conferences known as the Pugwash Conferences held from 1957 to 1971 which gathered together leading scientists of the time to discuss the technical and scientific aspects of nuclear weapons and disarmament.
Bernard Brodie is undoubtedly one of the most influential writers of the period publishing regularly until his death in 1978. He was a consistent advocate for a strong US stance on nuclear weapons and by the 1970’s had become an acknowledged expert on the history of US deterrence policy. Beginning as a military analyst, *The Absolute Weapon* is widely regarded as the blueprint for US deterrence theory and the development of US nuclear policy. He continued his efforts to inform US nuclear policy with his works *Strategy in the Missile Age* (1959) and *Strategy and National Interests: Reflections for the Future* (1971) as well as articles such as “War Department Thinking on the Atomic Bomb” (*Bulletin of Atomic Scientists*, 1947) and “The Atom Bomb as Policy Maker” (*Foreign Affairs*, 1948). Ultimately, while Brodie clearly established some of the theoretical concepts behind US deterrence policy during the early and middle stages of the Cold War, he also symbolizes the periodic inability of analysts to separate issues of broader US nuclear policy (e.g. deterrence) from the more specific considerations of nonproliferation. Fundamentally, with the development of the Soviet bomb Brodie believed that the possibility of halting or even reversing nuclear proliferation was gone. He argues ultimately that it is the responsibility of the US “as a status quo power” to protect and promote US interests as well as those of our allies, “…which enjoy democratic political institutions comparable to our own.”

While he did not explicitly reject the notion of nonproliferation, he believed that the weapons were a political and military fact that could not be ignored and thus should be used however necessary to promote and protect US interests.

Perhaps the most important contributions of analysts of the period to the evolving issue of US nonproliferation policy were the injection of morality and ethics into the

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discussion, and the increased examination of international institutional oversight of nuclear energy. Regarding the former, the primary issue became the implications of continued nuclear development, both vertical and horizontal, in the future existence of mankind. One of the first direct applications of this line of thinking can be found in Sir George Thomson’s “Hydrogen Bombs: The Need for a Policy” (*International Affairs*, October 1950). Written between the time of the Soviet test and the development of the hydrogen bomb by both the US and the Soviets, his analysis is clearly driven by a growing fear within the academic community as to the future impact of continued nuclear weapons proliferation. He sums up the evolving liberal approach to nonproliferation thusly:

Now I want to consider this problem from what I can only describe as the moral point of view… I think a weapon could be given a figure of merit based on its military effect divided by the suffering it produces. It seems to me that while a reasonable case can be made for the U bomb on this basis, providing that it is used for the bombing of factories and other installations of military importance, no case can be made for the H bomb… It seems to me, then, that, regarded purely as a weapon, purely as a means of settling human quarrels, the H bomb is bad, without even taking account of what I regard as an even more serious evil, the possibility that its use would lead to the making of the world, or a large part of it, unfit for human habitation… (pp 467 – 468)

The concerns over the morality of nuclear proliferation are echoed in later works such as William J. Nagle’s *Morality and Warfare: the State of the Question* (1960) and John C. Bennet’s edited volume *Nuclear Weapons and the Conflict of Conscience* (1962). Thomson however goes on to conflate the issues of deterrence, disarmament, and nonproliferation by arguing,

How can the head of a State refuse to arm his State with the most powerful weapons possible in a time of considerable tension and when the possibility of this weapon has been revealed?... I consider the U bomb is to the advantage of Western democracies, and I would be extremely sorry to see its use banned. I regard it simply as in the same category as ordinary bombing and that control should relate not to which particular bomb is used but how (sic) its is used. The H bomb seems different to me… Let me urge all to look on it in a broad and
This last section is particularly interesting as it addresses a variety of issues that would later be pivotal in the discussion of US nonproliferation policy. From recognizing the massive and immediate impact of nuclear weapons on a State’s security (and thus the incentive to proliferate), to intimating the selective application of US policies based upon the type of weapon and who is developing it, Thomson in this short selection identifies fundamental causes of the variation in US nonproliferation policy for the decades to follow. Most interestingly, all of these considerations are cloaked in a clear lack of scientific understanding of the technical practicalities of nuclear weapons and general nuclear development, a condition that arguably doomed the Atoms for Peace Program from the beginning.

Regarding the internationalization of peaceful nuclear energy, Leo Szilard offers perhaps one of the earliest and most comprehensive discussions of the subject in his piece “Can We Have International Control of Atomic Energy?” (Bulletin of Atomic Scientists, January 1950). He begins by very directly pointing out that the promise of nonproliferation, “…does not lie in the narrow area of atomic energy on which the spotlights of public discussion are focused, but rather in the dark fields of our over-all foreign policy which are only scantily illuminated by occasional comments.” (p 9) This is a critical assessment in so much as it foreshadows the replacement of the technical and scientific considerations of nonproliferation policy with more political and eventually academic ones. While he does believe that an international agreement is possible, he also recognizes two essential considerations that have continued to hinder US and international nonproliferation policies to this day: enforcement and non-bias.
In the absence of any possibility of enforcement, the agreement will be of value only if it is so well balanced and so well adjusted to the interests of the contracting parties that if it were to lapse, they would, of their own free will, conclude it anew. An agreement that fulfills this requirement, might be said to be self-regenerating. Could this requirement be met? I rather believe so. (p 10)

It is in this last statement that the hope and faith in international institutions, as well as the realities of their weaknesses and failures, regarding nonproliferation lies. Both considerations would guide the analysis of US nonproliferation policy for the decades to follow.

II.B. Atoms for Peace: (1954 – 1973)

The study of US nonproliferation policy as a distinct subfield of the study of US foreign policy arguably begins with the establishment of the Atoms for Peace Program by Dwight Eisenhower in 1954 and his speech before the UN in 1953. While the speech itself deserves some attention as the first practical separation within US policy of nonproliferation issues from peaceful nuclear development, it is the expansion and increased depth of analysis during the next two decades that most clearly illustrates the evolution of the study of US nonproliferation policy in particular. The key characteristics of studies in this period are a focus on the commercialization of nuclear energy and the US position as the leader in the market, the development of the international nonproliferation regime, and the rise of case studies as the central methodology used by academics examining nonproliferation issues. The promotion by the US of nuclear technologies represents to many a key failure in US nonproliferation efforts as the lack of clear scientific understandings of the nuclear fuel cycle enabled several states to pursue nuclear weapons with the direct, albeit unknowing, assistance of the US. The establishment of the International Atomic Energy Agency (IAEA) and Nuclear Nonproliferation Treaty (NPT) during this period represents the genesis of the
international nonproliferation regime and set the guidelines for the bulk of US nonproliferation efforts to this day. Finally, the development of the “Nth state” concept in the study of proliferation served to shift the focus from the US-Soviet arms race and vertical proliferation concerns to the increasing number of possible new nuclear states and horizontal proliferation issues. While the literature of the period was still greatly impacted by issues of deterrence, nuclear posture, and incentives for proliferation, this period is most clearly defined by the evolution of the question, “How do we stop new states from acquiring nuclear weapons?”

Driven by several events and developments including the 1945 Franck Report, the failed Baruch Plan, Soviet acquisition of the atomic bomb, and development of hydrogen and thermonuclear bombs, Eisenhower’s Atoms for Peace proposal is widely held to be a key event in the evolution of US nonproliferation policy. Not only did it serve to create the theoretical and political foundations of the policy moving forward, but it also laid out the mechanisms that were thought to be most important in enforcing that policy. It began by establishing proliferation concerns as a global rather than solely US problem. “I know that the American people share my deep belief that if a danger exists in the world, it is a danger shared by all – and equally, that if hope exists in the mind of one nation, that hope should be shared by all.”

He then goes on to discuss the end of the American nuclear monopoly, the rise of the US-Soviet arms race, and the degree to which the latter threatened all of mankind. Before laying out the design of the proposed IAEA he highlights the belief that nuclear technology holds as much promise for peace as it does

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16 Dwight D. Eisenhower’s “Atoms for Peace” Address to the United nations General Assembly, December 8, 1953, (Cantelon, et. al., 1991, p 97)
for war. “The United States knows that if the fearful trend of atomic military build-up can be reversed, this greatest of destructive forces can be developed into a great boon for the benefit of all mankind. The United States knows that the peaceful power from atomic energy is no dream of the future. The capability, already proved, is here now – today.”

Thus it is on the foundation of disarmament and peaceful nuclear development that he believed the IAEA and international nonproliferation efforts in general had to rest. A portent of the problems to come however was his belief that while the IAEA and the US promotion of the new program should seek to adopt inspection and monitoring mechanisms to ensure the transition of nuclear technology to peaceful ends, those efforts would rest squarely on both US and recipient State’s “good faith” in their exchange of that technology.

It is the existence of this seemingly idealistic, and perhaps unrealistic, qualification that has engendered much of the debate concerning the true impact of the program on nonproliferation efforts over the last five plus decades. In one of the more comprehensive studies of the Atoms for Peace program, Joseph F. Pilat writes,

> Was Atoms for Peace a propaganda ploy in the Cold War? Was Eisenhower misled by nuclear advocates, notably the scientists, the U.S. Atomic Energy Agency (AEC), and the congressional Joint Committee on Atomic Energy (JCAE), into supporting a misconceived and ill-timed effort to sell American nuclear material equipment, and technology abroad? In embarking upon a new approach to U.S. nuclear policy, did the president and his advisors underemphasize the proliferation danger? Were the original objectives of Atoms for Peace, and in particular, the purpose of the international agency it envisioned, lost amid attempts to develop a practical program? ...after fifty years of debate, we do not yet have definitive, undisputed answers... But, as suggested, Atoms for Peace has been critical, and at times central, to thinking about nuclear issues for half a century.

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17 Ibid, p 102.
Pilat is correct in arguing that these questions to varying degrees have driven the study of nuclear policy, and nonproliferation in particular, since the early 1950’s. But in truth they have not been considered at the same time or with the same intensity. Rather, the questions he poses represent the often segmented approaches to analyzing US nonproliferation policy. Attempts to address these questions would initially be dominated by a focus on the technical and political hurdles confronting the establishment of safeguard and inspection procedures as barriers to the transfer of nuclear technology from peaceful to militarized purposes. Later it would lead to the rise of liberal institutional treatments of the issue as questions of how negotiations for the establishment of the nonproliferation regime should be conducted were replaced by concerns over the effectiveness and efficiency of the international/institutional approach to nonproliferation in general. Lastly, questions concerning the motives and naïveté of the Eisenhower administration in making the proposal in the first place don’t truly start to develop until later when it becomes clear that some State’s have used the program as a cover for their own nuclear weapons programs.

Some of the more influential and important treatments of the Atoms for Peace program, the IAEA and their impact on US nonproliferation efforts are Lewis L. Strauss’ “My Faith in the Atomic Future” (1955), John G. Stoessinger’s “The International Atomic Energy Agency: the First Phase” (1959), and Alwyn V. Freeman’s “The Development of International Co-operation in the Peaceful Use of Atomic Energy” (1960). Strauss’ impact on the analysis of US nonproliferation policy was driven much more by his interactions with key actors of the period and his eventual chairmanship of the AEC from 1953 to 1958, than by the depth or quantity of his publications. His support
of the Secrecy Policy even after the international dispersion of nuclear technology, and his hawkish approach to both the development of the H bomb and the arms race with the Soviets, helped establish many of the basic tenets of later US nuclear policies. Most notable among these was the laying at the feet of the Soviets the blame for the failure of the Baruch Plan which consequently forced the US to engage, “…in the costly and perilous contest for supremacy in nuclear weapons.” (Cantelon, et. al., 1991, p 105) In his mind, this was balanced however by the fact that, “Every thinking person knows now that our great and versatile stockpile is the major safeguard of the free world.” (Cantelon, et. al., 1991, p 105) He is perhaps most well known for his widely publicized dislike of Oppenheimer which led to the erosion of Oppenheimer’s, and the scientific community’s ability in general, to directly inform US nonproliferation policy. Fundamentally the scientific community’s focus on the open exchange of ideas ran directly counter to the growing paranoia and distrust that marked the Cold War, especially regarding the exchange of nuclear technology. The irony is that his 1955 article focuses almost exclusively on the scientific potential of nuclear technology, in fact highlighting many areas which today constitute the primary focus of the IAEA’s peaceful nuclear activities.

Stoessinger’s piece represents not only the first in depth analysis of the establishment and early operations of the IAEA, but the beginning of a productive career that saw him publish in a wide variety of fields on multiple topics. The importance of his 1959 article is that is was an excellent examination of the organization that not only created a blueprint for future institutional analysis of the proliferation problem, but introduced many of the concerns that would confound US nonproliferation policies for the decades to follow. The problems specifically were the structure and operations of the
Agency itself, the disagreements between the nuclear states and the “have-nots” (a
termed he coined which remains in use today), and the discrepancies between the
voluntary aspect of membership in the Agency and necessity for enforceable safeguard
procedures. The last point in particular has critically affected US policy as the Agency’s
Statute was intended to allow for the implementation of the Atoms for Peace principles.
According to Stoessinger however, while “It gave the Agency the capacity to play this
role, [it] did not give the Agency the power to compel its members to let it play this role.”
(p 401 – italics are author’s emphasis) This fact has frustrated US attempts to utilize the
IAEA in promoting its nonproliferation policies in just about every case of nuclear
proliferation from the Israeli program in the 1960’s to Iran today. While the US has never
fully abandoned the IAEA as a mechanism for nonproliferation, its support for the
organization has varied widely as evidenced by its exclusion from direct participation in
the Israeli case balanced against it being the primary tool in dealing with the Iranian and
North Korean programs. Ultimately Stoessinger’s contribution is the establishment of a
more objective treatment of international aspects of US nonproliferation policy focusing
on the importance of multilateralism rather than the more biased approaches that had
preceded his work.

Freeman’s piece takes a broader view of the development of international
nonproliferation policies by discussing emerging organizations like EURATOM and how
they along with the IAEA and other UN specialized agencies represent an expanding
international system of nuclear cooperation. His key points are that the scientific
community continues to be an important impetus behind international cooperation in
general, but are critically important within attempts to mitigate the dangers of nuclear
proliferation. In regards to US nonproliferation policy he reiterates earlier calls, including Eisenhower’s, that as a foreign policy issue, “The concern is universal not merely because atomic energy will permeate – if it has not already done so – every facet of human endeavor, but also because the nuclear genie presents problems and risks which cannot and will not be solved satisfactorily on a purely national or local level.” (Freeman 1960, p 384) So while he supports the continued lead position of science in efforts to deal with the issues of nuclear development, he also advocates strongly for the importance of multilateralism in those efforts. Both issues have caused various problems for US nonproliferation policy over the years as the former has limited their ability to isolate the security concerns associated with the dispersal of nuclear technology, while the latter has frustrated US unilateral attempts to address their own interests regarding nuclear proliferation.

The interaction between the US’ unilateral pursuit of its interests, and the perception of the proliferation problem as an international one requiring multilateral responses, would become a central component of the study of US nonproliferation policy from the early 1960’s onward. Ultimately the question to be answered was (and still is) how well the international nonproliferation regime meets US interests regarding proliferation concerns? Increasingly the study of the issue was represented not by the international and institutional perspectives of the preceding publications, but by the US focus found in such works as William C. Davidson, Marvin I. Kalkstein, and Christopher Hohenemser’s *The Nth Country Problem and Arms Control* (1958), Leonard Beaton and John Maddox’s *The Spread of Nuclear Weapons* (1962), and the edited volume by Richard N. Rosecrance *The Dispersion of Nuclear Weapons* (1964).
The first piece was a report from the National Planning Association intended to assess the scientific aspects and political ramifications of nuclear proliferation relative to US foreign policy. In an attempt to begin fashioning a more restrictive US approach to the problem, it was deemed necessary to determine just how feasible nuclear proliferation was with the available public information. This report and the 1964 “Nth country experiment” it engendered were an important step in the study of US nonproliferation policy as it set the stage for the formal modeling and quantitative studies of the subject that would develop in the 1970’s and 80’s. At the time however it prompted an evolution in the basic question of US nonproliferation policy from “how do we stop the spread of nuclear weapons?” to “can we stop the spread of nuclear weapons?” The change is reflected greatly in the literature of the time as numerous political scientists began to realize that the ramifications of the second question were inherently more dangerous to international peace than the first. Fred C. Ikle’s Nth Countries and Disarmament (1960) and Robert W. Tucker’s Stability and the Nth Country Problem (1962) are just a few of the studies of the period that attempted to address this new perspective. By no longer assuming that proliferation was controllable an entirely new field of study was opened. It shifted the primary academic focus from disarmament to arms control in so much as it was a foregone conclusion for some that there would be more nuclear weapons in the future, not less. Second, in coming to this realization academics now had to consider how to order a world dominated by nuclear powers,

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19 The experiment was conducted by the Lawrence Livermore Nuclear Laboratory with the intention of seeing how readily existing public information on nuclear technology could be used to create a nuclear bomb. Three young newly minted PhD physicists were able to accomplish the feat in less than four years prompting a host of exaggerated claims from a variety of sources that 20 to 30 states would develop nuclear weapons by the end of the 1980’s. (W.J. Frank (ed.), “Summary Report of the Nth Country Experiment,” Lawrence Radiation Laboratory, March 1967)
rather than focus primarily on creating a world without them. Fundamentally, the advent of the Nth state concern would serve as the fulcrum for liberal-realists debates over nuclear proliferation that have come to typify the modern study of the subject.

Maddox and Rosecrance’s work are probably more symbolic of the approaches to this problem during the period when the focus started to become what the US in particular should do to counter proliferation. The discussions were at this point also beginning to revolve around the development and promotion of the Partial Test Ban Treaty (PTBT) which came into affect in 1963.\(^\text{20}\) This focus in particular introduced a concept that would be problematic for US nonproliferation policy into the 1970’s: the peaceful nuclear explosion (PNE). As much as the PTBT was intended to create a brake for the proliferation of nuclear weapons, it was perhaps doomed from the beginning as it expressly excluded the PNE from the proliferation problem. This in conjunction with the Atoms for Peace and US Plowshare programs created a gaping loophole in US nonproliferation policy that would not be addressed until the advent of IAEA comprehensive safeguards agreements and the Nuclear Suppliers Group (NSG).

An additional characteristic of the writing of the period was the expansion of edited publications which sought to bring together a variety of viewpoints on the issue. Works such as D.G. Brennan’s *Arms Control, Disarmament, and National Security* (1961), Louis Henkin’s *Arms Controls Issues for the Public* (1961), and Ernest Lefever’s *Arms and Arms Control* (1961) typify this approach and set the foundation for the collective examination of the issue moving forward. Lefever’s book in particular is notable as it relied heavily on not only stressing the dangers of proliferation to the US,

but proposing policy responses that would serve to mitigate those dangers. Some of those proposals would directly influence the development of both the PTBT and later the Nuclear Nonproliferation Treaty (NPT).

The development of the NPT and considerations of how the US could slow or stop the proliferation of nuclear weapons caused another shift in the literature during the mid and late 1960’s. Where the Nth country perspective had dominated early conceptions of the problem, the literature began to disaggregate what had been a singular view of nonproliferation into individual considerations. As a result it focused more on how the US should approach the collection of proliferation cases rather than the general problem of nuclear proliferation itself. Alastair Buchan’s *A World of Nuclear Powers?* (1966) and Rosecrance’s *Problems of Nuclear Proliferation* (1966) exemplify this shift in that they not only present the problem in the form of compartmentalized analyses of US responses, but set the groundwork for the dominance of the case study method in the broader study of nonproliferation policy. Although in both works the primary focus is identification of the incentives for new states to pursue nuclear weapons, the manner in which the US can affect those incentives is a core component of the studies.

In regards to the shift to case studies one of the more influential works of this period was William B. Bader’s *The United States and the Spread of Nuclear Weapons* (1966) which combined a historical examination of US nonproliferation policy up to that point with a forward looking offering of policy prescriptions. What is interesting is that the first part of the book incorporates the singular “Nth state” perspective to explain the evolution of US nonproliferation policy up to the adoption of the PTBT, while introducing the idea of selectivity in US nonproliferation efforts as the foundation of that
policy moving forward. The idea of selectivity was based upon his belief that, “…the United States must begin to adjust to the fact that there have been, and will be in the future, situations where no combination of incentives and restraints will deflect some nations from developing national nuclear weapons programs.” (p 108) He then goes on to apply this dictate to the French, Indian, and “Latin American” cases in an attempt to explain why restraint has manifested itself in some instances, but not all. This conclusion is a powerful one as it sets the stage for future treatments of the issue from a wholly policy oriented case-by-case perspective, allowing this mode of inquiry to be separated in the literature from more general theoretical considerations of why states proliferate. He previews this change in his conclusion when writes, “The nuclear proliferation issue is manageable if we reduce the abstract horror of it to the specifics of policy choices.” (p 130)

Three factors combined to cause researchers to take up Bader’s call. First, the development and implementation of the NPT in 1968 represented a significant leap forward in the evolution of the international nonproliferation regime. It created a greater international and institutional focus within nonproliferation literature that when applied to US policy created a utilitarian approach to assessing the effectiveness of that policy. It also however allowed for more critical questions to be asked of particular states like Israel, India, Pakistan, and France regarding their rejection of the NPT. The second development was the exponential growth in the depth of the US academic community during the late 1960’s and early 1970’s driven ostensibly by a large group of liberal thinkers avoiding the specter of military service in Vietnam. As these individuals entered the advanced stages of their studies they sought new and unique areas of focus which
dovetailed nicely with the increasing need within policy circles for explanations and descriptions of particular proliferation cases. Both of these developments were subsumed in the fact that the number of possible proliferators had grown immensely since the 1950s. With this growth came an increased fear that the dire predictions that had accompanied the Nth state perspective a decade earlier were now coming to fruition. The result was more people looking for more ways to critically address what increasingly appeared to be the problem confronting US foreign policy.

Examples of this shift in the study of US nonproliferation policy can be seen in articles such as Lincoln P. Bloomfield and Amelia C. Leiss’ “Arms Control and the Developing Countries” (1965), James E. Dougherty’s “The Treaty and Nonnuclear States” (1968), E.L.M. Burn’s “The Nonproliferation Treaty: Its Negotiation and Prospects” (1969), and Joseph I. Coffey’s “Nuclear Guarantees and Nonproliferation” (1971). Important edited volumes and case study collections of the period include C.F. Barnaby’s Preventing the Spread of Nuclear Weapons: Pugwash Monograph I (1969), George Quester’s Nuclear Diplomacy (1973a) and The Politics of Nuclear Proliferation (1973b), and Onkar Marwah and Ann Schulz’s Nuclear Proliferation and the Near Nuclear Countries (1975). All of these works have at their core an implicit (and at times explicit) recognition that US nonproliferation policy was no longer being examined as a singular policy. Now it would be considered as a set of policies defined by both the expansion and increasingly complicated nature of the nuclear issue, and the varying relationships that the US had with prospective proliferators. Quester’s work perhaps is most symbolic of these issues in that he examines the impact of the NPT on US nonproliferation policy from the dual perspectives of the varying defenses put forth by
states resisting the adoption of the treaty and, “...some serious ambiguities in the American position.” (1973b, p 16) In assessing the impact of various potential proliferators’ incentives on US attempts to halt their nuclear programs, he argues that differences in political, economic, and military rationalizations preclude the ability of the US to pursue a universal nonproliferation policy. This sentiment is echoed by Coffee in his analysis of the interaction between the NPT and the use of security guarantees as a mechanism for US nonproliferation policy when he writes,

The motives of countries not adhering to the treaty are mixed, ranging from pique at the unequal obligations which it imposes to concern over its effect on the development of nuclear technology for civilian use. (p 836)

When coupled with the varying sets of US interests in each of those categories Quester concludes, “None of the near-nuclear states can really afford to be monolithically opposed to the treaty, just as the US can not afford to be monolithically in favor.” (1973b, p 234). Coffee also recognizes fluctuation in the US position, but argues more forcefully that the lack of consistency in the US position may act as a catalyst for further proliferation in the future. He believes that the answer is a strengthened focus on multilateral attempts to reduce state insecurity combined with a greater attention to nuclear disarmament.

Until the United States comes to assess more accurately the threats to its own security, it is unlikely to persuade others to reassess the threats to theirs; and unless the United States itself is prepared to safeguard its security by means other than arms buildups, it is unlikely to induce others to renounce forever the acquisition of nuclear weapons. (p 844)

These increasingly critical examinations of US nonproliferation policy would continue throughout the early 1970’s focusing predominantly on the discriminatory components of the NPT and perceived selectivity on the part of the US regarding enforcement of national and international mechanisms for combating proliferation. While most believed
that the NPT represented the right sentiment, its form left much to be desired on all sides. For the US however, the “good faith” assurances that supported both the NPT and Atoms for Peace seemed to be enough to claim a universal stance against proliferation, especially when coupled with the development of the PTBT and the SALT I treaty in 1972. Both the policy and the academic treatment of it would change however with the Indian nuclear test of 1974.


The literature of the previous periods evolved based upon combinations of political, scientific, and military considerations of the overall development of nuclear energy and weapons. The third era of nonproliferation studies however was driven by a singular historical event that changed how all of these considerations would be applied to the issue of US nonproliferation policy. “…the [1974] Indian explosion not only led to a major revision in U.S. thinking about nuclear exports, but it had the effect of moving nonproliferation from the periphery toward center stage in Washington’s foreign policy agenda.” (Potter 2005, p 344) In terms of the impact of the test on US nonproliferation policy in particular,

The U.S. reaction… was the most severe: in 1976 Congress introduced the Symington amendment to the foreign aid bill, thereby cutting off certain forms of economic and military assistance to countries that received enrichment or reprocessing equipment, materials or technology without full-scope International Atomic Energy Agency safeguards… Most important, the Carter administration passed the Nuclear Nonproliferation Act, omnibus legislation designed to severely curb nuclear sales to recalcitrant nations. The United States also undertook significant efforts to limit proliferation at the multilateral level, taking the lead in the formation of the London Suppliers Group [i.e. Nuclear Suppliers Group], which sought to coordinate and limit the sales of sensitive and dual-use technologies outside the ambit of the NPT. (Ganguly 1999, pp 160 - 161)

These organizations and laws now constitute the heart of US nonproliferation policy and were born from a perceived failure and naiveté regarding the Atoms for Peace program
and the “good faith” guarantees by states such as India, Israel, Pakistan and South Africa regarding promises not to use US nuclear assistance and expertise in an effort to develop nuclear weapons. The anger and sense of betrayal experienced within US policy circles led to the most direct strengthening of US nonproliferation policy that has taken place either before or since. But these renewed efforts also brought into focus some of the fundamental problems confronting that policy as its goals and mechanisms would also receive a more critical scrutiny. It is this scrutiny, specifically from the academic community, that most characterizes this period in nonproliferation literature.

The Indian nuclear test of 1974 had a profound impact on the way in which US nonproliferation policy would be studied moving forward. While the Nth state approach to the matter during the 50’s and 60’s had led to an examination of US policy in terms of a constellation of ‘near-nuclear’ states and precipitated the rise of the case study method within the discipline, the Indian advancements increased the focus on the incentives individual states were operating under in their pursuit of nuclear weapons. The result was the advancement of single-n case studies as the preferred method of examining how the US could stop nuclear proliferation. While there were still a considerable amount of collected case studies published, especially in the early and mid-1980’s, the individual cases were being separated from each other to a ever-increasing degree as evidenced by the tendency of individual authors to be assigned their own cases or chapters to present often without a theoretical theme to tie them all together. The second area of increasing focus within the literature of the period was the specific tools available to the US in its promotion of its nonproliferation policy. This focus revolved predominantly around the proposed use of IAEA safeguards, as well as national and international sanctions, to
inhibit the development of nuclear weapons programs. The questions asked revolved around issues of feasibility and effectiveness regarding the use of sanctions in particular, and would set the stage for later discussions of the US use of unilateral versus multilateral mechanisms for nonproliferation. Some secondary developments which would also manifest themselves in the literature of the period would be the steady decline of the peaceful-militarized dichotomy prominent in earlier literature as the promise of nuclear energy faded, capped by the Three-mile Island and Chernobyl nuclear accidents. Also, the rise of positivism as the dominant perspective in the American study of politics and IR allowed for increasingly complex quantitative and modeling methodologies to be applied to the issue creating a new avenue of study for those interested in nonproliferation policy. Overall all of these influences would combine to create an exponential expansion of the quality and quantity of nonproliferation research during the period.

The increased use of regional and state-specific case studies to examine US nonproliferation policy would begin almost immediately following the Indian test in 1974. Works such as Lewis Dunn’s *India, Pakistan, Iran... A Nuclear Proliferation Chain?* (1976), Richard K. Bett’s “Paranoids, Pygmies, Pariahs and Nonproliferation” (*Foreign Policy*, 1977) and “Nuclear Proliferation and Regional Rivalry: Speculations on South Asia” (*Orbis*, 1979), and Ernest Lefever’s *Nuclear Arms in the Third World: US Policy Dilemma* (1979) represented the initial attempts to address how the Indian program would impact future US policy considerations. Followed up later by “Half Past India’s Bang” (*Foreign Policy*, 1979) and a piece co-written with Herman Kahn (*Trends*...
Dunn’s perspective was that not only did India’s test represent a major problem for US nonproliferation policy, but it also heralded a possible chain reaction in southeast Asia with several states following the Indian example. He summed up the focus of his work during this period in “Nuclear Proliferation and World Politics” (1977) when he wrote:

Regional interactions within a proliferated world probably would include increased nuclear arms racing, inadvertent or calculated nuclear-weapons use, and outside involvement in domestic nuclear coups d’état. In turn, the possible global repercussions of local proliferation are likely to include: a partial erosion of existing alliances, or, to the degree that present superpower ties remain unchanged, a risk of escalating conflict; growing nuclear terrorism; a corrosion of political authority and legitimacy; and ultimately, even growing global anarchy… The gap between the gravity of a proliferated world’s varied threats and the probable effectiveness of politically acceptable policy responses supports the fear that the initial depiction may be more than a nightmare scenario. (p 96)

This sentiment would be echoed by the other works of the period and would serve directly as the foundation for the pessimistic responses to Kenneth Waltz’s claims that perhaps everyone was over-reacting to the proliferation problem in the first place.²¹ The key for the study of US nonproliferation was that the problem was seen as worsening, thus requiring increased efforts on the part of the academic community. These efforts would result in Dunn’s perspective being applied to other regional nuclear ‘hotspots’ such as Africa and Latin America producing important works like John R. Redick’s “Regional Restraint: U.S. Nuclear Policy and Latin America” (Orbis 1978), and Betts’ “A Diplomatic Bomb for South Africa?” (International Security 1979).

The latter piece, in conjunction with another article published by Betts in 1979 (“Incentives for Nuclear Weapons: India, Pakistan, Iran” – Asian Survey), brings up two salient issues that this study argues represent the predominant focus of the literature

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during the period: incentives amongst separate states for nuclear proliferation and the tailoring of US policies to address them individually. In analyzing the South African case Betts argues that the true dilemma for US policy is the inability of the US to either reduce their incentives to proliferate or inhibit their ability to do so through the use of existing mechanisms. Because they were pursuing nuclear weapons predominantly for the prestige factor and doing so with their own established nuclear technologies, the traditional ‘carrots’ (peaceful nuclear energy; security guarantees) & ‘sticks’ (threats; economic and political isolation through sanctions) used by the US in its nonproliferation efforts were deemed to be ineffective. The result was that, “Preventing [South African nuclear development] in the future could require more strenuous threats or inducements.” More worrisome was that fact that, “Now even more obviously than Israel, South Africa has a ‘Bomb in the Basement,’ or at least the diplomatic equivalent of one, a card it might try to play in the rough-and-tumble game of international bargaining…” (p 91) Betts would be proven right when the outgoing Apartheid regime used the bomb to secure significant concessions from the international community before turning over power to incoming ANC government.22 Perhaps more importantly, in identifying the central role nuclear weapons proliferation would have in certain state’s playing of that ‘rough-and-tumble game,’ he unknowingly previewed what would become the main aspect of current US nonproliferation policy as evidenced by US attempts to halt both Iranian and North Korean nuclear proliferation.

Betts addresses the advancement of a case specific approach to the study of nonproliferation in “Incentives for Nuclear Weapons: India, Pakistan, Iran” when he argues,

Discussion of the danger of nuclear proliferation has suffered from too much abstraction and too little specificity. Conceptualization of the problem as a general, global threat distracts attention away from the particular determinants of a nation’s decision for or against acquisition of nuclear weapons... Moving from the analytic focus to case studies of the incentives and constraints in individual countries offers greater promise for new insights. (p 1053)

This call for a new approach to studying nonproliferation policy led to a long and productive line of inquiry that dominated the field throughout the 1980’s and well into the 90’s. Some of the more influential and important works were Joseph A. Yager’s (ed) Nonproliferation and U.S. Foreign Policy, Leonard S. Spector’s Nuclear Proliferation Today (1984), The Undeclared Bomb (1988), and his co-authored work with Jacqueline R. Smith Nuclear Ambitions: The Spread of Nuclear Weapons 1989-1990 (1990). This new more focused approach to assessing the impact of US policy on state’s attempts to acquire nuclear weapons is also represented by works such as Thomas C. Schelling’s “Who Will Have the Bomb?” (International Security, 1976), Michael Nacht’s “The Future Unlike the Past: Nuclear Proliferation and American Security Policy” (International Organization, 1981), and Robert F. Goheen’s “Problems of Proliferation: U.S. Policy and the Third World” (World Politics, 1983). Together this literature represents a maturing of the analysis of US nonproliferation policy similar to a doctor’s shift from ‘practicing medicine’ early in their career to ‘treating patients’ once they have matured and established their own practice. This is not to say that these treatments of the issue were better than previous ones, but rather that they offered a more intricate
examination of how general US policy had and should be applied to specific proliferation cases.

In truth both approaches, the general and the specific, would be combined in several other important works to push the study of nonproliferation policy in new and important directions. While they incorporated aspects of the case study approach, they also examined previously unexplored or tangential aspects of US policy in order to identify other areas where it could be strengthened. One of the earliest and important works of this kind was Dagobert L. Brito, Michael D. Intriligator, and Adele E. Wick’s (eds) *Strategies for Managing Nuclear Proliferation* (1983). This book is notable first for its gathering of many of the period’s preeminent experts of US nonproliferation policy from a variety of backgrounds. From politician McGeorge Bundy and economist Gene I. Rochlin, to proliferation expert George H. Quester and IR theorist Kenneth N. Waltz, the book offers a wide variety of perspectives on the future of US policy. It does this by starting with the economic and political considerations driving both proliferation and the responses to it, before applying those considerations to both regional and US policy perspectives. The result is a piece that arguably must be read in order to understand the considerations underlying US nonproliferation policy towards the last stages of the Cold War. One of the central outcomes of the book highlighted by Lawrence Scheinman in the conclusion is the distinction between nonproliferation policy and proliferation management. The former is the purview of what would become the proliferation optimists who believe that proliferation can be stopped and if not, that it’s worst outcomes (e.g. nuclear war) can be avoided or significantly controlled. The latter represents the increasingly salient position of the nuclear pessimists who believe that
ultimately nuclear proliferation and its associated dangers can only at best be managed, a position at odds with the universalist foundations of US nonproliferation policy. In addressing this distinction he argues that one of the problems of nonproliferation studies is the tendency to separate issues of proliferation incentives and the associated US political attempts to affect them, from the capability to proliferate and US attempts to control the materials necessary for actual nuclear weapons development.

Commentators and analysts tend to present these approaches to controlling proliferation as sharply separated from each other, at times almost in opposition, as though they were contradictory and mutually exclusive alternatives. I find this representation not only inconsistent with the history of nonproliferation policy, but also misleading and potentially dangerous. (p 275)

As a result, Scheinman argues for a “mix of strategies and approaches” both within the development of US nonproliferation policy itself, and the study of the topic in general. He concludes by arguing “This alone would seem to make institutional arrangements an incumbent feature of any future nonproliferation strategy.” (pp 277-278)

Some other works that would attempt to recombine the separated areas of nonproliferation studies were William H. Kincade and Christoph Bertram’s (eds) Nuclear Proliferation in the 1980’s: Perspectives and Proposals (1982), Rodney W. Jones, Cesare Merlini, Joseph F. Pilat, and William C. Potter’s (eds) The Nuclear Suppliers and Nonproliferation (1985), and William C. Potter’s (ed) International Nuclear Trade and Nonproliferation (1990). The primary nexus most often explored, as the titles of the latter two books suggest, was the degree to which the economic and technical considerations of both the US and the potential proliferators offered a common ground on which substantive US policies could be built. Further, as Scheinman suggested they began to

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highlight the importance of international institutional mechanisms like IAEA safeguards as critical components of US nonproliferation efforts. Thus, in conjunction with the development of the nuclear export component of the international regime, there was a distinct rise in the technical examinations of US nonproliferation policy as represented by two books published in 1983, Robert Boardman and James F. Keeley’s (eds) *Nuclear Exports and World Politics* and William Walker and Mans Lonnroth’s *Nuclear Power Struggles: Industrial Competition and Proliferation Control*. The reality however was that the issue of control would dominate these general attempts to understand US policy, while the questions surrounding incentives to proliferate would continue to drive a secondary group of small-n case studies focusing on particular states or regions.

This second group of analyses continued to focus on proliferation incentives as the key to understanding and applying nonproliferation policies from both an international and US perspective. However, this approach now began to incorporate more statistical and mathematical methodologies to understanding the problem. George Quester argued that this new approach was both valued and needed; “As in every other case in which such rigorous mathematical approaches have been applied, the purpose is to serve as a check on our intuitive guesses, guesses that too often are wrong, that too often are based on less-than-rigorous comparisons of alternative premises.” (1983, p 163)

While the study of nonproliferation policy would continue to be hindered by the relatively small number of proliferation cases, by focusing on proliferation as the impetus for nonproliferation policies and broadening the universe of cases to all potential proliferators, the use of quantitative methods would allow for more objective and precise conclusions to be drawn regarding the relationship between the two issues. Key works of
the period like Michael J. Brenner’s *Nuclear Power and Non-Proliferation: the Remaking of U.S. Policy* (1981), Stephen M. Meyer’s *Nuclear Proliferation: Models of Behavior, Choice and Decision* (1983), and William C. Potter’s *Nuclear Power and Proliferation: An Interdisciplinary Perspective* (1982) collectively showed the potential in this approach could have for nonproliferation studies. As Quester’s review (“The Statistical ‘n’ of ‘nth’ Nuclear Weapons States” – *Journal of Conflict Resolution*, 1983) of these and other works of the period points out, the value of the approach was not in its ability to produce definitive understandings of the issue (which it couldn’t), but its, “…forcing us to verbalize our tacit assumptions, to confront some of our premises and axioms, and then ask whether they are tautological or inconsistent and mutually contradictory, or simply false and misleading.” (p 163) This would be accomplished by other works of the period such as Bruce Bueno de Mesquita and William H. Riker’s “An Assessment of the Merits of Selective Nuclear Proliferation” (*Journal of Conflict Resolution*, 1982), Bruce D. Berkowitz’s “Proliferation, Deterrence, and the Likelihood of Nuclear War (*Journal of Conflict Resolution*, 1985), and Stephen M. Meyer’s *The Dynamics of Nuclear Proliferation* (1984) which all in various ways reached the simple yet important conclusion that the probability of deliberate nuclear war did not necessarily increase with an increase in the number of nuclear weapons states. More specifically, BdM and Riker concluded that, “… a nuclear war as a result of an accident or other inadvertent behavior eventually becomes the dominant factor. An implication of this analysis is that control over accidental or irrational war is as important as policy that addresses proliferation per se.” (p 212) This is a critical conclusion because it fed nearly perfectly into broader understandings that the US in fact should consider selectively applying nonproliferation
mechanisms to those states most likely to be involved in these sorts of “accidental or irrational” conflicts. This conclusion also seemed to be justified as the few potential proliferators left by the end of the 1980’s seemed in almost every case to be pariah states bent on violating the rules and norms of the nonproliferation regime.

The rise of rogue or pariah states as a key focus for US foreign policy coincided with the end of the Cold War and the associated elevation of the US to its current hegemonic status. While the concept was arguably a implied component of many of the case study examinations from the 1960’s to the present, its incorporation as a central consideration for US nonproliferation efforts is a relatively new phenomenon within the literature and serves as the primary transition mechanism for analyses from the Cold War to post-Cold War periods. Robert E. Harkavy’s “Pariah States and Nuclear Proliferation” (International Organization, 1981) serves as one of the earliest examples of this new focus. There are some important components of this piece however that set it apart from similar articles even a few years later. First, Harkavy defines a pariah state as, “…a small power with only marginal and tenuous control over its own fate, whose security dilemma cannot easily be solved by neutrality, nonalignment or appeasement, and lacking dependable big-power support.” (p 136) By taking this somewhat mechanistic approach to defining pariah states he sees the threat (or advantage) that they pose to US material interests as the primary determinant of the future of US nonproliferation policy. His main point is that the severe security concerns of these states (e.g. Israel, Pakistan, Taiwan, South Korea) combined with their importance to US interests may inhibit the US’ ability to fully apply nonproliferation mechanisms against them. While he is partially correct in his latter conclusion, it seems he and others failed to recognize the degree to which
impending US hegemony would allow it to normatively declare who was a rogue state. While Harkavy’s conclusions would be echoed in later pieces such as Gerard C. Smith and Helena Cobban’s “A Blind Eye to Nuclear Proliferation” (*Foreign Affairs*, 1989), the entire perspective would change with the end of the Cold War. Once released from the shackles of deterrence and nuclear posture considerations emanating from the bipolar struggle with the Soviets, US nonproliferation efforts now had to consider both new found enemies and emerging policy choices that had been hidden during the previous decades. After 1990 the prospect of unilateral preemptive action would transform the concept of nonproliferation into counterproliferation, and combined with the redefinition by the US of rogue states would allow for one final shift in the study of US nonproliferation policies. Where the US had been focused for the previous four decades on states pursuing arsenals of nuclear weapons, now the focus would begin to shift to non-state actors seeking just one, and the role that rogue states would play in this new and seemingly deadlier threat.

**II.D. Post-9/11: (2001 – present)**

The transition form the first to second period of the study of US nonproliferation policy was driven predominantly by technical changes in our understanding of nuclear energy and the attempt to delineate between peaceful and militarized uses of nuclear technology. In turn, the movement from the second to the third period of nonproliferation studies was driven by the political realization that the policies in place, and understanding of the problem in general was inadequate, and may have inadvertently assisted some states in reaching their goal of acquiring nuclear weapons. The transition to the final and current stage in this field of study was driven almost exclusively by the systemic changes
associated with the end of the Cold War. In ascending to the position of hegemon the US was confronted with important policy altering considerations that have since shaped the nature of nonproliferation studies.

First, as the undisputed leader of the post-Cold War system, nuclear proliferation represented not just a specific threat to US interests, but an existential threat to the liberal democratic system that the US had been cultivating since the end of WW II. The result was that where rogue state proliferation may have been dealt with individually in the context of the US-Soviet rivalry, now rogue states as a group had to be confronted as a general threat to the stability of the system. This shift is seen clearly in the way in which the US defined the concept of the rogue state in the 1990’s and beyond, and ultimately in the more confrontational stance it took towards the group in general. The second change was that the US now had significantly more freedom in confronting proliferation with no state able to practically block its use of unilateral nonproliferation policies. As the dominant military and economic power in the system it now had the strength and implicit right to address the problem as it saw fit, relying on the international community to follow its lead rather than working in conjunction with them. The rise of the rogue state, and soon after international terrorism, along with the increasing ability of the US to act unilaterally in international affairs, represent the key foci of nonproliferation studies since the end of the Cold War.

The end of the Cold War provided nonproliferation analysts the opportunity to both look forward at the new challenges confronting US policy and look back in an effort to assess the effectiveness of the previous 50 years of US efforts to combat nuclear
weapons proliferation. The attempt to review US nonproliferation policy during the Cold War produced several excellent publications that together presented a comprehensive examination of the policy up to the end of the period. Peter A. Clausen in *Nonproliferation and the National Interest* (1993) breaks down US Cold War policy into several stages dictated primarily by the historical and political events that precipitated its evolution. Written in the context of concerns over the Iraqi nuclear program and increasing conflict in the Middle East, his goal was to draw a connection between the failures and successes of the past, and the newly identified threats. His main conclusion, which would be echoed by similar works in the period, was that, “…the end of the Cold War presents new proliferation risks as well as opportunities. The challenge to nonproliferation policy is to contain the former while exploiting the latter.” (p 198) In relation to the widely perceived variations of US policy during the Cold War he believed, “This requires, in turn, that the United States articulate and sustain a clear national interest in the issue, avoiding the peaks and valleys of attention, and gaps between nonproliferation and foreign policy that have marked the past.” (p 198) From his perspective this meant that, “There are two broad tasks for a revitalized strategy – to preserve and strengthen the global regime, and to deal with the handful of proliferation problem countries.” (p 200) Both of these prescriptions are important to understanding post-Cold War nonproliferation policy. The first represents what would be a renewed debate over the utility of multilateral mechanisms for the promotion of US nonproliferation goals. The debate which was initially energetic would diminish considerably after 9/11 and the issuance of the 2002 National Strategy to Combat WMDs. The second point, which is perhaps more important, was that the “Nth” state perspective
and its focus on a large group of potential proliferators was being replaced by concerns for a “handful of problem countries.” It is this point that serves as a major focus of post-Cold War nonproliferation literature.

Some other important treatments of US policy during the Cold War are John Simpson’s “Nuclear Non-proliferation in the Post-Cold War Era” (International Affairs – 1994), Randall Forsberg, William Driscoll, Gregory Webb, and Jonathan Dean’s *Nonproliferation Primer: Preventing the Spread of Nuclear, Chemical and Biological Weapons* (1995), Lewis A. Dunn’s “Proliferation Watch: Some Reflections on the Past Quarter Century” (*Nonproliferation Review*, 1998), and Henry D. Sokolski’s *Best of Intentions: America's Campaign against Strategic Weapons Proliferation* (2001). Taken together, the importance of these works is that they attempt to forward prescriptions for post-Cold War US nonproliferation policy based upon examinations of the historical record and identification of what worked and what didn’t. One of the other aspects of these works was an attempt to include a comprehensive discussion of all of the components of nonproliferation studies. Similar to the primer by Forsberg *et al*, Kathleen C. Bailey’s *Strengthening Nuclear Nonproliferation* (1993) and Gary T. Gardner’s *Nuclear Proliferation: A Primer* (1994) incorporate historical discussions of nuclear technology and the international nonproliferation regime in order to set post-Cold War US policy in a unified context. Other important works that sought to unify the nonproliferation issue before moving forward were David H. Albright’s *The Nuts and Bolts of Nuclear Proliferation: A Guidebook* (1991) and Leonard S. Spector’s *A Historical and Technical Introduction to the Proliferation of Nuclear Weapons* (1992).
In moving forward nonproliferation analysis focused on the nature of proliferation threats in the post-Cold War world and the mechanisms available to the US in confronting them. The new threats revolved what I will call diffusion proliferation or the spread of existing nuclear weapons to state and non-state actors. Initially this new threat centered on the post-Soviet nuclear arsenal and their perceived inability to keep them out of the hands of rogue states and terrorists. Two of the first treatments of the subject were Kurt Campbell, Ashton Carter, Steven Miller, and Charles Zraket’s *Soviet Nuclear Fission: Control of the Nuclear Arsenal of a Disintegrating Soviet Union* (1991) and William Walker’s “Nuclear Weapons and the Former Soviet Republics” (*International Affairs* – 1992). While the former piece focused primarily on the technical aspects of consolidating and securing the Soviet weapons which were now scattered amongst the former republics (FSRs), Walker’s piece would actually set the stage for the specific US policies on the subject. Formalized by the Soviet Nuclear Threat Reduction Act of 1991 (a.k.a. the Nunn-Lugar initiative) and the Department of Defense’s Cooperative Threat Reduction (CTR) program, the policy focused on what Walker identified as the “four main dangers”. The first two revolved around the fact that the FSRs may not only retain the weapons they had inherited, but possibly use them against each other or states in the region. The third danger was, “…that nuclear weapons, or more likely the materials, technologies, and human expertise involved in their manufacture will spill over into other countries seeking weapon capabilities.” (p 256) While the fourth danger was that the sudden emergence of three new nuclear states could reinvigorate security based proliferation incentives in central Asia.
Taken together, these dangers were perceived as much more threatening than the long term nuclear development taking place in states like India, Pakistan, and North Korea. Walker argues that the situation offered more opportunities for advancement of nonproliferation efforts than it did specific threats. While he discusses the chance for the US to promote and strengthen the role of international nonproliferation mechanisms, he argues prophetically that one of the biggest dangers was that, “The spectre (sic) of proliferation is becoming the nuclear planner’s best friend.” (p 276) This would come to fruition during the second Bush administration with their 2002 Nuclear Posture Review and the examination of increased ways to utilize nuclear and sub-nuclear explosives in conventional conflicts. Later works which analyzed the problem of ‘loose nukes’ and the US response to them were James Clay Moltz’s “CIS Proliferation Problems and Issues for the NPT Extension Conference” (The NPT Review, 1995) and Proliferation Concerns (1997), a report put out by the National Research Council. The conclusion of both Moltz and the report was that the program represented one of the most successful export control programs the US had ever instituted. Buoyed by Russian and FSR cooperation and support, and operated in conjunction with existing international export control mechanisms (e.g. the NSG and IAEA), the program persuaded the FSRS to relinquish their weapons while establishing a strong bilateral relationship with Russia that exists to this day.

With the decline of the ‘loose nukes’ problem, the issue of diffusion proliferation shifted from securing Soviet weapons in particular to keeping nuclear weapons in general out of the hands of rogue states and terrorist groups. As was previously discussed, the initial introduction of the concept of the rogue state into nonproliferation studies can be
traced to the work of Robert Harkavy in the late 1970’s and early 1980’s. The key to his approach however was indentifying them according to their isolated diplomatic situations and critical sets of security concerns. From his perspective they were states which had strong systemic incentives to proliferate and at least marginally increased reasons to actually use them. A change however took place with the end of the Cold War regarding the definition of rogue states, their relationship to proliferation concerns, and ultimately the US responses to their proliferation efforts. Arguably beginning with Qadhafi’s Libya, by the 1990’s,

…the labeling of a country as a rogue state is a certificate of political insanity, in terms of the rules of realpolitik and maintaining international order… A rogue state is one that puts a high priority on subverting other states and sponsoring non-conventional types of violence against them. It does not react predictably to deterrence or other tools of diplomacy and statecraft. In short, such a state requires special treatment and high levels of international pressure to prevent it from wrecking public order, setting off wars, and subverting whole areas of the world. (Rubin 1999)

Thus where early rogues were seen as relatively normal states lying at the extreme end of a spectrum of insecurity, the new rogue state was irrational and bent on using anarchy and terror to forestall “the end of history.” 24 The addition of nuclear weapons to this equation made them a universal and critical threat, while their seeming irrationality meant that the US and others had to be willing to use any means necessary to confront and defeat them.

While much of the attention of the early 1990’s was focused on Iraq and the Gulf War, one of the first full treatments of the subject was Michael Klare’s Rogue States and Nuclear Outlaws (1995). In it, Klare begins by arguing that the rise of the threat of

24 Francis Fukuyama proclaimed in his widely cited book The End of History and the Last Man (New York: Free Press, 1992) that the Western victory in the Cold War constituted the end of ideological struggle and rise of an international system dominated by liberal democracies and thus increased peace.
potentially nuclear armed rogue states fit nicely with the US’ post-Cold War search for a new enemy. He highlights the fact that these sorts of states had been around during the late stages of the Cold War as well, but had escaped the label or direct confrontations to the US due to their potential value as allies against the Soviets. “In some cases, Washington even chose to overlook these countries’ nuclear and chemical weapons programs rather than combat such activities and thereby run the risk of weakening their ties with the United States.” (p 17) In the post-Cold War period however, these states’ behavior and radical ideologies allowed the US to construct a “new demonology” which combined their illicit WMD activities, with their seemingly universal support for international terrorism and intent on “sabotaging the prevailing world order,” to create a new threat to the US and world peace. (p 26) It would be the devastating attacks on the World Trade Center on September 11, 2001 that would solidify this image in the minds of Americans and become the primary rationale for US nonproliferation policy since.

Lexicon,” *Journal of International Affairs* – 2001) and Mark Strauss ("Rogue by Any other Name: The Adjustable Language of Foreign Policy,” *The Chronicle of Higher Education* – 2000) agreed with O’Sullivan’s skepticism concluding generally that, “…the term ‘rogue’ has no basis in international law – it’s a label imposed by the powerful on the not-so-powerful.” (Strauss) Not everyone however agreed with the criticisms. Theorists like Kenneth M. Pollock argued that America had always insinuated issues of ethics and morality into its foreign policy and that it had, “often created disjunctions between the United States and its European allies over how to handle rogue regimes.” (1998, p 1) More importantly, he argued that it was a policy that was here to stay so regardless of the debates over the normative foundations and policy implications of the concept, the rest of the international community needed to adapt to the new strategy.

Raymond Tanter in *Rogue Regimes: Terrorism and Proliferation* (1998) takes a similar perspective choosing to examine the threat using a case study approach to determine which cases the US should attempt engagement in, and which required containment and confrontation. He disagrees with critics who argue the threat was manufactured or exaggerated by the Pentagon and relies on the increasing intersection between terrorism (e.g. attacks on two US embassies in Africa in 1998) and evidence that states such as Iran were seeking WMDs to support the US policy. The debate continued right up to the attacks on 9/11 with authors like Thomas H. Henriksen ("the Rise and Decline of Rogue States,” *Journal of International Affairs* – 2001) agreeing with Tanter and Pollock on the basis that the connection between terrorism, rogue states, and proliferation was real and ominous. In conjunction with the historical separation of the proliferation issue into individual cases and the modern rise of US unilateralism, he
concluded that, “Since circumstances differ with each rogue, the steps taken to neutralize them can vary from covert actions for toppling a dictator to forms of economic and diplomatic engagement. But whatever the course of action, it must be sustained.” (p 373)

Before discussing how 9/11 ended the debate and crystallized US nonproliferation policy around the threats of terrorism and rogue states, it’s important to note a study that did much to inform the development of this analysis. Peter D. Feaver and Emerson M.S. Niou’s “Managing Nuclear Proliferation: Condemn, Strike, or Assist?” (International Studies Quarterly – 1996) focused on the acquisition stage in proliferation cases and the circumstances under which the US should confront or engage the proliferator with the goal of getting them to renounce nuclear weapons. Returning to the perspective of “managing proliferation,” the authors use a series of deductive models to conclude that the decision was a function of whether or not the US was “purist” (universally committed to stopping proliferation) or “pragmatist” (resigned to accepting minimal levels of proliferation) at the time, the “size” and political disposition of the proliferator relative to the US, and the degree to which the proliferator was “risk-averse” in its proliferation efforts. (p 211) These conditions were important in developing the independent variables this analysis focuses on. Some of their conclusions also served to establish some of the key hypotheses presented here. Central among them was the conclusion that prior to acquisition, engagement through the nonproliferation regime was the appropriate response for the US. They also concluded that direct assistance in order to secure a safe nuclear arsenal was the preferred strategy after acquisition. (p 229) Ultimately they determine that US has only rarely reacted strongly against a nuclear program, “…and never after the proliferator has fully deployed.” (p 230) While this is not absolutely
confirmed by the analysis presented here, it does support the relatively low frequency of strong US responses found throughout the history of US nonproliferation policy.

Beginning shortly before 9/11 and accelerating quickly afterwards, the need to summarize the new problems confronting US nonproliferation efforts produced several important publications which represent the most current understandings of the issues. Barry R. Schneider and William L. Dowdy’s (eds) *Pulling Back from the Nuclear Brink* (1998) offers as good a summary of the state of the discipline as Brito, Intriligator, and Wick’s piece did in the early 1980’s. By combining a ‘past, present, future’ perspective with institutional and case study approaches to the problem, the book provides an excellent overview of the practical and potential application of US policy heading into the post-9/11 period. Other presentations of this style are Henry Sokolski and James M. Ludes’ *Twenty-First Century Weapons Proliferation* (2001) and Janne E. Nolan, Bernard E. Finel, and Brian D. Finlay’s (eds) *Ultimate Security: Combating Weapons of Mass Destruction* (2003). While all of the pieces would rely on a wide variety of academic and political perspectives, they all would come to the general conclusion that up until 2002 the US had lacked a clear post-Cold War nonproliferation policy. The latter piece sums up this position when the authors write,

…there is no evidence of an articulated strategy that explains how military, political, and economic instruments need to be harmonized to serve national interest... It is past time for the White House to conduct a strategic review of nonproliferation mechanisms, going beyond its fixation on military countermeasures and seeking instead to lay out the continuum of proliferation policy instruments that can be brought to bear in different circumstances. (p 239)

The administration was in fact making such a review at the time the authors were writing and the subsequent 2002 National Strategy to Combat WMDs constitutes the proximate cause for this study.
The 2002 Strategy was seen by many as a fundamental shift in US nonproliferation policy. No individual was more influential in making this charge than William C. Potter who in a speech for the Carnegie International Non-Proliferation Conference in 2005 argued that there were four new principles guiding the Bush administration’s nonproliferation policy and which made it a radical departure from historical US policy. First, he argued that the US had evolved from an optimist (and thus universal) approach to stopping proliferation, to a pessimistic perspective allowing for the adoption of a “selective” approach to the problem. Next, he believed that the application of this new selectivist policy was being driven by the US conception of “good proliferators and bad proliferators,” and “Although it is true that Washington in the past has played favorites with the NPT outliers, the new policy of nonproliferation exceptionalism is far more explicit and pronounced than prior routine efforts by the United States to deflect criticism of Israel’s nuclear policies.” (p 2) The third principle he identified was the Bush administration’s disdain for multilateral mechanisms as the central aspect of US nonproliferation policy. While debates over their utility had informed the study of US policy as early as the Baruch Plan, Potter was particularly concerned with the degree to which the new unilateral approaches of the US would weaken the international nonproliferation regime. Lastly, Potter was concerned with the manner in which regional US security interests seemed to be overriding its adherence to both national and international laws and thus overturning five decades of US nonproliferation policy. It is this last point, and Potter’s application of it to the 2005

India-US Joint Statement which established US-Indian nuclear cooperation efforts in the aftermath of their 1998 nuclear tests, which represents the foundation of the research question driving this analysis.

The most recent and comprehensive collection of analyses of these issues is Nathan E. Busch and Daniel H. Joyner’s (eds) *Combating Weapons of Mass Destruction* (2009). By gathering together several promising theorists, highlighting the prominent issues facing US and international nonproliferation policy, and applying them to the variety of cases currently occupying the proliferation landscape, the authors update as much as possible the current state of the discipline. Nuclear terrorism continues to occupy a central position in the study of nonproliferation policies, followed closely by concerns over continuing rogue state (e.g. Iran and North Korea) proliferation efforts. Consideration of the development of US counterproliferation policy (i.e. nonproliferation pursued through the possible preemptive use of force to reverse nuclear programs) is combined with continued assessment of the utility of the international regime to develop current understandings of the nonproliferation mechanisms available to the US. The only truly shared conclusion, which it could be said has guided the evolution of the literature from the very beginning, is that, “As the world enters the twenty-first century, understanding the problems of WMD proliferation currently facing states and the international community as a whole is of the greatest importance.” (p 5)

**II.E. Conclusion**

The study of US nonproliferation policy has gone through a variety of stages each defined by a distinct set of characteristics. Early on it relied heavily on the input of the scientists developing nuclear technology, and the politicians scrambling to determine the
proper policies for its use. Both perspectives however were heavily influenced by first WW II, and then the Cold War. The constant and eventually overwhelming influence of security and military concerns caused both problems and opportunities for the study of the policy. On the one hand it causes severe tensions between the various perspectives on the subject, leading at times to contradictory and ultimately damaging conclusions regarding the nature of the problem and the policies necessary for dealing with it. At the same time the growing divide between the scientific and military/political spheres opened the door for increasingly sophisticated and influential input from the academic community into the policy process. While their efforts were by no means unified or even complimentary, the fact that they generally as a group were concerned with reducing the dangers of proliferation and nuclear war greatly impacted the study and practice of US policy moving forward.

The second period in the study of nonproliferation policy was initially driven by changes in the scientific and ultimately political perceptions of the potentials of nuclear energy. An associated aspect of the literature of the period was critical analysis of the international and institutional mechanisms which were being developed to control peaceful nuclear energy, while safeguarding against the further proliferation of nuclear weapons. From the Atoms for Peace Program to the NPT, multilateral components of US policy at the time constituted a major focus of the analyses of the period. This was supplemented by the development of the “Nth-state” theoretical perspective which added a more urgent voice to the studies being produced, while at the same time leading to the disaggregation of the proliferation problem into often disconnected regional and single-n case studies. This period was important in the overall development of the discipline as it
represented a considerable advancement in the quality and quantity of academic treatments of US nonproliferation policy. In conjunction with the rise of positivism and generally more rigorous research methods, the period set the foundation for the more critical analyses that would follow.

The acquisition of nuclear weapons by India in 1974 marked a major turning point in the study of US policy, perhaps rivaled only by the end of the Cold War a decade and a half later. With such a real and visible illustration of the weaknesses of both US and international nonproliferation policies, attention quickly turned to both assessing the reasons behind the weaknesses and the implications the test would have on the broader issue of nuclear proliferation. There was a marked increase in the literature of examinations of particular technical aspects of the policies and how they fit into US efforts to combat proliferation. The quick expansion of both international and national mechanisms for nonproliferation efforts focused on the use of sanctions as the primary ‘stick’ available, and the increased use of unilateral approaches by the US. While there were concerns regarding both issues, much of them were lost amid the renewed rhetoric and eventual end of the Cold War that marked the later half of the third period. While the period would see the rise of the rogue state as a new concern relative to nonproliferation efforts, it would also see a decline in the production of case studies as the pool of potential proliferators declined due both their successes and failures. The result was the literature was primed for expansions in new directions when the systemic conditions that had informed the study of the issue suddenly evaporated in 1990.

The last and current period of study has been driven by fears of nuclear terrorism and rogue states determined to disrupt the US-led post-Cold War system. When
combined with the development of US hegemony and reality of 9/11, the focus of the most recent literature has been on the evolution of US nonproliferation policy in both form and substance. Some have expressed concern that the new US penchant for unilateral action and predominantly normative definitions of threats threatens to increase rather than decrease incentives some states may have for pursuing nuclear weapons. Others focus on the degree to which the new direction in US policy threatens to erode the legitimacy of the international nonproliferation regime and undermine decades of multilateral efforts at curbing proliferation. Still others believe that not only was the change necessary given the evolution in the nature of international proliferation concerns, but that a new more bold approach is essential for the promotion of US interests into the foreseeable future. Regardless of who is correct, it is true that the threat of nuclear weapons proliferation has been, and continues to be, a critical concern for US policy and thus must also be for those who study US foreign policy.
III. Research Design

The research question being addressed is what accounts for variations in US policy responses to states pursuing nuclear weapons? The practical impetus behind choosing this question to examine stems from the public outcry which accompanied the 2002 US National Security Strategy, the 2005 India-U.S. Joint Statement, and what both developments meant for the future of US nonproliferation policy. More specifically, this work seeks to explain the abrupt and substantial reversal of decades of US nonproliferation policy represented by these policies. The theoretical foundations of this study rest in the commonly held, but rarely tested, assumptions concerning what motivates responses to nuclear proliferation. The study of the incentives for proliferation amongst certain states, and the impact of proliferation on the stability of the international system, has dominated nonproliferation studies in general. This work seeks to fill what has historically been an under-examined aspect of the proliferation problem, incentives for responses to proliferation. Methodologically, the study of US foreign policy responses to proliferation are dominated by single or small-n case studies which provide rich descriptions of the context surrounding decisions, but often do not to produce clear explanations of the causal mechanisms involved. Further, these studies fail to recognize that each case of proliferation presents more than one opportunity for a significant US response. Thus by increasing the number of cases examined, as well as opening

26 The 2002 US National Security Strategy through its introduction of the term “counter-proliferation” opened the door for the use of preemptive force to halt another state’s nuclear program, as well as elevating the degree to which US unilateral approaches to nonproliferation were considered preferable over multilateral ones in certain cases. On an even broader level, the more “selective” case-by-case approach to determining the threat posed by nuclear weapons programs eroded the “universalism” that had long served as the foundation of international nonproliferation efforts. Finally, the 2005 agreement with India was the manifestation of these changes in so much as India became the recipient of one of the largest US nuclear cooperation agreements in history despite its violation and continued lack of participation in the international nonproliferation regime.
individual cases up to more structured analysis, it is hoped that we will increase our understanding of the causes of variations in US policy between individual cases, as well as within them.

III.A. Dependent Variable

Historically, the range of US nonproliferation responses has revolved around combinations of three broad approaches: coercion, incentivization, and denial. Coercion focuses on threats or uses of force aimed at directly eliminating the proliferator’s nuclear weapons program. While this has always been the most basic response available to the US, it has also been the one least used. Aside from providing intelligence support for the Israeli attacks against both the Iraqi and a suspected Syrian nuclear program, the US has never used force directly in an effort to foster its nonproliferation policies. While attacks have been considered, specifically in the Chinese case, the political and military costs of such a choice have consistently outweighed the potential benefits. Incentivization has evolved over the years but basically rests on the US provision of certain goods or services in return for a cessation of the proliferator’s nuclear weapons program. During most of the Cold War the primary tools of incentivization were US security guarantees and nuclear cooperation. The former focuses on reducing the security concerns driving the proliferator’s desire or perceived need for nuclear weapons, while the latter attempts to transfer the benefits of peaceful nuclear energy programs to states in return for their adherence to nonproliferation principles. Following the end of the Cold War and reduction of many of the global security concerns associated with it, economic assistance began to supersede military assistance as a primary US tool of nonproliferation policy.

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Nowhere has this policy shift been more apparent than on the Korean peninsula where both North and South Korea have been the recipients of substantial US incentives to end their respective nuclear programs. Perhaps the most important tool for US nonproliferation policy has been denial of access to both nuclear and broader economic and military materials and technologies through the imposition of sanctions or cessation of already granted assistance. While military preemption arguably was the first available US response to the problem of nuclear proliferation, the breadth and depth of US relations throughout the world has made the use of sanctions the most important and widely used US response to date. Likewise, sanctions have tended to be a primary focus within the study of US nonproliferation policy as they are often the most tangible symbols of that policy.

The dependent variable for this study will be US responses to proliferating states measured as a dichotomous variable. The two measurement categories are weak response and strong response with a weak response being defined as ‘any instance where the US reacts to a proliferating state with a failure to fully enforce existing national or international laws prohibiting nuclear weapons development, or provides technological, economic, or military assistance after it is clear that the proliferator has completed one of the stages of nuclear weapons development.’ First, it is important to recognize that the specific criteria for measuring this variable change according to the laws which exist at a given time regarding nuclear proliferation. Thus it is important to establish what those laws are, when they come into force, and what exactly constitutes an enforcement failure.

Table 1 is a list of US nonproliferation laws, their inception dates, and a brief description of their enforcement mechanisms as they impact this variable.

**Table 1: The Legal Framework of US Nonproliferation Policy**

<table>
<thead>
<tr>
<th>Nonproliferation Law</th>
<th>Inception Date</th>
<th>Enforcement Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atomic Energy Act (AEA)</td>
<td>1954</td>
<td>Requires the cut-off of US nuclear cooperation with countries that transfer US supplied nuclear materials or technology without prior US consent; requires the implementation of US inspection practices for any state receiving US nuclear assistance (replaced by IAEA inspection requirements after 1958)</td>
</tr>
<tr>
<td>Nuclear Nonproliferation Treaty</td>
<td>1968</td>
<td>NNWS pledge not to pursue nuclear weapons; all nuclear facilities must be under IAEA safeguards agreements and subject to inspection; failure to uphold these provisions would result in referral to the security council for possible action.</td>
</tr>
<tr>
<td>Symington Amendment to the Foreign Assistance Act of 1961</td>
<td>1976</td>
<td>Prohibits military or economic assistance to any state delivering or receiving nuclear enrichment technology without IAEA full-scope safeguards</td>
</tr>
<tr>
<td>Glenn Amendment to the Foreign Assistance Act of 1961</td>
<td>1977</td>
<td>Requires &quot;extensive sanctions&quot; against any state transferring nuclear weapons or technology to a NNWS; institutes presidential certification and waiver processes as &quot;triggering events&quot; for sanctions</td>
</tr>
<tr>
<td>The Nuclear Non-Proliferation Act</td>
<td>1978</td>
<td>Consolidates and strengthens the AEA and its associated amendments and agreements; Requires cut-off of US economic and military assistance to any state which detonates a nuclear device or participates in the development of a nuclear weapons program</td>
</tr>
<tr>
<td>The Nuclear Proliferation Prevention Act</td>
<td>1994</td>
<td>Institutes sanctions against foreign firms implicated in nuclear weapons development; requires cut-off of military assistance to any state violating the NPT; requires economic sanctions against any state who &quot;finances improper nuclear-related&quot; activities including a cut-off of Export-Import Bank Loans.</td>
</tr>
</tbody>
</table>

While there are additional legal mechanisms that have been created to facilitate strong US responses to nuclear proliferation (e.g. Iran-Iraq Arms Non-Proliferation Act of 1992), they generally are disregarded in this analysis due to the specificity of application,
and their tendency to include secondary triggering events such as the promotion of international terrorism or non-nuclear proliferation events (i.e. chemical, biological or missile weapons proliferation). Thus, the determination of a weak response will be solely predicated by the lack of a full US response to a triggering event as dictated by one of the existing nonproliferation laws.

In completing the “weak – strong” dichotomy of US policy responses, a strong response will be defined as ‘the enforcement of national or international laws, specifically the denial or cessation of economic, military and/or nuclear assistance, with the stated intention of slowing or reversing a nuclear program.’ The variable will be measured by utilizing content analysis of governmental, academic, and news service-based resources in order to determine when the US specifically enforces a new or existing national or international law aimed at coercing the state into ending its nuclear weapons program. In regards to each of the nonproliferation laws listed in Table 1, there is a clear triggering event or situation that must result in a specific US action and it is this relationship that will serve as the foundation for categorizing US responses to nuclear proliferation. In those cases where the US institutes sanctions, suspends economic/military assistance, and/or ends nuclear cooperation with a proliferating state the US response shall be deemed to be “strong”, while failure in any one of these areas will constitute a “weak” response.

III.B. Independent Variables

The independent variables are based upon the testing of several mainstream explanations of the formulae states use to make their foreign policy decisions. Generally the six independent variables to be examined can be broken down as three realist and
three liberal explanations for dyadic state behavior. Realists believe that state relations are dictated by the relative distribution of power within the state system. States with significant amounts of power like the US should be sensitive to the sorts of threats to their survival posed by nuclear weapons, and thus more likely to confront or resist proliferators before their nuclear potential is realized. In order to test this basic assumption relative to US nonproliferation policy the following variables will be examined: (A) the relative power of the US versus the proliferating state; (B) the existence of an alliance between the US and proliferating state; and (C) the degree to which the US has labeled the proliferating state as a “rogue” relative to the international system.

Liberals tend to focus on more cognitive explanations of state behavior arguing that shared characteristics or bonds can influence state choices more than simple power considerations. Where the realists are attempting to answer the question “why do states distrust each other?”, liberals are more focused on explaining why states cooperate in the face of reasons to distrust each other. Regarding nuclear proliferation one could argue there is the penultimate reason to mistrust another state (the threat of nuclear annihilation) and so one may presume that the US in particular would be vigilant and aggressive in its confrontation of most nuclear programs. The reality is however that the US has in fact more often chosen weak responses (19) than strong ones (9) when confronting nuclear programs. So it is essential that we understand the influences driving US nonproliferation from both perspectives in order to create a full understanding of the causal mechanism involved with US nonproliferation policy. In addressing liberal explanations of dyadic state behavior the following variables will be examined: (D)
whether or not the proliferator is a democracy; (E) the level of bilateral trade between the two states; and (F) the proliferator’s standing in the international proliferation regime.

III.B.1 US Power Advantage

The assumption that power is the foundation of international relations is at the heart of the realist paradigm. In particular, balance of power theory tells us that states will consistently seek to increase their power relative to other states (particularly threatening states) in an effort to maintain their own security. This effort will normally result in incremental increases and decreases of the ratio of power between the two states over a period of time. Nuclear weapons however alter the equation due mainly to the level of total destruction they are capable of visiting on an adversary. Put another way, nuclear weapons greatly alter the ability of other states (nuclear and non-nuclear) to utilize conventional power advantages as the threat of nuclear escalation raises the costs of traditional coercion. This can be particularly troubling for a hegemon such as the US whose conventional military dominance over the rest of the system is critical to their position. It is not surprising then that the US has consistently espoused a universalist approach to nuclear proliferation. By beginning with the simple belief that all nuclear proliferation is bad for US interests, US nonproliferation policy has evolved steadily with the goal of halting the spread of nuclear weapons in order to preserve their material advantages.

30 Universalist approaches to proliferation center on the two key assumptions that the probable outcomes of continued proliferation are bad and proliferation as a process is not inevitable. For a good discussion of universalism as one of many approaches to proliferation studies see Barry Schneider, “Nuclear Proliferation and Counter-Proliferation: Policy Issues and Debates,” Mershon International Studies Review, Vol. 38 (1994), and for the universalist view expanded see Ben Schneider, “Avoiding the Worst of All Possible Worlds,” in Beyond 1995: The Future of the NPT, edited by Joseph Pilat and Robert Pendley, New York: Plenum Press, 1990.
The choices available to the US in halting the spread of nuclear weapons (i.e. the balancing of other states against US power) are still constrained however by the relative power advantage the US enjoys over the proliferator during their nuclear development. In other words, states whose material strength is close enough to the US as to limit the threat of force as a viable nonproliferation tool limit the degree to which the US may ultimately issue a strong response regarding their nuclear development. While the 2003 invasion of Iraq is the only overt use of force by the US ostensibly to halt a WMD program, one must wonder whether or not that approach would have been taken absent the influence of 9/11 and the War on Terror. Nonetheless, the ratio of power between the US and a proliferating state would seem to be a critical variable in understanding why the US chooses a strong versus weak response, especially when examining nonproliferation from a realist perspective. We would expect that in instances where the US enjoys a substantial advantage in power it would be more willing to strongly confront a state before it acquires nuclear weapons, relative to a state with who it is more closely matched. This leads to the first of several key hypotheses to be examined:

**H1a**: The greater the ratio of US power to the proliferator, the more likely they are to respond strongly against the nuclear program

**H1b**: The US-Proliferator power ratio will be less important to determining US responses to nuclear proliferation once the proliferator has acquired a nuclear weapon

Using the Correlates of War’s National Material Capabilities Database (NMCD) the CINC scores of both the US and the proliferating state will be compared at each stage of nuclear development producing a ratio statistic. This statistic will then be reordered as independent variable (A) *US Power Advantage* using a dichotomous measure of “High” and “Low”. A “high US power advantage” will be defined as any CINC ratio of 20 or
greater between the US and the proliferator, while scores of less than 20 will be labeled as a “low” US power advantage. The rationale behind this is that the major US war of the nuclear age, Vietnam, began with a CINC ratio of 40 between the US and North Vietnam and ended when the ratio had decreased to 20 indicating that this level perhaps was the one at which protracted foreign conflicts became cost prohibitive for the US. While force ratio alone clearly can not explain war initiation or termination, it may be useful to explain the perceived effectiveness of differing levels of coercion, especially in the context of the hegemon attempting to hinder nuclear proliferation.

III.B.2 Alliance

The existence of shared security alliances has been widely acknowledged to affect the tendency of states to pursue nuclear weapons. Alliances indicate a shared outlook on international security and at least similar sets of national interests that the states involved come to believe can be jointly pursued. In regards to the development of nuclear weapons, alliances became a crucial instrument in balancing against nuclear threats, especially for non-nuclear states. Likewise, the pursuit of nuclear weapons has been argued to be critically affected by the extension or not of security guarantees by other states. The seeking of nuclear guarantees in particular by states such as India, South Korea, and Taiwan directly impacted not only their own nuclear programs, but those of the states aligned against them. Ultimately, there is evidence to suggest that proliferating states are less likely to complete the acquisition of nuclear weapons when their security is improved through an alliance with an existing nuclear weapons state. What this study is

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interested in examining however is the response of the US in particular to an ally pursuing nuclear weapons.

In extending a nuclear guarantee or security alliance to another state, the US is explicitly promising to come to that state’s aid in the event of a threat or attack against the ally. But the US is also implicitly relying on that state to uphold and cooperate in regards to the pursuit of US security interests. In this regard the introduction of nuclear weapons into US regional security calculations has historically represented a major problem for the overall development and maintenance of US interests. Whether discussing South Korean, Taiwanese, or even Israeli nuclear weapons programs, it is clear that the US has a vested interest in dissuading its non-nuclear allies from complicating regional security concerns with the development of their own nuclear weapons capabilities. However, it may be the case that once the state has acquired a nuclear capability it then relieves the US of its responsibilities as a nuclear guarantor of the proliferator’s security. Further, the US is then able to incorporate the ally’s nuclear capability into their own regional security calculations perhaps reducing the costs of US regional security policies. Thus another set of hypotheses to be explored is:

**H2a:** The US will respond strongly against a non-nuclear ally pursuing nuclear weapons

**H2b:** The US will not respond strongly against allies who acquire nuclear weapons

The independent variable “ally” will be measured by examining the COW2 alliance database, as well as the historical record, in order to identify explicit security agreements between the US and the proliferating states chosen for this study. In any instance where there is found to be a security agreement or shared alliance between the two states it will be coded as “yes” (1), whereas the absence of a security agreement or
alliance will be coded as “no” (0). The agreements or alliances may be either bilateral or multilateral, but must embody an explicit agreement for mutual defense or actions regarding the security of one or both of the states. A clear example of a security agreement is the 1955 Mutual Defense Treaty between the United States of America and the Republic of China (Taiwan), while the co-membership of the US and France in the North Atlantic Treaty Organization (NATO) is an example of an alliance.

III.B.3 Rogue

The concept of the rogue state is relatively new in the lexicon of US foreign policy vocabulary. Prior to the 1980’s the “rogue” (or “outlaw”, or “pariah”) label was generally given to states whose internal politics constituted severe mistreatment of their own people. The key was that the designation was based almost entirely on internal politics, whereas misbehavior of one sort or another internationally was most often associated with the bipolar power structure of the Cold War. This changed with the US creation in 1979 of the State Department list of State Sponsors of International Terrorism. With the switch from internal to external criteria for rogue designation, it did not take long for WMD proliferation to become an additional reason for a state to be designated as a rogue state. Michael Klare argues that it became an ever-increasing important aspect of US foreign policy as the large threat of Soviet aggression was slowly replaced in the 1980’s by a collection of smaller threats emanating from aggressive third world nations engaged in military build-ups and the promotion of international terrorism.

Several of these states were now described by U.S. strategists as “rogues” or “outlaws” because of their “anti-Western orientation” and their involvement in what was characterized as “illicit proliferation activities” – that is activities that violated the Nuclear Non-proliferation Treaty and other nonproliferation agreements. Such activities it was

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argued represented a fundamental threat to U.S. and international security.33

The result was that these states in part due to their relative weakness vis-à-vis the US (when compared to the Soviet threat), and also because their activities were seen as especially egregious and threatening to both the US and international system, were confronted quite directly and firmly in an attempt to coerce them into ending their support of terrorism and/or pursuit of WMDs. From the 1986 US bombing of Libya, to the 1996 Iran-Libya Sanctions Act, and including the 2003 Invasion of Iraq, the US has shown a particular aggressiveness in confronting these states.

The importance to this study is whether or not a rogue designation on the part of the US constitutes a sufficient condition for a strong response to nuclear proliferation. It is important to note that in focusing on US foreign policy this study ignores the designation of states as a rogue by non-US actors. While states such as Israel and even the US itself have at times been labeled as rogue states by other actors in the international system, it is the US designation specifically that often seems to result in clear US policy and legal responses. This does not preclude the US support of other actor’s designations of rogue state (e.g. the UN sanctioning of the South African Apartheid regime in the 1970s) as impacting US nonproliferation policy. But the key designator for this study is that the US must agree at some point that a state is a rogue for it to be measured as such. The hypothesis to be tested then is:

**H3:** The US will always respond strongly against any proliferator it has previously labeled as a rogue

Inclusion on the State Sponsors of Terrorism list will be validating condition for proliferators in this study to be labeled as a rogue state. This however will be

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supplemented by examination of the historical record to identify rogue state proliferators which the US confronted either before the initiation of the State Department list, or whom were left off of the list due to their rogue status being dependent on something other than their association with international terrorism. This leads to the following list of rogue states and their years of being designated as such.

**Table 2: Rogue State Nuclear Proliferators**

<table>
<thead>
<tr>
<th>State</th>
<th>Years Designated as a Rogue</th>
<th>Justification for Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>(1963 – 1994)</td>
<td>UNSC Resolution 181 passed in 1963 called for the imposition of voluntary arms embargoes against S. Africa; the US was one of the first states to adhere to this policy which would become mandatory for all UN members in 1974.</td>
</tr>
<tr>
<td>Iraq</td>
<td>(1979 – 1982; 1990 – 2003)</td>
<td>Iraq was one of the four original states listed as a state sponsor of terrorism; they were additionally charged with pursuit of WMDs in 1990 which led to their designation as a rogue state during that period.</td>
</tr>
<tr>
<td>Iran</td>
<td>(1984 – present)</td>
<td>Iran is currently identified as the most threatening state on the list for long time support of international terrorist groups; since the mid-1990s Iran has also been identified as pursuing WMDs.</td>
</tr>
<tr>
<td>Libya</td>
<td>(1979 – 2006)</td>
<td>Libya also was one of the original members of the list due initially to their sponsorship of terrorism; during the 1980s their pursuit of chemical and nuclear weapons made them the primary/initial example of a rogue state.</td>
</tr>
<tr>
<td>North Korea</td>
<td>(1987 – 2008)</td>
<td>Initially added to the list for aiding and abetting terrorist groups in Japan and South Korea. N. Korea’s WMD programs were the primary reason for the inclusion, and ultimately removal, from the list.</td>
</tr>
</tbody>
</table>

### III.B.4 Democracy

The role of democratic governing systems in determining state behavior has been a widely examined question. The development of *democratic peace theory* in particular constitutes a major theory in international relations and according to some has become
the closest thing to a ‘law-like statement’ in international relations.\(^{34}\) At the heart of the theory is the simple yet powerful claim that democracies do not go to war with other democracies. While the extensive literature surrounding the topic has argued a variety of reasons for this including cultural and systemic explanations, the key consideration for this study is the degree to which democracies are argued to have not only similar sets of general security interests, but more importantly shared mechanisms for the resolution of conflict. The tendency of democracies to focus more on the pacific settlement of disputes with other democracies is at least partially attributable to the degree to which they view each other as less of a threat. This relationship it has been argued is also applicable to democracies and nuclear proliferation.

Regarding the causes of nuclear proliferation, the role of democracy has been seen as a mitigating factor in states’ decisions to seek nuclear weapons. Specifically, whether due to a desire to adhere to the growing set of democratic norms and values that serve as the foundation for international cooperation, or the practical need to be included in the international economic system which is dominated by democracies, some believe that liberal regimes tend to refrain from seeking nuclear weapons.\(^{35}\) While some studies have refuted this argument, no studies have been conducted directly testing the influence of democracy on responses to proliferation.\(^{36}\) Incorporating the classic debate between Kenneth Waltz and Scott Sagan over the predicted impact of continued nuclear

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\(^{36}\) Singh and Way, p. 864.
proliferation, the role of democracy in nonproliferation policy can be reduced to the perceived importance of regime stability in maintaining a nuclear balance and ultimately avoiding nuclear war. Waltz argues that it is the instability of regimes prone to irrational behavior that makes nuclear weapons dangerous, not the weapons themselves. In the hands of rational, stable governments capable of maintaining control over the military and thus nuclear weapons, they may in fact be a foundation for a sustainable nuclear balance of power.

Sagan responds by arguing that Waltz over-estimates the rationalism of states seeking/acquiring nuclear weapons along with downplaying the dangers associated with regime instability and the use of nuclear weapons. The importance of their debate for this analysis is that they both agree that “the checks-and-balances system of civilian control” is a “critical factor” in determining the future of nuclear proliferation. In so much as the concept of checks-and-balances is a core component of democratic systems, it is appropriate to consider whether or not the US views democratic proliferators differently than non-democracies seeking nuclear weapons.

The hypothesis to be examined in relation to this variable is:

H4: The US will respond weakly to other democracies seeking nuclear weapons

The rationale is that because the US is less likely to feel threatened by other democracies, their pursuit of nuclear weapons is less likely to produce a strong response on the part of the US. This variable will be operationalized using the Polity IV database to establish whether or not the proliferating state was a democracy at each stage of its nuclear development. The polity database utilizes a basket of variables to measure both the

38 Ibid, p 83.
democratic and authoritarian characteristics of states in order to create a scale of -10 to 10 indicating the overall level of liberalness within a given government. This scale is then used to create three aggregate measures of regime type with -10 to -6 classified as “autocracies”, -5 to 5 categorized as “anocracies”, and 6 to 10 classified as “democracies”. Regarding this study, any state with a polity score of 6 or higher in a given stage of nuclear development will be coded as “yes” (democracy) while any score of 5 or lower will be coded as “no” (non-democracy).

III.B.5 Trade Partner

The role of trade relations in affecting dyadic state relationships is a long standing area of study in international relations. As the foundation of international political economy, the assumption that increased interdependence between states derived from substantial and consistent economic interaction is also an essential aspect of the US approach to establishing and maintaining international peace and security. The connections between trade and peace are well established in the academic literature as well as through official US government speeches. In terms of contemporary academic analysis the concept of trade/interdependence as a mechanism for peace has been more intimately tied to the broader discussion of democratic peace theory. Referred to as “liberal peace”, Russet and O’Neal state flatly that, “The likelihood of a dispute is much lower when states are dependent on bilateral trade or are democratic.” Patrick McDonald extends this analysis by offering a good review of the contemporary study of liberal peace theory highlighting the importance of this shared assumption despite

competing hypotheses concerning the exact mechanism of its operation.\textsuperscript{41} The importance for this study is that bilateral trade relations constitute a significant alternative explanation for explaining variations in US nonproliferation policy.

The connection between trade and nuclear weapons has been examined from a variety of perspectives. Most studies have again tended to focus on the impact of the independent variable on incentives for proliferation (Singh & Way 2004; Solingen 1994, 1998; Paul 2000). Singh & Way’s widely acknowledged quantitative study of the causes of nuclear proliferation concludes specifically that, “liberalizing coalitions trade away the opportunity to make the bomb for the opportunity to make money, perceiving little benefit from maintaining an ambiguous stance.” (Singh & Way, p 864) This simple yet important conclusion has done much to inform the study and practice of US nonproliferation policy going all the way back to its first practical development, the Atoms for Peace program. Where the relationship between US nonproliferation policy and trade begins with an offered trade-off (i.e. peaceful nuclear technology for nonproliferation promises), the current relationship seems to revolve around the use of economic sanctions as a coercive tool against proliferators. As a result most contemporary nonproliferation studies which contain an economic component focus specifically on the utility and consequences associated with the use of sanctions.\textsuperscript{42} This

\textsuperscript{41} Patrick J. McDonald, “Peace Through trade or Free Trade?” The Journal of Conflict Resolution, Vol. 48 no. 4 (August 2004), pp 549 – 551. McDonald classifies the approaches to liberal peace and the influence of trade in particular by “opportunity costs” hypotheses, or studies focused on the loss of trade associated with conflict; by “efficiency arguments” which focus on the costs of accessing new productive resources through peaceful versus coercive policies; by cognitive “sociological hypotheses” which focus on the development of cosmopolitan identities between states; and, “bargaining models” which argue that trade relationships represent key tools for signaling intentions and mitigating conflicts short of war.

\textsuperscript{42} The most comprehensive and widely cited study of US nonproliferation sanctions is Brain G. Chow, Richard H. Speier, and S. Rae Starr, Nonproliferation Sanctions, RAND (2001). It should be noted that the focus of the book includes sanction processes for all WMDs and thus the issue of nuclear sanctions in particular is somewhat muted within the study. Other important sources regarding the US use of sanctions
study however is more concerned with the general impact of economic relations through trade with proliferators on US policy, thus the hypothesis to be examined is:

**H5:** The US will respond weakly to nuclear programs initiated by a significant trade partner

Utilizing both the National Trade database (NTrade) and Dyadic Trade database (DTrade) published under the auspices of the Correlates of War project, this study will test the level of bilateral trade relations between the US and nuclear proliferators as an independent variable impacting the strength of US responses to nuclear proliferation. The first step in operationalizing this variable will be determining the amount of bilateral trade between the proliferator and the US at each stage of nuclear weapons development. Next, the total value of all US trade in the same year will be recorded. The bilateral trade value divided by the total value of all US trade will create a ratio measurement allowing for direct comparisons of the importance of various states to US economic activity in general. In converting the ratio measurement into a dichotomous variable it was next necessary to establish the baseline at which a state would be considered an important trading partner or not. This baseline was determined to be 2% based upon examination of statistics on US foreign trade from 1970 to present. In examining the top US trade partners during this period Canada was able to maintain the number one spot ranging from 17% to 21% of the total level of US trade. More importantly, the state occupying the 10 spot consistently averaged between 1.6% and 2.2% of total US trade.43  

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43 The NTrade and DTrade databases, along with their codebooks, are available at Correlates of War: Available Data Sets: International Trade: 1870-2006 (v2.01), http://www.correlatesofwar.org/. Bilateral trade values retrieved from the Bureau of Transportation Statistics (http://www.bts.gov/publications/
adopting a 2% threshold for determination of a proliferator’s importance to US trade this study assumes that any state ranking in the top 10 of US trade partners represents an important, if not essential trade partner for the US. Thus any state with a 2% or greater share of US trade during a given stage of nuclear development will be coded as “yes” (major trade partner), while any state having less than a 2% share of US trade will be coded “no” (not a major US trade partner).

III.B.6 Regime Membership

The last independent variable to be examined relative to US nonproliferation policy is the impact of a proliferator’s membership in the nuclear nonproliferation regime. The study of the regime, its components, and its impact on nuclear proliferation has evolved steadily as the regime itself has grown. Beginning in the 1950’s with the establishment of the Atoms for Peace program and associated creation of the IAEA, the study of the regime has constituted the most direct application of liberal theory to the problem of proliferation. The primary focus has been on the impact of the development of international rules and norms on the actions of states and the degree to which they are able to specifically affect the goals of nuclear proliferators. The work of liberal institutionalists such as Robert Keohane (1982, 1994), Oran R. Young (1980, 1982, 1995), and Stephen D. Krasner (1976, 1982) set the stage for later studies of the impact of regimes on nonproliferation. The primary assumptions guiding institutionalism are that regimes decrease uncertainty and thus insecurity by increasing the volume of interactions between states, providing increased information to states about other’s intentions and actions, establishing norms and rules which constrain state behavior, and reducing
transactions costs associated with policy promotion. Examination of these processes has been focused predominantly on economic and social relations between states supporting realist critiques of institutionalism which directly question its applicability to security issues. With the development of the international nonproliferation regime however theorists were forced to explain not only its existence, but its relentless growth.

These explanations tended to focus on two schools of thought within institutional literature. One school sought to apply hegemonic stability theory to the rise of the nonproliferation regime arguing that since nonproliferation was in the interests of the US as the dominant power in the system, its creation and progression could be explained simply by the interests and role of the US. Indeed, the central importance of the US and its interests to the development of the regime arguably constitutes a major area of nonproliferation study (Nye 1981, Bull 1975, Cirincione and Newland 2000, Jervis 1982). The key conclusion is that the US clearly sees the regime as a primary tool in confronting nuclear aspirants. In each instance where the US has confronted (either strongly or weakly) a proliferator, the regime has served as the starting point and in many cases the primary mechanism for the promotion of US nonproliferation policy. More importantly, in those instances where the US has perceived the regime to have failed, the US has sought to strengthen rather than abandon the regime. While this commitment has by no means been consistent, it has been durable and according to realists the primary reason for the regimes continued importance.

44 The primary response from realists is that institutionalism can not account for state’s concerns over relative gains in cooperative pursuits and thus they see regimes as either temporary expressions of already established behavior, or driven by hegemonic interests in system stability and thus wholly dependent on the systemic distribution of power. Good examples of this approach are Robert Jervis, “Security Regimes,” International Organization, Vol. 36 no. 2 (Spring 1982); Susan Strange, “Cave! hic dracones: A Critique of Regime Analysis,” International Organization, Vol. 36 no. 2 (Spring 1982); and Joseph M. Grieco, “Anarchy and the Limits of Cooperation: A Realist Critique of the New Liberal Institutionalism,” International Organization, Vol. 42 no. 3 (Summer 1988).
A second school of thought has focused on more cognitive approaches to regime theory specifically arguing that regimes in general, and the nonproliferation regime in particular, is important because of, “…the stable, predictable pattern of relations that develop and that enable states to work together, despite mutual mistrusts and fears generated by the need to survive.” (Tate 1990, p 410) The cognitive (or Grotian approach as it’s been called) directly focuses on the importance of knowledge and learning as the foundations of regime-based cooperation amongst states. Tate summarizes this point later by concluding, “…nothing has happened to make adherents to the regime believe that continued participation threatens their security.” (Tate 1990, p 411) While others have supported and expanded on this theme (Smith 1987, Scheinman 1981, Kratochwil and Ruggie 1986) some have argued that he in fact does not go far enough in accounting for the role of norms in influencing state behavior and thus the importance of the regime (Brzoska 1992). What is important however is that regardless of the school of thought used in understanding why the US supports the international regime, its existence clearly impacts how the US views the issue of nonproliferation. As the regime’s fundamental purpose is to establish a system of rules concerning nuclear weapons proliferation the hypothesis to be examined is:

**H6a:** The US will react strongly against regime members who it identifies as pursuing nuclear weapons

**H6b:** The US will react strongly against any state (member and nonmember) who has achieved refinement of nuclear material

The rationale behind the first hypothesis is clearly established in the institutionalist literature. The second hypothesis is developed in relation the practical goals of the regime itself. While the foundation of the regime rests on its development
and promotion of universal norms against proliferation backed up by the establishment of inspection and monitoring procedures for the enforcement of those norms, its real purpose has evolved around its role as the vessel for comprehensive international oversight of nuclear technology. With the Indian nuclear test in 1974 US faith in the normative components of the regime diminished significantly, and was replaced by a greater insistence on practical approaches to denying states the ability to develop nuclear weapons. The first stage of nuclear weapons development allows for the considerable application of norms as disincentives, and thus denial approaches while applicable are often in the form of the promotion of the spirit of the regime in general (e.g. signing the NPT). Conversely, acquisition of nuclear weapons has historically indicated a regime failure and thus its denial components are virtually useless, akin to closing the barn door after the cow has escaped. This fact has been consistently proven throughout almost all of the cases of proliferation, most recently regarding India and Pakistan’s 1998 nuclear tests. As a result the stage of nuclear development in which the practical denial components of the regime are both most applicable, and perhaps most effective, are at the point where the proliferator has demonstrated the technical ability to develop weapons and is now in search of the components necessary to complete the program: refinement. For this reason we would expect the US to be most likely to utilize the regime (i.e. react strongly) at this stage in particular against both members and non-members.

In order to determine whether or not a proliferator is a regime member, this study will focus on those components of the regime with universal membership and which specifically prohibit nuclear weapons development. Finally, a state must be a member of all available regime components at the specific time of its achievement of a stage of
nuclear development. Any state meeting this criteria will be coded as “yes” (regime member), while failure to do so will be coded as “no” (not a member). The following is a list of regime components as delineated by the dates at which they entered into force:

**Table 3 – The International Nonproliferation Regime**

<table>
<thead>
<tr>
<th>Regime Component</th>
<th>Year Established</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Atomic Energy Agency (IAEA)</td>
<td>1957</td>
</tr>
<tr>
<td>Partial Test Ban Treaty (PTBT)</td>
<td>1963</td>
</tr>
<tr>
<td>Nuclear non-Proliferation Treaty (NPT)</td>
<td>1967</td>
</tr>
<tr>
<td>Seabed Treaty</td>
<td>1972</td>
</tr>
<tr>
<td>Nuclear Weapons Free Zones (NWFZs)</td>
<td>1961</td>
</tr>
<tr>
<td>Treaty of Antarctica</td>
<td>1961</td>
</tr>
<tr>
<td>Treaty of Tlatelolco (Latin America)</td>
<td>1968</td>
</tr>
<tr>
<td>Treaty of Rarotonga (South Pacific)</td>
<td>1986</td>
</tr>
<tr>
<td>Bangkok Treaty (Southeast Asia)</td>
<td>1997</td>
</tr>
</tbody>
</table>

**III.C. Boolean Methodology**

The study of US nonproliferation policy has historically been dominated by case study methods. The reason for this is that first, the number of available proliferation cases is too small for large scale quantitative methods to be applied to the problem. The second reason is that while US policy itself has been generally consistent in its universal approach to the problem, historical and political contexts have been an essential component in addressing the successes and failures of that policy. The result is that while the literature has developed a generally rich and informative description of the application of policy in individual cases, it has been unable to identify the key variables across cases necessary to explain general variations in US nonproliferation policy. Because of this the understanding of US nonproliferation policy can be best described as a collection of snapshots whose lack of association with each other raises more questions than the answers. The goal of this study is to combine those snapshots into a single
collage allowing greater comparison of cases in order to identify critical variables impacting the application of US nonproliferation policy.

This study will also utilize a comparative case study approach in examining US nonproliferation policy. But the approach will be supplemented by use of Boolean analysis in order to identify the necessary and sufficient conditions across cases for explaining strong and weak responses by the US to nuclear proliferation. Boolean analysis as a research method has both strengths and weaknesses that must be addressed before moving forward. The strengths of the approach lie in its general simplicity, its utility relative to small-n case studies and data sets, and its ability to identify multiple causal mechanisms which lead to the same outcome. Its simplicity comes from its ability to incorporate dichotomous variables into testable formulae and its reliance on applications of basic deductive logic to identify key causal mechanisms. “It provides a way of testing all possible causal combinations and, by way of logical deduction, eliminates irrelevant factors and differentiates the status of relevant ones as necessary, sufficient, or both for the realization of the outcome of interest.” (Chan 2003, p 58) The method’s utility relative to case studies is dependent upon its focus on the presence or absence of particular variables rather than their frequency or severity. As such it allows for the easy study of qualitative variables operationalized as dichotomous measures (e.g. 1 = present, 2 = absent) which resist codification as more complex quantitative expressions. The result is the ability to critically test causal relationships that have remained unexamined or subsumed within other studies as theoretical assumptions. This in turn leads to the ability to develop understandings of causal mechanisms which can be obscured or not manifest at all in traditional quantitative studies. The primary reason for
the loss of clarity is that quantitative approaches can often be negatively impacted by the existence of multicollinearity between independent variables and thus lead to the obfuscation or exclusion of variables that may in fact be important for explaining independent variable outcomes. By utilizing the Boolean method this study seeks to establish clear causal relationships between multiple independent variables and the promotion of US nonproliferation policy despite the lack of a large number of proliferation cases or the existence of quantified variable measurements.

The weaknesses of the approach while not precluding its application to the research question are significant enough to warrant attention at this point. Fundamentally, its main weakness is associated with its greatest strength in that by focusing on the absence or presence of a variable rather than the frequency or intensity of its measure, the Boolean method is sensitive to outlying or deviant cases. This weakness can be compensated for through development and examination of those cases within an associated focused case study comparison framework, but it does not remove it entirely from consideration. Likewise, the method does not allow for critical comparisons of strength amongst competing independent variables within a shared causal mechanism. By only identifying necessary and sufficient variables the method, “…does not give appropriate emphasis to those causal combinations responsible for the largest number of the outcome of interest.” (Chan 2003, p 63) The result is that while the method can offer parsimonious explanations of causal relationships, it can not determine the intensity or frequency of those relationships within a given research paradigm. When combined with

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45 Multicollinearity is defined as the high correlation of two independent variables which when examined through the application of regression statistics, “causes inflated standard errors for estimates of regression parameters.” Alan Agresti and Barbara Finlay, Statistical Methods for the Social Sciences (3rd Edition), Upper Saddle River: Prentice Hall, 1997.
the reality that the application of Boolean methods increases exponentially in complexity as you add additional independent variables, the approach is inherently limited in its scope of application. However, in this instance the method is both appropriate and preferable as the components of the research design clearly play to the strengths of the approach while limiting the impact of the weaknesses relative to the goals of the study.

Boolean analysis has been most clearly explained by Charles Ragin (1987) and although not a widely used method, it has gained in acceptance through its use in a variety of areas of study (Harvey 1999, Berg-Schlosser and De Meur 1994, Lieberman 2005). As with any study, the application of Boolean analysis must begin with a clear development of the research question and the associated variables to be tested. Initial presentation of the variables should focus on developing clear hypotheses to be tested in relation to the causal mechanisms identified as end products of the application of deductive logic. After establishing the theoretical relationships and potential causal mechanisms to be examined, the independent variables must be operationalized as dichotomous variables. Once completed, an index is formed cross-listing each case and its associated measurements for each variable, independent and dependent.

After preliminary development of all of the measurements necessary, they must be reorganized in a truth table. “This table provides all possible combinations of independent variables which are coded dichotomously to indicate the presence or absence of the alleged causal factors. It also identifies for each combination of factors the particular outcome judged to have occurred.” (Chan 2003, pp 58-9) Using a conventional approach, an upper-case letter signifies the presence of a given variable while a lower-case letter will indicate an absence of the variable. Textual representations will utilize
abbreviated variable names with an associated indicator of presence and absence (e.g. \(\text{democ} = \text{presence of democracy}, \sim \text{democ} = \text{absence of democracy}\)). While the table will produce every possible mixture of independent variables theoretically linked with the examined outcome, the focus will be only on those combinations associated with actual historical instances and so the table will usually represent many more causal patterns than are actually applicable to the study.

After creation of a truth table, it is now possible to clearly identify all of the variable combinations associated with the studied outcome. After selecting out only those combinations associated with actual historical episodes, it is then necessary to begin applying Boolean logic to the expressions in order to identify the necessary and sufficient conditions associated with the independent variable. “In Boolean algebra, if \(A + B = Z\) and \(A = 1\) and \(B = 1\), then \(Z = 1\). The basic idea in Boolean Addition is that if any of the additive terms is satisfied (Present), then the outcome is true (Occurs).” (Ragin 1999, p 89) Boolean algebra relies on the logical operator “OR” wherein if either of the dependent variables attains (equals 1) then the independent variable does as well. This produces a string of combinations each with the ability to cause the desired independent variable outcome.

\[
\text{Ex.1} \quad Z = ABC + ABc + ABc + aBc
\]

The application of Boolean multiplication using the “AND” operator is next applied to the set of individual causal relationships in order to reduce them to the smallest set of appropriate indicators. In simplifying the product of Boolean algebra a key assumption is that, “If two Boolean expressions differ in only one causal condition, yet produce the same outcome, then the causal condition that distinguishes the two expressions can be
considered irrelevant and can be removed to create a simpler, combined expression.”

(Ragin 1999, p 93)

Ex. 2 If Abc = Z and ABc = Z, then Ac = Z as B/b is irrelevant in so much as Z will attain whether B is present or not.

The use of this minimization technique produces what is called the *prime implicants* or the simplest causal relations produced within the truth table which explains the desired outcome.

Ex. 3 the prime implicant Ac describes both Abc and ABc.

After determining these prime implicants it is then necessary to reduce them further to what are called the *essential prime implicants* or the minimal number of prime implicants necessary to explain the desired outcome. This is done by creating a second truth table cross indexing the prime implicants with the essential Boolean expressions and eliminating those implicants which are subsumed within larger expressions. The result is the minimal number of implicants necessary to cover all pertinent Boolean expressions.

The final stage is identification of the necessary and sufficient conditions under which the desired or studied independent variable outcome is obtained. A *necessary condition* is defined as any variable which must be present for the desired outcome. A *sufficient condition* is defined as any variable which by its presence alone allows for the desired outcome.

Ex. 4 Thus, if Z = AC + Bc then no cause is necessary or sufficient.

If Z = AC + BC then C is necessary, but not sufficient.

If Z = AC then both A and C are necessary, but not sufficient.

If Z = A + Bc then A is sufficient, but not necessary.
And if $Z = B$ then $B$ is both necessary and sufficient$^{46}$

After the necessary and sufficient conditions for outcome attainment are identified, it is then possible to return the initial hypotheses and draw conclusions as to their validity and applicability to the research question. While the limitations of this approach have been discussed and certainly present problems for most large-n case studies and complex multivariate analyses, it is appropriate for this study and in fact was designed to work within the sorts of parameters that have been established here.

**III.D. Case Study Selection Criteria**

The use of case studies represents the dominant methodology in the study of nonproliferation policies. Whether focusing on a particular set of state characteristics or a specific region, small-n case studies are the preferred approach for theorists studying the spread of nuclear weapons. The reasoning for this is two-fold. First, the nature of nuclear proliferation is such that the high technological requirements and budgetary costs of pursuing nuclear weapons make the option necessarily prohibitive for most states. As a result the universe of possible observations is relatively small which in turn severely limits the use of mainstream quantitative methods in the study of nuclear proliferation. A second reason for the dominance of qualitative methodologies is that the nature of the decisions being made regarding the pursuit of nuclear weapons by a state means that context and perception are essential components to understanding those decisions. While traditional realist understandings of (and quantitative approaches to) the study of the state as a “black box” are appropriate for understanding what decisions have to be made

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$^{46}$ Richard Warnes produced a short, but excellent summary of Ragin’s Boolean technique (“A Boolean Approach to Qualitative Research”) as part of The Focusing on the Case project, funded by the Economic and Social Research Council (ESRC) in 2004-5 at the Cathie Marsh Centre for Census & Survey Research, University of Manchester. The summary which was the product of a roundtable discussion can be accessed at [http://www.dur.ac.uk/case.2004/papers/Boolean%20Features.pdf](http://www.dur.ac.uk/case.2004/papers/Boolean%20Features.pdf).
relative to pursuing nuclear weapons, it is essential to know the decision makers, their perceptions, and the decision making environments in order to determine how and why certain decisions are made. Ultimately, the study of US nonproliferation policies requires a clear understanding of the historical context involved, and the relationship between the US and the proliferating state in particular. But it can not stop there. To truly understand US nonproliferation policy we must be able to extend that understanding between cases with a strong theoretical foundation that helps to determine what policies work, which don’t, and why.

The most common problem with many of the previous studies of US nonproliferation policy is also the problem most often associated with the case study methodology in general; selection bias. Selection bias in the use of case studies to study nonproliferation policy usually takes one of two forms; either a focus on a particular region or bilateral relationship, or on a specific type of proliferator. The result typically is that the author is able to describe the decisions being made, or maybe even explain them in the specific context of the case(s) presented, but is unable to create broader causal paths or explain the links between seemingly unassociated cases. Stated more directly, while authors utilizing the case study approach for the examination of nonproliferation policy are able to describe or even explain key decisions they are often unable to fully locate those explanations in a broader theoretical model that transcends the small number of cases they are focusing on. An example of this problem can be found in the widely cited, edited volume by Joseph A. Yager, “Nonproliferation and U.S. Foreign Policy.” In it Yager attempts to present an overview of US nonproliferation policy by examination of

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what he identifies as the key cases facing the US at the time (the early 1980’s) and the real and possible reactions to each case. What is important to understand is that he specifically disaggregates the study into a series of examinations of bilateral relationships, rather than a study of US nonproliferation policy across all of the cases together. “Multinational developments are by no means ignored, but the emphasis is on the interaction between nonproliferation policy and other components of U.S. foreign policy in concrete, largely bilateral relationships.”48 The result is that we are provided with a series of disconnected snapshots of U.S. nonproliferation policy which the reader is then left to assemble into a landscape which explains US responses to nuclear proliferation as a whole. Practically speaking some questions that remain unresolved are how does the US respond to states that violate the international nonproliferation regime, and yet are not identified as rogue states? How does the US treat allies seeking nuclear weapons? And perhaps most importantly, how do past successes and failures in the promotion of US nonproliferation policies affect future responses to proliferating states? It is these questions that this study argues are the foundation of variation within US nonproliferation policy.

In order to address these shortcomings the method which will be employed in this study is a hybrid approach, or “cross-method study.”49 In attempting to produce a more nuanced and comprehensive examination of US nonproliferation policy both a *Focused Comparative Case Study* method and a *Boolean Analysis* will be utilized. The use of the


49 The intermingling of methodological approaches represents a highly under-examined aspect of IR research. Although this approach has increased with the relatively recent rise in the use of quantitative methods, it also requires a higher level of collaboration and cooperation between theorists wedded to distinct methodologies and is further impacted by the field being studied. Sprinz and Wolinsky-Nahmias, p 46-47.
case study method is in recognition of the utility and strength of the qualitative approach to studying nonproliferation policy. In particular this approach provides the same richness of detail associated with more standard case study approaches, but also requires, “…systematizing the information in descriptive case studies in such a way that it could conceivably be used for descriptive or causal inference.” The result is a formalized case study approach that relies on stronger theoretical foundations and a more precise presentation of case descriptions in relation to the subject of study. In other words, this approach requires a more clearly defined research agenda and set of hypotheses to be tested. While this approach has been used to a degree in other studies of US nonproliferation policy, it has often lacked a solid theoretical foundation and thus has left the reader unable to draw the important causal connections necessary to consider alterations or implications for US policy.

In developing and presenting each of these cases the goal is two-fold. First the intention is to present every relevant case for the question being posed and not a truncated or temporally limited set of cases. By addressing all of the cases in which the US had real policy choices for responding to a fledgling nuclear program this study seeks to present the entire landscape of US nonproliferation policy and not just a set of specific cases addressing one aspect of that policy. What is most important to understand is that the majority of similar studies focus on two associated, yet incomplete questions regarding US nonproliferation policy. During most of the Cold War the primary concern relative to US policy was understood to be the creation and maintenance of nuclear deterrents towards states which had already gained nuclear weapons, namely the Soviet Union. As the war ended and the post-Cold War period began, the new question to be

50Ibid, p 45-46.
explored was why do non-nuclear states pursue weapons and how can the US dissuade them from doing so? It was during this second stage that nonproliferation policy gained real significance in international security studies. The result however was a bifurcation of the study of US nonproliferation policy into Cold War and post-Cold War phases with the former focusing more on issues of arm’s control and threat reduction, and the latter on strengthening the international regime and later, the unilateral capacity of the US to resist and respond to nuclear proliferation issues. The intention here is to examine the development of that policy in a uniform way which allows for causal mechanisms to be examined across cases and time periods.

The second goal is to broaden considerably the traditional approach to the topic by opening up the cases into essentially three different periods of observation. One of the key assumptions offered in this work is that each case of proliferation actually represents three distinct opportunities for the study of US policy. From initiation of a nuclear program, through refinement of weapons grade material, to the acquisition of a state’s first nuclear device, each proliferation case offers the US multiple opportunities for policy responses and change, a fact that is mostly obscured in the majority of existing studies. By examining each of the key independent variables supporting mainstream explanations of how the US responds to nuclear proliferation, and doing so in a specific way based upon a more complete understanding of the cases involved, the hope is that the theoretical precision which is often lacking in other studies of this kind, will be fully developed here.

Methodologically the study focuses on examining all cases of nuclear proliferation after the establishment of the nonproliferation regime and the US responses
to those cases. In accepting Stephen Krasner’s widely accepted definition of an international regime, I establish 1957 as the year during which the regime could said to enter into existence as there was a “rules and guidelines” component in the IAEA, “principles” were now being incorporated in the dozens of “Atoms for Peace” agreements being signed by states, and all ultimately because the “norm” of nonproliferation had transformed from a US policy to an international understanding of a preferred future.\footnote{Krasner 1982, p 186.}

Each stage of nuclear development will be established by an explicit statement by a proliferating state, or clear US assumptions based upon available evidence, that indicates a state has begun that particular stage of their nuclear weapons program. It is the date of the US discovery of the particular proliferator’s stage of development that is the key indicator, and not the historically established date of completion. The goal is to produce a clear picture of the patterns of US nonproliferation policy both across and within proliferation cases so it only once the US believes a program has begun or progressed that a policy response will be assumed to be appropriate.

Initiation is almost always done in secret and thus it is the analysis of this stage that will most often rely on US intelligence reports and analysis to determine the point at which the US believed a state had begun a nuclear weapons program. With the exception of the French case (excluded from this study as it began before 1957), every major nuclear weapons program has begun under the auspices of a state’s desire to acquire nuclear power as a domestic energy source. While secrecy has also shrouded many state’s attempts to refine nuclear material, this stage has at times included more explicit acknowledgments of success either out of pride over indigenous technological advancements (e.g. South Africa) or rhetoric concerning the importance of refinement to
the establishment of a indigenous nuclear fuel cycle (e.g. India and Iran). The most easily determined stage is acquisition as it is virtually impossible to hide a nuclear weapons test in the age of satellite imagery and detection. That said, ambiguity is still a problem at this point as states may either ‘piggy-back’ on other states nuclear test programs (e.g. Israel with France and South Africa) or practice sub-nuclear testing procedures which are able to be disguised as other types of military activity (e.g. North Korea and South Africa).

Based upon selection criteria there are 12 cases of states which the US deemed to have initiated a nuclear program, 9 cases of states which successfully refined weapons grade nuclear material after initiation, and 7 cases in which the state successfully acquired a nuclear weapon.

Table 4 – Stages of Nuclear Weapons Development

<table>
<thead>
<tr>
<th>Initiation</th>
<th>Refinement</th>
<th>Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Israel (1958)</td>
<td>Israel (1965)</td>
<td>Israel (1966)</td>
</tr>
<tr>
<td>China (1960)</td>
<td>China (1962)</td>
<td>China (1964)</td>
</tr>
<tr>
<td>India (1964)</td>
<td>India (1964)</td>
<td>India (1974)</td>
</tr>
<tr>
<td>South Africa (1975)</td>
<td>South Africa (1973)</td>
<td>South Africa (1979)</td>
</tr>
<tr>
<td>Brazil (1974)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Libya (1975)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iraq (1975)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taiwan (1966)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The most recognizable cases that were excluded are Great Britain, France (Initiation and Refinement), the USSR, and Argentina. The first three were excluded because some or all of the stages of development were completed before the initial establishment of clear US policy mechanism for a response (e.g. France – Initiation 1954 and Refinement 1949; USSR – Initiation 1943, Refinement 1947, Acquisition 1949), while Argentina was
excluded because it neither explicitly announced the start of a nuclear program, nor did the US ever directly fear that a nuclear weapons capability was their specific goal. It should also be noted that in a few cases (India and South Africa) refinement preceded US recognition of their existing nuclear programs and in fact was the catalyst for reevaluations of the state’s intentions regarding the development of nuclear weapons specifically.

IV. Analysis

What explains variation in the application of US nonproliferation policy to cases of nuclear weapons proliferation? Regarding the historical examination of US policy the emphasis has clearly been on identification of proliferator motives and capabilities as an explanation of variations in the achievement of US goals: namely no new nuclear weapons states. (Goheen 1983, Schlesinger 1997, Cortright & Lopez 2005, Dunn 2006) These studies have all in varying degrees begun with the assumption that US nonproliferation policy is universal in its focus and comprehensive in its application. From this perspective the US has always sought to counter all instances of nuclear proliferation and failures in achieving this policy goal are thus attributed to characteristics of the proliferator (Klare 1995, Sagan 1996, Tanter 1999) or the ineffectiveness of the policy tools available (Nye 1992, Carter 2004, Newman 2004). This study seeks to challenge these assumptions by first illuminating the fact that US nonproliferation policy

52 While the US recognized Argentina’s developing nuclear energy program and historical competition with Brazil as catalysts for their possible institution of a nuclear weapons program, they also identified technological and political hurdles as reasons why ultimately they did not believe Argentina was pursuing nuclear weapons. Special National Intelligence Estimate 4-1-74, “Prospects for Further Proliferation of Nuclear Weapons,” 23 August 1974, located at http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB240/snie.pdf, last accessed March 25, 2009.
has been selectivist in nature, not universalist. The US has clearly had stronger responses against some states and their nuclear weapons programs than others, and I argue that it is this variation which has had a greater impact on the success and failure of nonproliferation policy than the intrinsic characteristics of the proliferators themselves. By examining the conditions of each case associated with particular US policy responses this study seeks to clearly identify the causal mechanisms which lead the US to respond either strongly or weakly to respective nuclear weapons programs. In so doing it may then be possible to fashion stronger approaches to halting nuclear weapons proliferation while explicitly recognizing that not all proliferation represents the same threat to US interests. While this realization has only recently been explored as the, “…most sweeping shift in U.S. grand strategy since the end of the Cold War,” this study argues that selectivity has always been the basis of US nonproliferation policy and consequently the primary reason for the perceived successes and failures in attempts to halt nuclear proliferation.53

IV.A. The Puzzle

The application of US nonproliferation policy has been selective and not universal in nature. In any given case of proliferation the US has had a set of specific responses all with the goal of dissuading states from pursuing and acquiring a nuclear weapons capability. These responses generally fall into one of three categories: *coercion*, *incentivization*, and *denial*. While the form and utility of each response has evolved over

time, the basic choices have remained the same. Coercion is the threat or use of force to deter a state from continuing their nuclear weapons program. While this is the most basic nonproliferation policy tool and theoretically has universal application, deterrence as a form of coercion is reliant on three critical considerations: communication, capability, and credibility.\textsuperscript{54} The US has always maintained the ability to use coercion in so much as no one questions either the capability or credibility of US threats to use force in pursuit of its interests. The problem coercion faces in relation to nonproliferation goals lies in its communication. Most states pursuing nuclear weapons do so from a position of insecurity, so threats or the use of preventative strikes aimed at stopping a nuclear program may, by addressing or attacking the vital interests of the proliferator, increase rather than decrease its incentives to proliferate.\textsuperscript{55} When combined with the practical and political costs of such a policy it is understandable that why the US while considering this approach on several occasions, has never chosen to directly use it.

Incentivization has consistently been one of the policies of choice for the US in confronting proliferators. Beginning with the Atoms for Peace program and continuing through the post-Cold War period, the extension (and retraction) of military and economic assistance has served as a critical component of its nonproliferation policy. The policy’s most common forms have been US backed security guarantees (both nuclear and


\textsuperscript{55} The question over the utility of preventative war is one of the key considerations for the current debate between “neo-optimists” and “neo-pessimists” over the impact of future proliferation on international peace and stability. Its importance has been further increased over its inclusion as a viable component of the Bush administration’s revamped National Security Strategy to Combat WMDs. For a critical summary of the debate see Peter D. Feaver, Scott D. Sagan, and David J. Karl, “Proliferation Pessimism and Emerging Nuclear Powers,” \textit{International Security}, Vol. 22 no. 2 (Fall 1997).
non-nuclear), direct military assistance, and the development of extensive economic assistance. However, incentivization has been met with some skepticism due primarily to the mixed results it has produced relative to the goal of halting nuclear proliferation.

Such measures may help to strengthen bilateral relations, and thus improve chances for a fruitful discussion and agreement on nuclear issues; but they probably can’t compete if a state has a vision of gaining energy self-sufficiency through nuclear power, or if it considers the possession of nuclear explosives to be essential to security… Indeed the tendency at times to use U.S. aid in order to press for changes in the foreign relations of recipient countries seems to arouse nationalistic resistance more often than it accomplishes the objectives sought. (Goheen 1983, 211-212)

Indeed this last point has often been identified as one of the key explanations for variations in the outcomes of US nonproliferation policy. Although the US has consistently utilized incentives to alter the calculations of proliferators regarding their need or desire for nuclear weapons, it has been understood that as a tool their impact is highly dependent on the reasons that a state has chosen to pursue nuclear weapons in the first place. (Cortright and Lopez 2005, Ogilvie-White 1996, Thomas 2001)

A clear bridge between the use of incentives/disincentives towards proliferators, and the development of modern denial policies designed to inhibit the access of proliferators to the components necessary for a nuclear weapons program can be found in the 1974 Indian nuclear test. While denial has clearly been an important part of US nonproliferation policy beginning with the “secrecy policy” initiated during WW II, its formalization really didn’t crystallize until after the shock experienced by the US regarding India’s acquisition of nuclear weapons.56 The role played by incentives

56 The most basic aspect of the denial policy was formed when the US and UK in 1945 decided, “…not to disclose any detailed information on the practical industrial applications of atomic energy before effective enforceable safeguards against its misuse could be devised, either in the form of international inspections or otherwise.” (Goldschmidt 1977, p 70) It is widely acknowledged that the strengthening of export controls and denial policy in general, along with the establishment of the Nuclear Supplier’s Group in particular, was a result of the Indian nuclear test in May of 1974. The expansion of the policy itself is explored in
extended to India through the Atoms for Peace program in enabling them to complete their nuclear program constituted a ‘wake-up call’ for US nonproliferation policy and directly led to the preference for denial over incentives as the primary policy tool. The realization that promises from proliferators were simply not enough to halt proliferation led to an increased focus on the technical aspects of nuclear weapons development and the degree to which strict regulation of nuclear exports could serve as a major hindrance to proliferation. Whether through the broad regulation and restriction of access to nuclear technology and materials, or the specific application of sanctions on nuclear and non-nuclear trade, denial has become the primary component of US nonproliferation policy.

So while it is relatively easy to establish the tools available for the promotion of US nonproliferation policy, the question being asked is why has there been such variance in their use across and within proliferation cases? Regarding the intra-case use of these tools the argument being forwarded here is that as a nuclear program progresses from initiation, through refinement, and concluding with acquisition, the relative threat to US interests changes. At each stage the US is forced to reevaluate the nature of the threat posed by the possible new nuclear state as the proliferator’s nuclear potential becomes more of a reality. When coupled with the degree to which the US must also recalculate the technical ability of the proliferator to reach each successive stage of development, as well as its own practical ability to halt the program, it becomes clear that the stages of development themselves may in fact be a significant source of overall variation within US nonproliferation policy. This leads to a few important hypotheses to be tested:

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**H1b:** The US-Proliferator power ratio will be less important to determining US responses to nuclear proliferation once the proliferator has acquired a nuclear weapon

**H2b:** The US will not respond strongly against allies who acquire nuclear weapons

**H6b:** The US will react strongly against any state (regime member or non-member) who has achieved refinement of nuclear material

All of these hypotheses rest on the assumption that as a state gets closer to acquiring nuclear weapons, US security calculations regarding that state are altered. Nuclear programs are not a single consistent threat (or in the case of allies, non-threat), but rather a continuum of threats (and opportunities for response) with each individually categorized by the degree to which they may lead to the development of nuclear weapons to be used against the US, and the perceived viability of confronting them through the tools available. The result is that while the US may initially respond strongly to a nuclear program, considerations of alliance/threat strength and regime efficacy may cause them to respond more weakly in the latter stages of the proliferator’s nuclear development. Such was the case with Brazil and South Korea wherein the US response to these state’s initiation of their nuclear programs met with much stiffer resistance than their later refinement of nuclear material. Likewise, varying US perceptions and calculations may explain why Pakistan was initially responded to strongly, met little

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57 The conceptualization of nuclear weapons programs as “continuums” is not new and has been included in some of the more important studies of nonproliferation. However, it has most often been presented as a dependent variable describing the choices made by proliferators in studies focusing on incentives to proliferate (Quester 1981, Singh and Way 2004). Where it has been examined as an independent variable it has been either in relation to the possibility of nuclear war (Brito and Intriligator 1996) or further proliferation (Singer and Tago 2004). The major study utilizing it as an independent variable explaining US policy responses (Feaver and Nioi 1996) begins with such a broad conceptualization that it immediately has to be reduced to only two stages (weaponization and deployment). By adding several broad and in some instances questionable assumptions concerning motives for US responses to proliferation, before they have even conducted their study they conclude that the US has only ever “assisted” one state in acquiring nuclear weapons (the UK) and, “Many countries… faced a stiff nonproliferation regime at all stages, more or less stoutly defended by the world community;” (p 218) these are both assumptions that this study implicitly calls in to question.
resistance after refinement, and then was again strongly confronted after acquiring nuclear weapons. If the goal is to clearly explain US nonproliferation policy then examination of the stage of development of proliferators must be included directly as an intervening variable conditioning the impact of dependent variables such as alliances and regime membership on the overall promotion of US nonproliferation policy.

While the secondary hypotheses above represent an important aspect of this study, the primary focus is on the necessary and sufficient conditions for the US to respond strongly to a particular case of nuclear proliferation. The conditions to be tested are based upon well established theories regarding the nature of bilateral relationships between states. Here they are separated into realist and liberal categories of explanations with each group offering clear motivations and actions to be expected based upon assumptions about how state characteristics and perceptions impact their foreign policies. The realists tend to focus on issues of power, material capabilities and their distributions within the system, and threat assessment as the key variables explaining state behavior. When applied to US nonproliferation policy they produce the following hypotheses to be examined:

**H1a:** The greater the ratio of US power to the proliferator, the more likely they are to respond strongly against the nuclear program

**H2a:** The US will respond strongly against a non-nuclear ally pursuing nuclear weapons

**H3:** The US will always respond strongly against any proliferator it has previously labeled as a rogue

The influence of relative power considerations on state behavior has always been a central consideration within realist literature. While this assumption is at the center of
proliferation optimist’s beliefs that more nuclear states are not a universally negative development for international peace and security, the theory has not been fully applied to US nonproliferation policy.\textsuperscript{58} When it has, it has most often been from a policy perspective rather than an academic one thus lacking a clear theoretically basis for analysis or conclusions. Likewise, the discussion of US power calculations has tended to be highly case specific, a fact which has been mitigated somewhat by the end of the Cold War and movement away from purely systemic examinations of US foreign policy.

The end of the Cold War has also impacted the relative importance of alliances in US policy calculations, as well increased the consideration of the role of rogue states in hindering the pursuit of US interests. As the global hegemon the US has clearly demonstrated its ability and willingness to act unilaterally in international politics, and the last National Security Strategy (2002) further incorporated this new found policy freedom into US nonproliferation policy in particular. While alliances certainly seemed to be a critical condition impacting the nature of US responses to proliferation during the Cold War, their importance has arguably been diminished in the US switch from non-proliferation to counter-proliferation, specifically in context to the increased willingness of the US to use pre-emptive military action against WMD proliferators. Likewise, while the concept of the rogue state was established some time ago as a descriptor for those states seeking to violate international norms concerning good governance and respect for human rights, the term has become much more closely linked to the dual threat posed to US interest by international terrorism and WMDs. Thus, while their importance has been

established in particular cases such as Israel, Libya, Iran, and North Korea, the impact of alliances and rogue status as general determinants of US nonproliferation policy both during and after the Cold War has eluded enunciation. By critically applying them both across and within historical proliferation cases this study expects to find that the importance of alliances is dependent on the stage of development for a particular proliferator, while application of the rogue label will constitute a necessary if not sufficient condition for the issuance of strong US responses against their respective nuclear weapons programs.

Liberal perspectives on bilateral state relations tend to take a more cognitive approach to the issue focusing on perceptions and shared characteristics or patterns of interaction to explain state behavior. Whether due to democratic systems of government, economic interaction, or shared commitments to international norms and institutions, liberals tend to focus more on uniting conditions that may lead to state cooperation and the reduction of conflict. As a result, it is the liberal camp that is more directly wedded to proliferation pessimism as they tend to question the assumption of rationality that is at the heart of deterrence and balance of power theories. It is important to include these perspectives in a comprehensive study of US nonproliferation policy because while realist explanations may be of prime consequence in regions of conflict or situations of high threat (e.g. the Cold War; the Middle East), we must also be able to explain US policy response in less contentious cases such as Brazil and France. Thus the liberal hypotheses to be examined are:

\textbf{H4:} The US will respond weakly to other democracies seeking nuclear weapons

\textbf{H5:} The US will respond weakly to nuclear programs initiated by a significant trade partner

\textbf{H6a:} The US will react strongly against regime members who it identifies as pursuing nuclear weapons

In as much as democratic peace theory in particular and liberal peace theory in general have become significant explanations of state behavior, it is essential that they be tested relative to the bilateral relationships the US has with nuclear proliferators. The importance of democracy as a condition for weaker US responses rests in assumptions concerning the influence of shared systems of peaceful conflict resolution and how this in turn may decrease US perceptions of threat from a democracy developing nuclear weapons. When coupled with the existence of established political ‘checks and balances’ on the use of force and traditions of civilian control of the military, it is logical to assume that the US would be less likely to confront a democratic proliferator than a non-democratic one. This same rationale influences arguments concerning the level of trade between two states and how interdependence increases the costs of conflict thereby decreasing the attractiveness of confrontation as a policy choice. The expectations of liberals is that increased levels of interdependence will cause states to be more measured and restrained in their dealings with each other, even where disputes may exist. As such, we should expect the US to be more likely to respond weakly to a proliferator with whom it has a significant trade relationship in order to buy time to either save or transfer to other markets the economic activity represented by the particular bilateral relationship.

\footnote{The utilization of democratic peace in proliferation literature has been almost exclusively in relation to the initiation of wars between nuclear states (Berkowitz 1985, Brito and Intriligator 1996, Singh and Way 2001).}
The importance of shared regime membership approaches the question of state cooperation from a slightly different perspective in so much as it examines the relationship after, not before or during, the establishment of state agreements to cooperate in meeting nonproliferation goals. While the US may indeed be more restrained in its dealings with other democracies or trade partners, one may assume that once the parties involved (democratic or not) have agreed to cooperate in the form of supporting and adhering to the international regime that it is then expected by all parties that violations of the regime constitute a justification for harsh responses from the other regime members, and the US in particular as the undeniable leader of the regime.\(^61\) While US responses to proliferation have clearly been impacted by non-regime membership on the part of a proliferator (e.g. India, Pakistan, Israel, and North Korea), the importance of regime membership in general to US policy continues to be illustrated by its insistence that all states become party to it.

**IV.B. The Test**

In utilizing Boolean Analysis to determine the necessary and sufficient conditions for strong responses to nuclear proliferation it is first necessary to create a table that clearly shows each of the cases to be examined in conjunction with the measurements of all of the applicable variables to be explored. Because this study seeks to disaggregate US policy responses according to the stages of nuclear development through which all states must pass, this first step in analysis produces three tables of significance. Each will be

\(^{61}\) An interesting and insightful combination of liberal peace theory and institutionalism is presented by Glen Chavetz (1995) when he argues that the regime, in so much as it is designed and maintained by a “liberal security community,” is enforced much more regularly against non-liberal regimes than liberal ones. While the study is somewhat incongruent with this one due to utilization of “international responses” rather than US responses to proliferation as the dependent variable, and inclusion of non-nuclear proliferation (e.g. missiles) within the set of independent variables, its application of liberal peace theory and political psychology to the question of nonproliferation policy raises some interesting questions for further research.
presented and then briefly discussed before moving to the next requirement of Boolean analysis, the truth table.

### Table 5. Weapons Program Initiation and US Policy Response

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There are 12 cases of nuclear weapons program initiation represented within this study. Their selection was dependent upon the recognition or belief on the part of the US policy establishment that they had begun a nuclear development program with the particular goal of acquiring nuclear weapons. No state has ever explicitly announced the beginning of a nuclear program (perhaps with the exception of Iran) and thus establishment of the dates of initiation regarding these cases is specifically determined by the first instance at which the US expressed direct concerns or knowledge of the proliferator’s intentions to do so. While these dates do not always correlate to the actual dates of initiation determined by examination of historical records, it is the point at which the US knew of the program and thus had reasons to respond, and not the actual date of initiation that is important. In most cases the US had expressed significant concerns over the possibility or impact of a particular state’s nuclear weapons ambitions before they specifically determined the existence of such a program. These dates however are directly
tied to real US policy statements in actions taken in response to their determination that a program had been initiated. The selection of cases was also dependent upon the existence of a tangible response mechanism for the promotion of US nonproliferation policy. In that regard France, the United Kingdom, and the Soviet Union have all been excluded from analysis in so much as the only real response available to the US against their proliferation activities was coercion, a response that as has been previously discussed, has never been a primary or even preferred policy response. Thus only cases which were initiated after 1957 and the establishment of the IAEA and its inspection procedures are considered here.

Initial examination of the table shows that while there is significant variation across all of the measured variables, only 33\% (4 of 12) elicited a strong response from the US. Of interest considering all of the cases are located in the Cold War is the fact that all of the instances of strong responses involve allies, while half of the weak responses were targeted at non-allies. This supports hypothesis H2a and assumptions regarding the importance of alliances in impacting US nonproliferation policy, at least in the initiation phase. Another important observation is that of the 12 states, the three identified by the US as rogue state did not receive strong responses from the US in relation to their nuclear activities. A closer examination of these cases (S. Africa, North Korea, and Libya) shows however that the first two states already had sanctions of some sort levied against them when the US determined they were pursuing nuclear weapons. In the case of South Africa it was the voluntary adherence to a UN arms embargo established in 1963 by UNSC Resolution 181, created in response to the worsening conditions within the Apartheid regime. Comprehensive US sanctions against North Korea had been in place
since the end of the Korean War in 1953. Libya is a more ambiguous case. While sanctions would not be in place until 1978, Gadhafi’s regime was being increasingly isolated politically for suspected sponsorship of terrorism in the Middle East and escalations of border conflicts with its neighbor’s Chad and Egypt. However, during the early and mid-1970’s the US-Libyan economic relationship expanded exponentially, perhaps providing the real reason for US silence regarding Ghadafi’s numerous public statement’s concerning development of a Libyan nuclear bomb.62

There are nine cases in which a state with a suspected or declared nuclear program successfully refined or processed weapons grade uranium or plutonium. Only two of the cases (North Korea and Iran) resulted in strong policy responses from the US. Both had previously been identified as Rogue states but perhaps more interestingly, both instances took place after the end of the Cold War. The other rogue state on the list,

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South Africa, again faced no sanctions. But again the lack of a strong US response to their nuclear program may be explained by the pre-existing UN sanctions.\textsuperscript{63} Also, while the US had concerns over the eventual goals of the South African program, it was still generally considered to be peaceful in nature in 1973. Both North Korea and Iran were members of the nonproliferation regime at the time they received the strong US response to their refinement of nuclear material. While there were two other regime members who reached refinement (Israel and India), they were also both democracies and further, their advancement took place at a time when the IAEA had not fully developed comprehensive safeguards agreements, nor had the NPT been created. If we include Brazil, none of the democracies who achieved refinement were strongly confronted by the US. Generally, there is a lower instance of confrontation by the US during the refinement stage when compared to initiation which may be attributable to the role of achieving refinement in the broader development of nuclear fuel cycles associated with peaceful nuclear energy programs.

Even at the point of acquisition of nuclear weapons, the US has not demonstrated a consistent response towards nuclear proliferation. The three states receiving strong responses were neither regime members, nor significant trade partners of the US at the time of their nuclear test or acquisition. The response to the Indian test in 1974 is particularly significant for the degree to which it led to a complete overhaul of the

\textsuperscript{63} Lt. Col. Roy E. Horton (“Out of South [sic] Africa: Pretoria’s Nuclear Weapons Experience,”” Occasional Paper for the Program in Arms Control, Disarmament and International Security (ACDIS), located at http://www.acdis.uiuc.edu/Research/OPs/Horton/html/cover.html) argues that the ineffectiveness of US attempts to halt South African proliferation through sanctions was due primarily to their dual proliferation/anti-Apartheid focus and the degree to which European states circumvented the voluntary UN arms embargo by taking advantage of the long-standing dual-use problem associated with most nuclear materials.
Table 7. Acquisition and US Policy Response

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international nonproliferation regime, specifically the adoption of export control mechanisms as a critical component of nonproliferation policy. In 1998 there were sanctions issued against Pakistan for its six tests that took place from May 28th to the 30th. But there is an argument to be made that this response also was weak due to the fact that many of the sanctions were suspended or lifted altogether within six months based on what one official called “an initial and minimal response.” (Chow et. al. 2001, pp 37-39)

The benign response to both Israel and South Africa seems to be dependent upon ambiguity concerning the exact nature of their suspected nuclear tests. Israel had been very discreet in its run up to acquiring nuclear weapons, working under the cover of others state’s programs such as France and South Africa. So while it has never been directly identified as having conducted a nuclear test itself, “In the early phases [of development], the amount of collaboration between the French and Israeli nuclear weapons design programs made testing unnecessary.” (Farr 1999, p 7) Further, it may have been Israeli collaboration with South Africa, as well as clandestine US support of South African confrontations of socialist governments in Angola and Mozambique, that
caused the US to ignore evidence of a South African nuclear test in 1979.\textsuperscript{64} The response to the October 9, 2006 nuclear test by North Korea was a call for North Korea to return the Six-Party Talks begun in 2003, as well as a strengthening of sanctions through the issuance of UNSC resolution 1718 a week after the test.

Utilizing the raw data matrices above, it is now necessary to create truth tables which identify the combinations of conditions present during US responses to nuclear proliferation. With six independent dichotomous variables being examined there are a total of 72 possible variable combinations. Focusing on only those combinations

\begin{table}[h]
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\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|}
\hline
\textbf{A: Power} & \textbf{B: Ally} & \textbf{C: Rogue} & \textbf{D: Democracy} & \textbf{E: Trade} & \textbf{F: Regime Member} & \textbf{No. of Cases} & \textbf{No. of Strong Responses} & \textbf{Outcome Code} \\
\hline
0 & 0 & 0 & 0 & 0 & 0 & 1 (China) & 0 & \\
0 & 1 & 0 & 0 & 0 & 0 & 1 (S. Korea) & 1 & aBcdef \\
1 & 1 & 0 & 0 & 0 & 0 & 1 (Taiwan) & 1 & ABcdef \\
1 & 1 & 0 & 0 & 0 & 1 & 1 (Iraq) & 0 & \\
1 & 0 & 1 & 0 & 0 & 0 & 1 (S. Africa) & 0 & \\
1 & 0 & 1 & 0 & 1 & 0 & 1 (Pakistan) & 1 & aBeDef \\
1 & 0 & 1 & 0 & 0 & 1 & 1 (Brazil) & 1 & aBcDef \\
0 & 0 & 1 & 0 & 0 & 1 & 1 (N. Korea) & 0 & \\
0 & 0 & 0 & 1 & 1 & 1 & 1 (India) & 0 & \\
1 & 0 & 0 & 1 & 0 & 1 & 1 (Israel) & 0 & \\
0 & 1 & 0 & 0 & 1 & 1 & 1 (Iran) & 0 & \\
1 & 0 & 1 & 0 & 0 & 1 & 1 (Libya) & 0 & \\
\hline
\end{tabular}
\caption{Table 8. Boolean Truth Table - Initiation}
\end{table}

\textsuperscript{64} There were several issues at play when the test was detected. First, everyone involved vehemently denied it was a test with several other often implausible theories being forwarded to explain the flash. The US Vela satellite had detected such a flash 41 times previously and in every case it had proven to be an atmospheric nuclear test. Yet in this case “The Presidential Panel Review of the South Atlantic Event finds insufficient evidence to support a definite correlation between the light signal of the Vela Event and a nuclear explosion.” The result is again a series of mixed signals. On the one hand the US in 1980 terminates the fuel agreement with SA which it had suspended after 1976. On the other hand, the US votes against the denial of SA credentials for the 1979 IAEA General Conference (ironically held in New Delhi) and never levies or promotes any international sanctions against SA stemming directly from the nuclear test. Pabian, Frank V., “South Africa’s Nuclear Weapon Program: Lessons for U.S. Nonproliferation Policy,” \textit{The Nonproliferation Review}, Fall 1995.
associated with actual proliferations cases we are left with Tables 8 – 10. Through the above table (8) we can now specifically identify the conditions associated with strong US responses to nuclear proliferation at the stage of initiation. South Korea, Taiwan, Pakistan, and Brazil represent the four cases involving strong US reactions to the initiation of nuclear weapons programs. Thus the initial Boolean expression representing the conditions under which the US responds strongly is:

1) \[ \text{Strong Response (SR)} = aBcdef + ABcdef + aBcDef + aBcdEf \]

Applying rules of Boolean minimization, if two expressions resulting in the same outcome differ in a particular causal condition, than that condition can be considered irrelevant and may be dropped out of the equation to create a simpler explanation of how the outcome is attained. (Ragin 1987, p93-43) Applying this technique to the full expression above we are left with:

2) \[ \text{SR} = Bcf \]

This now allows us to state that based upon this study, the existence of a US alliance, and absence of both a rogue label and nonproliferation regime membership are necessary conditions for the US issuance of a strong response against a proliferator’s nuclear weapons program. None of these conditions however can be considered sufficient on their own. These findings clearly support hypothesis H2a (the US will respond strongly against a non-nuclear ally pursuing nuclear weapons) at least at the initiation stage. The rationale that has been offered to explain this is that allies pursuing nuclear weapons represent a significant additional consideration relative to US regional security interests. In at least three of the four cases (S. Korea, Taiwan, and Pakistan), the development of nuclear weapons by the ally would have directly impacted the security
balances that the US was attempting to maintain in that state’s particular region. The development of a South Korean weapon would have substantially increased the incentive for North Korea to pursue one as well. Further, it would have increased Chinese insecurities in the region perhaps causing them to move away from their policy of minimal deterrence and begin engaging in an arms race with the US. The Taiwanese development of a nuclear weapons program would have constituted an even more direct threat to Chinese interests and would have elevated the US-Chinese dispute over the status of Taiwan to an even more dangerous level than already existed. The development of a Pakistani program had an impact on Southeast Asian regional security similar to that of the South Korean program in East Asia. It impacted not just India’s nuclear policy, but also China’s. Ultimately, it was in the US interest in each case to sternly confront the state in order to keep their possible nuclear development from further complicating already complex regional relationships.

Brazil represents a more ambiguous case as there were no critical security considerations in Latin America on par with the US concerns in Asia. The issues which may have most directly led to the US resistance to a Brazilian nuclear weapons program were its simmering rivalry with Argentina who also seemed to be in the early stages of nuclear development, and Brazil’s search for nuclear assistance outside of the longstanding relationship with the US through the Atoms for Peace program. While the former represented the possibility of a nuclear rivalry in the Western Hemisphere (something to be avoided from the US perspective), the latter was disturbing because not only did it represent the loss of a substantial consumer of US nuclear technology and material, the deal Brazil struck with West Germany in 1975 represented a substantial
expansion of the Brazilian program and was in fact, “…the first-ever transfer of the technology for a complete nuclear fuel cycle, including enrichment and reprocessing.” Even more alarming was that the massive deal did not include IAEA safeguards and the US had to lobby West Germany hard just to get minimal bilateral safeguards included in the final agreement.

Perhaps more surprising is the degree to which hypothesis H3 (the US will always respond strongly against any proliferator it has previously labeled as a rogue) is not supported by the evidence at this stage. One explanation for this may be the degree to which the US issues sanctions against rogue states and thus considers additional sanctions in relation to their nuclear programs potentially redundant or ineffective. South Africa, North Korea, and Libya all had significant US or international sanctions in place against them for violations of international norms and laws before the US determined that they were pursuing nuclear weapons. In the case of South Africa the arms embargo included nuclear materials that could conceivably be used to further their nuclear program, while in the cases of Libya and North Korea their trade relations with the communist bloc (the USSR and/or China) meant that further US sanctions would most likely be ineffective in halting their nuclear programs. Another possible explanation is that while the US wanted to isolate and marginalize these states, it did not want to create “martyrs” in the sense of them becoming beacons for other potential rogues states who saw them as the examples of how to stand up to the US and “Western Imperialism.” (Klare 1995, pp 219-220) The US ultimately wanted these states to return to being accepted members of the international community and so had to on some level avoid so completely isolating them.

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that they felt no choice but to generally continue their ‘roguish’ behavior, or specifically continue their pursuit of nuclear weapons. This approach would seem to have worked in so much as both Libya and South Africa eventually made unprecedented reversals of their nuclear programs. While the status of the North Korean program continues to be a critical issue, continued engagement by the US would seem to indicate that this policy is still in place.

The assumption guiding the examination of hypothesis H6a (The US will react strongly against any regime members who it identifies as pursuing nuclear weapons) was that regime membership constitutes an explicit adherence to international nonproliferation norms and rules and that violation of those rules would elicit strong reactions by the US. Further, the regime itself contains clear definitions of triggering events, as well as established coercive mechanisms intended to punish proliferators, thus making a strong US response both easier to develop and more legitimate in its application. There were six regime members between 1961 and 1988 who the US identified as pursuing nuclear weapons, none of which were confronted by a strong US response, thus casting significant doubt on the legitimacy of the hypothesis. While the individual cases include additional conditions that may explain US complacency such as the presence of democracies (e.g. Israel and India), significant trade relationships (e.g. India and Iran), or substantial US power advantages over the proliferator reducing the potential threat posed by the program (e.g. Libya and Iraq), the lack of a associated universal prime implicant suggests that it is an aspect of the regime itself that precludes US confrontation of members and their nuclear proliferation efforts at the initiation stage. This study argues that it is the lack of functional coercive mechanisms within the regime
that can be applied at the initiation stage that limits the ability of the US to utilize it as a primary foundation of strong responses against proliferation. Aside from showing disdain and disappointment, the US can not realistically use the regime to stop a state from simply deciding to pursue nuclear weapons. This fact is further complicated by the degree to which proliferators rarely explicitly announce their nuclear intentions and the impossibility of using the regime to independently verify those intentions. As a result the US tends to use engagement and bilateral ‘carrots and sticks’ at the initiation stage rather than formal incorporation of the regime to confront proliferation. Interestingly, almost all of these cases resulted in either a successful nuclear program (India, Israel, and North Korea) or an eventual use of force to halt the program or dissuade the state from further development (Libya and Iraq). The one case yet to be determined (Iran) may turn in either direction and the implications of either outcome may critically impact the future of international peace and stability.

**Table 9. Boolean Truth Table - Refinement**

<table>
<thead>
<tr>
<th>A: Power</th>
<th>B: Ally</th>
<th>C: Rogue</th>
<th>D: Democracy</th>
<th>E: Trade</th>
<th>F: Regime Member</th>
<th>No. of Cases</th>
<th>No. of Strong Responses</th>
<th>Outcome Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1 (Israel)</td>
<td>0</td>
<td>abCdeF</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1 (China)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1 (India)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1 (S. Africa)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2 (N. Korea, Iran)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1 (Pakistan)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1 (S. Korea)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1 (Brazil)</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

An analysis of the refinement stage produces the only consistent and singular Boolean expression amongst all three of the stages under investigation. While there are only two instances of strong US responses to states successfully refining nuclear material, the associated conditions are identical in both cases. *At the refinement stage, the*
following conditions are necessary for the issuance of a strong US response against the proliferating state: the state must not be a democracy, an ally of the US, or a major trading partner; further, the US must not enjoy a significant power advantage over the proliferator and it should be classified as a rogue state and member of the nonproliferation regime. While it would be preferred that the instances of strong US responses was higher at this stage, it is significant that the only two cases are identical in their prime implicants. The Boolean expression of this relationship is:

3) \( SR = abCdeF \)

In relation to the refinement stage there were several hypotheses which were guiding the development and analysis of the selected independent variables. First, hypothesis H6b (the US will react strongly against any state – regime member or nonmember – who has achieved refinement of nuclear material) is clearly not supported by the evidence. The fact that only 25% of the refinement cases resulted in strong responses indicates that as much as this stage represents the highest utility for the application of the regime that alone is not enough for the issuance of a strong response by the US. While both cases (North Korea and Iran) were members of the regime at the time of their refinement, two other cases involving members (India and Israel) did not result in strong US responses. One explanation for this may be the time frame. The former cases both occur after 1974 and the establishment of the export control system within the nonproliferation regime. As a result the practical ability of the US to use the regime’s mechanisms (e.g. referral to the UNSC for consideration of sanctions) is much greater and represents a viable alternative to more costly unilateral responses. The latter cases both occur prior to 1974 and the establishment of export controls so while they were also
viewed by the US as potentially destabilizing and unwanted events, the real ability of the US to respond strongly is limited to unilateral threats. This response was relatively unwarranted in both cases in so much as neither India nor Israel represented direct threats to the US and thus the use of coercion, especially given the fact that both states had now developed their own refinement capabilities, would have created enemies where there had not been previously. Thus it is possibly the broader importance of Cold War dynamics that influenced the US weak responses to Israel and India as the former was on its way to becoming an important ally in US Middle Eastern policy, and the US in the latter case wanted to avoid driving India any closer to the Soviets then they already were. With the end of the Cold War and development of the export control regime, confronting North Korea and Iran was at the same time less likely to have broad impacts on US geopolitical considerations and more practically achieved.

Hypothesis H3 is not fully supported by the results found in analysis of the refinement stage of proliferation. While both states facing strong US responses were in fact labeled as rogue states by the US, a third state (South Africa) had also been identified as a rogue yet did not face significant US resistance to their successful refinement. Further examination of the cases however indicates a crucial difference between them. As discussed by Robert Litvack the nature of the rogue label changed significantly by the end of the Cold War. Where the initial rogue (South Africa) was identified primarily by its domestic violations of human rights, both Iran and North Korea were labeled as such due primarily to their promotion of international terrorism. One result is that while simple isolation as a source of pressure on the Apartheid regime represented the accepted
response to their proliferation attempts, the conjunction between nuclear weapons and terrorism represented a far more dangerous threat to the US and international community as a whole. Thus rather than isolation, aggressive confrontation was viewed as necessary to ensure that Iran and North Korea’s programs did not allow terrorist groups access to nuclear weapons. It must also be mentioned that both cases take place after the end of the Cold War so that the US in its hegemonic role may have viewed itself as the primary party able and responsible for halting their respective nuclear programs. All of these considerations taken together may explain the differences in responding to rogue states and in fact continue to be critical components of US nonproliferation policy to this day.

In relation to hypothesis H4 (the US will respond weakly to other democracies seeking nuclear weapons) no democratic state achieving refinement of nuclear materials has faced a strong US response. Israel, India, and Brazil all developed nuclear refinement abilities during the Cold War and were recognized as democracies at the time. In the case of India it was in fact their successful refinement that led the US to determine they were seeking nuclear weapons. But of critical importance is the degree to which they believed that domestic political conditions would slow or even reverse India’s desire to gain a nuclear weapon.66 In the case of Israel, its democratic system may have played less of a direct role in the US choosing not to aggressively confront them over their successful refinement. In fact the US initially did confront Israel somewhat, but the policy choice was driven more by concerns of the clandestine nature of their nuclear activities than by

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66 It was believed that the primary supporters of an Indian nuclear option were originating from public sentiment, as well as the scientific and military communities. Official US sources however believed that PM Shastri and his government were in a strong enough political position to resist these influences. CIA Special Intelligence Estimate, no. 31-1-65, “India’s Nuclear Weapons Policy,” October 21, 1965, located at the National Security Archive, US Intelligence and the Indian Bomb, http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB187/index.htm, last accessed December 28, 2009.
any direct threat the Israeli program posed to the US. Thus while the destabilizing aspects of a nuclear Israel in relation to Mideast security was a concern for the US, there were no calls for sanctions or the cessation of US economic or military support.\footnote{The issues in play were the perceived inevitably of Israeli acquisition of nuclear weapons and the impact that explicit recognition of this fact would have on broader US interest in the Mideast. Ultimately the decision seems to have been made to support Israel’s opaque nuclear status as it met both the Israeli security needs while allowing the US plausible deniability regarding the Israeli program. Henry A. Kissinger, Memorandum for the President, “Israeli Nuclear Program,” November 6, 1969, located at the National Security Archive, \textit{Israel Crosses the Threshold}, http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB189/index.htm, last accessed December 28, 2009.} The fluid nature of Mideast politics at the time meant that as the 1967 Arab-Israeli War approached the US was becoming increasingly alarmed over the connections between the Arab community (specifically Nasser’s Egypt) and the Soviet Union to the point that in the time between discovery of the Israeli program in 1961 and the US conclusion that Israel had a nuclear bomb in 1966 their bilateral relationship had moved from one of limited engagement to one of implicit alliance.

In the Brazilian case democracy may have in fact played a central role in the decision by the US not to aggressively confront them over their development of a nuclear program. After the US conclusion in 1974 that Brazil had begun a nuclear weapons program, considerable efforts were mounted to dissuade Brazil from continuing their program and coerce states like West Germany away from supporting their efforts. The US concerns over their program revolved around, “Brazilian rejection of the Nuclear Non-Proliferation and Tlatelolco treaties, insistence on its legal right to develop so-called peaceful nuclear explosives (PNEs), aspirations to great power status, authoritarian military government, and [a] tacit nuclear rivalry with Argentina…” (Barletta 1997, p 1) Ultimately however, all of the concerns revolved around the lack of civilian control or oversight of the military government and its nuclear activities. By the time of the
Brazilian announcement in 1987 of their successful enrichment of uranium the political situation in Brazil had changed radically. The election of Tancredo Neves as President in 1985 marked the end of 21 years of military rule and represented an increasing public dissatisfaction within Brazil with the domestic economic and political environment. Although it would take another decade for real political stability to be established, the rise of democracy in Brazil seemed to point to immediate changes in their nuclear stance symbolized by the passing in 1988 of a new constitution including a ban on all non-peaceful nuclear activities and culminating in the 1991 Quadripartite Agreement between Argentina and Brazil in which they pledged open and peaceful nuclear cooperation as well as the acceptance of IAEA safeguards agreements on their respective nuclear programs.68 Ultimately, the US response to Brazilian refinement may have been a ‘wait and see’ approach as not only were there signs of democratic development softening their pursuit of nuclear weapons, but there were also encouraging efforts as early as 1980 that the nuclear rivalry between Brazil and Argentina were being diffused.

In relation to US responses to the refinement of nuclear material, the most important conditions would seem to be the presence of a rogue status and regime membership, as well as the absence of democracy. The importance of trade, power, and alliance relationships is less conclusive in their centrality in determining US policy responses in this stage. Two important variables to discuss at this point are the impact of Cold War bipolar dynamics and the rise of international terrorism on US responses to nuclear refinement. It seems clear that the impact of the Cold War was the addition to all US policy considerations of the importance of the Soviet perception and response to any

aggressive nonproliferation stances the US made. While there were several incidences of US-Soviet cooperation on nonproliferation issues, the US arguably never considered nonproliferation responses without calculating how they would affect the Cold War rivalry. (Walsh 2004) While it is difficult to determine in which cases if any this was the primary variable, it undoubtedly impacted US nonproliferation policy in general during the period. Likewise, with end of the Cold War and the rise of international terrorism as the primary threat to US interests, it would seem that much of US nonproliferation policy in the post-Cold War period has been conditioned by the proliferator’s connection to this phenomenon. While the connection may be more explicit in US policy rhetoric today, the absence of clear evidence supporting the actual transfer of nuclear materials from a proliferator to a terrorist group means that as a policy point it is still focused on a hypothetical rather than real world situation.

**Table 10. Boolean Truth Table - Acquisition**

<table>
<thead>
<tr>
<th>A: Power</th>
<th>B: Ally</th>
<th>C: Rogue</th>
<th>D: Democracy</th>
<th>E: Trade</th>
<th>F: Regime Member</th>
<th>No. of Cases</th>
<th>No. of Strong Responses</th>
<th>Outcome Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>0</td>
<td>1</td>
<td>0</td>
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</tr>
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<td>0</td>
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<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1 (India)</td>
<td>abcDef</td>
</tr>
<tr>
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<td>1</td>
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<td>0</td>
<td>1</td>
<td>1</td>
<td>1 (France)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1 (S. Africa)</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1 (Pakistan)</td>
<td>abCdef</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1 (N. Korea)</td>
<td>abCdef</td>
</tr>
</tbody>
</table>

In examining the acquisition stage we see seven cases in which a state acquired a nuclear weapon and in three of those cases the US responded strongly to the proliferator. The Boolean expression associated with these three cases is:

4) \[ SR = abcDef + aBcdef + abCdef \]

Applying Boolean minimization we are left with:
5) \( SR = aef \)

The prime implicants then support the following statement: *The conditions under which the US is most likely to issue a strong response against states acquiring nuclear weapons are a relatively low bilateral power ratio, the absence of a significant trade relationship, and the proliferator being a non-member of the nonproliferation regime.* A key aspect of US responses at this stage is the fact that once a state has acquired a nuclear weapon the goals of US nonproliferation policy have failed. In that regard the only real reason for a response at this stage is to punish the proliferator for its transgressions. While ostensibly the hope of the US may also be a reversal and renunciation by the proliferator of its nuclear weapons development, it is interesting to note that the only state to ever dismantle a successful nuclear weapons program (South Africa) never received a strong rebuke from the US when it reached acquisition.

Analysis of the acquisition stage of nuclear development in relation to the offered hypotheses begins with H1b (The US-proliferator power ratio will be less important to determining US responses to proliferation once the proliferator has acquired a nuclear weapon). The reasoning behind this hypothesis was that once a proliferator acquires nuclear weapons, US advantages in conventional military capabilities are no longer as critical to the relationship. Thus, where the US may have been more likely during the first two stages of nuclear development to strongly condemn a state it enjoyed a significant power advantage over, it was expected that in the third stage that will be less of an important variable. In all three cases of a strong reaction by the US (India, Pakistan, and North Korea) they did not enjoy a major power advantage over the proliferator. In the case of the first test in 1974 by India, the US did not have substantial mechanisms in
place for a punitive reaction. The only two institutions in place were the NPT and the Atoms for Peace program, the former of which India had refused to ascend to. As a result, the US was not able to claim a specific violation of international laws. They did however find India in violation of the bilateral cooperative agreements signed under the auspices of Atoms for Peace and subsequently ended all nuclear cooperation with them. The more important aspect of the US reaction however was the degree to which they viewed the Indian test as an illustration of the weaknesses of both the US and international attempts to halt nuclear proliferation. There is some debate over the characterization of the US response as strong considering the public statements by the US at the time were relatively tame and evidence suggests that they were specifically intended to be that way. But there is no denying that the test,

...not only led to a major revision in U.S. thinking about nuclear exports, but it had the effect of moving nonproliferation from the periphery toward center stage on Washington’s foreign policy agenda. One consequence of the change in priority was intensification of U.S. diplomatic efforts to establish strict guidelines for the major nuclear exporting states covering the transfer of nuclear fuel and sensitive technology. (Potter 2005, p 344)

The combination of the first (1974) and second (1998) Indian nuclear tests calls into question the legitimacy of H1b in so much as the second test in particular elicited a much stronger response by the US (in the form of bilateral sanctions) than did the first. While there are other possibly crucial considerations such as the impact of the Cold War and the post-1974 development of export controls within the nonproliferation regime, the

69 According to official documents the Secretary of State at the time, Henry Kissinger advised Richard Nixon for, “... a low-key response to India’s ‘peaceful’ nuclear explosion.” There seemed to be both a solemn resignation to the fact that India would eventually acquire nuclear weapons, as well as a now central concern that Pakistan would soon follow suit. According to Deputy Secretary of State Kenneth Rush, “The challenge is no longer keeping India from going nuclear; it is stabilising [sic] a new nuclear ‘power’ within the international framework and trying to dissuade others from following suit.” Sridhar Krishnaswami, “What the US Thought of India’s 1974 Nuke Test,” PTI, December 22, 2007, located at http://www.rediff.com/cms/print.jsp?docpath=/news/2007/dec/22us.htm, last accessed August 18, 2009.
lack of a consistent response against a state which the US had essentially a constant force advantage against does not allow claims that H1b has been confirmed. Ultimately however, considering that the expectation for this study was that there would be no connection between the US-proliferator force ratio and instances of strong US responses to weapons acquisition, more research is needed to determine the importance of force ratios to US policy.

H2b (The US will not respond strongly against allies who acquire nuclear weapons) is also questionable as to its legitimacy as an explanation of US nonproliferation policy. Only two of the cases involving acquisition also involve a US ally (Pakistan and France) and of them only Pakistan elicited a strong response from the US. The response to the Pakistani development of a nuclear weapon included the institution of both national and international sanctions designed to punish Pakistan by denying them US military and economic assistance, as well as access to international loans. However, almost immediately discussions within the Clinton administration began concerning the intentions and impacts of the sanctions, both on Pakistan (and India) as well as on US interests. The key goals were to ensure the safety of the new nuclear arsenals, a reduction in the tensions between India and Pakistan, and careful consideration of the impact the sanctions would have on each state’s stability. (Chow, et. al. 2001, pp 38-39) As a result of these considerations the sanctions were being eased as early as the day after their implementation and by February of 1999 the US had either suspended or waived most of the sanctions that had been instituted against both India and Pakistan for their May 1998 tests. According to analysts, the sanctions did significantly
harm the Pakistani economy in particular, but also illustrated the basic problems with punishing states after their acquisition of nuclear weapons.

Except for the threat that the Indian and Pakistani programs pose to each other (a threat that is not part of U.S. sanctions law) and some residual limitations on U.S. exports, there appears to be no security penalty for the nuclear tests… This U.S. experience with “draconian” nonproliferation sanctions demonstrates the difficulty of maintaining broad and open-ended penalties. The [Arms Export Control Act of the NNPA] itself lacked specific provisions for terminating the sanctions – a gap the Administration filled with its five goals (and terminating sanctions after India and Pakistan had promised to fulfill two of the goals – moratoria on nuclear tests and willingness to sign the CTBT). (Chow, et. al. 2001, pp 39-40)

The fact that Pakistan was an acknowledged ally of the US and India was not, yet both states received essentially the same treatment following their respective nuclear tests in 1998, truly casts doubt on the importance of H2b. In short, alliance considerations would seem to be secondary to broader issues concerning the safety and transparency of new nuclear programs, as well as their impact on regional balance of power considerations.

This relationship also seemed to be a primary factor in the lack of a strong response to the 1960 French nuclear test. Although the French did make some small initial contributions to the Manhattan Project mainly in the form of material and some personnel, for the most part they were excluded from the US and UK development of nuclear weapons throughout the 1940’s and 50’s. The primary reasons for this exclusion were concerns over the political environment within France (i.e. the active and influential socialist party) and specific evidence that France had shown a willingness to sell nuclear technologies to the highest bidders.\(^7\) This exclusion despite their founding role in NATO

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played a critical role in both the rationale behind the French nuclear program and its shape and development. Ultimately, the US position on the French nuclear program could be characterized as neutral. On the one hand they were an explicit US ally and the primary continental partner of the US in maintaining the European balance of power prior to the reinvigoration of the West German military. But their continued pursuit of colonial policies in North Africa, the South Pacific and Southeast Asia, combined with their affinity for socialism, led the US to be wary of a full commitment to France in the nuclear arena. The result was an independently developed French nuclear weapon and perhaps more critically the rise of a competitor in the growing field of peaceful nuclear energy development, a relationship that would play out most directly in the French assistance to the Israeli nuclear program.

France is also a central case in relation to hypothesis H5 (The US will respond weakly to nuclear programs initiated by a significant trade partner). It is the only state which at the time of its nuclear weapons acquisition was also a major trading partner of the US. While the presence of only a single case limits the certainty with which we can assert the hypothesis to be proven correct, in relation to the previous hypothesis it does seem certain that at least in the French case the existence of an alliance and a significant trade relationship combined to tie US hands in confronting the French nuclear program. While the combination of these two conditions occurs infrequently across all three stages of nuclear development, in 3 of the 4 cases where the proliferator was both an ally and trade partner of the US, they refrained from issuing a strong response against the state’s nuclear activities. This would seem to support arguments that the US plays favorites in relation to the application of its nonproliferation policies, specifically elevating its own
economic and security interests above the rhetoric of its universal condemnation of nuclear proliferation.

One final observation stemming from analysis of the acquisition stage is that none of the states receiving a strong response from the US were members of the nonproliferation regime at the time. Whether examining the ongoing North Korean case, or the response, to India (1974 / 1998), and Pakistan (1998), it is clear that a critical consideration of the US after acquisition is how to incorporate the new nuclear power into the regime’s mechanisms, specifically IAEA safeguard and inspection procedures. In relation to Israel and France (the two states who were regime members at the time of their acquisition) it was important that the US not isolate the states to the degree that they would then withdraw from the regime or the US-led Cold War Western alliance system. Relative to the non-members however sanctions are the only practical means by which the US could force them to on some level accept international regulation of their nuclear programs. While this approach has not ultimately led to Indian or Pakistani accession to the NPT, their increased willingness to engage both each other and the international community in safeguarding their nuclear arsenals can be linked directly to the promise and eventual suspensions of the initial sanctions placed against them. The relationship between the easing of sanctions following nuclear testing and adherence to international laws governing proliferation also continues to be at the heart of negotiations with North Korea. In this case however there is a considerable belief on the part of US officials that that they are acting disingenuously and are not fully committed to reestablishing their NPT membership or accepting comprehensive IAEA safeguards.
V. Conclusion

The research question addressed in this study is “What accounts for variations in US nonproliferation policy?” After examination of both the literature and the historical evolution of the policy, several possible conditions were offered in an attempt to explain what have often been overlooked inconsistencies in that policy. While it was not expected that any one condition would be necessary on its own to explain the variation, the goal was to identify the sets of sufficient conditions that could serve to illuminate why the US has so often failed to achieve its nonproliferation goals. An additional component to the argument is the assumption that the importance and combination of these conditions would fluctuate depending on the specific stage of weapons development that the US was responding to. While the central importance of examining individual cases was not replaced, this study has attempted to develop a more rigorous theoretical perspective with which to examine the overall effectiveness of US policy both across and within those cases.

In the initiation stage it was found that the existence of an alliance with the proliferator as well as its non-membership in the nonproliferation regime constituted sufficient conditions for the US to respond strongly to proliferation. The realist consideration of the relative power distribution between the states was not a factor. An interesting result was that no state which had been labeled as a rogue prior to its initiation was met with a strong US response once the nuclear program was discovered. One explanation for this is the fact that the rogues that have initiated programs have all already been under sanctions for previous activities not related to WMD proliferation. This precluded the institution of additional measures against the state as they would have
essentially duplicated existing sanctions. More directly, in many cases the specific nonproliferation mechanisms that now serve as the primary tools for US nonproliferation policy were developed relatively late in the history of the policy and within the context of the US-Soviet rivalry may have simply been impossible to impose.

The non-importance of democracy and trade relations during this stage were a function of initial uncertainties in many cases regarding both the reliability and capability of proliferators to achieve their nuclear goals. The initiation of a program and the US perception of it seem to most directly to depend on how the US was including the state into its regional and global security calculations. If the state also was a member of the nonproliferation regime the US concluded that they were not only not only a threat (and even perhaps an asset) to US interests, but that the regime if given time could reverse the proliferator’s course through a mixture of coercion and incentives that would make continuation untenable. The additional absence of a rogue label served to confirm US beliefs that certain state’s programs did not constitute a threat and thus did not require strong US responses. It can not be discounted how much the importance of these conditions was impacted by the Cold War environment and associated US policy foci on issues of deterrence and disarmament. The irony however is that the point of initiation where arguably the US has the greatest possibility of arresting a new nuclear program is also the stage in which one sees a low probability of a strong US response.

The stage of refinement was thought to be the stage in which the US could most practically apply specific mechanisms to hinder or halt a nuclear weapons program. Considering that after successful refinement of weapons grade material the development of nuclear weapons becomes essentially a forgone conclusion, it would be expected that
US policy at this stage would be in its clearest and most unified form. In fact this stage is the only one that produced a singular Boolean expression indicating that rogue status and regime membership were critical factors in predicting a strong US response. Other factors like the absence of an alliance or trade relationship with the US, as well as the lack of a democratic form of government and an overwhelming US power advantages also seem important. These secondary considerations however are less conclusive and are impacted by the fact that the US ultimately only issued strong responses to two of the eight states who have successfully refined weapons grade material. The primary explanation for US responses at this stage appears to be the belief that the state is unwilling to adhere to the norms and rules governing proliferation, a belief ultimately supported by the fact that they are regime members at the time of their nuclear advancement. When combined with no fear of confronting a trade partner or similar democratic state the incentives for the US to respond strongly are greatly increase. Finally, when considering that the US does not enjoy significant enough material advantages to contemplate direct intervention, the issuance of a strong response in the form of sanctions and political/economic isolation may ultimately constitute the only real available response for the US.

Finally, the stage of acquisition represents a peculiar policy consideration for the US in so much as it essentially represents a failure of its nonproliferation goals. As a result the institution of a strong response against a state at this point does not have as its goal halting proliferation. Rather the goals to be considered must be either simple punishment of the state for its transgressions or the more problematic hope that the state will give up its nuclear weapons all together. There are some cases to support this second rationale, namely South Africa, the FSRs, and more recently Libya. In addition, the first
consideration causes problems for the eventual safeguarding of the new nuclear arsenal as a desire to punish must be balanced with the need to keep the state within the fold of responsible nuclear states. This consideration was the primary impetus behind the lifting of sanctions against India and Pakistan after 1998, while the hope of nuclear reversal drives current US engagement with North Korea despite their intransigence in the Six-Party Talks.

The conditions most associated with strong US responses in this stage seem to be a lack of proliferator membership in the international regime and the absence of both a significant trade relationship and dominant US material advantage relative to the proliferator. There is some discrepancy regarding whether or not the US response to the Indian program in 1974 can be considered strong, but it has been argued here that because of the relative lack of actual nonproliferation mechanisms available to the US at the time, their response was as strong as it could have been given the circumstances. If however you exclude India, it is interesting to note that the only other strong responses to weapons acquisition (Pakistan and North Korea) are after the end of the Cold War. India is a unique case in so much as it has essentially gone through the acquisition stage twice with its second test in 1998 receiving much more direct admonishment than its 1974 test. It seems fair to conclude that regarding nuclear weapons acquisition the US has enjoyed significantly more freedom of action after the Cold War than it did during it. Again the absence of a significant trade relationship and inability to utilize a major power advantage of the proliferator may make the use of sanctions the only viable option available. It is important to note however that North Korea is the only state which has endured a significant long term strong response by the US, sure to be joined by Iran if
they continue along their current path. This indicates that much as the recent literature has highlighted, the rogue proliferator is currently the singular focus of US nonproliferation efforts. What is also certain however is that the continued use by the US of a selective nonproliferation policy will continue to lead to uneven results and perhaps as it has in the past, new and dangerous proliferation threats.
Bibliography


Case Specific References

Brazil


China


India


Special National Intelligence Estimate, No. 31-1-65. (1965) “India’s Nuclear Weapons Policy.”
Iran


Iraq


Israel


**Libya**


**North Korea**


Pakistan


South Africa


South Korea


**Internet and Electronic Sources**

http://www.gwu.edu/~nsarchiv/NSAEBB/#Nuclear%20History.


http://www.systemicpeace.org/polity/polity4.htm

Correlates of War. http://www.correlatesofwar.org/