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NUCLEAR NON-PROLIFERATION REGIME IN THE TWENTY-FIRST CENTURY: A CHECKERED PAST AND A VITAL FUTURE

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ABSTRACT

The Nuclear Non-Proliferation Regime (NNPR) has a sixty year history of resisting the spread of nuclear weapons while encouraging the use of nuclear power generation. This paper will critically examine the Regime to determine its relevance in the twenty-first century as well as what improvements should be made to improve its effectiveness.

A multinational, comprehensive regime is required to stem the potential proliferation of nuclear weapons in the twenty-first century. The motivations to acquire a nuclear weapon are real and must be understood by the international community in order allow for successful non-proliferation strategies to be developed. The spread of nuclear weapons is generally a negative influence on stability and security but not necessarily as a direct result of the initial proliferation. The real danger lies in the increase in the availability of nuclear technology, material, and knowledge which then heightens the potential proliferation risk to a 'rogue state' or a terrorist organization.

Several brief case studies in the history of nuclear proliferation are examined to explore the lessons for the regime. These lessons are then applied to the ongoing proliferation risks in North Korea and Iran. Finally, recommendations for the future of the NNPR are made. This paper contends that in spite of a few notable failures, the NNPR has been remarkably successful in the past sixty years. This success nonetheless masks serious weaknesses in the regime that must be addressed if the NNPR is to prevent the spread of nuclear weapons to states or organizations that would not hesitate to use them.

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INTRODUCTION

The world shook in 1945 when the United States (US) dropped atomic bombs on Hiroshima and Nagasaki, Japan.[1] Over the past sixty-three years, the international community has evolved an international, multilateral response to minimize the proliferation of these weapons of mass destruction (WMD) and reduce the risk of another detonation. This response, the Nuclear Non-Proliferation Regime (NNPR), has had a few notable failures and many successes.

The NNPR originated immediately after World War Two as the Allied powers tried to come to grips with the existence of such a powerful new weapon. In spite of the international desire to eliminate the threat of the atomic bomb, American President Harry Truman concluded in 1946 that "we should not under any circumstance throw away our gun until we are sure the rest of the world can't arm against us."[2] The conflict between the desire to eliminate the nuclear menace and the pursuit of the security of the state had begun.

The NNPR has since evolved to include treaties, agencies, conferences, groups, agreements, pledges, initiatives, and weapons free zones. Of the NNPR's many components, the most important is the Nuclear Non-Proliferation Treaty (NPT). The treaty, signed in 1968, and ratified in 1970, established who was allowed to possess nuclear weapons and who was not. The original five Nuclear Weapons States (NWS), the US, Soviet Union, United Kingdom (UK), France, and China, would be the only NWS

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[1] Lewis A. Dunn, *Controlling the Bomb* (New Haven: Yale University Press, 1982), 6.

[2] P. Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism* (New York: Sloan Publishing, 2007), 141.

and all other signatories promised to refrain from developing their own nuclear weapons. In return, the non-nuclear weapons states (NNWS) would have access to nuclear technology for peaceful use. In addition, the existing NWS agreed to commit themselves to reductions in, and eventually the elimination of, their nuclear arsenals.[3] At present, there are only four significant nations outside of the NPT: India, Pakistan, Israel, and North Korea. India and Pakistan tested nuclear weapons in 1998 and Israel is widely acknowledged to be in possession of them.[4] North Korea withdrew from the NPT in 2003 and subsequently detonated a nuclear device in 2006 but is not believed to possess a credible nuclear arsenal.[5]

The emergence of nuclear weapon states (NWS) outside of the NPT has challenged the relevance, efficacy, and value of the NNPR. The regime failed to prevent India, Pakistan, Israel, and North Korea from crossing the nuclear threshold and, since then, it has largely ignored them. The regime also has no mechanism to re-engage the new NWS to allow for increased control over their international behaviour, to help improve the security of their arsenals, and to reduce the risk of triggering further proliferation. Moreover, two threats to the NNPR are ongoing: North Korea and Iran. Iran has yet to detonate a nuclear device but appears to be approaching the capacity to do so.

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[3] Victor Gilinsky, "Nuclear Proliferation after the Indian and Pakistani Tests," in *Twenty-first Century Weapons Proliferation*, ed. Henry Sokolski and James M. Ludes (London: Frank Cass Publishers, 2001), 6.

[4] Saira Kahn, *Nuclear Proliferation Dynamics in Protracted Conflict Regions* (Burlington, Ashgate Publishing, 2002), 1.

[5] United States, Office of the Director of National Intelligence, *Annual Threat Assessment of the Director of National Intelligence for the Senate Select Committee on Intelligence* (Washington: US Government Printing Office, 5 February 2008), 14. Available from http://www.dni.gov/testimonies/20080205_testimony.pdf; Internet: accessed 11 March 2008.

Careful examination is required to determine the most effective strategies to deal with both states and minimize their crossing of the nuclear threshold.

The historical successes of the regime must likewise be acknowledged. While there are many countries capable of developing a nuclear weapon, few have actually done so.[6] In addition, several counties have willingly given up their nuclear arsenals. South Africa developed a nuclear weapon capability and then dismantled it in 1991.[7] Kazakhstan, Belarus, and the Ukraine all inherited nuclear stockpiles from the collapse of the Soviet Union, but each gave them up.[8]

The pressure on the NNPR has since increased with the collapse of the Soviet Union in 1991. Nuclear technology, material and knowledge have all become more accessible as the former Soviet Union has dismantled large portions of its nuclear stockpile and industry.[9] This has coincided with the emergence of a post Cold War multi-polar world with less restraint amongst, and less pressure on, smaller nations not to proliferate while there are significant incentives to do so.[10] The existence of trans-national terrorist organizations interested in carrying out dramatic acts for political gain has further complicated the situation.

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[6] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 235.

[7] Ian Bellemy, *Curbing the Spread of Nuclear Weapons* (Manchester: Manchester University Press, 2005), 67.

[8] Scott D. Sagan and Kenneth M. Waltz, *The Spread of Nuclear Weapons: A Debate Renewed* (New York: W.W. Norton, 2003), 111.

[9] Allison Graham, "Is Nuclear Terrorism a Threat to Canada's National Security?" *International Journal* LX, no. 3 (Summer 2005): 715.

[10] Bradley A. Thayer, "The Causes of Nuclear Proliferation and the Utility of the Non-Proliferation Regime," in *The Nuclear Non-Proliferation Regime*, ed. Raju G.C. Thomas (New York: St. Martin's Press, 1998), 101.

The motivation to proliferate will continue to be real, and intense. The current availability of technology, material, and knowledge will make it difficult for the NNPR to be completely successful without countering the motives of potential proliferators. In spite of this, the mere possession of nuclear weapons by a stable state will not necessarily reduce international stability and security. Nonetheless, it is important to strengthen the NNPR as the real danger lies in the further proliferation to 'rogue nations,' or terrorist organizations. The more states that possess nuclear weapons, the more difficult it is to control their spread, and the more risk international society assumes that the weapons will reach an undesirable state or organization. Given that proliferation cannot be sanctioned, a multilateral, quasi-universal approach such as the NNPR is the best hope to retard further proliferation of nuclear weapons. For the NNPR to have any hope of sustained success in the future, it must counter the motivations of states to proliferate, strengthen supply-side controls, re-engage outcast NWS, and generate a commitment from the current NWS to reduce their own stockpiles in return for the halt on horizontal proliferation.

This paper will first explore the reasons nuclear proliferation must be countered multilaterally. Second, the history, components, and development of the NNPR will be examined. Third, several case studies will be reviewed to draw out lessons learned and to make recommendations to manage the ongoing proliferation risk in North Korea and Iran. Finally, the future of the NNPR will be analyzed and recommendations will be made on how to strengthen it.

THE MULTILATERAL APPROACH

Is a multilateral NNPR necessary to prevent the spread of nuclear weapons? The answer to this question must consider states' motivations to acquire nuclear weapons, the potential impact of the spread of nuclear weapons, and the options to deter proliferation.

The motivations for a state to pursue a nuclear weapons program can be divided into three broad categories. First, a state may desire to augment its power and prestige. Second, it may seek to increase its security through the deterrent effect of a nuclear weapon. Third, it may intend to develop the weapon for an actual or threatened nuclear attack.

The desire to augment national power and prestige has been a contributing factor in some states' decisions to acquire nuclear weapons.[11] For them, one must have a nuclear capability to be perceived as a great power on the world stage.[12] Britain's decision in 1947 to develop an atomic bomb was partially motivated by a belief that it could not remain a first rank power without it. [13] Charles De Gaulle, president of the Fifth Republic of France from 1958 to 1969, argued vociferously that France must develop nuclear weapons to assume its rightful place in the world. In his words, "A great state that does not possess [nuclear weapons], while others have them, does not command its own destiny."[14] After China became a NWS in 1964, India feared that its status would

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[11] Gilinsky, "Nuclear Proliferation after the Indian and Pakistani Tests," 4.

[12] Kahn, *Nuclear Proliferation Dynamics in Protracted Conflict Regions,* 15.

[13] Dunn, *Controlling the Bomb*, 8.

[14] Charles de Gaulle, *Discours et Messages*, 5 vol., (Paris:Plon, 1970), vol. 3, 369. Quoted in Thayer, "The Causes of Nuclear Proliferation…," 78.

diminish unless it too joined the nuclear club.[15] In all three cases, the pursuit of power and prestige contributed to the decision to pursue a nuclear capability. The validity of this motivation is debatable; however, it is difficult to deny its existence.

The desire to acquire nuclear weapons for offensive reasons has been rare. Nazi Germany's pursuit of an atomic bomb in 1939 is the only clear example.[16] Germany was in the process of rapidly expanding its borders as World War Two opened and was developing new weapons in pursuit of European hegemony. Since Germany's nuclear program predated all others, it cannot be regarded as a response to another state.[17]

Today, only a rogue state or a terrorist organization would pursue a nuclear weapon for offensive use. Political scientist Elaine Bunn has defined rogue states as "those who brutalize their own people, display no regard for international law, threaten their neighbours, are determined to acquire weapons of mass destruction, sponsor terrorism around the globe, and reject basic human values."[18] Rogue states may consider the use of nuclear weapons during a conflict regardless of international norms to the contrary. The unpredictability of a rogue state could easily spur its neighbours to pursue a nuclear weapons program as a deterrent. This could set off a regional domino effect causing a massive burst of proliferation and, presumably, a reduction in stability and

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[15] Sumit Ganguly, "The Indian and Pakistani Nuclear Programmes: A Race to Oblivion?" in *The Nuclear Non-Proliferation Regime*, ed. Raju G.C. Thomas (New York: St. Martin's Press, 1998), 274-275.

[16] Dunn, *Controlling the Bomb*, 14.

[17] It could be argued that the US developed the atomic bomb in order to use it against the Axis powers in WWII but this ignores the fact that the US commenced the Manhattan Project only after realizing that Germany had been pursuing an atomic weapon. The motivations for the US would appear to be, at worst, a combination of aggression and a desire to counterbalance or deter Germany. Thayer, "The Causes of Nuclear Proliferation…," 89.

[18] Derek D. Smith, *Deterring America: Rogue States and the Proliferation of Weapons of Mass Destruction* (Cambridge: Cambridge University Press, 2006), 14.

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security for all. Finally, a rogue state could provide nuclear weapons to another like minded state or terrorist group.

The idea of a terrorist organization acquiring a nuclear weapon is the worst case

Germany would acquire the technology first.[23] Soviet dictator Joseph Stalin famously demanded his own atomic bomb after watching the results of Hiroshima and Nagasaki: "A single demand of you comrades,…Provide us with Atomic weapons in the shortest possible time. The balance has been destroyed. Provide the bomb – it will remove a great danger from us."[24] The Soviet leader feared that he would not be able to match a nuclear threat, regardless of his conventional might, and this led to the Soviet Union testing its first nuclear weapon in 1949.[25]

The UK, in addition to its motivation to enhance its prestige, was also fearful of American isolationism and that it would be left to face a nuclear armed Soviet Union in Europe alone, a legacy of its position in 1940.[26] London subsequently joined the nuclear club in 1952.[27] France was concerned with a rearming Germany and a nuclearized Soviet Union, and so looked to be able to provide its own independent deterrent. As De Gaulle said, "What destiny has a people whose salvation depends on the good will of another?"[28] France tested its first nuclear weapon in 1960.[29]

China's security was threatened at the end of the Korean War (1953) when American President Dwight Eisenhower hinted at nuclear escalation if the armistice

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[23] Kahn, *Nuclear Proliferation Dynamics in Protracted Conflict Regions,* 14.

[24] A.Lavrent'yeva in "Stroiteli novogo mira", V mire knig, no. 9 (1970), 4. Quoted in Thayer, "The Causes of Nuclear Proliferation…," 90.

[25] Mitchell Reiss, *Without the Bomb: The Politics of Nuclear Proliferation* (New York: Columbia University Press, 1988), 9.

[26] Dunn, *Controlling the Bomb*, 8.

[27] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 41.

[28] Jean Lacouture, *De Gaulle: The Ruler 1945-1970*, (New York: W. W. Norton and Company, 1992),421. Quoted in Thayer, "The Causes of Nuclear Proliferation…," 91.

[29] Kahn, *Nuclear Proliferation Dynamics in Protracted Conflict Regions*, 10.

negotiations remained stalemated. Chinese leader Mao Zedong said, "If we are not to be bullied in this present-day world, we cannot do without the bomb."[30] The Chinese began their program in 1955 and successfully tested their first nuclear device in 1964.[31]

When India was decisively defeated by Chinese forces in the Sino-Indian war of 1962, there were widespread demands for an Indian nuclear capability to counter the threats and anticipated nuclear capabilities of its northeastern neighbour.[32] This resulted in an active Indian program and first test of a nuclear device in 1974.[33]

Predictably, Pakistan cast a worried gaze on the ambitions of the larger and more powerful India. The 1971 war with India demonstrated that its conventional forces were inferior and there was widespread acknowledgement that India would soon possess a nuclear capability.[34] President Bhutto expressed his concerns, "If Pakistan were to suspend its nuclear programme, it would …enable India to blackmail Pakistan with her nuclear advantage." And, "Our problem, in essence, is how to obtain a weapon in time before the crises begins."[35] Pakistan is suspected of achieving a nuclear capability soon after India, although it did not test its capability until 1998.[36]

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[30] John Wilson Lewis and Litai Xue, *China Builds the Bomb*, (Stanford: Stanford University Press, 1988), 142. Quoted in Thayer, "The Causes of Nuclear Proliferation…," 92.

[31] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 41.

[32] Sumit Ganguly, "The Indian and Pakistani Nuclear Programmes…," 273.

[33] Thayer, "The Causes of Nuclear Proliferation…," 93.

[34] Sagan and Waltz, *The Spread of Nuclear Weapons…*, 90.

[35] Zulfikar Ali Bhutto, *The Myth of Independence* (Karachi: Oxford University Press, 1969). Quoted in Thayer, "The Causes of Nuclear Proliferation…," 94.

[36] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 41.

Israel pursued nuclear weapons beginning in the 1950's in order to nullify numerically superior hostile conventional forces in the Middle East.[37] Israel had learned not to rely on any other state for its own defence and possession of a nuclear deterrent was seen as the only way to guarantee its security.[38] Israel is widely believed to have achieved a nuclear weapon capability by the early 1970's although it has not tested a weapon nor openly admitted to having one.[39]

South Africa was similarly isolated and faced potentially hostile Cuban and Warsaw Pact troops in Mozambique and Angola during the 1970's.[40] Clearly unable to counter the conventional capabilities of the combined forces at its doorstep, South Africa pursued a nuclear weapon to deter an invasion directly, as well as to provide a bargaining chip to gain the involvement of the US. One South African official said, "the thing we fear most was total *aanslag* – a Soviet led invasion south to Capetown. Letting the US and Soviets know we had the bomb showed them we were desperate."[41] A South African nuclear test site was discovered in 1977 but no overt nuclear test was ever confirmed.[42]

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[37] Paul Doty and Steven Flank, "Arms Control for New Nuclear Nations," in *New Nuclear Nations*, ed. Robert D. Blackwell and Albert Carnesale (New York: Council on Foreign Relations Press, 1993), 66.

[38] Thayer, "The Causes of Nuclear Proliferation…," 93.

[39] J.E. Birnberg, "Sun Sets on Tamuz I: The Israeli Raid on Iraq's Nuclear Reactor," *California Western International Law Journal* 13, (1983): 91.

[40] Dunn, *Controlling the Bomb*, 54-55.

[41] Thayer, "The Causes of Nuclear Proliferation…," 95.

[42] Doty and Flank, "Arms Control for New Nuclear Nations," 62-63.

South Africa then decided in 1989 to dismantle its seven nuclear weapons and had signed the NPT by 1991.[43]

The motivation to acquire a nuclear weapon can be overwhelming, particularly when a state feels that its security is at risk. Understanding the reasons for proliferation will facilitate the development of a tailored response to meet the concerns of a particular state. However, it is possible that the motivation may be so acute that there is little the world community can do to assuage it. If a country acquires a nuclear weapons capability in spite of all efforts, there must still be a post proliferation response to encourage effective controls and safeguards. The aim of this response is to allow the new nuclear weapons state to exist peacefully with its neighbours, and to prevent further proliferation.

Given that the motivation to proliferate will be strong, it is necessary to consider whether the further proliferation of nuclear weapons is indeed a negative influence on the stability and security of the world. If not, the very discussion of nuclear non-proliferation will become moot. This debate has traditionally been broken down into two camps: nuclear optimists, and nuclear pessimists. The optimists argue that the spread of nuclear weapons can only increase the stability in the world, as demonstrated by the lack of direct conflict between the US and the Soviet Union during the Cold War and more recently between Pakistan and India. The pessimists argue that the spread of nuclear weapons is

[43] Robert Block, "A Cautionary Disarmament: South Africa's Surrender of Nuclear Arms Was Only Half the Battle," *Wall Street Journal,* 31 January 2003, A.9.

inherently bad as the greater numbers can only lead to a greater likelihood of their use in conflict and risk of a nuclear accident.[44]

The optimist camp claims that "nuclear weapons prevent the regional states that have them from fighting each other."[45] The theory is that the nuclear capability acts as a deterrent to attack by threatening a response too horrific to tolerate. When two neighbours, or adversaries, possess the same nuclear deterrent, the result will be a stalemate and stability. In this way a relatively small nation may deter a much more conventionally powerful rival. This potentially removes the incentive for the more powerful rival to try to coerce, and increases the security and independence of the weaker rival. In sum, the balance of deterrence would lead to increased stability for all.

This argument seems plausible for a stable state with strong controls and safeguards. The real gaps in the logic appear when considering a failing state that may experience regime change and loss of control over its weapons. Similarly, a fledgling nuclear power without strict and effective controls over its arsenal could cause concern amongst its neighbors. Finally, the demise of the Soviet Union has provided an example of a state that has lost tight control over its stockpile of material, technology, and expertise.[46] These scenarios all raise the risk of an undesirable group or state acquiring a nuclear weapon.

The truth lies somewhere in between nuclear optimism and nuclear pessimism. While nuclear proliferation to a relatively stable state may not directly decrease regional

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[44] Kenneth Waltz, *The Spread of Nuclear Weapons: More May Be Better*, International Institute for Strategic Studies Adelphi Paper 171 (London: International Institute for Strategic Studies, 1981), 1.

[45] Martin van Creveld, *Nuclear Proliferation and The Future of Conflict* (New York: Free Press, 1993), 122-123.

[46] Ken Luongo *et al*, "The Crises in Russia's Nuclear Cities," in *Repairing the Regime: Preventing the Spread of Weapons of Mass Destruction,* ed. Joseph Cirincione (New York: Routledge, 2000) 39-40.

or world security, there is always the risk of unforeseen events in the future changing the context. Furthermore, the sheer increase in numbers of states in possession of nuclear weapons makes it more challenging to control the nuclear materials, technology and knowledge, thereby increasing the risk that proliferation to a rogue state or terrorist organization may occur. Therein lays the real, albeit indirect, danger. The value in non-proliferation is in its ability to cap the risk of proliferation to the truly undesirable.

This conclusion leads to another: It does matter who acquires nuclear weapons. There is a significant difference in the way the world reacts to proliferation to a democratic, stable state such as India, as opposed to an aggressive belligerent, such as Iraq under Saddam Hussein. The current NNPR makes no allowance to reintegrate a state that decides to proliferate when it is in the best interest of the NNPR to do so. After India, a growing world power with very real security concerns, acquired nuclear weapons, it became a nuclear pariah outside of the NPT. India has therefore termed the NPT 'nuclear apartheid,' since it sanctioned vertical proliferation within the five NWS while disallowing horizontal proliferation amongst all other states.[47] This perceived hypocrisy of the NNPR cannot strengthen it in the eyes of the world and there must be a construct whereby new NWS can be reintegrated into the regime. The dangers inherent in a nuclear outcast are well demonstrated by the Kahn network of nuclear technology sales originating out of Pakistan.[48] The interests of security and stability are best served by

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[47] Hilary Synnott, *The Causes and Consequences of South Asia's Nuclear Tests*, International Institute for Strategic Studies Adelphi Paper 332 (Oxford: Oxford University Press, 1995), 22.

[48] Dr AH Kahn was the nuclear mastermind behind the Pakistani nuclear program and subsequently offered materials, technology and knowledge for sale to countries such as North Korea and Libya. Smith, *Deterring America…*, 100.

engaging with emerging nuclear powers to help ensure the command, control and security of their arsenals.

Is the multilateral NNPR the best mechanism to prevent the further spread of nuclear weapons? Two plausible alternatives will be considered: a policy of self-regulation, and one of smaller coalitions of the willing enforcing non-proliferation.

Self-regulation means leaving the decision to acquire nuclear weapons to each individual state. This approach assumes that rational nations would realize the impracticality, cost, and danger associated with nuclear weapons and would choose not to proliferate of their own free will. Such a system, largely in place prior to the maturation of the NNPR, led to the boom in proliferation between 1945 and 1965. The technological hurdles to proliferation are less daunting than ever due to dual use technologies, global markets and the general advancement in the industrial and technological capabilities of most countries.[49] These factors, combined with an increasingly multi-polar world rife with regional tensions, increase the motivation for further proliferation.[50] Without controls, norms, and deterrents against nuclear proliferation, the risk is high that it will take place. If a trickle of nations cross the nuclear threshold, the pressure to counter these new threats will become overwhelming. Proliferation leads to further proliferation.[51]

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[49] Ashton B. Carter and L. Celeste Johnson, "Beyond the Counter Proliferation Initiative," in *Twenty-first Century Weapons Proliferation*, ed. Henry Sokolski and James M. Ludes (London: Frank Cass Publishers, 2001), 69.

[50] Thayer, "The Causes of Nuclear Proliferation…," 101.

[51] Mohamed El Baradei, "Towards a Safer World," *The Economist* 369, no. 8346 (18 October 2003): 47.

History suggests that self-restraint cannot be reliably depended upon to sufficiently discourage proliferation.

A smaller coalition of the willing, such as was used to invade Iraq in 2003, would be a second option to counter proliferation. The peaceful efforts of a smaller coalition are constrained by the fact that its economic sanctions, diplomatic pressure and technology controls would not be universal and would therefore be limited in their effectiveness. A smaller coalition, without the support of the UN, would have difficulty establishing legitimacy while imposing its will on a third party. Over time, the ineffectiveness of the coalition's peaceful means could lead it to consider forceful means to prevent intolerable proliferation. This form of preventative attack would not only have legal and moral risks associated with it, but also pragmatic ones. Ironically, an attack against a nation in the process of developing a nuclear capacity would likely only encourage other proliferators. A nuclear weapon would be seen as the only realistic deterrent from interference by foreign powers. Potential proliferators would be motivated to keep their pursuit covert, but would realize that successful development of a nuclear weapon would likely make military interference untenable.

The multilateral, quasi-universal NNPR does rely to some extent on both self-regulation and smaller coalitions of the willing. The NPT allows for a nation to withdraw and develop nuclear weapons should it decide that its supreme interests are in jeopardy.[52] Self-regulation, or willing compliance with the international norm, must also play a part in curbing proliferation. However, the NNPR recognizes that goodwill alone will not be enough to prevent proliferation. Nuclear free zones could be considered a coalition of the

[52] United Nations, *The Treaty on the Non-Proliferation of Nuclear Weapons* (New York: UN, 1967); available from http://www.un.org/events/npt2005/npttreaty.html; Internet; accessed 16 February 08.

willing. A region prohibiting nuclear weapons, with safeguards, inspections and consequences can effectively instill a sense of nuclear stability by removing the fear that a state's neighbours might be pursuing the bomb, thereby relieving the pressure to proliferate.

The NNPR is a multi-faceted, layered, range of measures, norms, treaties and safeguards. In this way, it hopes to address the majority of motivations to proliferate and, where ineffective, to provide the means to prevent the acquisition of the required material and technology. The reliability of economic sanctions requires the support of the many. The effectiveness of supply-side controls requires the concurrence of all. Security guarantees can only instill confidence when offered by the world and regional powers. Only a multilateral, universal regime can hope to build an international norm against proliferation. In these ways, the NNPR remains the best hope to minimize the risk of further proliferation.

HISTORY OF THE NUCLEAR NON-PROLIFERATION REGIME

Political scientists use the term regime to describe a set of rules, norms, and institutions governing an issue.[53] The NNPR is a network of treaties, agreements, institutions, and inspections that collectively aim to prevent further proliferation of nuclear weapons. The NNPR has been an evolving entity, with elements added on periodically to improve and enable it.

[53] Joseph S. Nye, Jr., "Diplomatic Measures," in *New Nuclear Nations*, ed. Robert D. Blackwell and Albert Carnesale (New York: Council of Foreign Relations Press, 1993), 80.

The origins of the NNPR can be traced to the discovery of nuclear fission in 1938.[54] Efforts to harness the unprecedented power of fission into a weapon were spurred on by the arrival of the Second World War. When the US detonated an atomic weapon over Hiroshima on 6 August 1945, then again over Nagasaki on 9 August 1945, the world was faced with the stunning devastation of this new capability. A single bomb, carried on a single aircraft, was capable of leveling a city of 340,000 people in an instant. Seventy thousand of Hiroshima's 76,000 buildings were destroyed or damaged and 130,000 of its 340,000 people were killed by wounds and radiation burns.[55] In the sixty-three years since this event, the weapons have greatly increased in power and numbers.

A few lessons have guided and shaped the NNPR since 1945.[56] First, nuclear weapons cannot be "un-invented." The knowledge of how to make nuclear weapons is openly available and the materials to make them with exist. The world entered the nuclear age in 1945 and this cannot be denied or reversed. Second, the catastrophic devastation wrought by a nuclear weapon is too horrific to be considered and all efforts must be made to prevent a nuclear war or use of a nuclear weapon in conflict.

The seeds of the NNPR were sown by American President Eisenhower, in his "Atoms for Peace" speech to the UN General Assembly in 1953.[57] Eisenhower told the UN that "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

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[54] Reiss, *Without the Bomb: The Politics of Nuclear Proliferation*, 6.

[55] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 2.

[56] *Ibid.,* xiii.

[57] International Atomic Energy Agency, *Atoms For Peace*; available from http://www.iaea.org/About/history_speech.html; Internet; accessed 12 February 2008.

benefit of all mankind."[58] He exhorted the UN to create an International Atomic Energy Agency (IAEA) that would encourage peaceful use of nuclear technology in the world, diminish the destructive power of the world's nuclear stockpiles, demonstrate that the atomic powers could share their knowledge and technology for the benefit of humankind, and make progress towards peace.[59]

The UN established the IAEA in 1957 and its statute laid out three pillars of the Agency's mission: nuclear safeguards and verification; nuclear safety and security; and science and technology transfer.[60] The IAEA has been criticized for two weaknesses. First, it has an inherent conflict of interest in that it exists to promote the transfer of nuclear technology for peaceful use while also being responsible for enforcing the NPT and the norm of non-proliferation. The IAEA must promote the spread of nuclear technology even though it is widely recognized that the dual use nature of the technology means that it could provide the seeds of a weapons program.[61] The conflict was initially exacerbated by the ineffective nature of the inspections that the IAEA was able to carry out. The testimony in 1980 of a former IAEA inspector, Mr Roger Richtor, revealed that the IAEA had little ability to discover a clandestine weapons program during its scheduled inspections in Iraq.[62] This sentiment was echoed within Iraq when Dr Jaffer, scientific head of the Iraqi clandestine nuclear program in the 1980's, advised Iraqi leader

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[58] *Ibid.*

[59] *Ibid.*

[60] International Atomic Energy Agency, *IAEA Mission & Programmes*; available from http://www.iaea.org/About/index.html; Internet; accessed 17 February 2008.

[61] Gilinsky, "Nuclear Proliferation after the Indian and Pakistani Tests," 8.

[62] M.S. Nydell, "Tensions Between International Law and Strategic Security: Implications of Israel's Pre-emptive Raid on Iraq's Nuclear Reactor," *Virginia Journal of International Law* 24, (1984): 477.

Saddam Hussein that remaining within the NPT would in no way hinder a clandestine nuclear program.[63] Foremost among the restrictions of the IAEA was its ability to inspect only those sites which the subject nation had itself declared. The IAEA had no mandate to search for a covert nuclear weapons program.[64]

The weakness in the IAEA safeguards was not addressed until 1995 when the agency responded to the lessons of the Iraqi clandestine program and recommended an additional protocol to its safeguards agreements which would enable it to look for undeclared sites and activities. This initiative has been largely accepted, with over 116 signatories as of February 2008.[65]

Nuclear proliferation accelerated during the early days of the IAEA. In addition, the Cuban Missile Crisis in 1962 brought the world to the brink of a nuclear conflict. These events emphasized the inadequacy of the IAEA to stem the spread of nuclear weapons and provided the impetus to create the NPT.

The NPT was a product of negotiations sponsored by the US, the UK and the Soviet Union. It was initially signed in 1967 by sixty-two nations and came into force in 1970.[66] The NPT currently has 190 signatories and is the cornerstone of the NNPR due to its near universal acceptance, breadth of coverage and largely successful history. The

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[63] Thayer, "The Causes of Nuclear Proliferation…," 93.

[64] J. Jennekens, "The IAEA, International Safeguards and the Future of the NPT," in *Nuclear Non-Proliferation and Global Security*, ed. D.B. Dewitt (Sydney: CroomHelm Ltd, 1987), 80.

[65] International Atomic Energy Agency, *Strengthened Safeguards System: Status of Additional Protocols*; available from http://www.iaea.org/OurWork/SV/Safeguards/sg_protocol.html; accessed 16 February 2008.

[66] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 240.

only significant states outside of the NPT are India, Pakistan, Israel and North Korea. The IAEA asserts that, "the NPT aims to prevent the spread of nuclear weapons and weapons technology, to foster the peaceful uses of nuclear energy, and to further the goal of disarmament."[67]

The NPT attempts to reach this aim through several avenues. Article I of the treaty states that current NWS will not assist any NNWS in acquiring or developing nuclear weapons. In Article II, the NNWS agree not to pursue nuclear weapons. In Article III, the NNWS agree to allow the IAEA to inspect their nuclear energy facilities to ensure there is no diversion to a nuclear weapons program. Article IV declares that nothing will affect "the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes."[68] Article VI commits the NWS to negotiating an end to the nuclear arms race and elimination of their nuclear weapons at the earliest opportunity. Article VII permits regional treaties to establish nuclear free zones. Finally, Article X, perhaps the most controversial article, allows a signatory to the NPT to withdraw from the treaty if "extraordinary events… have jeopardized the supreme interests of its country."[69]

When it was launched, the NPT appealed to NWS as it maintained their nuclear monopoly in the short term, while also benefiting their nuclear industries and reducing the risks of further proliferation. The NPT also appealed to the NNWS by assuring them

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[67] International Atomic Energy Agency, *Treaty on the Non-Proliferation of Nuclear Weapons*; available from http://www.iaea.org/Publications/Documents/Treaties/npt.html; accessed 12 February 2008.

[68] United Nations, *The Treaty on the Non-Proliferation of Nuclear Weapons* (New York: UN, 1967); available from http://www.un.org/events/npt2005/npttreaty.html; Internet; accessed 16 February 08.

[69] *Ibid.*

that their neighbours would not pursue nuclear weapons.[70] Furthermore, it guaranteed them access to nuclear technology for peaceful use and suggested that the current NWS would, over time, reduce and eliminate their own nuclear weapons.

Over the years, several weaknesses in the NPT have become apparent, and have manifested themselves in further proliferation since 1970. The first is that the treaty does not compensate for the fact that some peaceful nuclear technologies can be used to develop a nuclear program. The "dual-use" nature of the technology makes it difficult to deny a state the ability to acquire the elements of a nuclear weapon program, so long as it can claim that the purpose is for peaceful use.[71] This migration of technology provided the means for India, Pakistan, North Korea and Israel to develop their nuclear weapons in spite of the international community's attempts to limit technology transfers.[72]

Another weakness of the NPT is its perceived hypocrisy. As long as the currently acknowledged five NWS take no meaningful strides towards disarmament, how can the NPT legitimately expect other NNWS not to pursue nuclear weapons of their own? India has opposed the NPT claiming the treaty is discriminatory between the nuclear "haves and have-nots" so long as the NWS continue to shirk their Article VI responsibility to disarm.[73] In this environment, India can make the argument that the NPT exists only to preserve the status quo and power of the original NWS.

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[70] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 240.

[71] Raju G.C. Thomas, "The Renewed NPT: Old Wine in New Bottles?" In *The Nuclear Non-Proliferation Regime*, ed. Raju G.C. Thomas (New York: St. Martin's Press, 1998), 6.

[72] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 240.

[73] Raju G.C. Thomas, "Should India Sign the NPT/CTBT?" In *The Nuclear Non-Proliferation Regime*, ed. Raju G.C. Thomas (New York: St. Martin's Press, 1998), 285-286.

By forcing emerging powers with nuclear weapons, such as India, to remain outside of the NPT, the treaty does not accept the reality that the relative power of nations is in constant flux.[74] A state such as India, outside of the NNPR, develops without technical assistance to safeguards, safety or command and control over its nuclear arsenal. Moreover, an outcast state is not committed to other controlling measures of the NPT, such as the pledge not to proliferate further. In short, the isolation of a proliferant may actually increase the risk of further proliferation.[75]

Countries that have not signed the NPT, such as India and Pakistan, are completely within their rights to develop and maintain nuclear weapons. Furthermore, any nation can withdraw from the NPT to pursue a nuclear weapons program. Withdrawal from the NPT was first threatened by North Korea in 1993, and carried out in 2003.[76] Fortunately, this revolving door has only been used once, but it nonetheless highlights the vulnerability of the treaty. The withdrawal of North Korea, compounded by a nuclear test, could threaten its neighbours and precipitate a regional arms race.

The emergence of Pakistani scientist Dr. A.Q. Kahn's quasi-private network of international nuclear technology sales is an example of the risk inherent in outcast nuclear nations.[77] Kahn had first overseen the development of Pakistan's nuclear weapons and then established his network which sold nuclear technology and designs to Libya, North Korea and Iran and is suspected of having dealt with several other nations

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[74] T.V. Paul, "The NPT and Power Transitions in the International System," in *The Nuclear Non-Proliferation Regime*, ed. Raju G.C. Thomas (New York: St. Martin's Press, 1998), 59-60.

[75] Edward M. Spiers, *Weapons of Mass Destruction: Prospects for Proliferation* (New York: St. Martin's Press, 2000), 146.

[76] Smith, *Deterring America*…, 66, 78.

[77] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 227-228.

such as Syria, Egypt, Sudan and Algeria from the 1980's through 2004.[78] Re-integrating Pakistan into the fold of the NPT would have helped to ensure tighter controls over its weapons program and might have prevented Kahn's network and the proliferation it assisted.

Finally, the regime neither completely addresses the motivations for a country to proliferate, nor does it sufficiently address denying the means to proliferate. This combination places the NPT in a vulnerable position and demonstrates the requirement for additional measures to buttress the NPT within the NNPR.

In the 1950's, efforts to limit nuclear testing were initiated largely by the NNWS in an attempt to dampen the arms race between the two superpowers and, more recently, to force the NWS to move towards nuclear disarmament. A further impetus developed when environmental and health hazards from the atmospheric tests of nuclear weapons became evident around the same time.[79] Negotiations continued during the 1950's and 1960's but were derailed by a combination of the intensity of the arms race and lack of verification methods. The Limited Test Ban Treaty (LTBT) was finally concluded in 1963 and it limited nuclear testing to underground sites only.[80] The treaty did succeed in

[78] William Broad, David Sanger and Raymond Bonner, "A Tale of Nuclear Proliferation: How Pakistani Built His Network," *New York Times*, 12 February 2004.

[79] Keith A. Hanson, *The Comprehensive Nuclear Test Ban Treaty: An Insider's Perspective* (Stanford: Stanford Law and Politics/Stanford University Press, 2006), 6.

[80] Ian Bellemy, *Curbing the Spread of Nuclear Weapons* (Manchester: Manchester University Press, 2005), 133-134.

limiting the environmental and health hazards of nuclear tests, but did little to abate the nuclear weapons programs of the NWS as their tests simply moved underground.[81]

Nuclear testing was further restricted when the yield of nuclear tests was limited to 150 kilotons (kt) under the Threshold Test Ban Treaty (TTBT).[82] While the treaty was signed by the US and the Soviet Union in 1974, it was not ratified until 1990 (after an agreement on peaceful nuclear explosions and verification procedures).[83]

The drive towards a complete ban on testing nuclear weapons continued until 1996 when heavy international pressure on the NWS led to the negotiation and signature of the Comprehensive Test Ban Treaty (CTBT). While the treaty was signed by all of the key countries, it has never been ratified and does not look likely to be put in force.[84] The failure of the CTBT was a blow to the NPT and the larger NNPR as it would have been a step towards the eventual disarmament of the NWS. Without this step, the sincerity of the NWS and the legitimacy of the NPT will continue to be questioned by the NNWS.

The international community, in particular the US, also realized that the NNPR would need tighter controls over the transfer of nuclear technology.[85] This understanding led to the London Nuclear Suppliers Group Guidelines in 1977, which provided a framework under which peaceful nuclear technology and materials could be transferred

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[81] Hanson, *The Comprehensive Nuclear Test Ban Treaty…*, 6.

[82] Bellemy, *Curbing the Spread of Nuclear Weapons*, 167.

[83] Hanson, *The Comprehensive Nuclear Test Ban Treaty…*, 7.

[84] Bellemy, *Curbing the Spread of Nuclear Weapons*, 3, 155.

[85] Dunn, *Controlling the Bomb*, 33.

to a state in accordance with the NPT.[86] The suppliers agreed to exercise restraint in their transfers, and to require recipient nations to agree to safeguards to ensure the integrity of the transfer, whether or not the recipient was a signatory to the NPT.[87] Furthermore, recipients would need to pledge not to use the transfer to pursue nuclear weapons or to retransfer to a third party without the consent of the supplier. Perhaps most importantly, the suppliers agreed to share information about who was transferring what to whom. In this way, they could discover a state that was attempting to assemble the parts of a weapons program from various suppliers.[88] This was the first coordinated attempt at supply-side controls to the proliferation problem. It formed a foundation for further work but has since been found lacking after countries such as Iraq and North Korea managed to acquire technologies to develop weapons programs in spite of these controls. This speaks to the difficulties presented by dual-use technology and the willingness of some companies to engage in unscrupulous transfers.[89]

The establishment of Nuclear Weapon Free Zones (NWFZ) within the international community has been a successful aspect of the NNPR. As permitted by Article VII of the NPT, a NWFZ is a regional agreement which prohibits the development, acquisition or pursuit of nuclear weapons within a defined geographic

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[86] M.J Moher, "The Policies of Supplier Nations," in *Nuclear Non-Proliferation and Global Security*, edited by D.B. Dewitt (Sydney: CroomHelm Ltd, 1987), 90-91.

[87] Sumit Ganguly, "The Indian and Pakistani Nuclear Programmes…," 275.

[88] Dunn, *Controlling the Bomb*, 33.

[89] Thayer, "The Causes of Nuclear Proliferation…," 100.

area.[90] In addition, the signatories typically agree to safeguards and inspections. While the individual treaties may differ slightly in detail, they all share the same goal: to enhance regional peace and security by removing the presence and possibility of nuclear weapons.[91] There are currently four principal NWFZs in force and two awaiting ratification.[92] The first NWFZ was agreed to in 1959 and demilitarized the Antarctic.[93] Next, a NWFZ covering Latin America and the Caribbean entered into force in 1968.[94] The South Pacific Nuclear Free Zone (NFZ) came into effect in 1986 and is unique in that it prohibits peaceful nuclear use in addition to nuclear weapons.[95] The Southwest Asia NWFZ entered into force in 1997. The African NWFZ was signed in 1996 but has not yet been ratified by the minimum twenty-eight countries to come into force.[96] Finally, the Central Asian NWFZ was signed in 2006 and has not yet been ratified.[97] A NWFZ creates an important resistance to proliferation as it provides assurance that a nation's neighbours are not pursuing nuclear weapons thereby reducing the motivation to proliferate. The trend to implement NWFZs in support of the NNPR is likely to continue

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[90] Bellemy, *Curbing the Spread of Nuclear Weapons*, 104.

[91] Tariq Rauf, *Nuclear-Weapon-Free Zones (NWFZs): Questions & Answers, Negative Security Assurances, Charts and Matrices* (Monterey: International Organizations and Nonproliferation Project Center for Nonproliferation Studies, 1997), 3.

[92] *Ibid*., 3-5.

[93] Adam Shapiro, "Nuclear-Weapon-Free Zones: The Solution to Nuclear Disarmament?" In *The UN Chronicle,*[journal on-line]; available from http://www.un.org/Pubs/chronicle/2004/webArticles/081204_nwfz.asp; Internet; accessed 14 February 08.

[94] Rauf, *Nuclear-Weapon-Free Zones (NWFZs): Questions & Answers...,* 4.

[95] *Ibid*., 4.

[96] Shapiro, "Nuclear-Weapon-Free Zones: The Solution to Nuclear Disarmament?"

[97] International Atomic Energy Agency, *Central Asia: Towards a Nuclear-Free World*; available from http://www.iaea.org/NewsCenter/News/2006/central_asia.html; accessed 12 February 2008.

with proposals in the UN General Assembly for the establishment of zones in the Middle East, South Asia, Northeast Asia, and Central Europe.[98] This trend can only be seen as a promising step towards a more universal disarmament and an example of cooperation and trust among NNWS in support of the NNPR.

A narrower pillar of the NNPR is the use of a bilateral agreement to reduce or restrict the number and types of weapons, or to reduce the insecurity of two rivals by making a mutually beneficial pledge. The most well known bilateral agreements are between the US and the former Soviet Union, now Russia. The Strategic Arms Limitation Treaty (SALT I) was signed in 1972 and was followed by SALT II in 1979.[99] SALT I limited the number of strategic missiles each nation could field and SALT II expanded this to include strategic bombers. The Strategic Arms Reduction Treaty (START) was signed in 1987 (START I) and START II was ratified in 2000. These treaties ensured further reductions in the nuclear inventory of the two superpowers and prohibited multiple warheads on an Intercontinental Ballistic Missile (ICBM). One could argue that these reductions were largely symbolic as each side was clearly not reducing its arsenal below what was necessary for a strong deterrent and second strike capability, but the reductions were nonetheless real and an important step towards building good will with the NNWS. Without these treaties, the two chief NWS would have had difficulty showing that they were pursuing, however symbolically, nuclear disarmament in accordance with the NPT.

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[98] Shapiro, "Nuclear-Weapon-Free Zones: The Solution to Nuclear Disarmament?"

[99] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 144-145.

Another supporting element within the NNPR is the unilateral declaration. These statements have taken many forms but all have been in support of the international norm against nuclear weapons development or use. For example, in 1992, the US Congress declared a national moratorium on nuclear testing except for safety purposes.[100] In fact, of the five original NWS, only China is not presently abiding by a self declared moratorium on testing.[101]

A second form of the unilateral declaration is a "no first use" policy. This means that a state or alliance would pledge not to be the first to use a nuclear weapon in a conflict. Typically though, this pledge has been proffered by the stronger power in a rivalry. For example, India has declared a no first use policy against Pakistan, but Pakistan has refused to respond in kind, fearing the overwhelming conventional power of India.[102] Similarly, the US and NATO planned to respond to a Soviet conventional invasion into Germany with nuclear weapons as they were unable to repel the anticipated force conventionally.[103] While no first use declarations seem to have a stabilizing effect on the surface, they will rarely overcome the motivation of a weaker state to maintain a deterrent capability.

Perhaps the most alarming threat to proliferation today is the existence of unsecured nuclear material and equipment following the collapse of the Soviet Union in

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[100] Hanson, *The Comprehensive Nuclear Test Ban Treaty…,* 8.

[101] *Ibid.*, 8.

[102] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 211.

[103] *Ibid.*, 211-212.

1991.[104] This is compounded by the thousands of unemployed technicians and scientists in the Former Soviet Union (FSU) who possess the knowledge needed to contribute to the development of a nuclear weapon.[105] UN Secretary General Kofi Annan affirmed in 2005, "We live in a world of excess hazardous materials and abundant technological know-how, in which some terrorists clearly state their intention to inflict catastrophic casualties."[106] President George Bush declared this sudden availability of the tools to pursue a nuclear weapons program, combined with the rise of terrorism, the greatest security threat to the US.[107] Canada similarly "placed the highest priority on countering international terrorism, [and] preventing the proliferation of weapons of mass destruction" in its National Security Policy of 2004.[108] While terrorists have deservedly garnered much of the attention, any state with the motive to proliferate would also see the FSU as a source of the building blocks to a nuclear weapons program.

This legacy of the Cold War was initially addressed in 1991 when the United States and Russia agreed to a multilateral initiative to disassemble excess Russian nuclear warheads, to secure "loose" nuclear materials throughout the FSU, and to redirect former

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[104] Graham, "Is Nuclear Terrorism a Threat…," 715.

[105] Brian D. Finlay, "Russian Roulette: Canada's Role in the Race to Secure Loose Nuclear, Biological, and Chemical Weapons," *International Journal* 61, no. 2 (Spring 2006): 411-412.

[106] Department of Foreign Affairs and International Trade, *Global Partnership Program: Making a Difference* (Ottawa: Global Partnership Program, 2006), 2.

[107] Michèle A. Flournoy, "The G-8 Global Partnership: Successes and Shortcomings," *Testimony Before the Subcommittee on International Terrorism and Nonproliferation United States House of Representatives 30 June 2005* (Washington: Center for Strategic and International Studies, 2005), 5. Available from http://www.csis.org/media/csis/congress/ts050630flournoy.pdf; Internet; accessed 11 December 2007.

[108] Privy Council Office, *Securing an Open Society: Canada's National Security Policy* (Ottawa: Canada Communications Group, 2004), 48.

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nuclear weapons experts to alternate employment.[109] This initiative was known as the Nunn-Lugar Cooperative Threat Reduction Program and was an important first step in addressing a grave security risk in the FSU.[110]

The initial program was followed up after the "9/11" terror attacks by the more ambitious Global Partnership. The Global Partnership was launched at the G8 Kananaskis Summit in June 2002 and pledged up to US$20 billion over ten years to address this risk in a more urgent manner.[111] Since that time there have been successes but also evident strains in the partnership. The multilateral program has succeeded in improving the physical security of stored material, ensured the closure of Russia's last reactor producing weapons grade plutonium, and assisted Russia in the disposal of some of its excess weapons grade material.[112] The program has, however, run into difficulties, including the Russian preference to dispose of nuclear submarines, which conflicts with the partnership's preference to target more urgent threats, such as securing all weapons usable fissionable material.[113] The Global Partnership has largely met its goal of US$20 billion in contributions[114] but this will not be sufficient to complete the work. It may also become more difficult moving forward because, as Russia has looked to re-establish its

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[109] Finlay, "Russian Roulette…," 416.

[110] *Ibid.*, 417.

[111] Department of Foreign Affairs and International Trade, *Global Partnership Program: Making a Difference*, 3.

[112] *Ibid.*, 4.

[113] Flournoy, "The G-8 Global Partnership: Successes and Shortcomings," 5.

[114] Department of Foreign Affairs and International Trade, *Global Partnership Program: Making a Difference*, 3.

place in the world order, it has become more sensitive to the international presence in its nuclear facilities. Nevertheless, the Global Partnership should be a priority within the NNPR since it promises to restrict the availability of material and knowledge for the nuclear weapons program of a potential proliferator.

While the Global Partnership has attempted to choke a supply of nuclear materials off at the source, it is only part of the solution. The gravity of the security threat posed by the proliferation of weapons of mass destruction (WMD) to terrorist organizations or rogue states has required that the international community move to interdict the flow of WMD and the associated materials.[115] The US established the Proliferation Security Initiative (PSI) in 2003 in order to build on existing non-proliferation efforts by sharing information and physical interdiction.[116] The PSI is currently supported by over eighty countries and the United Nations' High Level Panel on Threats, Challenges and Change has encouraged all states to adhere to it.[117]

The most notable success of the PSI was the seizing of the ship, *BBC China,* by US and British forces in the Mediterranean Sea in October 2003.[118] The ship was carrying centrifuge parts to Libya which could have been used in the production of weapons grade fissionable material.[119] Two months later, Libya renounced its

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[115] Department of National Defence, *Backgrounder: The Proliferation Security Initiative May 19, 2006* (Ottawa: Dept. of National Defence, 2006); available from http://www.mdn.ca/site/Newsroom/view_news_e.asp?id=1329; Internet; accessed 22 January 08.

[116] *Ibid.*

[117] United Nations, *A More Secure World: Our Shared Responsibility* (New York: UN, 2004); available from http://www.un.org/secureworld/; Internet; accessed 16 February 08.

[118] Mark Valencia, *The Proliferation Security Initiative: Making Waves in Asia*, Adelphi Paper 376 (New York: International Institute for Strategic Studies, Routledge, 2005), 38.

[119] *Ibid.*, 38.

clandestine nuclear weapons program and agreed to sign the NPT.[120] This shocking reversal could be largely attributed to the successful interdiction of its supplies and the public proof of its clandestine program. By making the acquisition of the necessary materials and technology more difficult, the PSI plays an important role in supply-side control of proliferation within the NNPR.

The most recent addition to the NNPR was UN Security Council Resolution (SCR) 1540, unanimously adopted in April 2004.[121] This resolution mandates that "all States shall refrain from providing any form of support to non-state actors that attempt to develop, acquire, manufacture, possess, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery."[122] Furthermore, all states shall "establish domestic controls to prevent the proliferation of nuclear, chemical, or biological weapons."[123] The resolution clearly articulates the international norm against proliferation and makes support of the norm a requirement. It only speaks to the proliferation to non-state actors, however, and therefore limits itself. The UN Security Council should extend resolution 1540 to include all transfers and support, regardless of the status of the recipient.[124]

In summary, the NNPR is a complex arrangement working towards the goal of stopping further proliferation, and eventually reversing it. To achieve this aim, supply-

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[120] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 227.

[121] United Nations, *UNSCR 1540 (2004)* (New York: UN, 2004); available from http://disarmament2un.org/committee1540/index.html; Internet; accessed 22 January 2008.

[122] *Ibid.*

[123] *Ibid.*

[124] Smith, *Deterring America…*, 149.

side controls such as the Nuclear Suppliers Group, the Global Partnership and PSI have been established. The IAEA has been established to promote peaceful uses of nuclear power while enforcing safeguards to verify that the peaceful supply is not diverted into a weapons program. Test ban treaties have been signed to limit the further development of nuclear arsenals within the NWS. Bilateral agreements have allowed the US and Russia to take a few, tentative steps towards eventual disarmament. Unilateral declarations, UN SCR 1540 and the NPT itself have all contributed to the entrenchment of an international norm against proliferation and use of nuclear weapons.

Nevertheless, the NNPR still contains several serious weaknesses. The demand-side, or motivation, of potential proliferators has not been adequately addressed. The supply-side controls have not been adequately enabled and executed. The current NWS have not taken sufficient strides towards disarmament. Finally, the hypocrisy of the NPT in refusing to engage three of the eight nuclear powers in the world leaves far too much to chance.

FAILURES, SUCCESSES AND CHALLENGES

The previous chapters have examined the development of the NNPR, its components and its theories. This background will serve as a framework to evaluate how the components of the NNPR have interacted with several states pursuing proliferation. The following experiences have been chosen as they are matters of history from which deductions can be drawn. These deductions will then be applied to the two ongoing cases

of North Korea and Iran to both analyze the past strategies and make recommendations for the future of the non-proliferation efforts directed at these states.

North Korea and Iran have created international concern because of their hard line regimes and resistance to non-proliferation efforts. These two states represent a tipping point for the NNPR as they could trigger regional arms races and instability if effective strategies to arrest their proliferation are not instituted. Recommendations for international efforts will be limited to what is possible within the regime as it currently exists while further discussion of the possible improvements to the NNPR will be reserved for the final chapter.

The NNPR has failed to prevent the emergence of three nuclear powers outside of the NPT: Israel, India, and Pakistan.[125] In addition, Iraq demonstrated that a state in the 1980's could acquire the elements of a nuclear program in spite of being a signatory of the NPT and subjected to safeguards and inspections. These failures will be evaluated first before moving on to more positive cases.

Israel is widely acknowledged to have become the sixth nuclear power in the world and the first outside of the NPT when it developed a nuclear bomb in approximately 1967.[126] The date is approximate as Israel has never declared itself a nuclear power nor has it tested its weapons in full view of the world. Moreover, Israel has cloaked itself in statements that it would not be the first nation to introduce nuclear

[125] North Korea is not included in this list since they are not believed to possess more than an emerging weapons capability after successfully detonating a small nuclear device in October 2006. United States, Office of the Director of National Intelligence, *Annual Threat Assessment of the Director of National Intelligence*…, 14.

[126] Joseph Cirincione, Jon B. Wolsthal, and Miriam Rajkumar, *Deadly Arsenals: Nuclear, Biological, and Chemical Threats* (Washington: Carnegie Endowment for International Peace, 2005), 259.

weapons into the Middle East while also refusing to sign the NPT.[127] This determined ambiguity, or opaque status, has had two results. The lack of confirmation of a nuclear capability has reduced the diplomatic pressure Israel has faced over the years regarding its status and put the state in a position of plausible deniability. On the other hand, deterrence can only work if your adversary believes you possess the capability, and Israel has encouraged that belief amongst its neighbours without providing concrete proof.

The development of Israel's arsenal preceded many of the more modern elements of the NNPR, such as the NPT, the NSG, and proliferation resistant reactors. France directly assisted Israel by selling it the Dimona plutonium producing reactor, plutonium extraction technology, and expertise on the design and construction of nuclear weapons.[128] Since their actions pre-date the NPT, the support was legal and subject simply to the national interests of France at the time.

Israel's pursuit of nuclear weapons was motivated by the need for a deterrent against attack. Israel has led an isolated existence in a region dominated by quantitatively superior hostile Arab forces.[129] When questioned on the subject of Israel's nuclear capability in 2004, American Secretary of Defence Donald Rumsfeld responded,

> It's a democracy and it exists in a neighbourhood that in many – over a period of time has opined that they'd like it not to be there, and they'd like it put in the sea. And Israel has opined that they it would prefer not to be put into the sea, and as a result, over a period of decades, it has arranged itself so it hasn't been put in the sea.[130]

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[127] Zaki Shalom, *Israel's Nuclear Option: Behind the Scenes Diplomacy Between Dimona and Washington* (Portland: Sussex Academic Press, 2005), 152.

[128] Cirincione, *Deadly Arsenals…*, 264.

[129] Reiss, *Without the Bomb: The Politics of Nuclear Proliferation*, 138.

[130] Michael Karpin, *The Bomb in the Basement: How Israel Went Nuclear and What That Means for the World* (New York: Simon & Schuster, 2006), 2.

Thus, while ambiguous, Israel's status as a nuclear power is widely understood as a response to a perceived threat to its survival.

Three lessons are clear from this case. First, the non-proliferation policies of a NWS, such as the US, can be overridden by other political necessities such as maintaining support for an ally in a strategically vital region. Second, it does matter who is proliferating and a nuclear double standard does exist. If an ally of the US proliferates, it is much more likely to be tolerated than if a rogue nation such as Iraq or North Korea does the same.[131] Third, the motivation to proliferate can be so strong that little can be done by the international community to prevent it. In the words of Israeli Prime minister Begin in 1981, "tell your friends, tell anybody you will meet, we shall defend our people with all the means at our disposal."[132] Israel exists under the shadow of the Holocaust and it is willing to suffer any diplomatic costs to ensure the survival of the state and its people. Thus, proliferation may have to be endured if the world is faced with a strongly motivated state with the technological and financial means to develop a nuclear bomb.

It then follows that there should be a subsequent effort to re-engage emerging nuclear nations to bring them back into the fold of the NNPR to prevent further proliferation. This is particularly relevant if the state in question is stable and presents no

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[131] Miller, Marvin, and Lawrence Scheinman, "Israel and a Nuclear Weapons Free Zone in the Middle East," in *Nuclear Proliferation and International Security*, ed. Morten Bremer Maerli and Sverre Lodgaard (New York: Routledge, 2007), 139.

[132] Meron Medzini, "Interview With Prime Minister Begin on C.B.S. Television, 14 June 1981," *Israel's Foreign Relations: Selected Documents* (Tel Aviv: Ministry of Foreign Affairs, 1981), v. 7 (1981-82) Item 31; available from http://www.mfa.gov.il/mfa/foreign%20relations/israels%20foreign%20relations%20since%201947/1981-1982/; Internet; accessed 12 December 2007.

aggressive or immediate threat to its neighbours, or if the geopolitical situation prevents a strong reaction by the international community.

Some or all members of the international community may opt not to vigorously oppose proliferation to a particular state for political reasons. Diverging national interests can result in an inconsistent support for the NNPR, limiting its effectiveness. The international community should emphasize the need for universal support in non-proliferation efforts in spite of conflicting national interests. Universality may be difficult to obtain, but it must nevertheless be the goal of an effective NNPR.

India followed Israel by achieving nuclear status in 1974 with its "peaceful" nuclear explosion. The motivations of India to proliferate have been discussed and remain true to this day, with the continuing development of China into a neighbouring superpower.[133] Initially, India assumed a semi-opaque status with the claim in 1974 that it had tested a nuclear device but was not pursuing nuclear weapons.[134] This careful distinction appeared to have the same benefits as Israel's attempt at complete opaqueness in that India did not face a severe international backlash while its technological prowess was demonstrated to its neighbours and the international community. India maintained this ambiguous status until its May 1998 nuclear weapons tests.

India's pathway to nuclear weapons was based on the exploitation of dual-use technology provided by the US and Canada. India's proliferation resulted in the creation of the NSG which would thereafter restrict the sale of nuclear technology to states which

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[133] Cirincione, *Deadly Arsenals…*, 222.

[134] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 176.

had not signed the NPT or agreed to full inspections and safeguards. Thus, its conduct served to further develop supply-side controls.

The existing NWS have resisted calls to allow India to join the NPT but have a vested interest in including India in any non-proliferation initiative.[135] The NWS want to make an example out of India, and yet realize that India must not be left to its own devices as a renegade nation and potential source of further proliferation. This conflict has led to the relatively muted international response to India's tests and the subsequent creep to normal relations.

India has also attempted to normalize relations with the international community. In May 2000, after years of criticizing the NPT as a protector of the status quo and a symbol of nuclear apartheid, India's Foreign Minister Jaswant Singh explained that his country would support the provisions of the NPT in spite of not being recognized by it.[136] Furthermore, India has endorsed the UNSCR 1540 in support of the NNPR.[137] These attempts at becoming a responsible nuclear power have had a moderating effect on the international opinion.

The diplomatic response to India's proliferation was further downplayed because of a shift in US policy which sought to build a strategic partnership with India in South Asia. India's position as a potential US ally against terrorism and a counterbalance to China in the region proved too tempting and resulted in the lifting of most US sanctions

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[135] Gilinsky, "Nuclear Proliferation after the Indian and Pakistani Tests," 6.

[136] C. Raja Mohan, "India's Nuclear Exceptionalism," in *Nuclear Proliferation and International Security*, ed. Morten Bremer Maerli and Sverre Lodgaard (New York: Routledge, 2007), 160.

[137] *Ibid.*, 163.

after 9/11.[138] As with Israel, India's status as a NWS has been tolerated since its motivation has not been interpreted as aggressive or as a direct threat to stability. This is another example of the hypocrisy, and realism, inherent in the NNPR: grand political strategy can override the non-proliferation policy.

The lessons of India's transition from a NNWS to an opaque nuclear power and finally to an outcast nuclear power are relevant to future cases of proliferation. Once again the motivation of a state resulted in proliferation despite the hurdles presented by the NNPR. While proliferation cannot be encouraged, if all efforts to resist it have been circumvented, the international community must be prepared to deal with it. The international response to India was telling in that it recognized that India was not a rogue nation and that other political considerations could overpower the NNPR. India's behaviour in the intervening years has supported this assessment with the relative lack of open conflict with Pakistan since 1998 and India's open support of the ideals of the NNPR insofar as it does not require India to sign the NPT as a NNWS. This process has served as a draft model of how a state can be reengaged by the NNPR after proliferation, although much work remains to be done.

The Pakistani nuclear program was an almost inevitable result of a nuclear India. Pakistan's need for a deterrent when faced with a conventionally superior, nuclear armed and adversarial India would have been understandably acute. Lt General Khalid Kidwai, head of Pakistan's Strategic Planning Division, claimed that their nuclear weapons were

[138] Cirincione, *Deadly Arsenals…*, 224.

"aimed solely at India."[139] Pakistan also assumed an ambiguous status to avoid isolation and diplomatic pressure until it tested its nuclear weapons just two weeks after India in 1998.[140] Even then, Pakistan argued that its tests were only a necessary response to India.[141]

The US placed sanctions on Pakistan in 1979, as a result of Islamabad's nuclear program, but these were soon lifted when the US needed Pakistan's cooperation to fight the Soviet expansion into Afghanistan.[142] The US and the G8 again placed sanctions on Pakistan in 1998. These sanctions remained in place long after those against India had begun to be eliminated in 1999.[143] A military coup had occurred in Pakistan in 1999 resulting in the continuation of sanctions in the absence of a stable democratic state with which to deal. Sanctions were lifted only after 9/11 when it became clear that Pakistan was more valuable as an ally in the War on Terror than as a nuclear pariah. Once again, the NNPR had been trumped by a more pressing strategic condition.

Relations between India and Pakistan took a disturbing turn in 1999 when an armed conflict erupted over the disputed Kargil territory. While both states did engage in limited combat, the situation was de-escalated quickly under heavy international pressure.[144] The increased cost of a nuclear conflict appears to have restrained these

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[139] Gopalaswami Parthasarathy, "Nuclear Disarmament, Nuclear Proliferation and WMD Proliferation: An Indian Perspective," in *Arms Control After Iraq*, ed. Waheguru Pal Singh Sidhu and Ramesh Thakur (Hong Kong: United Nations University Press, 2006), 359.

[140] Cirincione, *Deadly Arsenals…*, 240.

[141] Talat Masood, "Pakistan as a Receptive Proliferator," in *Nuclear Proliferation and International Security*, ed. Morten Bremer Maerli and Sverre Lodgaard (New York: Routledge, 2007), 175.

[142] Cirincione, *Deadly Arsenals…*, 244.

[143] Talat Masood, "Pakistan as a Receptive Proliferator," 176.

[144] Cirincione, *Deadly Arsenals…*, 242.

traditional rivals as their relations have since been peaceful. A further impetus to cooperation has been the importance of the US led War on Terror. Both India and Pakistan value a growing relationship with the US and find themselves in the position where peaceful collaboration is mutually beneficial.

Pakistan's pathway to a nuclear weapon was a combination of overtly acquired dual-use technology as well as the development of a clandestine network of nuclear supply under the management of Dr A.Q. Kahn.[145] Kahn, the head of the Pakistani nuclear program, had been trained in Europe and developed a ring of suppliers of nuclear technology and information.[146] His work led not only to the Pakistani nuclear weapons, but he proved to be a willing supplier to anyone with financial means, including North Korea, Iran and Libya.[147]

A.Q. Kahn represents the worst risk of proliferation and the most important lesson to take away from the Pakistan saga. While Pakistan itself may not provide any direct threat to stability, the lack of control over its nuclear program led to further proliferation. Kahn enabled proliferation to anyone with the resources, whether a state or some other less predictable organization. Therefore, a nascent nuclear nation must be engaged at the earliest opportunity to counter its concerns and motivations in order to prevent the proliferation in the first place. This must be done in addition to strengthening supply-side controls. If this fails, the proliferator should be engaged and reintegrated into the NNPR

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[145] Gordon Corera, *Shopping for Bombs: Nuclear Proliferation, Global Insecurity and the Rise and Fall of the A.Q. Khan Network* (New York: Oxford University Press, 2006), xii.

[146] Peter Brookes, *A Devil's Triangle: Terrorism, Weapons of Mass Destruction, and Rogue States* (Lanham: Rowman & Littlefield, 2005), 123.

[147] Corera, *Shopping for Bombs*…, xiv.

as a whole, if not the NPT directly, to ensure the reliable command and control of its weapons, thereby retaining the stability of the international system.

The sanctions placed against Pakistan were ineffective largely because they were inconsistent. The isolated, partial, or incoherent application of sanctions demonstrates a lack of will and cohesion by the international community which can only embolden potential proliferators and lessen the likelihood of a successful NNPR.

Iraq's nuclear program and the international response to it can be seen from many perspectives. On one hand, the end result was successful in that a despotic, aggressive leader was denied the nuclear bomb. On the other, three efforts at forceful counter-proliferation were taken in addition to the more conventional use of sanctions, inspections, supply-side controls and diplomatic pressure. Furthermore, Iraq's ability develop its nuclear program by 1991, in spite of it being a signatory to the NPT, highlighted the inability of the NNPR to effectively control proliferation with the methods available at the time.[148]

Iraq's nuclear program began in the 1960's with the acquisition of reactors from the Soviet Union and France as well as technological support from Italy.[149] Iraq followed the well worn path of relying on multiple suppliers of dual-use technology to provide the building blocks of a nuclear weapon. Iraq's claims of peaceful intentions were met with suspicion, which led to the Israeli destruction of an Iraqi nuclear reactor at Osiraq in June

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[148] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,*176.

[149] Timothy L.H. McCormack, *Self-Defense in International Law: The Israeli Raid on the Iraqi Nuclear Reactor* (New York: St. Martin's Press, 1996), 46-54.

1981.[150] This particular attack, while unilateral, does emphasize that all proliferators are not equal. Although the international community diplomatically condemned the strike, substantive sanctions against Israel were not forthcoming, implying a level of international approval. Moreover, while India's explosion and Pakistan's progress had been met with mild diplomatic protest, and limited sanctions, Iraq's preparations were met with a preventive strike.

Iraq continued its program after the setback in 1981 and relied on acquired dual-use technology to build up the means to construct a nuclear bomb. These means were once again supplied within the construct of the NPT and subject to IAEA inspections.[151] However, as noted in the testimony of former IAEA inspector Mr. Roger Richtor, the IAEA had little ability to discover a clandestine weapons program during its scheduled inspections.[152] Due to the limitations of the IAEA inspections and safeguards protocols, Iraq advanced its nuclear weapons program without the knowledge of the international community. Iraq had several agents employed within the IAEA, including a member of the board and an inspector that supplied information on the IAEA's methods, limitations, and plans.[153] This was compounded by the IAEA's ability to inspect only declared sites and not to aggressively search for a clandestine program.

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[150] N. J. Kaplan, "Attack on Osiraq: Delimitation of Self-Defense Under International Law," *New York Journal of International and Comparative Law* 4, (1982): 155.

[151] Al J. Venter, *Allah's Bomb: The Islamic Quest for Nuclear Weapons* (Guilford: The Lyons Press, 2006), 82.

[152] Nydell, "Tensions Between International Law and Strategic Security…," 477.

[153] Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton: Princeton University Press, 2007), 149-151.

Following the Gulf War in 1991, a UN Special Commission (UNSCOM) on Iraq was tasked to implement the requirements of the cease fire, including the declaration, inspection and elimination of Iraq's WMD in cooperation with the IAEA.[154] UNSCOM's mission turned out to be an example of the difficulties involved in imposing the NNPR on a non-compliant state.[155] UNSCOM's efforts were continually hampered by a state-sponsored plan of concealment, denial, and obstruction.[156] To further complicate matters, united and firm support by the UN and the UNSC was not provided to force compliance of the proliferators and to enable UNSCOM to be fully effective.

In spite of the difficulties, UNSCOM discovered an alarmingly large and advanced clandestine Iraqi nuclear weapons program operating out of sight of the IAEA and the international community prior to 1991.[157] Through considerable efforts, the IAEA and UNSCOM declared the nuclear file closed due to the successful destruction of the Iraqi nuclear program and the lack of any ability to rapidly reconstitute it.[158] This declaration was later verified by the CIA's Iraq Survey Group's activities in Iraq following the American invasion in 2003.[159]

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[154] Richard Butler, "Inspecting Iraq," in *Repairing the Regime: Preventing the Spread of Weapons of Mass Destruction,* ed. Joseph Cirincione (New York: Routledge, 2000), 175.

[155] Graham S. Pearson, *The Search For Iraq's Weapons of Mass Destruction: Inspection, Verification and Non-Proliferation* (New York: Palgrave Macmillan, 2005): 91-95.

[156] Trevor Findlay, "Lessons of UNSCOM and UNMOVIC for WMD Non-Proliferation, Arms Control and Disarmament," in *Arms Control After Iraq*, ed. Waheguru Pal Singh Sidhu and Ramesh Thakur (Hong Kong: United Nations University Press, 2006), 142.

[157] Venter, *Allah's Bomb*…, 82.

[158] Findlay, "Lessons of UNSCOM and UNMOVIC for WMD Non-Proliferation, Arms Control and Disarmament," 150.

[159] Solingen, *Nuclear Logics*…, 153-154.

The Iraq saga contains a few vital lessons. The IAEA inspections regime in place in the 1980's was wholly incapable of discovering a clandestine nuclear program. The effectiveness of the more robust capabilities of UNSCOM and the IAEA after 1991, however, is an encouraging contrast. Thus, an inspection and safeguards regime can be successful when given access to intelligence and the ability to search where it wants, without notice. These fundamentals were subsequently captured in the IAEA Additional Protocol of 1995 and strengthened NSG guidelines.[160]

Second, the inspections and monitoring could not have been successful without the additional support of military threats, economic sanctions on militarily significant items, and unified diplomatic pressure.[161] The military threat gave weight to the diplomatic pressure and coerced the limited compliance. Effective sanctions against militarily significant items denied the ability to restart a clandestine program. The diplomatic pressure can only be sustained by the support of a united UNSC. In the case of UNSCOM, support was divided, allowing the Iraqis to provide more robust resistance than otherwise possible.[162] This comprehensive approach is best able to effectively target the program of a potential proliferator.

Finally, the international community must be prepared to use judgment in applying counter-proliferation tactics. The motives and governments of Iraq and India were substantially different which led to vastly different international responses to the

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[160] Astrid Forland, "Preventive War as an Alternative to Treaty Based Nuclear Non-Proliferation," in *Nuclear Proliferation and International Security*, ed. Morten Bremer Maerli and Sverre Lodgaard (New York: Routledge, 2007), 39.

[161] Findlay, "Lessons of UNSCOM and UNMOVIC for WMD Non-Proliferation, Arms Control and Disarmament," 150.

[162] Pearson, *The Search For Iraq's Weapons of Mass Destruction*, 241.

proliferation efforts. This apparent hypocrisy in the NNPR must be accepted as a reflection of reality that should be tolerated in the interests of global stability and security.

The preceding four cases have all strained the NNPR, but not without providing valuable impetus for the evolution of the regime. The regime will always be constrained by what is politically possible, not by what is technically feasible, and therefore expectations must be tempered. The more stringent political limitations will be balanced by the real desire to counter proliferation by the majority of the international community.

The following cases can be interpreted as successes in the history of the NNPR, but they also provide valuable lessons to be heeded if future challenges are to be met. South Africa and the instant nuclear states of the former Soviet Union willingly gave up their nuclear arsenals and joined the NPT as NNWS. Argentina, Brazil, and Libya all pursued nuclear weapons but gave up their programs prior to achieving the capability.

South Africa is the only known state to have developed its own nuclear weapon capability and then to have unilaterally dismantled it. South Africa obtained the expertise and technology for its weapons program through the assistance of the US and France in the development of a nuclear power industry.[163] Once again the eagerness of the NWS to provide nuclear expertise and technology in the 1950's and 1960's, with few effective safeguards in place, created the foundation for future proliferation.

South Africa perceived an increasing regional threat from Cuban and Soviet forces in Angola in the mid 1970's, faced rising tensions with neighbouring states, and

[163] Helen E. Purkitt, and Stephen F. Burgess, *South Africa's Weapons of Mass Destruction* (Indianapolis: Indiana University Press, 2005), 17.

then proceeded to covertly build seven nuclear bombs.[164] South Africa noted that India faced little more than diplomatic pressure following its nuclear test in 1974 and this encouraged the South African program.[165] However, the South African weapons were never tested, largely due to intense diplomatic pressure applied by the US and the Soviet Union when the test site was discovered in 1977.[166] This resulted in the opaque nature of South Africa's nuclear status until it publicly acknowledged its program 1993.[167]

The decision by South Africa to dismantle its weapons program was influenced by several factors. Most importantly, the regional security threat decreased with the withdrawal of Cuban and Soviet troops from the region.[168] Spending concerns, increased international diplomatic pressure and internal political upheaval as South Africa moved closer to the abolishment of Apartheid all contributed to the F.W. de Klerk government's decision to terminate the nuclear program in February 1990.[169] Subsequently, South Africa has become a leading proponent of the NNPR. It has signed and ratified the NPT and CTBT, as well as joined the NSG in 1995.[170]

South Africa shows that if the motivation to possess nuclear weapons can be addressed it is possible to prevent a state from acquiring a nuclear weapon, or even cause

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[164] Thayer, "The Causes of Nuclear Proliferation…," 95.

[165] Roy E. Horton, *Out of South Africa: Pretoria's Nuclear Weapon's Experience*, INSS Occasional Paper 27 (Colorado Springs: Institute for National Security Studies, U.S. Air Force Academy, 1999), 6.

[166] Thomas, "The Renewed NPT…," 11.

[167] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 226.

[168] Horton, *Out of South Africa: Pretoria's Nuclear Weapon's Experience*, 16.

[169] Purkitt, *South Africa's Weapons of Mass Destruction*, 120.

[170] Cirincione, *Deadly Arsenals*…, 409.

a state to renounce its nuclear status. This has important implications for the NNPR in that it emphasizes supply-side controls must be augmented by demand-side controls. It is vital to understand the motivations of each potential proliferator in order to develop an appropriate prescription to prevent proliferation.

When the Soviet Union dissolved in 1991, four new nuclear states were created: Russia, Belarus, Ukraine, and Kazakhstan. Few observers held out hope that Russia would give up its nuclear weapons but diplomatic pressure began immediately to encourage the denuclearization of the other three states.[171] In an instant, three nuclear powers with thousands of weapons each were created, their arsenals exceeded only by the US and Russia.[172] The instant nuclear states had no indigenous history of command and control of the technology, potentially providing a source for further proliferation.

On 5 December 1994, the last of the three instant nuclear powers joined the NPT as a NNWS and gave up its inherited nuclear status.[173] This triumph was achieved by extensive negotiations supported by international diplomatic pressure, along with financial and technical assistance from the US and Russia.[174] This willingness to give up their newfound military might, albeit in exchange for economic incentives and security guarantees, is promising for the regime.[175] Where the security and financial concerns of

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[171] *Ibid*., 366.

[172] *Ibid*., 365.

[173] *Ibid*., 365.

[174] Carter, "Beyond the Counter Proliferation Initiative," 68.

[175] Stephen Blank, "Proliferation and Non-Proliferation in Ukraine: Implications for European and US Security," in *The Nuclear Non-Proliferation Regime*, ed. Raju G.C. Thomas (New York: St. Martin's Press, 1998), 159.

the states were considered and met, they proved ready to renounce their nuclear weapons and join the NNPR. This underscores that the proliferation calculus of a state can be affected by the use of incentives as well as by addressing the underlying motivations.

Argentina and Brazil together represent another success story within the NNPR. These two regional rivals had pursued nuclear weapons from the 1970's, spurred by a mutual distrust, strong military regimes and nationalism.[176] The nuclear technology was provided by Canada, Germany and the US for allegedly peaceful purposes but clandestine nuclear programs laboured concurrently in both countries until the late 1980's. In 1983 in Argentina and 1985 in Brazil, democratic governments replaced military rule and began to defuse their rivalry and mutual suspicion.[177]

The nuclear competition between these two rivals was at its peak after the Falklands War of 1982. The victory of the UK accompanied by rumours of nuclear threats made by it, the support given by the US to the UK instead of to its hemispheric partners, and the rapid military buildup by Argentina following its humiliating defeat all served to destabilize the region and provided the motivation to augment existing efforts to develop a nuclear weapon.[178]

This precarious situation was resolved by decisive and progressive leadership in both countries. Beginning in 1985, a confidence building agreement was signed between the two countries allowing for mutual inspection of their most sensitive facilities,

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[176] Doty and Flank, "Arms Control for New Nuclear Nations," 64.

[177] Cirincione, *Deadly Arsenals*…, 385, 395.

[178] Barletta, Michael, "Argentine and Brazilian Non-Proliferation: A Democratic Peace?" In *Twenty-first Century Weapons Proliferation*, ed. Henry Sokolski and Jame M. Ludes (London: Frank Cass Publishers, 2001), 150.

including clandestine uranium enrichment centres.[179] This successful initiative was enhanced in 1991 when the two states further integrated their nuclear industries, renounced peaceful nuclear explosions, and signed bilateral agreements assuring each other they would not develop nuclear weapons.[180] These same agreements committed the two countries to mutual inspections as well as verification by the IAEA.

The enlightened leadership in Brazil and Argentina delivered their countries from the brink of regional nuclearization to a collaborative bilateral relationship of verification and non-proliferation. This is an example of the international norm against proliferation taking hold and de-escalating a precarious situation. While the initiative taken by Brazil and Argentina is admirable, it is probably too optimistic to expect all regional rivals to reach the same destination without external assistance. The international community will need to be prepared to initiate and support the reversal of a budding regional arms race. The lesson to take away is that mutual suspicion and the resulting motivation to proliferate can be countered by a program of mutual verification and security guarantees. If the insecurity of a state can be addressed, the motivation to acquire a nuclear weapon can be reduced to the point where the costs of a nuclear weapon outweigh the benefits.

Libya had long been a proliferation risk as a result of its financial resources from oil revenues, hostility towards Israel and the West, and open declarations of nuclear ambition by its leader Muammar Khaddafi.[181] Khaddafi was motivated by aspirations of

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[179] Cirincione, *Deadly Arsenals*…, 385.

[180] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 226-227.

[181] Doty and Flank, "Arms Control for New Nuclear Nations," 71-72.

Libyan prestige and leadership within the Arab world as well as a desire to counter Israel's nuclear strength.[182] This troublesome history was brought to a dramatic close in December 2003 when Libya declared is nuclear weapons program, renounced it, and opened it for inspections and verification by the IAEA and other international bodies.[183]

Libya was limited by its technological backwardness restricting it to more direct purchases of nuclear capability.[184] Libya's open hostility to the West further limited its purchasing options to the Soviet Union, China, Pakistan and later A.Q. Kahn's clandestine nuclear network.[185] Libya was a signatory to the NPT and subjected to IAEA inspections, but engaged in a clandestine program from the late 1970's.[186] Despite repeated efforts at acquiring nuclear technology, Libya's inadequate technological ability resulted in a relatively fruitless nuclear program until its demise in 2003.[187]

Libya remained a target of US sanctions from 1975 and was placed on the US list of nations supporting international terrorism in 1979.[188] UN sanctions against Libya were enacted in 1992 and 1993 after Libya was implicated in a litany of terrorist attacks. The crushing nature of these economic sanctions and diplomatic isolation began to take effect so that by the mid 1990's Libya indicated it was willing to discuss its WMD and its part

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[182] Wyn Q. Bowen, *Libya and Nuclear Proliferation: Stepping Back from the Brink*, Adelphi Paper 380 (New York: International Institute for Strategic Studies, 2006), 22.

[183] Solingen, *Nuclear Logics*…, 214, 218.

[184] Doty and Flank, "Arms Control for New Nuclear Nations," 71-72.

[185] Venter, *Allah's Bomb*…, 35-41.

[186] Harald Muller, "The Exceptional End to the Extraordinary Libyan Nuclear Quest," in *Nuclear Proliferation and International Security*, ed. Morten Bremer Maerli and Sverre Lodgaard (New York: Routledge, 2007), 78.

[187] Solingen, *Nuclear Logics*…, 213-218.

[188] Muller, "The Exceptional End to the Extraordinary Libyan Nuclear Quest," 75.

in previous acts of terrorism in order to have the sanctions lifted.[189] In March 2003, after nearly a decade of sputtering negotiations, Libya renounced WMD, including its nuclear program, in return for the lifting of economic sanctions and improved relations with the international community.[190]

Libya renounced its nuclear program for several reasons. Given the lack of success, there was little to gain from the exercise while it put Libya's security at risk from a preventive attack. The risk would have been emphasized by the invasion of Iraq in 2003 as well as the interception of the *BBC China* in October 2003, carrying thousands of centrifuges to Libya.[191] Moreover, Libya had suffered enormously under the economic sanctions and had demonstrated a willingness to negotiate to loosen the stranglehold on its economy.

The Libyan saga emphasizes the continuing importance to the NNPR of robust supply-side control, in this case the PSI and the NSG. It also demonstrates that when broadly applied against an appropriate target, sanctions can have the desired effect over time. In this case, Libya was easily isolated and was largely dependent on a single source of income, thereby increasing its vulnerability.[192] Finally, in addition to applying pressure, the international community must be willing to negotiate with even the most hard-line rogue nations to achieve the aims of the NNPR.

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[189] *Ibid.*, 76-77.

[190] Cirincione, *Deadly Arsenals*…, 318-319.

[191] Valencia, *The Proliferation Security Initiative: Making Waves in Asia*, 38.

[192] Solingen, *Nuclear Logics*…, 222-223.

The lessons from the preceding analysis should be applied to the next two cases of ongoing challenges to the NNPR. North Korea and Iran each provide unique challenges but are similar in that a failure to prevent proliferation will likely have consequences to regional balances of power and stability. Both states, in possession of nuclear weapons, would create significant concern among their neighbours and could trigger a new round of proliferation.

North Korea has played a cat and mouse game of nuclear brinkmanship over the past twenty years which culminated with its first and only nuclear test in October 2006.[193] At the time, this test appeared to represent the complete failure of the NNPR and the addition of another nuclear power to the international community. This conclusion was somewhat premature, however, as negotiations continue to this day, with the goal of re-integrating North Korea into the NNPR as a NNWS.[194]

The North Korean nuclear program began in 1962 when Pyongyang acquired a Soviet research reactor. It added a second reactor in 1980, again with Soviet support. North Korea has also benefited from the notorious nuclear network of A.Q. Kahn.[195] The Soviet Union, a traditional supporter of the NNPR, pressured North Korea to sign the NPT which it did in 1985.[196] This initial success was tempered by the North Korean refusal to complete safeguards agreements with the IAEA unless the US removed its

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[193] United States, Office of the Director of National Intelligence, *Annual Threat Assessment of the Director of National Intelligence*…, 14.

[194] *Ibid.*, 15.

[195] Cirincione, *Deadly Arsenals*…, 282.

[196] Gordon G. Chang, *Nuclear Showdown: North Korea Takes on the World* (New York: Random House, 2006), 24.

nuclear weapons from South Korea.[197] North Korea then announced in 1990 that it would be required to defend itself with nuclear weapons if the Soviet Union recognized South Korea.[198] This marked the beginning of a disturbing trend, which continues to this day, where North Korea uses its nuclear status as a bargaining tool in its negotiations with the international community.

North Korea finally signed safeguard agreements with the IAEA in 1992, five years after the original deadline, and after South Korea had announced the removal of all tactical nuclear weapons from its territory.[199] IAEA inspections and US intelligence sources soon revealed North Korean non-compliance with the NPT and an undeclared nuclear weapons program.[200] North Korea responded by announcing on 12 March 1993 that it was withdrawing from the NPT.[201] Intense diplomatic pressure from the UN and bilateral talks with the US resulted in North Korea suspending its NPT withdrawal but not allowing full inspections to resume.[202] Further pressure from the IAEA to resume inspections resulted in North Korea banning the IAEA. The UN responded with the threat of economic sanctions. This escalation was halted only by a visit from former US President Jimmy Carter, who reached an understanding with the North Korean dictator,

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[197] Walter A. Dorn, and Andrew Fulton, "Securing Compliance with Disarmament Treaties: Carrots, Sticks, and the Case of DPRK," *Global Governance* 3 (1997), 21. Available from http://www.rmc.ca/academic/gradrech/dorn15_e.html; Internet; accessed 14 December 2007.

[198] *Ibid.*, 21.

[199] Chang, *Nuclear Showdown: North Korea Takes on the World*, 24-25.

[200] Peter Hayes, "North Korean Proliferation and the End of US Nuclear Hegemony," in *Nuclear Proliferation and International Security*, ed. Morten Bremer Maerli and Sverre Lodgaard (New York: Routledge, 2007), 121.

[201] Ron Huisken, *North Korea: Power Play or Buying Butter With Guns?* Strategic and Defence Studies Centre Working Paper 393 (Canberra: Strategic and Defence Studies Centre, 2004), 7.

[202] Dorn, "Securing Compliance with Disarmament Treaties…," 24.

Kim Il Sung.[203] This understanding led to the negotiation of the Agreed Framework in October 1994 which traded diplomatic, economic and military concessions to North Korea in return for its full compliance with the NPT.[204]

This solution, however promising, proved to be yet another false end. North Korea soon violated the NPT and its clandestine nuclear program continued.[205] In 2002 North Korea admitted that it was pursuing a uranium enrichment capacity, and in January 2003 it again expelled the IAEA, announced its withdrawal from the NPT, and cancelled the Agreed Framework.[206] Negotiations to resolve this situation began in troubling fashion in April 2003 when North Korea asserted that it had already developed nuclear weapons, implied the possible further transfer of nuclear weapons, and advised that any sanctions would be interpreted as an act of war.[207]

The negotiations continued with North Korean hints to the UK that it would renounce its nuclear weapons in return for security guarantees from the US. [208] The US was not receptive and asserted that it would not be blackmailed.[209] In response to North Korean threats to sell plutonium, the US announced the PSI to interdict potential transfers

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[203] Chang, *Nuclear Showdown: North Korea Takes on the World*, 27.

[204] Solingen, *Nuclear Logics*…, 123.

[205] Cirincione, *Deadly Arsenals*…, 282.

[206] Charles L. Pritchard, *Failed Diplomacy: The Tragic Story of How North Korea Got the Bomb* (Washington: Brookings Institution Press, 2007), 38-43. Smith, *Deterring America*…, 77-78.

[207] Glenn Kessler, "North Korea Says it has Nuclear Arms," *Washington Post*, 25 April 2003. Pritchard, *Failed Diplomacy: The Tragic Story of How North Korea Got the Bomb*, 65.

[208] Huisken, *North Korea: Power Play*…, 21.

[209] *Ibid.,* 22.

of WMD.[210] Negotiations extended through 2005 with disagreements over whether North Korea would dismantle its weapons program before or after receiving concessions.[211] North Korea then used the threat of a nuclear test as leverage in the negotiation but the US refused to waver as negotiations stalled into 2006.[212]

North Korea carried out its threat to test a nuclear device with a one kiloton explosion on 10 October 2006.[213] This dramatic event re-invigorated the negotiations between the six parties (the US, China, South Korea, Russia, Japan, North Korea) and led to the successful conclusion of the Denuclearization Action Plan (DAP) which once again traded off North Korea's promise to freeze and then dismantle its nuclear weapons program in exchange for more economic, political, and security concessions from the other members of the six parties.[214]

Analysts have pointed out that North Korea signed onto the DAP for less inducements than were provided for in the Agreed Framework.[215] This could point to the increasingly precarious position of the North Korean economy and the effect that has had on the country's negotiating position. This is even more remarkable given that the US would be much less likely to use military force to resolve this issue than it was in Iraq, presumably weakening its negotiating position. The US military is currently stretched

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[210] *Ibid.*, 22.

[211] Pritchard, *Failed Diplomacy: The Tragic Story of How North Korea Got the Bomb*, 101-120.

[212] Huisken, *North Korea: Power Play*…, 38-39.

[213] United States, Office of the Director of National Intelligence, *Annual Threat Assessment of the Director of National Intelligence*…, 14.

[214] Jacques L. Fuqua, *Nuclear Endgame: The Need for Engagement with North Korea* (Westport: Praeger Security International, 2007), 2.

[215] *Ibid*., 4.

with current commitments in Iraq and Afghanistan, and a global military response to North Korean proliferation efforts is unlikely without American involvement. Moreover, an attack on North Korea would likely bring reprisals against South Korea causing untold human as well as economic costs.[216] Finally, a military intervention on China's doorstep would be diplomatically challenging for any international coalition.

The future of the DAP has yet to be determined but North Korea has already failed to meet its commitment for a full declaration of its nuclear program by 31 December 2007.[217] Nevertheless, several lessons can be drawn from the recent history to guide the near future. It is likely that North Korea will continue to use its nuclear weapons program as a bargaining chip to entice concessions from the international community, largely because it is in need of assistance and it has little else to bargain with.[218] Thus, North Korea will not agree to a unilateral disassembly of its program as South Africa and Libya did, but will draw out the process to gain the greatest concessions possible. A balanced and unified approach will be required from the six parties, supported by the UN, involving iterative rewards for steps taken towards a full dismantling of the nuclear weapons program. These rewards must be balanced with a real threat of economic and diplomatic consequences for non-compliance.

Given North Korea's history of proliferation and unpredictability, the goal of a denuclearized North Korea is worthy of sacrifice by the international community. The fact remains that North Korea will continue to possess the means to build a nuclear

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[216] Smith, *Deterring America*…, 86.

[217] United States, Office of the Director of National Intelligence, *Annual Threat Assessment of the Director of National Intelligence*…, 14.

[218] Chang, *Nuclear Showdown: North Korea Takes on the World*, 46-47.

weapon for some time and this will not be solved by any single agreement. A long and iterative process will be required to coax North Korea back into the NPT and significant concessions will be necessary.

A tailored response to North Korea must be developed on the three planes of economic aid, security guarantees and diplomatic normalization. However, these concessions must be dispensed in small quantities, each directly tied to North Korean compliance. The use of pressure against North Korea must be carefully weighed given its traditionally shrill reaction to threats. Harsh rhetoric against North Korea will likely illicit a defiant response and heighten its concerns that the survival of the state is threatened.[219] The US statement that North Korea was a member of the "axis of evil," combined with Washington's demonstrated willingness to engage in regime change in Iraq, likely encouraged North Korea to continue to develop its weapons program to provide an effective deterrent to military intervention.[220]

Sanctions against North Korea will have little impact on its government in the near term due to its economic isolation and poverty of its people. In contrast, the threat of removal of rewards could have an effect. Diplomatically, the political isolation of North Korea should be reversed and the nation engaged regionally and internationally, in particular with the US. The direct involvement of the US in negotiations and a toning down of rogue nation and axis of evil rhetoric prevalent over the last seven years should assist in assuaging North Korean security fears. In addition, North Korea can be placated

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[219] Pritchard, *Failed Diplomacy: The Tragic Story of How North Korea Got the Bomb*, 18, 59.

[220] Cirincione, *Deadly Arsenals*…, 281.

with security guarantees from the US as well as from its regional neighbours such as China, South Korea and Japan.

The danger in this sort of negotiation is the example it sets. A signatory to the NPT clandestinely developed nuclear weapons, flagrantly violated IAEA safeguards, withdrew from the NPT, and was rewarded with concessions.[221] This does demonstrate weakness of the NPT but also reflects the reality and uniqueness of North Korea. North Korea is a rogue nation that acquired the means to produce a nuclear weapon in a previous era. Nothing can be done now to change the past in North Korea but efforts can be made to reintegrate it, albeit at some cost. Reticence to negotiate with a dictator must be overcome in order to pursue the greater cause of non-proliferation.

In sum, the North Korean case is far from over and careful vigilance will be required to coax it back into the NPT and the NNPR. The lessons of the past, including the last twenty years in North Korea, must be learned and applied to future dealings with it. North Korea is on the cusp of becoming a NWS, as well as a potential source for further proliferation. It therefore merits intense scrutiny, and, if required, sacrifice, by the international community.

Iran's nuclear activities have aroused suspicion within the international community for the past two decades and the threat of an Iranian nuclear bomb will likely remain for some time. Unlike North Korea, Iran has yet to admit to a weapons program let alone test a device, but has nevertheless garnered much attention due to its hostility to

[221] Gilinsky, "Nuclear Proliferation after the Indian and Pakistani Tests," 7.

the West, its technological and financial capability, its acknowledged civilian nuclear program and recently discovered IAEA safeguards violations.

Iran's nuclear power program began with US, French and West German support in the 1950's and 1960's but has proceeded more recently with Russian support due to a western embargo.[222] Iran's interest in nuclear and other unconventional weapons spiked after its experience as a target for Iraqi chemical weapons in the Iran-Iraq war in the 1980's and the lack of any international response to its plight.[223] Iran's nuclear weapons program was subsequently supported by China, North Korea, as well as A.Q. Kahn's nuclear arms network.[224] The extent of Iran's nuclear weapons program was largely a matter of conjecture until elements were revealed in 2002 by an Iranian opposition group.[225] This triggered two years of extensive IAEA investigations which documented uranium enrichment, plutonium production facilities and violations of IAEA safeguards agreements.[226] Iran has subsequently claimed that this weapons grade fissile material was intended for peaceful purposes and was pursued in compliance with its rights under the NPT, in spite of its covert nature.[227] This highlights the difficulty with proving intent, as this can be the only discriminator in whether a dual-use technology is in compliance with,

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[222] Sverre Lodgaard, "Iran's Uncertain Nuclear Ambitions," in *Nuclear Proliferation and International Security*, ed. Morten Bremer Maerli and Sverre Lodgaard (New York: Routledge, 2007), 97. Cirincione, *Deadly Arsenals*…, 297-298, 302, 305.

[223] David C. Rapoport, "Terrorism and Weapons of the Apocalypse," in *Twenty-first Century Weapons Proliferation*, ed. Henry Sokolski and James M. Ludes (London: Frank Cass Publishers, 2001), 18.

[224] William Walker, *Weapons of Mass Destruction and International Order*, Adelphi Paper 370 (New York: International Institute for Strategic Studies, 2004), 65.

[225] Lodgaard, "Iran's Uncertain Nuclear Ambitions," 97.

[226] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 206.

[227] Cirincione, *Deadly Arsenals*…, 299-302.

or in contravention of the NPT. The same technology can either produce fuel for a power generating reactor or material for a bomb.

In February 2005, Russia agreed to build nuclear reactors in Iran as long as the fuel was supplied from Russia. Once spent, the fuel will be returned for disposal, thereby easing the proliferation concerns.[228] This contract does provide a potential model for the future; however, Iran has maintained its right to manage the complete nuclear fuel cycle as a matter of sovereignty, and has pointed to its peaceful intentions and its willingness to comply with the full spectrum safeguards of the Additional Protocol.[229]

Currently, Iran continues to pursue uranium enrichment and has declared that it will not be coerced out of this right in spite of the 31 July 2006 UNSCR 1696 which demanded that it suspend all enrichment activities.[230] This led to the UNSCR 1737 in December 2006 that banned international trade with Iran in nuclear and missile technologies.[231]

Iran's original desire for a nuclear weapon to counter its arch enemy Iraq has now largely been eclipsed.[232] Its current motivation stems in part from its desire to resume its position as the pre-eminent regional power along with a strong sense of nationalism that pervades all levels of the country.[233] Iran has the largest population in the Middle East, and the world's third largest oil reserves, yet finds itself surrounded by superior

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[228] *Ibid.*, 302.

[229] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 206.

[230] Solingen, *Nuclear Logics*…, 174.

[231] *Ibid.*, 174.

[232] Venter, *Allah's Bomb*…, 74.

[233] Solingen, *Nuclear Logics*…, 168.

conventional forces as a result of sanctions and US backed Gulf state militaries.[234] Iran also seeks a deterrent against US interference as observed on its borders in Iraq and Afghanistan. Finally, Iran seeks nuclear parity with Israel, Pakistan, and India, as well as increased prestige inside the country and throughout the region.[235]

Iran's response to the US aggressive counter-proliferation in Iraq contrasts with that of North Korea. Where North Korea revealed and then accelerated its program, the US itself has declared the Iranian nuclear weapons program in hiatus since 2003.[236] Moreover, Iran admitted its nuclear activities, claimed they were for civilian purpose, has ratified the NPT and has signed the Additional Protocol to allow the IAEA to ability to confirm its claims.[237] Still, this alleged transparency has not been seamless as the IAEA declared in 2004 that Iran had not met its obligations.[238] While the US has admitted the Iran nuclear weapons program has paused, it emphasizes that, at a minimum, Iran continues to work towards acquiring the components of a bomb, which would allow a future decision to weaponize to be executed quickly.[239]

The US, in particular over the past six years, has used severe rhetoric when discussing Iran in general and its nuclear program in particular.[240] President Bush

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[234] Cirincione, *Deadly Arsenals*…, 296-297.

[235] Solingen, *Nuclear Logics*…, 168-169.

[236] United States, Office of the Director of National Intelligence, *Annual Threat Assessment of the Director of National Intelligence*…, 11.

[237] Walker, *Weapons of Mass Destruction and International Order*, 64.

[238] Cirincione, *Deadly Arsenals*…, 295.

[239] United States, Office of the Director of National Intelligence, *Annual Threat Assessment of the Director of National Intelligence*…, 11-14.

[240] Lodgaard, "Iran's Uncertain Nuclear Ambitions," 105.

declared that the international community would not tolerate Iran armed with nuclear weapons, insisted Iran could not possess uranium enrichment technology, and has called for regime change in Iran to remove it from the axis of evil.[241] Iran has been pressured by military threats as well as UNSC backed sanctions to gain limited compliance with the NPT and IAEA safeguards, although this has been balanced by European preference for economic rewards.[242] This firmness in dealing with Iran as compared to North Korea reflects the differences in negotiating positions in the two cases.

Iran is not believed to have a nuclear weapon nor is nuclear status believed to be possible in the next five years.[243] Furthermore, Iran is isolated in the Middle East and faces US military dominance in the region. Finally, Iran's economy and the government are susceptible to sanctions because of the country's heavy dependence on oil and natural gas revenues.[244]

Dealing with Iran is further complicated by the opaque nature of its political system. Iran has a popularly elected government but its power is shared by the Supreme Leader and the Guardian Council, a group of high ranking, unelected Islamic clerics who determine who can run for election.[245] This has resulted in mixed messages from the elected president and the Council with respect to Iranian intentions.

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[241] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 206-207.

[242] *Ibid.*, 207.

[243] United States, Office of the Director of National Intelligence, *Annual Threat Assessment of the Director of National Intelligence*…, 13-14.

[244] Beckman, *et al*, *Nuclear Weapons, Nuclear States, and Terrorism,* 206-207.

[245] *Ibid.*, 207.

The US must be cautious in its dealings with Iran due to its adversarial position over the past three decades and frequent calls for regime change in the country. Further confrontation will likely force the Iranian regime into a defiant position and rally public support around a threatened government.[246] A more effective strategy would be less US-centric and rely more heavily on the EU and Russia, both of whom share the goal of nuclear weapon free Iran, offering incentives for compliance. If the US is to be involved in the negotiations, a conciliatory approach would be more likely to yield results. Iran's right to the full nuclear fuel cycle should be acknowledged but concessions offered in exchange for restraint. This would allow Iran to preserve its reputation domestically while the US would continue to provide the means to apply pressure with its tight military grip on the region.[247] Iran has shown a willingness and preference to work with the EU and Russia.[248]

Incentives to coax Iran would need to include support for its nuclear power industry while denying control of the complete fuel cycle. Economic incentives such as WTO membership and increased trade should be balanced by the threat of economic sanctions, discreetly wielded, to provide an effective lever in Teheran. Diplomatic normalization of relations with the US would also reduce Iranian anxiety. Normalization would require a toning down of US rhetoric as long as Iran made progress towards compliance with IAEA safeguards. Security guarantees from both the US and other regional powers would further diminish Iranian fears of an invasion or interference

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[246] Lodgaard, "Iran's Uncertain Nuclear Ambitions," 105.

[247] *Ibid.*, 106.

[248] Solingen, *Nuclear Logics*…, 173.

thereby reducing the motivation to proliferate. A more multilateral approach based on iterative rewards for increased compliance with full IAEA safeguards should prevent Iran from resuming its weapons program and keep Iran within the NPT. The IAEA inspections would then provide a disincentive to resume due to the increased risk of a clandestine program being discovered.

The path to engage Iran should be similar to the North Korea approach. Small compromises should be rewarded, ingrained and built upon. Iran will not likely agree to unilaterally renounce its right to peaceful use of the complete fuel cycle prior to receiving any rewards. As with North Korea, international motivation to restrain Iran's nuclear ambitions should be high. A nuclear armed Iran could trigger a cascade of regional proliferation in Saudi Arabia, Egypt or Turkey, or could provide a source for follow on proliferation to state and non state actors alike. Moreover, a reaction from Israel against a nuclear armed Iran could escalate into a wider Middle East conflict.

THE FUTURE OF THE NUCLEAR NON-PROLIFERATION REGIME

The history of the NNPR has revealed a work in progress that, in spite of its apparent shortcomings, has in large part prevented the widespread proliferation of nuclear weapons. This indicates that while the regime has a solid foundation, cracks still need to be repaired if a new round of proliferation is to be prevented. For example, the emergence of cases such as the A.Q. Kahn network, Iran, and North Korea all point to weaknesses within the NNPR. The required improvements can be grouped into supply-side controls, demand-side controls, and post proliferation responses.

Supply-side controls will always form the first line of defence to slow if not stop the rate of proliferation. Increasing the risk, cost and difficulty of obtaining nuclear materials is a vital effort within the NNPR that must be strengthened. While the clock cannot be turned back on the nascent nuclear states in existence today, further transfers can be slowed or stopped. Moreover, the supply-side control of nuclear material and technology is the only way to stop a non-state actor whose motivation to proliferate cannot be defused, and whose willingness to use a weapon cannot be deterred. Improvements to the NNPR within supply-side controls can be grouped into export controls, fissile material control, and interdiction efforts, each of which will be discussed in turn.

Export controls are the key to managing the proliferation risk inherent in nuclear power generation. There are currently 440 nuclear power plants in existence providing 16% of the world's electricity.[249] Nuclear power generation is poised to expand rapidly in response to economic growth in the developing world, the increased cost of fossil fuels, and growing global concerns about the environmental effects of burning hydrocarbons. Tighter export controls on dual-use technology are required to meet the challenge of a flourishing nuclear power industry. Unfortunately, accelerating globalization and competition in the nuclear industry will make controlling the growing number of suppliers and recipients increasingly difficult.[250] Nevertheless, safeguards, such as

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[249] Tariq Rauf, "Export Controls and Multilateral Nuclear Arrangements," in *Nuclear Proliferation and International Security*, ed. Morten Bremer Maerli and Sverre Lodgaard (New York: Routledge, 2007), 267.

[250] *Ibid.*, 274.

verification and inspections, must be required and enforced if technologies capable of producing weapons grade material are transferred. More stringent export criteria by the NSG and an expansion of the NSG to approach universality would tighten the export controls to a more tolerable level.

The right to control the complete nuclear fuel cycle, as guaranteed by the NPT, must be addressed by bringing fissile material under international regulation and management. A multinational nuclear fuel cycle would limit the inevitable tension between the right to possess material and technology for peaceful use and international resistance to provide non-nuclear states with the means to establish a nuclear weapons program. Under the NPT, a state can possess weapons grade material as long as it is declared and inspected by the IAEA to ensure peaceful use. This latent nuclear weapon capability allows a state to withdraw from the NPT and be untenably close to production of a weapon. The international community is therefore hesitant to allow countries such as Iran, North Korea and Libya access to the complete fuel cycle. The infringement on the rights of a state, as guaranteed by the NPT, will create resentment and needs to be countered through incentives for restraint such as technical assistance and access to modern nuclear power plants.

Ultimately, multinational control and the regulation of fissile materials would solve this conflict by taking the material in question out of the possession of potential proliferators while still providing an acceptable guarantee of supply. A multilateral agreement of this complexity will be difficult to accomplish; in the interim, there are two mitigating possibilities. First, a requirement for the fuel supply to be provided by the

source nation and returned when spent, as was implemented by the recent Russian contracts with Iran, could be made standard practice through the NSG.[251] Of course, the recipient state may still have concerns about the security of the fuel supply that would need to be adequately addressed. Alternatively, all enrichment or reprocessing technology could be supplied on the condition that the recipient has ratified the Additional Protocol and agreed to the more invasive safeguards.[252] These stopgap measures would decrease the appearance of cases like Iran where the parties argue over intent, something exceedingly difficult to prove, while tensions continue to escalate.

A concession on the right to control the complete fuel cycle by the NNWS would need to be met by a suitable concession from the NWS. Specifically, progress needs to be made on the ratification of the CTBT and the commitment to nuclear arms reductions as promised by the NWS in Article VI of the NPT.[253] Without adequate concessions by the NWS it is likely that the NNPR will be criticized as an effort to institutionalize the current nuclear division and will struggle to achieve legitimacy.[254]

UNSCR 1540 requires national controls to prevent transfers of WMD to a non-state actor but stops short of addressing transfers to another state.[255] The UNSC should expand its resolution to prohibit state to state transfers of WMD in order to strengthen the

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[251] Smith, *Deterring America*…, 97-99.

[252] Annette Schaper and Morten Bremer Maerli, "The Fissile Material Cut-off Treaty as a Nuclear Security Policy Driver," in *Nuclear Proliferation and International Security*, ed. Morten Bremer Maerli and Sverre Lodgaard (New York: Routledge, 2007), 248.

[253] Sverre Lodgaard, "Regaining Common Ground," in *Nuclear Proliferation and International Security*, ed. Morten Bremer Maerli and Sverre Lodgaard (New York: Routledge, 2007), 297.

[254] Walker, *Weapons of Mass Destruction and International Order*, 27.

[255] Smith, *Deterring America*…, 148-149.

supply-side legislation and to enable more robust interdiction in the event of a suspected violation.

A strengthened UNSCR 1540 could be enforced by the PSI which should, in turn, be enlarged as universally as possible with the explicit backing of the UNSC. Ultimately, a UN organization should be carrying out the interdiction to enforce UNSC 1540; however, in the near term, nothing prevents the UN from sanctioning regional or other organizations to support the maintenance of international security.[256] A near universal PSI backed by the UNSC would have far greater latitude to carry out interdictions on the high seas and would provide a more effective final defence on the supply-side. A more effective PSI would provide further disincentive for a potential proliferator in that a clandestine nuclear transfer would be more likely to be discovered and stopped.

The requirement for increased information sharing among the nuclear suppliers, national intelligence assets and the IAEA will span all of the supply-side controls. It will become increasingly difficult to put the pieces of the puzzle together to discover a proliferator assembling the components, typically dual-use in nature, from a wide variety of suppliers. Only when seen as part of a complete picture can the proliferator be identified then actively confronted and countered.

The NNPR has not addressed the demand-side of the proliferation problem as rigorously as the supply-side. To develop a nuclear bomb, a state needs both the means and the will, each of which should be countered. The technological difficulties of proliferation will become less of a hurdle to potential proliferators as technological

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[256] *Ibid.*, 150.

capacity diffuses throughout the international community.[257] IAEA Director General and Nobel Peace Laureate Mohammad El-Baradei has warned:

> technology has come out of the box…we need to have a different approach to handling issues of non-proliferation. This should look at not only controlling the source of the water, but we must also look at the reasons why countries are trying to acquire nuclear weapons.[258]

Moving forward, demand-side initiatives will have to take on a more important role within the NNPR.

The largest single motivator to develop nuclear weapons is national security. It therefore provides the first lever and the most important aspect of the demand-side equation.[259] In areas of conflict and regional rivalries, efforts must be made to develop confidence building measures, NWFZ, security guarantees, and ultimately resolving the root causes of the conflict. These can be aided by other military, diplomatic and economic incentives depending on the state in question. The ultimate goal is to raise the cost of acquiring a nuclear weapon and the benefits of abstaining.

The current US emphasis on regime change and hard line rhetoric such as the "axis of evil," are not conducive to decreasing the security concerns of smaller nations. The rhetoric should be replaced by a multilateral policy of firm opposition to proliferation, a willingness to acknowledge other states' security concerns, and a readiness to compromise and negotiate where possible. The softening of the US stance combined with a deeper integration within multilateral non-proliferation efforts will

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[257] Cyrus Samii, "Conclusion: Managing Nuclear Threats after Iraq," in *Arms Control after Iraq*, ed. Waheguru Pal Singh Sidhu and Ramesh Thakur (Hong Kong: United Nations University Press, 2006), 423.

[258] Solingen, *Nuclear Logics*…, 249.

[259] Lodgaard, "Regaining Common Ground," 311.

increase US legitimacy and increase the long term chances of success of the multilateral NNPR.

Aggressive counter-proliferation efforts are a necessary contingency that the international community must be prepared for, but should be kept as an absolute last resort. Counter-proliferation, in particular unilateral action by the US, would likely have the opposite effect over time, as it could cause potential proliferators to recognize the need for a nuclear deterrent to counter America's overwhelming conventional superiority.[260] When necessary, counter-proliferation activities should be sanctioned by the UNSC and could therefore carry the weight of international legitimacy.

The key to solving the demand-side problem is understanding what motivates the state in question. Understanding or predicting the thoughts of a state has never been simple but it is nevertheless vital in addressing the relevant concerns. Once the concerns of the proliferator are understood they must be attended to in a coherent and legitimate manner. A unilateral or even a small coalition approach will not be able to ensure consistent and appropriate provision of rewards and consequences for the behaviour of a potential proliferator. In contrast, a multilateral effort with the support of UN is more likely to ensure a coordinated, coherent and universal approach to dealing with a country. The difficulties of working within a multilateral context are outweighed in most cases by the legitimacy that is inherent in organizations such as the UN and the IAEA. Where possible, the IAEA should be used to enforce, inspect and verify the NNPR, although

[260] Walker, *Weapons of Mass Destruction and International Order*, 64.

understandably it must be backed up by the military, economic, and political power of the individual states.[261]

The IAEA also needs to be supported by a UNSC that is willing to act when faced with reported violations. Rifts in the council prevent the forceful backing of the agency and may lead to unilateral action which can only damage the legitimacy of the NNPR in the long term.[262] The recent North Korean nuclear test may have a beneficial unintended consequence for the NNPR. This event appears to have demonstrated to China that it is not immune to multilateral failures of the regime and this could encourage Beijing's support in future discussions over Iran, North Korea and beyond.[263]

The secondary motivation to proliferate, to enhance the power and prestige of a country, is more difficult to address directly. Incentives offered by the international community should therefore the aim to provide other benefits to encourage the state to remain engaged in the NNPR. The selection of diplomatic, economic or security incentives to be used should again depend on condition of the state in question.

Supply-side controls are too late for countries such as North Korea and Iran who have already obtained the means to produce a nuclear weapon. If the motivations of a state capable of producing a nuclear weapon cannot be countered then the world may be faced with the arrival of a new nuclear nation. The international community will then have three options. Military intervention with the aim of destroying the nuclear capability is one, and can largely be dismissed out of hand. A surgical strike, such as the Israeli

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[261] *Ibid.*, 73.

[262] Solingen, *Nuclear Logics*…, 265.

[263] *Ibid.*, 249.

attack against the Osiraq reactor in 1981, is now unlikely to succeed.[264] More modern nuclear programs in Iran and North Korea are characterized by dispersal, duplication, secrecy and hardened facilities. The probability of a successful strike would be low and therefore this would leave the attacker vulnerable to reprisal. The deterrent effect of a nuclear weapon will be difficult to overcome.

The second option is isolation and the establishment of an outcast nuclear state. This has been the traditional reaction of the international community as seen in Pakistan and India. The danger of this response has been revealed by the emergence and discovery of the Kahn network. Moreover, the failure of this option is apparent in the recent reengagement of both Pakistan and India by the US in particular and the international community more generally.

The third option is to actively engage a recent proliferator to bring it back into the fold of the NNPR, encourage its development into a responsible nuclear power, and reassure its neighbors to prevent a regional flurry of follow on proliferation. This will require a less absolutist approach but will in the long run ensure that, if proliferation must occur, it will be as controlled and stable as possible. While allowing the outcast nuclear nations to join the NPT as NWS is unrealistic in the near term, this should be the long term goal. In the short term, they should be encouraged to behave as if they were signatories to the NPT and to take an active role within the NNPR.[265] As long as the new nuclear nation is behaving as a responsible member of the international community, it should be rewarded with normalized relations and a full reintegration into the NNPR.

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[264] Smith, *Deterring America*…, 138.

[265] Lodgaard, "Regaining Common Ground," 318.

This pragmatic approach accepts that proliferation may occur and that the best course of action if it does is to minimize further damage to the NNPR and prevent instability in the international community. It is in the best interest of the international community to assist an emerging nuclear power with the security, command and control of its newfound capability.

CONCLUSION

The world has over sixty years of experience in living with the existence of nuclear weapons and working to curb their proliferation in the interest of international security and stability. This history has not resulted in a mature, perfect regime but a regime with flaws and cracks that has functioned well within its limits. The greatest strengths of the regime are its near universality and the lack of any plausible alternative.

The need for an effective multilateral NNPR has never been greater thanks to the rapid pace of technological advancement and globalization. The capacity to produce a nuclear bomb is resident in more countries than ever before. Rogue nations and even non-state actors have unprecedented access to the tools of proliferation through under-secured nuclear expertise and material in the FSU. The motivation to develop a nuclear weapon continues to be strong as a result of the new multi-polar world removing some of the hurdles to proliferation while raising the security concerns of many nations. In contrast, proliferation, even to a stable and responsible state, is undesirable because of the increasing difficulty in controlling nuclear material and technology as it progresses. The

more states in possession of nuclear weapons technology, the more likely the capability will eventually migrate to a rogue nation or terrorist organization.

A multilateral NNPR is the most effective means to prevent proliferation because of the legitimacy and capabilities inherent in the construct. Self-regulation is unreliable, and smaller coalitions of the willing enforcing a non-proliferation agenda could have the opposite effect over time. The near universality of the NPT and the NNPR are precisely what gives them their strength, it spite of the difficulties associated with multinational efforts.

The history of the NNPR demonstrates that it is an evolving and complex entity. The regime has responded to developments, weaknesses, and experiences in the past in order to reinforce for the future. Iterative adaptation has been its hallmark. This holds promise for the future in that it shows that the international community can support the evolution of the regime to better respond to present and future proliferation challenges.

The historical case studies have provided a valuable base of experience to form a set of recommendations to deal with the ongoing proliferation risks in North Korea and Iran. Israel demonstrated that a strongly motivated state is difficult for the NNPR to stop. Also, the NNPR is just one of many priorities considered by states and it can be overcome by other political realities, thereby preventing a coherent and consistent approach to non-proliferation. India showed that the international community will consider reintegrating an outcast NWS if it behaves responsibly and otherwise supports the NNPR. This gives hope to the concept that nuclear pariahs must be re-engaged to prevent further proliferation. Pakistan established the dangers of the outcast nuclear nation with the emergence of the Kahn nuclear sales network. Furthermore, the Pakistan

case illustrated the ineffectiveness of sanctions when they are not applied in a coherent, near universal manner. The Iraq saga demonstrated that the strengthened inspections regime, combined with universally applied and targeted sanctions, could be effective in preventing the development of a nuclear weapons program.

The denuclearization of South Africa and the FSU states was largely due to the motivations of the nations having been addressed. The FSU states further illustrated how incentives from the international community to comply with the NNPR can overcome what motivations to proliferate remain. Libya's decision to renounce its nuclear weapons program was a validation of the broad sanctions against it, the success of the supply-side controls, and the pressure of a possible counter-proliferation effort. An overarching lesson from all of the states was that the motives and conditions are varied and a tailored approach to each situation is needed in order to effectively counter proliferation.

Iran and North Korea both have a pre-existing capability to produce a nuclear weapon that cannot be denied. Therefore, future efforts need to focus on mitigating the root causes of the desire to proliferate while offering rewards and imposing consequences for positive and negative behaviour. This demand-side tactic will need to focus on iterative incentives for concrete demonstrations of compliance. A nuanced method, avoiding confrontational rhetoric and understanding of valid security concerns, will be more likely to gain compliance. This approach must be firmly supported by the international community, and the UNSC in particular, to have legitimacy and credibility. Finally, international motivation to restrain Iran and North Korea's nuclear ambitions should be high. Either country has the potential to trigger a regional arms race and act as a source for further proliferation.

The future of the NNPR is uncertain. What is clear is that the regime needs to be buttressed to enable it to continue to be successful into the future. The denial of the components of a nuclear weapon must be strengthened as supply-side controls will be the most effective way to deny rogue nations or non-state actors. Fissionable material must be brought under multinational control and management to prevent its misuse. The international community must improve its ability to address the motivations of a potential proliferator as this will be the most effective strategy to prevent further proliferation to states. Finally, the international community must accept that proliferation may still occur and be prepared for a post proliferation response. The response must be centred on a normalization of relations and a reintegration into the NNPR for the new nuclear nation as long as it behaves responsibly. The aim of the post proliferation response should be to prevent the further spread, particularly to rogue nations or terrorist organizations, and to maintain regional and international stability. This stability will allow the world to adapt to the presence of a new nuclear actor without initiating a new round of nuclear arms races.

The NNPR has largely succeeded over the past sixty years in slowing, if not stopping, the proliferation of nuclear weapons. The year 2008 finds the world with eight nuclear powers and no new nuclear nations in the past twenty years. This run of success masks serious weaknesses in the regime that must be addressed if the next round of proliferation is to be prevented. A multilateral NNPR in the twenty-first century is vital as it represents the best hope in preventing the ultimate WMD from falling into the hands of a state or organization that would not hesitate to use it.

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