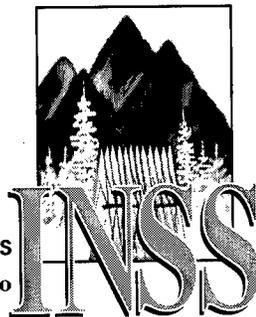

INSS OCCASIONAL PAPER 7
Proliferation Series

Nuclear Proliferation:

**The Diplomatic Role of
Non-Weaponized Programs**

Rosalind R. Reynolds
January 1996

INSTITUTE FOR NATIONAL SECURITY STUDIES
U.S. Air Force Academy, Colorado



DISTRIBUTION STATEMENT A
Approved for Public Release
Distribution Unlimited

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

1. REPORT DATE (DD-MM-YYYY) 01-01-1996		2. REPORT TYPE		3. DATES COVERED (From - To)	
4. TITLE AND SUBTITLE Nuclear Proliferation: The Diplomatic Role of Non-Weaponized Programs				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Rosalind R. Reynolds				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) HQ USAFA/DFES USAF INSS 2354 Fairchild Dr., Ste 5L27 USAF Academy, CO 80840				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) HQ USAFA/DFES USAF INSS 2354 Fairchild Dr., Ste 5L27 USAF Academy, CO 80840				10. SPONSOR/MONITOR'S ACRONYM(S) HQ USAFA/DFES, HQ USAF/XONP	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) HQ USAFA/DFES USAF INSS 2354 Fairchild Dr., Ste 5L27 USAF Academy, CO 80840				HQ USAF/XONP 1480 AF Pentagon, Room 5D518 Washington, DC 20330-1480	

12. DISTRIBUTION / AVAILABILITY STATEMENT
A Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT
The end of the Cold War has not seen the end of reliance on nuclear weapons for deterrence or diplomacy purposes. The use of nuclear weapons for such purposes is as evident in the threshold states as in the nuclear powers. The nuclear weapon states used their nuclear weapons for deterrence, bargaining, and blackmail, even during the early years of the Cold War when the U.S. was essentially non-Weaponized. In the nuclear non-Weaponized states in Asia a non-Weaponized deterrent relationship is developing between India and Pakistan and North Korea has used its nuclear program to restore diplomatic relations with the international community. The role of nuclear weapons in the post Cold War world is determined by the role of non-Weaponized programs in proliferating states. This paper describes examples in South Asia and the Korean peninsula and show that while an increased reliance on nuclear weapons programs may be a threat to the current non-proliferation regime, the focus on non-Weaponized programs rather than on weapons themselves actually improves international security by reducing the threat of nuclear war.

15. SUBJECT TERMS
Proliferation, Nuclear Weapons, Non-Weaponized Program, USAFA

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UNCLASSIFIED UNLIMITED	18. NUMBER OF PAGES 33	19a. NAME OF RESPONSIBLE PERSON DR. JAMES M. SMITH
a. REPORT UNCLASSIFIED	b. ABSTRACT UNCLASSIFIED	c. THIS PAGE UNCLASSIFIED			19b. TELEPHONE NUMBER (include area code) 719-333-2717

**NUCLEAR PROLIFERATION:
THE DIPLOMATIC ROLE OF
NON-WEAPONIZED PROGRAMS**

Rosalind R. Reynolds

INSS Occasional Paper 7

Proliferation Series

January 1996

19990708 008

USAF Institute for National Security Studies
US Air Force Academy, Colorado

DTIC QUALITY INSPECTED 4

The views expressed in this report are those of the author and do not necessarily reflect the official policy or position of the Department of the Air Force, the Department of Defense or the US Government. This report is approved for public release; distribution is unlimited.

ABOUT THE AUTHOR: Rosalind R. Reynolds is a PhD candidate in the Department of Government and Politics at the University of Maryland, College Park, MD. Her dissertation topic is "Existential Deterrence: Compromise to Nuclear Dilemmas." She has served as a Hubert H. Humphrey Fellow at the Arms Control and Disarmament Agency. She holds a BA from Wellesley College, and an MA from the University of Maryland.

This paper was originally presented at the annual conference of the International Studies Association, Chicago, Illinois, February 1995.

Comments pertaining to this report are invited and should be forwarded to: Director, Institute for National Security Studies, HQ USAFA/DFE, 2354 Fairchild Drive, Suite 5D33, US Air Force Academy, Colorado Springs, CO 80840, 719-472-2717.

TABLE OF CONTENTS

Foreword	vii
Executive Summary	ix
Introduction	1
Typology of Weaponization	2
Nuclear Weapon States	2
<i>Early U.S. Nuclear History</i>	2
<i>Nuclear Blackmail</i>	4
<i>Nuclear Bargaining</i>	5
<i>Deterrence</i>	6
The Nuclear Nonproliferation Regime	9
Nuclear Non-Weaponized States	10
Case Studies of Successful Non-Weaponization	13
South Asia	13
<i>Stopping on the Weaponization Ladder</i>	14
<i>Indo-Pakistani Deterrence</i>	16
<i>Impact on the Nonproliferation Regime</i>	18
North Korea	19
<i>Rationale for the North Korean Program</i>	20
<i>Impact on the Nonproliferation Regime</i>	24
Nuclear Non-Weaponized States and Non-Proliferation	24
Endnotes	28

FOREWORD

We are pleased to publish this seventh volume in the *Occasional Paper* series of the US Air Force Institute for National Security Studies (INSS). This monograph represents the results of graduate research first presented at the February 1995 conference of the International Studies Association.

INSS is co-sponsored by the National Security Negotiations Division, Plans and Operations Directorate, Headquarters US Air Force (USAF/XOXI) and the Dean of the Faculty, US Air Force Academy. The primary purpose of the Institute is to promote research done within the DOD community in the fields of arms control, proliferation, national security, regional studies, the revolution in military affairs, information warfare, and environmental security. INSS coordinates and focuses outside thinking in various disciplines and across services to develop new ideas for USAF and DOD policy making. The Institute develops topics, selects researchers from within the military academic community, and administers sponsored research. We also host conferences and workshops which facilitate the dissemination of information to a wide range of private and government organizations. INSS is in its fourth year of providing valuable, cost-effective research to meet the needs of the Air Staff and our other sponsors.

This paper presents a nontraditional, almost revisionist approach to the vital topic of nuclear proliferation and the search for answers as to why proliferation has not progressed as far as it might have. Reynolds points out that states can achieve many of their national security goals through the mere *capability* of producing nuclear weapons. Existential deterrence may occur without even having any weapons, as long as the potential adversary believes that a state could develop them. This is not a good finding for the current

Institute is “to promote national security research for the Department of Defense within the military academic community, and to support the Air Force national security education program.” Its primary purpose is to promote research in fields of interest to our organizational sponsors: arms control, proliferation, national security, regional studies, the revolution in military affairs, information warfare, and environmental security. INSS coordinates and focuses outside thinking in various disciplines and across services to develop new ideas for USAF policy making. The Institute develops topics, selects researchers from within the military academic community, and administers sponsored research. We also host conferences and workshops which facilitate the dissemination of information to a wide range of private and government organizations. INSS is in its fourth year of providing valuable, cost-effective research to meet the needs of the Air Staff and our other sponsors.

We appreciate your continued interest in INSS and its research products.



JEFFREY A. LARSEN, Lt Colonel, USAF
Director, Institute for National Security Studies

EXECUTIVE SUMMARY

The end of the Cold War has not seen the end of reliance on nuclear weapons for deterrence or diplomacy purposes. The use of nuclear weapons for such purposes is as evident in the threshold states as in the nuclear powers. The nuclear weapon states used their nuclear weapons for deterrence, bargaining, and blackmail, even during the early years of the Cold War when the U.S. was essentially non-weaponized. In the nuclear non-weaponized states in Asia a non-weaponized deterrent relationship is developing between India and Pakistan, and North Korea has used its nuclear program to restore diplomatic relations with the international community.

The role of nuclear weapons in the post Cold War world is determined by the role of non-weaponized programs in proliferating states. This paper will describe examples in South Asia and the Korean peninsula and show that while an increased reliance on nuclear weapons programs may be a threat to the current non-proliferation regime, the focus on non-weaponized programs rather than on weapons themselves actually improves international security by reducing the threat of nuclear war.

Nuclear Proliferation:

The Diplomatic Role of Non-Weaponized Programs

In August 1945 the United States depleted its tiny arsenal of atomic bombs on the Trinity test and on the attacks on Hiroshima and Nagasaki. Still, the U.S. emerged from World War II and began the Cold War as the sole nuclear superpower. Its status as a nuclear superpower was a result of its demonstrated nuclear capability rather than the size of its nuclear arsenal.

Since the first use of nuclear weapons, the U.S. and other nuclear weapon states have relied on the mere existence of these weapons for deterrent, political, and diplomatic uses. Although the Cold War has ended and significant arms reductions are occurring, the benefits that nuclear weapons bring are still being counted by nuclear weapon states as well as by a new type of non-nuclear weapon states.

Today, many proliferating states use their actual or potential capabilities for producing nuclear weapons in much the same way as nuclear weapon states have used their nuclear weapons. While this trend of using nuclear capabilities as weapons may lead to the proliferation of nuclear weapons programs and become a threat to the international non-proliferation regime, it also presents benefits to international security. The foremost benefit is that non-weaponized nuclear programs are more easily managed than nuclear arsenals. Nor do they present the same risk of nuclear war.

This paper examines three states--India, Pakistan, and North Korea--which have crossed some of the steps on the weaponization threshold and have programs designed towards producing weapons, but have stopped short of actually developing and deploying nuclear weapons--at least publicly. These three states are particularly interesting because they act in many ways

like the nuclear weapon states and use their nuclear programs as if they were weaponized. Non-weaponized programs used like nuclear arsenals--perhaps this is the reason for the restraint shown by the nuclear non-weaponized states.

Typology of Weaponization

Nuclear Weapon States

To show how nuclear non-weaponized states have used their nuclear programs, it is necessary to first look at the various ways the nuclear weapon states have used their arsenals. While nuclear weapons have not been detonated against another country since 1945, such weapons have been used in other ways. This phenomenon was particularly evident in the early years of the Cold War, for during that time the U.S. was arguably non-weaponized, yet it still used its nuclear capability for diplomatic purposes.

Early U.S. Nuclear History. The size of the U.S. nuclear arsenal during the first few years of the Cold War remained a secret until 1982, when the information was declassified and published by David Rosenberg in *The Bulletin of the Atomic Scientists*.¹ The released figures indicated the numbers of "nuclear components" and "mechanical assemblies" available on June 30th of each year from 1945 to 1950. Rosenberg described the numbers as "surprisingly small." In June of 1945 the U.S. had two plutonium weapons, presumably those used on the Trinity test site and on Nagasaki. The uranium weapon used on Hiroshima was not completed until July. The figures suggest that there were no weapons ready for use in the months following the end of the war. The released figures show that only nine bombs were available in June of 1946, and two were used the following month on the Bikini tests. Rosenberg considers the numbers for 1947 the "most

intriguing." In this crucial year of the Cold War, the U.S. had thirteen nuclear components, just four more than the previous year. These numbers were closely guarded. President Truman probably did not learn just how few available weapons existed until April of 1947, when the Atomic Energy Commission took over the management of the nuclear weapons. The bombs were few in number, not necessarily assembled, and not available for immediate delivery. Rosenberg writes that through 1948 the bomb storage site was an hour's flight from the nearest Air Force bomber base, and only 23 of the 46 "nuclear modified" Boeing B-29's were operational.²

Gregg Herken presents an even more dismal view of the American arsenal, based on interviews with David Lilienthal, Chairman of the Atomic Energy Commission in 1947. In the spring of 1947 there were only about a dozen bombs, and these were not available for immediate use. Lilienthal told Herken, "Actually we had one [bomb] that was probably operable when I first went off to Los Alamos; one that had a good chance of being operable...The politically significant thing is that there really were no bombs in a military sense."³ In the first three years after World War II the U.S. was not weaponized, as the bombs were not assembled or available for immediate delivery. Nonetheless, the U.S. used its nuclear status for political purposes soon after the end of World War II. The U.S. was the first state to use its nuclear program as a non-weaponized tool for diplomacy.

While theories of how to use nuclear weapons to deter Soviet attacks on U.S. territory were developed early in the nuclear age, American national security thinking also focused on other potential uses for nuclear weapons. In particular, Herman Kahn believed the U.S. should not rely on nuclear weapons simply for deterrence, because deterrence might fail. In *Thinking About the Unthinkable*, Kahn developed strategies and scenarios in which the U.S. must plan how to "fight, survive, and win a thermonuclear war."⁴ The belief that a nuclear war could be fought, and should therefore be planned,

led to the development of tactical nuclear weapons designed for battlefield use.

Others believed that if U.S. nuclear weapons were developed for use in war, areas outside the U.S. could be defended. Henry Kissinger, in his famous 1957 book *Nuclear Weapons and Foreign Policy*, described how nuclear weapons should be used to prevent Soviet aggression in Europe.⁵ He believed that the policy of using nuclear weapons merely as retaliation against a Soviet nuclear attack limited U.S. options and played right into the hands of the Soviet Union, thereby rendering the weapons useless. Kissinger believed that planning to launch a limited nuclear war to contain various forms of Soviet aggression would be both possible and advantageous to the U.S. As a result, the U.S. granted security guarantees to NATO by threatening a nuclear attack on the Soviet Union in the event of any attack--nuclear or conventional--on NATO countries.

Nuclear Blackmail. While some theorists and policy-makers advocated planning for nuclear weapons use, others believed that merely threatening the use of nuclear weapons could achieve political benefits. In *Nuclear Blackmail and Nuclear Balance*, Richard Betts described many instances in which the U.S. threatened to use nuclear weapons in situations which were clearly not vital to U.S. national security interests as a way "to convince the enemy that any war could turn into all-out war."⁶ He defined "nuclear blackmail" as "coercion by the threat of punishment, a threat designed either to deter or compel action by the opponent."⁷ In this study Betts showed how both nuclear superpowers used combinations of bluff and blackmail to reach political goals. Richard Betts, Daniel Ellsberg, and McGeorge Bundy all described instances beginning in 1946 in which states threatened, either directly or indirectly, the first use of nuclear weapons.⁸ These events included Truman's threatening the use of the bomb in 1946 if

Soviet troops did not leave Iran; announcing that "atomic-capable" aircraft were being sent to Germany during the 1948 Berlin Blockade, claims from Truman and Eisenhower that atomic bombs could be used in the Korean War; and threats to use nuclear weapons against China in 1958 to defend the islands of Quemoy and Matsu. Although these and other attempts at atomic diplomacy and blackmail may not have been totally successful, it is important to note the frequency of the threats. Ellsberg provides examples of every president from Truman to Reagan (except Ford) threatening the use of nuclear weapons and writes that the effect of the threats on the opponents' policies is not the issue:

What matters...is that presidents *believed* that past and current threats had succeeded; this was why, as they understood it, they or their predecessors had not been forced to carry them out, and why they and their successors kept making such threats, and buying more and more first-use and first-strike nuclear weapon systems to maintain and increase the credibility and effectiveness of threats they expected to make in the future. It is why, after all, each president has refused to make a "no-first-use" commitment.⁹

Nuclear Bargaining. Not all the uses of nuclear weapons for political purposes involved threats. Nuclear weapons were also used for bargaining and negotiation. Throughout the Cold War, nuclear weapons provided a foundation for U.S. and Soviet negotiations. During tense periods of U.S.-Soviet relations, discussions regarding nuclear weapons offered a chance for returning to a diplomatic relationship, for example, the "Hot Line" agreement and Limited Test Ban Treaty were signed in 1963, shortly after the Cuban Missile Crisis. The past few decades of using nuclear weapons for diplomatic purposes has led to what Emanuel Adler calls a "growing international understanding that arms control and diplomatic measures are

closely intertwined and that conflict resolution, wherever needed, requires a measure of arms control."¹⁰

It is important to recognize that there are positive and negative effects of using nuclear weapons as a foundation for negotiations. While communication and information are important for maintaining good diplomatic relations, there is the problem of developing a "bargaining chip" mentality. Blacker and Duffy describe this "'bargaining chip' rationale" as a reason why ABM deployment received influential support in the U.S. Congress in the 1960s.¹¹ Many believed that having a deployed system that could then be given up was essential to negotiating a favorable arms control deal in the more important realm of strategic weapons. A similar situation occurred two decades later with the strategic defense initiative (SDI). Strobe Talbott called SDI "the greatest sting operation in history," describing how the "arms control potential" of SDI brought in powerful supporters such as Robert McFarlane and Paul Nitze. They hoped that limiting the SDI program could be exchanged for a reduction of Soviet MIRVed ICBMs.¹² While weapon systems are not usually built for the sole purpose of giving them up in negotiations, weapons can receive an unusual level of support from arms controllers who view them as potentially valuable negotiating concessions.

Deterrence. Despite repeated efforts to the contrary, many scholars and policy-makers contended that nuclear weapons had but one use--to deter a nuclear attack with the threat of a nuclear response. Much of the debate has centered on what is necessary to achieve effective deterrence. Bundy writes:

The more we learn about living with nuclear arsenals, the less we are able to find any good use for them but one--the deterrence of nuclear aggression by others--and the more we are led to the conclusion

that this one valid and necessary role is not nearly as demanding as the theorists of countervailing strategy assert.¹³

Bernard Brodie realized the value of nuclear weapons as a deterrent early in the nuclear age, even when the U.S. was the sole nuclear weapon state. He wrote these famous words in the autumn of 1945:

Thus, the first and most vital step in any American security program for the age of atomic bombs is to take measures to guarantee to ourselves in case of attack the possibility of retaliation in kind...Thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them. It can have almost no other useful purpose.¹⁴

When the Soviet Union tested its first atomic bomb in 1949, the question of how nuclear weapons could be used to deter became even more urgent in both the academic and policy-making communities. The basic concepts of deterrence were understood and built upon, even though it would be years before the U.S. had a nuclear adversary, an advanced arsenal, a variety of delivery systems, or a second strike capability. In 1945, simply knowing that the U.S. had the capability to produce atomic bombs, even without an arsenal of completed bombs, changed the dynamics of the U.S.-Soviet relationship.

During the Cold War, U.S. foreign policy centered on the issue of ensuring effective deterrence. Secretary of Defense Robert McNamara described the importance of deterrence and the necessary capabilities in 1968:

The cornerstone of our strategic policy continues to be to deter deliberate nuclear attack upon the U.S. or its allies. We do this by maintaining a highly reliable ability to inflict unacceptable damage upon any single aggressors at any time during the course of a strategic nuclear exchange, even after absorbing

a surprise first strike. This can be defined as our assured-destruction capability.¹⁵

In the next two decades, the theory that the concept of deterrence was more important to national security than superiority of weapon systems received further attention, primarily by McGeorge Bundy. Bundy is credited with developing the term "existential deterrence." He alluded to the theory in 1969 by writing that having superior weapons does not strengthen deterrence. No matter what the level of arms control, he added, any first strike would be "an act of utter folly:"

unthinkable level of human incineration is the least that could be expected by either side in response to any first strike in the next ten years, no matter what happens to weapons systems in the meantime.¹⁶

In 1984 Bundy gave the name "existential deterrence" to the theory that retaliation can be expected at some point. He wrote:

Terrible and unavoidable uncertainties have great meaning for the theory of deterrence. They create what I will call existential deterrence. My aim in using this fancy adjective is to distinguish this kind of deterrence from the kind that is based on strategic theories or declaratory policies or even international commitments. As long as we assume that each side has very large numbers of thermonuclear weapons which could be used against the opponent, even after the strongest possible pre-emptive attack, existential deterrence is strong.¹⁷

In the same year, Jonathan Schell's *The Abolition* used the theory of existential deterrence as an argument for disarmament rather than merely arms control. He wrote that "the capacity for retaliation would consist less and less of the possession of weapons and more and more of the capacity for rebuilding them, until, at the level of zero, that capacity would be all."¹⁸

The theory of existential deterrence was not accepted by either of the nuclear superpowers. In fact, both sides emphasized increasing the quality and quantity of nuclear weapons. While this vertical proliferation was occurring, the nuclear weapon states were also actively campaigning against horizontal proliferation, or the spread of nuclear weapons to new states. This dilemma was problematic for the non-proliferation regime. Nuclear weapon states asserted that the possession of nuclear weapons was viewed as beneficial to international security, since the weapons promoted peaceful deterrence. However, if additional states acquired these same weapons, the effects would be destabilizing and disastrous for international security.

These are a few examples from the Cold War period which show how nuclear weapon states have used nuclear weapons for political goals. Nuclear weapons may or may not have successfully attained political goals. Nonetheless, nuclear weapons were used for blackmail, bargaining, and protecting close allies with the threat of nuclear retaliation.

The Nuclear Nonproliferation Regime

Despite these and other problems related to non-proliferation, nuclear weapon states and international organizations created a non-proliferation regime, resulting in the 1968 Non-Proliferation Treaty and supporting institutions such as the International Atomic Energy Agency. This regime effectively established a taboo against further acquisition of nuclear weapons. Nearly all non-nuclear weapon states agreed to remain non-nuclear and to cooperate with the terms of the treaty, and the few who rebelled have not openly produced, tested, or deployed nuclear weapons. States which have developed or are developing capabilities to produce nuclear weapons have kept their programs either hidden or non-weaponized. These non-weaponized programs have been used by states in much the same way as nuclear weapon states used their arsenals throughout the Cold War.

During the Cold War the nuclear weapon states set several examples of how nuclear weapons could be used to improve national security. It is therefore understandable that nuclear non-weaponized states would seek similar security advantages. With the end of the Cold War and the increase of superpower arms control, it is necessary to consider the changing role of nuclear weapons. An evaluation of the nuclear non-weaponized states indicates that advanced weapons arsenals may not be needed to achieve the same goals of deterrence and bargaining. Today's nuclear non-weaponized states are following the example set by the U.S. in the early years of the Cold War: using a non-weaponized program for diplomatic purposes. David Rosenberg used the figures of the early U.S. nuclear program to support the contention that nuclear weapons are not as important as the idea of nuclear weapons. According to Rosenberg:

The phenomenal growth of the nuclear weapons stockpile during the past three decades has apparently not reduced U.S. vulnerability or increased U.S. security. Release of these stockpile figures reinforces the conclusion that, despite its vast power, the atomic bomb itself is less critical in global diplomacy than the ideas, beliefs and policy choices surrounding it.¹⁹

Nuclear Non-Weaponized States

The non-proliferation regime, consisting of the 1968 Non-Proliferation Treaty and the organizations which support and enforce the treaty, attempted to address the spread of nuclear weapons by dividing the countries of the world into two types of states. The nuclear weapon states are the five countries that detonated a nuclear device before 1967--the United States, Soviet Union, Great Britain, France, and China. The non-nuclear weapon states are all other countries. This classification system is ineffective, for the states which are most important to understand fall somewhere

between these two types. These countries are most properly labeled "nuclear non-weaponized states." These states are important for two reasons. First, they are considered a threat to the non-proliferation regime, as they have the capability to produce nuclear weapons. Second, they are important because they have restrained their nuclear capabilities. None of these states have crossed the same nuclear threshold as the five nuclear weapon states, despite their capabilities. The nuclear non-weaponized states, for numerous reasons, have not followed the lead of their nuclear counterparts. Examining why states do not feel the need to weaponize might prove helpful in determining the future of nuclear proliferation.

The U.S. Office of Technology Assessment (OTA) specifies three threshold requirements a proliferant must complete before having the capability to produce nuclear weapons. First, a state must acquire sufficient fissile material to produce a chain reaction for each weapon. There are two routes a state could take to obtain weapons grade material. Taking the uranium route would require mining natural uranium and separating U-235 or acquiring low enriched uranium for light water reactors, and then enriching the U-235 to very high levels (about 80 percent). The plutonium route requires using uranium to fuel a reactor, and reprocessing the spent fuel to separate plutonium. This initial step is by far the most difficult, as either route involves complex and expensive processes and technologies.

The second step of weaponization is to design and assemble a fissile core and other non-nuclear components into a weapon. These weapons must be made small and light enough to be attached to delivery systems and deployed.²⁰

In addition to the OTA prerequisites, it is also necessary for the states to develop arsenals and integrate the weapons into military and national strategic planning, if they are to be on the same level as the acknowledged nuclear states. This, however, requires a public admission of

nuclear status. By declaring and preparing a nuclear arsenal, states indicate their readiness to use the weapons--to have a first strike capability. By not crossing this final step, on the other hand, states show that although they have the capability to become nuclear weapon states, they do not have immediate plans to do so and are not planning for a first use of nuclear weapons.

Many different kinds of states fall into the category of nuclear non-weaponized states. There are states with highly advanced capabilities such as Japan, Germany, and Sweden who choose to cooperate fully with the non-proliferation regime. States which could have become nuclear weapon states, yet have decided not to take that path, strengthen the non-proliferation regime. States which develop nuclear weapon programs but do not cross the final threshold are also valuable to the regime. Israel, which almost certainly has an undeclared nuclear arsenal and has crossed all but the final threshold, has clearly stated for decades that it will not be the first to introduce nuclear weapons into the Middle East. The reasons that these states have shown restraint should be closely examined.

It is possible for states to realize substantial security benefits without possessing or using actual weapons. The next section examines three states which have successfully used their nuclear programs in the same manner as nuclear weapon states have used their arsenals.

Case Studies of Successful Non-Weaponization

South Asia

South Asia is the prime example of a region in which nuclear programs share many of the same traits as nuclear weapons. Both India and Pakistan have advanced nuclear capabilities which have been developed for decades. An interesting phenomena has occurred between the two rivals. A nuclear deterrent relationship has developed between the two states, even though both programs are non-weaponized.

India began its nuclear program in the 1960s, using the plutonium route to weapons capability. In 1974, India publicly demonstrated its nuclear capability with a "peaceful nuclear explosion" (PNE). India claimed that the 1974 PNE was not a test of a nuclear weapon; rather, it was a test of mining techniques and underground nuclear engineering.²¹ India began separating plutonium in the mid 1980s and began stockpiling plutonium entirely free from international controls. There have been reports that India developed weapons designs and non-nuclear weapon components in the 1980s. By 1990, India had the capability to produce plutonium for 5 to 10 devices a year, and had probably stocked enough plutonium for 40 to 60 bombs. During this period India also began developing a delivery capability, in the form of the short range Prithvi and intermediate range Agni ballistic missiles, both first tested in the late 1980s.²² Albright and Hibbs estimated that by the end of 1995 India had enough plutonium for 65 weapons.²³

With few exceptions, Indian officials have come out in favor of disarmament and denied that their nuclear program is geared toward weapons. For example, Ambassador Kanwal Sibal, deputy chief of mission at the Indian Embassy in Washington, wrote in a policy statement for *Arms Control Today*, "We have demonstrated our capability in 1974, but our record in not weaponizing the option since then has been exemplary, and stands out

as a singular example of unwavering restraint in the atomic age."²⁴ India has a great incentive not to build or deploy nuclear arsenals, for doing so would disrupt its peaceful reputation in the international community.

Responding to India, Pakistan began its nuclear program in the early 1970s. Pakistan initially tried both routes to producing nuclear weapons, seeking capabilities to extract plutonium and to produce highly enriched uranium. It had more success with the latter, and by the mid-1980s Pakistan had enriched uranium to a weapons-grade state. Pakistan has not acquired as much fissile material as India, but probably has enough for 5 to 10 bombs. Pakistan also began testing missile systems in the late 1980s. Pakistan's missile system consists of the Haft I and Haft II surface-to-surface ballistic missiles, both of which are capable of carrying a nuclear warhead.²⁵ Like India, Pakistani officials generally have admitted to the capability but have denied assembling nuclear weapons. For example, Ali Sarwar Naqvi, minister counselor for public affairs at the Pakistani Embassy in Washington, wrote, "In its peaceful nuclear pursuit, Pakistan has achieved a certain capability which we consider very important in the security context of the subcontinent, but a political decision has been made not to manufacture, acquire or develop a nuclear weapon."²⁶ Pakistan has admitted to having elements which, if assembled, would be a nuclear device.²⁷

Stopping on the Weaponization Ladder. Using the four steps on the weaponization threshold outlined earlier, India and Pakistan can both be considered non-weaponized. They have crossed the first two steps: acquiring weapons-grade materials and having the capabilities and components to assemble deliverable nuclear weapons. It is uncertain, however, if either country has followed through with the third step of assembling and deploying weapons. They have not taken the final step that the five nuclear weapon states took of integrating nuclear weapons into their military and strategic

doctrines. While U.S. government officials and members of the academic community frequently wonder about the nuclear status of these countries, they generally agree with India's reports that their programs are essentially non-weaponized. *Arms Control Today* editor John Schulz writes that few serious observers believe that India has actually assembled and deployed nuclear weapons, though nearly all believe India could do so in a short amount of time.²⁸ Scholarly literature implies the same about Pakistan. The U.S. government generally believes that Indian and Pakistani claims of not assembling nuclear weapons are true. CIA Director Robert Gates testified to Congress in 1992 that though the U.S. had "no reason to believe that either India or Pakistan maintains assembled or deployed nuclear bombs...such weapons could be assembled quickly."²⁹

Both states have chosen to remain non-weaponized and have taken this stance within the international community. There are several advantages inherent in maintaining this status. India can respond to the nuclear threat of China, and receive respect and admiration for testing a nuclear device, while still being a leader in international organizations by promoting disarmament. Much of India's reputation derives from its strong pro-disarmament stance. Pakistan can counter the Indian program while still attempting to reestablish good terms with the U.S. This would allow it to become eligible for foreign aid, or at least get the F-16s that Pakistan previously purchased but did not receive from the U.S. Their nuclear programs allow the two countries to maintain a sense of security similar to that enjoyed by the nuclear weapon states. Furthermore, both states seem content with the present situation and have established a relationship of non-weaponized deterrence. Both states are restrained from crossing further thresholds of weaponization because there is little incentive to deploy arms and build arsenals.

Indo-Pakistani Deterrence. George Perkovich used Bundy's phrase "existential deterrence" to describe the situation in South Asia. He defined existential deterrence as

the mere possibility that one's actions could provoke a nuclear encounter," and wrote that "an existential deterrent relationship has been established [between India and Pakistan], probably without construction of actual nuclear weapons, and both countries at the moment feel no compulsion either to renounce this deterrent or to 'bolster' it by weaponizing and arms racing."³⁰

Perkovich believed that their deterrence is much simpler than that which was built between the U.S. and the Soviet Union, as neither India nor Pakistan show great interest in the concepts of war-fighting, worst case scenarios, extended deterrence, or second strike capabilities. It is enough that both accept that each state has the basic capability to retaliate by dropping a nuclear bomb on the other, which prevents each from launching a nuclear strike against the other. Nuclear arsenals are not necessary to that assumption. Perkovich wrote:

Most Indian and Pakistani elites show little interest in postulating how nuclear war could be managed, how deterrence could be extended across a range of conventional and nuclear scenarios, or whether worst-case analyses require an ambitious program to deploy nuclear weapons. Instead, at least for now, they simply seem to accept the basic and mutual deterrent effects of one's capability to drop a nuclear weapon on another.³¹

George Questor agrees that existential deterrence in the region provides a sense of security, particularly as a sort of no-first-use pledge. He writes that non-weaponization:

is an assurance that neither South Asian power is planning to introduce nuclear weapons on a first-strike basis early in any war. One does not nuclearize a conventional war, in hopes of winning the victories that otherwise would go to the other side, without first exercising the command and control arrangements that will be required, without first carefully training one's troops in the targets to be attacked.³²

Questor concludes that there is reason to be optimistic, as India and Pakistan are not overly concerned about each other's capabilities. Booth and Wheeler agree that South Asia provides empirical support to the idea that the benefits of deterrence can be achieved without the dangerous presence of assembled arsenals. They write, "each additional day there is no major war between India and Pakistan is a testament to 'weaponless deterrence'."³³

Indian and Pakistani officials and scholars frequently make comments which show that they feel that their nuclear programs are a deterrent to the other, and that they feel deterred by the other state. Often these statements are made while denying that their nuclear programs are weaponized. Retired Chief of the Indian Army General Sundarji said in an interview, "For all practical purposes, one must plan today on the fact that [Pakistan has] a limited nuclear-weapon capability. And that India has similar capability... If clear deterrence signals go out from one country to the other, chances of peace are brighter."³⁴ Denying that India has assembled nuclear weapons, but leaving little doubt that the capability would be assembled if necessary, Indian Atomic Energy Commission Chairman P.K. Iyengar said, "In how much time we make it, will depend on how much time we get."³⁵ On the other side, retired General Beg wrote that Pakistan ceased to enrich uranium in 1989 "because we thought that Pakistan had acquired the maximum deterrence level that is needed to avert the threat that we perceived."³⁶ Federal interior minister and retired Major General Nasirullah

Khan Babar agrees, saying that Pakistan is safe from Indian aggression because India is aware of Pakistan's "deterrent power."³⁷ From these and similar statements, it is clear that many in India and Pakistan see their non-weaponized programs as deterrents.

Cold War deterrence theory, developed over many years to describe the relationship between the U.S. and the Soviet Union, created a list of requirements necessary for effective deterrence. This list included possessing a second-strike capability and the ability to create massive destruction in a very short amount of time. Neither of these traits are evident in a non-weaponized country. Furthermore, it is not known whether a state can credibly deter a nuclear attack without a large, complete, weaponized, deliverable, and declared nuclear arsenal. What is significant in these scenarios is that the states feel deterred and are, therefore, prevented from launching a first strike against the other. Regardless of the deterrent formula, the U.S. and the Soviet Union never launched a nuclear strike, and India and Pakistan are following their example.

Impact on the Nonproliferation Regime. While India and Pakistan feel secure in their situation, the non-proliferation regime does not. Both states have large quantities of unsafeguarded fissile material and have refused to sign the Non-Proliferation Treaty. India and Pakistan remain strongly opposed to the treaty and all that it represents. India opposes the NPT because of its discriminatory nature, and has a similar dislike of regional agreements. India also maintains that as long as a nuclear armed China remains in the region, it will not enter into an agreement which does not involve China. Yet India favors universal arms control agreements such as a nuclear test ban and a ban on the production of fissile material.³⁸

Pakistan's policies on non-proliferation vary slightly from that of India. Pakistan favors regional agreements, such as a nuclear weapon free

zone, or bilateral agreements with India. In fact, Pakistan frequently introduces such resolutions to the United Nations. Most notable of these efforts was Pakistan's proposed creation of the Five Power Conference--Pakistan, India, China, Russia, and the U.S.--to "discuss and resolve" South Asian proliferation.³⁹ Despite this apparent support for non-proliferation and arms control, it must be noted that Pakistan sacrifices little when it proposes negotiations to which India will most certainly not agree.

There are some common policies between the two states: neither will unilaterally limit its nuclear program, and neither accepts the current non-proliferation regime. The challenge to managing the future of South Asian proliferation is to find a solution which reconciles the views of the non-proliferation regime with those of India and Pakistan. The restraint that India and Pakistan have shown in keeping their nuclear programs non-weaponized may offer a solution to handling the proliferation of nuclear weapons programs.

North Korea

While India and Pakistan are examples of states using non-weaponized programs for deterrence, North Korea is an excellent example of a non-weaponized state using its nuclear program for political and diplomatic purposes.

North Korea began its nuclear program in the mid-1960s, receiving a small research reactor from the Soviet Union with possibly some assistance from China. In the 1980s the North Korean program became increasingly suspicious to the non-proliferation regime as it built facilities to produce and separate plutonium.⁴⁰ Under pressure from the Soviet Union, North Korea signed the Non-Proliferation Treaty in 1985, but refused to allow IAEA inspections. By the time IAEA inspection teams finally entered North Korea in the summer of 1992, the reprocessing facility had been operating for

several years. While North Korea admitted to only separating 100 grams of plutonium, closer inspections showed that North Korea had separated more than 100 grams on several occasions. Meanwhile, intelligence reports indicated that North Korea had two hidden nuclear waste sites.⁴¹ Over the next two years, North Korea played a political game with the U.S. and IAEA, which were attempting to determine past nuclear activities, freeze these activities, and prevent the further acquisition of a nuclear weapons capability.

After two years of intense negotiations and the occasional crisis, North Korea and the U.S. finally concluded the October 1994 Agreed Framework.⁴² The agreement provides for a complete dismantlement of North Korea's nuclear program in three phases over ten years. In the first phase, North Korea will freeze its present activities in return for oil from the U.S. and a light water reactor from South Korea. In the second phase, the U.S. will remove and examine the fuel rods from the reprocessing facility to determine the extent of North Korea's past activities. At this time the first South Korean reactor will be completed, installed and ready to generate electricity. Finally, North Korea will receive the second completed reactor in exchange for tearing down the previous reactors.

While North Korea's nuclear activities were a significant violation of the Non-Proliferation Treaty, its nuclear program was far less advanced than that of India or Pakistan. The most plutonium North Korea's facilities could have produced and separated was 6 to 13 kilograms, enough for one to two weapons.⁴³ With this action, North Korea would barely surpass the first weaponization threshold. David Albright mentions U.S. intelligence sources which believe North Korea could have designed a bomb, but there is no evidence to suggest that it developed an assembled and deliverable device.⁴⁴

Rationale for the North Korean Program. Now that the crisis has subsided, some wonder if North Korea ever truly sought a nuclear weapons

capability. There are two schools of thought on this question. Some believe that North Korea's uncooperative stance was a game of diplomacy to receive political and economic awards. Others disagree, thinking that North Korea needed to develop its nuclear program for security reasons, in order to deter a nuclear power which threatened its existence. Both ideas are valid motivations for North Korea's developing nuclear facilities, and either shows that a nuclear non-weaponized state acts very much like a nuclear power.

As discussed earlier, nuclear weapon states have used their arsenals as bargaining chips and for purposes of blackmail. In the past few years North Korea has successfully used its program in a similar manner. If the nuclear facilities were developed primarily as a bargaining chip to be given up when something more valuable was offered, North Korea succeeded in gaining considerable rewards in exchange for cooperation. North Korea also succeeded at blackmail, for the threat of a North Korean arsenal prompted the U.S. to grant payments. A short review of events during the North Korean nuclear crisis substantiates these claims.

In the first stage of the crisis, from 1989 to 1991, North Korea was reprocessing plutonium and refused to enter into a safeguards agreement until U.S. tactical nuclear weapons were removed from South Korea. The U.S. removed its nuclear weapons in December 1991, and a month later North Korea signed the IAEA safeguard agreement and opened its facilities for inspection. The second stage began when the IAEA learned in the summer of 1992 that North Korea had separated more than the 100 grams of plutonium that it had admitted. North Korea responded by refusing further inspections and withdrawing from the NPT on 12 March 1993. Its reward for suspending its withdrawal was the cancellation of annual U.S. "Team Spirit" military exercises in South Korea. It also garnered a series of high level talks with the U.S.--quite an improvement for a small country which had been isolated from the international community for decades. The final

stage of the crisis began in May 1994 when North Korea removed spent fuel rods to prevent the IAEA from determining the extent of plutonium separation. This crisis ended with the October 1994 Framework Agreement, which resulted in the dismantlement of North Korea's nuclear weapons capabilities in exchange for light water reactors and oil.

Paul Bracken believes that North Korea played the game of diplomacy, but does not think that either side lost. He calls it a "non-zero sum game" in which economic and diplomatic favors were traded by the U.S. and South Korea in exchange for North Korean cooperation. As he said, "such joint gains [are] from the bedrock of international arms control: each party in a negotiation benefits."⁴⁵

Another scholar, Andrew Mack, discards the theory of the bargaining chip, and believes that North Korea wants and needs a nuclear capability as a strategic asset. He writes that North Korea has legitimate security needs and would find deterrence useful:

Nuclear weapons would provide a countervailing deterrent against U.S. nuclear threats. These threats still exist in the form of the "nuclear umbrella" held over South Korea--"nuclear umbrella" simply being a polite way of saying that, under certain circumstances, the U.S. would use nuclear weapons against North Korea.⁴⁶

Selig Harrison agrees that the American threat prompted the North Korean nuclear program. He writes that North Korea began developing a nuclear program after the U.S. continually acknowledged the possibility of using nuclear weapons against the state.⁴⁷

North Korea could very well have been striving for a non-weaponized deterrent to address the threat from the U.S. While it seems unlikely that a small state with only a few kilograms of fissile material could deter a large nuclear power, if North Korea felt its sovereignty and national

survival was at stake, it would have used all its resources to protect itself. North Korea is surrounded by nuclear powers (U.S. and China), and by states that North Korea believes have nuclear weapons (Japan and South Korea). Living by the value of *juche*, or self-reliance and independence, North Korea faced its perceived nuclear threat with the most obvious response--developing a nuclear capability itself. A North Korean journalist depicts a sentiment which is typical of many reports coming out of North Korea:

Our people oppose war but will never show mercy to aggressors who try to encroach upon the dignity of our nation and the sovereignty of our country. We have strong self-defensive power that can reliably safeguard the country's sovereignty and the might of singlehearted unity that can never be shattered by anything.⁴⁸

A potential nuclear capability offered a sense of security to the North Koreans, and gave them the possibility for a response to a nuclear attack--even if that response would be a long time coming. The concept that the mere possibility of response would deter a potential attack provided security for the troubled state, as North Korea had much to lose. Unlike the game of diplomacy, Bracken writes, the game of sovereignty is a "zero-sum game" and only one side will control the peninsula. "In any game of control for an indivisible resource, there can only be one winner; coming in second has no value."⁴⁹

The nuclear crisis in North Korea has only recently come to a close, and it is too early to know the motivations and purposes behind its nuclear program. Regardless whether the few reactors and small amounts of fissile material were used as blackmail, bargaining chips, or a deterrent, North Korea treated its non-weaponized program in much the same way as nuclear weapon states use their arsenals.

Impact on the Nonproliferation Regime. Although a signatory of the NPT, North Korea remained outside the non-proliferation regime for years before it was forced back into it, and North Korea acquired unsafeguarded fissile material while a member. Some values of the regime were lost in order to end North Korea's nuclear weapon capability. The 1994 Agreed Framework instituted a policy of forgiveness--past mistakes would not be punished as long as they were disclosed. Furthermore, the U.S. may have started a dangerous precedent of paying off a state which has not carried out its treaty obligations. However, the crisis also brought good news for non-proliferation. If North Korea had been seeking a nuclear arsenal, it would have never agreed to the deal, and when the state had the opportunity to withdraw from the NPT, it chose not to do so. North Korea gained considerable security, diplomatic, and economic benefits by acquiring a nuclear capability. That this state was satisfied with the benefits of non-weaponization is an important observation in determining the future of non-proliferation.

Nuclear Non-Weaponized States and Non-Proliferation

Nuclear weapon states use their arsenals for deterrent and diplomatic reasons. Today, nuclear non-weaponized states are using actual or potential capabilities for the same reasons. This trend, which goes back to Bundy's theories of existential deterrence, suggests that weapons systems matter less than the idea of nuclear weapons and the potential harm they can cause. This observation provides insight into the future of non-proliferation and nuclear weapons.

William Kincaid discussed the "proliferation paradox" and questioned why fewer states choose to develop nuclear weapons even as the capabilities to produce nuclear weapons increase.⁵⁰ States are not choosing

to become nuclear weapon states because having nuclear capabilities is sufficient to meet their security needs. Future years will probably bring a proliferation of nuclear programs with capabilities of producing weapons, even among states that have previously not been a proliferation concern. If the acquisition of weapons-grade material (highly enriched uranium and reprocessed plutonium, which are not necessary for nuclear power plants) proves to be a valuable tool in international relations, states will have incentives to go beyond the boundaries of the NPT. This is a threat to the non-proliferation regime. It is also, however, a restraint. If states with the capability to produce nuclear weapons find utility and security in non-weaponized programs, they will not test, deploy, or integrate nuclear forces into the military.

Non-weaponization has numerous advantages for international security. When states are content to remain non-weaponized, they will not enter into destabilizing arms races. By not acquiring working weapons, states show that their intentions are not aggressive and commit themselves to something resembling a no-first-use agreement. Furthermore, when nuclear programs are months, weeks, or even days away from being weaponized, the delayed time factor decreases the possibilities of inadvertent or accidental uses of nuclear weapons. Therefore, the non-proliferation regime would, very likely, actually be more successful in preventing weaponization than in stopping proliferation.

It is important to note, however, that non-weaponization is not a perfect scenario. Dangers remain in large quantities of fissile materials spread throughout the world. States which possess a nuclear weapons capability also possess the capability to supply other states. In addition, nuclear programs which are not secured are highly susceptible to theft. However, if these dangers can be addressed, a non-weaponization regime can be an alternative to the non-proliferation regime.

While the non-proliferation regime has had many successes over the past 25 years, and the NPT was strengthened by the indefinite extension granted in 1995, not all states have chosen to join the treaty. It would be best for international security to bring the states not currently parties to the NPT into a regime that provides for protection of fissile materials, rather than attempting to prevent proliferation outright. The situations of India, Pakistan, and North Korea have confirmed that non-weaponized programs can provide security benefits. A non-weaponized regime might also include the following provisions : states would provide an open acknowledgment as to the extent of their nuclear programs; fissile material would be secured and protected from smuggling and theft; states would offer a formalized statement that any fissile materials in their possession have not been assembled into weapons and are not intended to be used in an aggressive first strike against another state; and mutual inspections would enforce non-weaponization. Finally, states would agree to conditions similar to those found in the NPT-- they would not transfer nuclear materials or technology to other states or groups.

Such an agreement could be more attractive than those proposed in the past, and would not have the discriminatory stigma of the NPT. A Comprehensive Test Ban Treaty and a treaty banning the production of weapons-grade fissile materials would have the advantage of both limiting nuclear weapon states and freezing existing non-weaponized programs. Acting on the similarities between the needs and wants of nuclear and non-nuclear weapon states is the best way to address the concerns of the future of nuclear proliferation. If non-weaponized programs can be frozen and safeguarded, serious proliferation problems such as arms races and nuclear detonations can be prevented. In the long run, international security will benefit more from the prevention of nuclear war than it will from additional signatures on the Non-Proliferation Treaty.

ENDNOTES

- ¹ *Computer World*, June 5, 1995, p. 5
- ² Manfred Lachs, *Article: Views From The Bench: Thoughts On Science, Technology And World Law*, 86 A.J.I.L. 673 (1992) (Judge and former President of the International Court of Justice) citing Joseph Weizenbaum, *Computer Power and Human Reason: From Judgment to Calculation* (1976).
- ³ *Washington Post*, "The Pentagon's New Nightmare: An Electronic Pearl Harbor," July 16, 1996, p. C03.
- ⁴ *Time*, "Onward Cyber Soldiers," Aug. 21, 1995, p. 44.
- ⁵ *Time*, "Onward Cyber Soldiers," Aug. 21, 1995, p. 40
- ⁶ *Washington Post*, "The Pentagon's New Nightmare: An Electronic Pearl Harbor," July 16, 1996, p. C03.
- ⁷ John Arquilla and David Ronfeldt, of The RAND Corporation, have defined information warfare as being the sum of netwar and cyberwar. Netwar they define as "societal-level conflict waged through Internetted modes of communication." Cyberwar they define as "conducting and preparing to conduct military operations according to information principles."
- ⁸ Working definition recognized by the School of Information Warfare and Strategy of the National Defense University as of 11/16/93.
- ⁹ Department of the Air Force, *Cornerstones of Information Warfare*, at 2 (1995).
- ¹⁰ *Cornerstones of Information Warfare*, at 3.
- ¹¹ Winn Schwartau, *Information Warfare: Chaos on the Electronic Superhighway*, p. 13 (1994).
- ¹² Richard Power, *Current and Future Danger: A CSI Primer on Computer Crime & Information Warfare*, p. 27 (1995).
- ¹³ *Ibid.*
- ¹⁴ *Washington Post*, "The Pentagon's New Nightmare: An Electronic Pearl Harbor," July 16, 1996 at C03.
- ¹⁵ *Cornerstones of Information Warfare*, at 3. This definition is similar to one proposed by the Office of the Assistant Secretary of Defense for C³I.

ENDNOTES

-
- ¹ David Alan Rosenberg, "U.S. Nuclear Stockpile, 1945 to 1950," *The Bulletin of the Atomic Scientists* (May 1982), pp. 25-30.
- ² *Ibid.*, p. 29.
- ³ Gregg Herken, *The Winning Weapon: The Atomic Bomb in the Cold War 1945-1950* (Princeton: Princeton University Press, 1988), p. 197.
- ⁴ Herman Kahn, *Thinking About the Unthinkable* (New York: Horizon Press, 1962), p. 59.
- ⁵ Henry Kissinger, *Nuclear Weapons and Foreign Policy* (Washington: Council on Foreign Relations, 1957), p. 7.
- ⁶ Richard K. Betts, *Nuclear Blackmail and Nuclear Balance* (Washington: The Brookings Institution, 1987), p. 2.
- ⁷ *Ibid.*, p. 4.
- ⁸ *Ibid.*; also McGeorge Bundy, "The Unimpressive Record of Atomic Diplomacy," *The Nuclear Crisis Reader*, Gwyn Prins, ed. (New York: Vintage Books, 1984); Daniel Ellsberg, "How We Use Our Nuclear Arsenal," in *The Nuclear Predicament: A Sourcebook*, ed. Donna Uthus Gregory (New York: St. Martin's Press, 1986), pp. 94-5. From *Protest and Survive*, E.P. Thompson and Dan Smith, eds. (New York: Monthly Review Press, 1981).
- ⁹ Ellsberg, pp. 94-5.
- ¹⁰ Emmanuel Adler, ed., *The International Practice of Arms Control* (Baltimore: John Hopkins University Press, 1992), p. xiii.
- ¹¹ Coit D. Blacker and Gloria Duffy, eds., *International Arms Control: Issues and Agreements* (Stanford: Stanford University Press, 1984), p. 223.
- ¹² Multiple Independently targeted Re-entry Vehicles on InterContinental Ballistic Missiles. Strobe Talbott, *The Master of the Game: Paul Nitze and the Nuclear Peace* (New York: Vintage Books, 1988), pp. 203-206, 288.
- ¹³ Bundy, "The Unimpressive Record of Atomic Diplomacy," p. 53.
- ¹⁴ . Bernard Brodie, "Implications for Military Policy," in *The Absolute Weapon*, Bernard Brodie, ed. (New York: Harcourt, Brace & Co., 1946), p. 76.
- ¹⁵ Robert S. McNamara, "Mutual Deterrence," in *The Nuclear Age Reader*, Jeffrey Porro, ed. (New York: Alfred A. Knopf, 1989), p. 194. (Excerpted from Robert S. McNamara, *The Essence of Security: Reflections in Office* (New York: Harper & Row, 1968), pp. 51-55.)

-
- ¹⁶ McGeorge Bundy, "To Cap the Volcano," *Foreign Affairs* (October 1969), p. 10.
- ¹⁷ McGeorge Bundy, "Existential Deterrence and Its Consequences," in *The Security Gamble*, D. McLean, ed. (Totowa, NJ: Rowman and Allanhead, 1984), pp. 8-9.
- ¹⁸ Jonathan Schell, *The Abolition* (London: Picador, 1984), p. 153.
- ¹⁹ Rosenberg, p. 30.
- ²⁰ Office of Technology Assessment, *Technologies Underlying Weapons of Mass Destruction* (Washington D.C., U.S. Government Printing Office, December 1993), pp. 130-131.
- ²¹ David Albright and Mark Hibbs, "India's Silent Bomb," *The Bulletin of the Atomic Scientists* (September 1992), p. 28.
- ²² Leonard Spector with Jacqueline Smith, *Nuclear Ambitions* (Boulder: Westview Press, 1990), pp. 63-75.
- ²³ Albright and Hibbs, p. 29.
- ²⁴ Kanwal Sibal, "India: Seeking a Democratic and Non-Discriminatory New World Order," *Arms Control Today* (June 1993), p. 9.
- ²⁵ Spector and Smith, pp. 89-112.
- ²⁶ Ali Sarwar Naqvi, "Pakistan: Seeking Regional Peace and Progress in a Non-Nuclear South Asia," *Arms Control Today* (June 1993): 9.
- ²⁷ *Arms Control Reporter* (Cambridge, MA: Institute for Defense and Disarmament Studies, 1995), p. 454.A.2.
- ²⁸ John Schultz, "Riding the Nuclear Tiger: The Search for Security in South Asia," *Arms Control Today* (June 1993), p. 5.
- ²⁹ George Perkovich, "A Nuclear Third Way in South Asia," *Foreign Policy* (Summer 1993), p. 88.
- ³⁰ George Perkovich, "Trip Report. Pakistan and India," September 10-22, 1992, pp. 5-6.
- ³¹ Perkovich, "A Nuclear Third Way in South Asia," p. 88.
- ³² George Questor, "Nuclear Pakistan and Nuclear India: Stable Deterrent or Proliferation Challenge?" Strategic Studies Institute, US Army War College, 1992, p. 9.
- ³³ Ken Booth and Nicholas Wheeler. "Beyond Nuclearism," in *Security Without Nuclear Weapons?*, Regina Karp, ed. (Oxford: Oxford University Press, 1992) p. 33.
- ³⁴ Michael O'Rourke, "Nuclear Standoff," *Far Eastern Economic Review* (13 September 1990), p. 26.

-
- ³⁵ David Albright, "India and Pakistan's Nuclear Arms Race: Out of the Closet But Not in the Street," *Arms Control Today* (June 1993), p. 12.
- ³⁶ Mirza Azlam Beg, "General Assesses Development of Nuclear Program" (text). Islamabad *The News* in English. (23 April 1994). *FBIS Daily Report: South Asia*, 4 May 1994 (PrEx 7.10: FBIS NES-94-086; p. 69).
- ³⁷ "Minister: India Aware of Country's 'Deterrent Power'" (text). *Islamabad Radio Pakistan Overseas Service* in English. (18 May 1994). *FBIS Daily Report: South Asia*, 24 May 1994, (PrEx 7.10: FBIS-NES-94-100; p. 71).
- ³⁸ Albright and Hibbs, p. 28.
- ³⁹ Samina Yasmeen, "Pakistan's Bomb: Conflicting Incentives." *Pacific Research* (May 1992), p. 7.
- ⁴⁰ Spector and Smith, pp. 118-124.
- ⁴¹ David Albright, "How Much Plutonium Does North Korea Have?" *The Bulletin of the Atomic Scientists* (September/October 1994), pp. 46-47.
- ⁴² For an in-depth review of the chronology of this period, see William E. Berry, Jr., *North Korea's Nuclear Program: The Clinton Administration's Response*, INSS Occasional Paper No. 3 (Institute for National Security Studies, Colorado Springs, CO: March 1995).
- ⁴³ Albright, p. 53.
- ⁴⁴ *Ibid.*
- ⁴⁵ Paul Bracken, "Nuclear Weapons and State Survival in North Korea," *Survival* (Autumn 1993), p. 147.
- ⁴⁶ Andrew Mack, "A Nuclear North Korea: The Choices are Narrowing," *World Policy Journal* (Summer 1994), p. 27.
- ⁴⁷ Selig Harrison, "Breaking the Nuclear Impasse: The U.S. and North Korea," prepared for a Hearing of the Subcommittee on Asian and Pacific Affairs, Committee on Foreign Affairs, U.S. House of Representatives, November 3, 1993, p. 31.
- ⁴⁸ Nodong Sinmun, "We Do Not Beg for Peace" (text). *Pyongyang Korean Central Broadcasting* in Korean (18 May 1995). Translation by the Foreign Broadcast Information Service. *FBIS Daily Report - East Asia*, 19 May 1995 (PrEx 7.10: FBIS-EAS-95-097; p. 35).
- ⁴⁹ Bracken, p. 148.
- ⁵⁰ William Kincade, "Nuclear Proliferation: Diminishing Threat?" paper presented to the 36th Annual Convention of the International Studies Association, 22 February 1995, Chicago, Illinois. Also published as INSS Occasional Paper No. 6, *Nuclear Proliferation: Diminishing Threat?* (Institute for National Security Studies, Colorado Springs, CO: Dec 1995).

INSS OCCASIONAL PAPERS

1. *Explaining Weapons Proliferation: Going Beyond the Security Dilemma.* Gregory J. Rattray, July 1994
2. *The Ukrainian Military: Instrument for Defense or Domestic Challenge?* Oleg Strekal, November 1994
3. *North Korea's Nuclear Program: The Clinton Administration's Response.* William E. Berry, Jr., March 1995
4. *Environmental Assistance as National Security Policy: Helping the Former Soviet Union Find Solutions to its Environmental Problems.* Robert L. Dunaway, November 1995
5. *Economic Power in the Sino-U.S. Relationship.* Kevin F. Donovan, December 1995
6. *Nuclear Proliferation: Diminishing Threat?* William Kincade, December 1995

⁷² Art. 35, *International Telecommunication Convention*, Malaga-Torremolinos, Oct. 25, 1973, 28 UST 2495, TIAS No. 8572. The Law of the Sea Treaty has a similar provision, there prohibiting the broadcasting from the high seas so as to interfere with the radio broadcasts of coastal states.

⁷³ *Time*, "Onward Cyber Soldiers," Aug. 21, 1995 at 43.

⁷⁴ Art. 37, *International Telecommunication Convention*.

⁷⁵ Art. 38, *International Telecommunication Convention*. Paragraph 2 of Art. 38 states: "Nevertheless, these installations must, so far as possible, observe statutory provisions relative to giving assistance in case of distress and to the measures to be taken to prevent harmful interference, and the provisions of the Administrative Regulations concerning the types of emission and the frequencies to be used, according to the nature of the service performed." It would seem that jamming all of a country's stations and substituting for them the transmissions of a belligerent would constitute a "harmful interference." The language "so far as possible" which precedes this section may afford the squirm room necessary to circumvent this provision in time of conflict.

⁷⁶ OCDE/GD (92) 190, Paris 1992.

⁷⁷ OCDE/GD (92) 190, at 33.

UNITED STATES AIR FORCE ACADEMY

**Lieutenant General Paul E. Stein
Superintendent**

**Brigadier General Ruben A. Cubero
Dean of the Faculty**

**HEADQUARTERS, US AIR FORCE
PLANS AND OPERATIONS DIRECTORATE**

**Major General Robert E. Linhard
Director of Plans**

**Lieutenant Colonel Todd A. Bodenhammer
Chief, National Security Negotiations Division**

USAF INSTITUTE FOR NATIONAL SECURITY STUDIES

**Lieutenant Colonel Jeffrey A. Larsen
Director/Editor**

**Ms Cari Gast-Mulherin
Editor**

**Ms Marsha Taylor
Cover Design**

USAF Institute for National Security Studies

USAFA/DFE
2354 Fairchild Drive, Suite 5D33
US Air Force Academy
Colorado Springs, CO 80840

(719) 472-2717
DSN: 259-2717
FAX: (719) 472-2716