

2010년도 KINU KOREA-U.S. 민간전략대화 및 국제적 공동연구  
KINU-USKI JOINT RESEARCH PROJECT

# Nuclear Security 2012

**: Challenges of Proliferation and  
Implication for the Korean Peninsula**

edited by Jung - Ho Bae and Jae H. Ku



Korea Institute for  
National Unification



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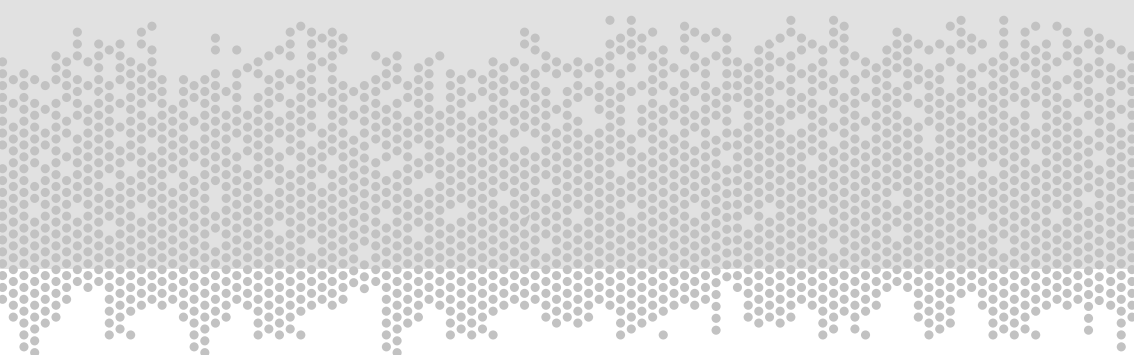
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# **Nuclear Security 2012**

## **: Challenges of Proliferation and Implication for the Korean Peninsula**

The analyses, comments and other opinions contained in the this monograph are those of the authors and do not necessarily represent the views of the Korea Institute for National Unification.

## Preface

Distributed among some 40 countries around the world, there is enough plutonium and highly enriched uranium to produce some 120,000 nuclear bombs, and a considerable portion of this material is not held under sufficient control and supervision. Terrorist organizations and other non-state actors have been actively seeking to obtain some of these nuclear materials in order to manufacture nuclear weapons. Furthermore, North Korea, Iran and Syria have been directly operating nuclear weapons programs, posing a threat to the nuclear non-proliferation regime.

Considering these developments, we cannot deny that the global nuclear security situation has become increasingly vulnerable. President Obama has felt these concerns and drawn attention to the importance of nuclear security, and in April 2010 he hosted the 1st Nuclear Security Summit in order to seek common ground and cooperation among world leaders.

Further, at President Obama's suggestion, the 2<sup>nd</sup> Nuclear Security Summit is scheduled to be held in South Korea in 2012. The 2012 summit will be an international conference on a far greater scale than the G20 summit. South Korea plans to make every effort to prepare for this conference so that it can focus the capacities of the international community and create a turning point in resolving the North Korean nuclear issue.



Based on an awareness of this issue, this research will address the topics of the nuclear non-proliferation regime and nuclear security. This project brings together researchers from the U.S. and South Korea, primarily drawing from the Korea Institute for National Unification(KINU) and the U.S.-Korea Institute(USKI) at SAIS, affiliated with Johns Hopkins University. Hoping for the success of the 2<sup>nd</sup> Nuclear Security Summit, we will address the topic of the nuclear non-proliferation regime and nuclear security.

The editors of this volume hope that it will help researchers, students, and general readers in South Korea and the U.S. to better understand the current state of the nuclear non-proliferation regime, the threat posed to global nuclear security by the nuclear programs of North Korea, Iran and Syria, and the efforts by non-state actors such as terrorist organizations to acquire materials for the purpose of making nuclear weapons. We also hope that it will help to increase awareness of the strategic importance of the ROK-U.S. alliance in deterring asymmetric threats such as the North Korean nuclear programs.

Lastly, the editors would like to thank Ms. Eun-Jung Lee and Mr. Uichan Ko, research associates at KINU, for their excellent editorial assistance, including designing the front cover and proof-reading all drafts of this volume.

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# I . Nuclear Summit 2012 and U.S.–ROK Strategic Cooperation

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# 1. Introduction

With the demise of the Cold War and in the aftermath of 9·11, American leaders began voicing more concerns about unsecured nuclear material falling into the hands of Al Qaeda and other terrorist networks. The concern is not generally over nuclear warheads in the possession of declared nuclear states, although political instability in Pakistan continues to raise concerns over its ability to maintain and secure its nuclear weapons.<sup>1</sup> The main concerns arise from securing nuclear materials in the possession of countries which are either actively in pursuit of nuclear weapons program, such as North Korea, Iran, and Syria or countries which have a questionable capacity to safeguard the nuclear material already in their possession. These two types of countries make it more likely that terrorist networks may eventually succeed in acquiring both the technology and the material to create a nuclear device.

Therefore, the international community's heightened concern has been over maintaining the security of the stockpile of nuclear material used for both civilian and military use. Although the chance of a nuclear weapon being used by a nuclear state has dramatically fallen, the possibility that a terrorist network will try to acquire and use a nuclear device against the United States has dramatically increased. Since the end of the Cold War, the International Atomic Energy Agency (IAEA) has tracked nearly 1,000 incidents involving the illicit

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<sup>1</sup> See in this book Walter Andersen's chapter "South Asia and the Strategic Implications of Nuclear Weapons."





trafficking of nuclear and other radioactive materials.<sup>2</sup> According to U.S. officials, there exists over 2,000 tons of plutonium and highly enriched uranium for military and civilian use in dozens of countries; moreover, there have been 18 documented cases of theft or loss of plutonium or highly enriched uranium.<sup>3</sup> When one adds the unknown number of cases of terrorist organizations and other non-state actors reaching out to nuclear weapons scientists, the future does not bode well for nuclear security.<sup>4</sup> That is, the threat of nuclear terror posed by non-state actors has become more serious.

To confront such a threat, in January 2008, writing in the *Wall Street Journal*, four distinguished U.S. statesmen - George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn - called upon the world, the U.S. and Russia<sup>5</sup> in particular, to “Dramatically accelerate work to provide the highest possible standards of security for nuclear weapons, as well as for nuclear materials everywhere in the world, to prevent terrorists from acquiring a nuclear bomb (emphasis original).”<sup>6</sup> In April 2009, President Barack Obama delivered a speech in Prague calling for the eventual and ultimate elimination of

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<sup>2</sup>- Walter Andersen, “South Asia and the Strategic Implications of Nuclear Weapons.”

<sup>3</sup>- Office of the Press Secretary, The White House, “Key Facts about the Nuclear Security Summit,” (13 April, 2010).

<sup>4</sup>- See in this book Sharon Weiner’s chapter “Nuclear Weapons and Non-State Actors: Issues for Concern.”

<sup>5</sup>- Presently, of the 23,000 nuclear warheads in existence, the U.S. and Russia possess an overwhelming number of nuclear warheads; nearly 22,000 nuclear warheads or over 95% of existing stockpile of warheads are in their possession. Swadesh M. Rana, “The NPT and Nuclear Security Summit,” *CBRN South Asia Brief*, No. 19 (April 2010), p. 2.

<sup>6</sup>- *The Wall Street Journal* (15 January, 2008).

all nuclear weapons. His speech followed earlier calls for a world free of nuclear weapons, in which he proposed that a nuclear security summit be held in Washington D.C. in 2010.

The IAEA defines nuclear security as “the prevention and detection of, and response to, theft, sabotage, unauthorized access, illegal transfer or other malicious acts involving nuclear material, other radioactive substances or their associated facilities.”<sup>7</sup> What this means in terms of international relations is taking action to keep non-states actors from acquiring nuclear fission material or using such material maliciously.

## 2. The First Nuclear Summit

As proposed by President Obama, the first Nuclear Security Summit was held in Washington D.C., on 12–13 April, 2010. In attendance for the two-day summit were forty-seven heads of states and governments as well as the representatives of three international organizations (the UN, the IAEA and the EU).<sup>8</sup> These leaders came, at the behest of the United States, to find better ways to secure all vulnerable fissile, nuclear material and to prevent nuclear material from reaching the hands of international terrorists.

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<sup>7</sup>-International Atomic Energy Agency, “Concepts and Terms,” <<http://www-ns.iaea.org/standards/concepts-terms.asp?s=11&l=90>>.

<sup>8</sup>- The Summit was the largest conference held in Washington D.C. since the San Francisco conference convened in 1945 to create the UN. It is considered to be one of the largest international conferences ever in the area of disarmament and non-proliferation.



The thrust of the first Nuclear Security Summit has been to reinforce the “principle that all states are responsible for ensuring the best security of their materials, for seeking assistance if necessary, and providing assistance if asked, (and to promote) international treaties that address nuclear security and nuclear terrorism.”<sup>9</sup> Therefore, the main goals of the Summit were to ① build a consensus on the seriousness of the threat of nuclear terror, ② reconfirm that securing nuclear material is the most urgent task in order to prevent nuclear terror, and ③ strengthen domestic nuclear security measures, the role of the IAEA and international cooperation.

Thus, given the potential for misuse and misallocation of nuclear material, President Obama has called upon the leaders of the 47 countries to come “together to advance a common approach and commitment to nuclear security at the highest levels.”<sup>10</sup> After two days of discussion, the leaders shared the thought that nuclear terror is one of the most urgent and serious challenges to international security and signed a 12 item communiqué and a work plan, calling for the securing of all vulnerable nuclear material over the next four years.<sup>11</sup> The non-binding communiqué released after the Summit specifies the following:

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<sup>9</sup>– Office of the Press Secretary, The White House, “Key Facts about the Nuclear Security Summit.”

<sup>10</sup>– *Ibid.*

<sup>11</sup>– The Work Plan calls for more inter-state cooperation and also to cooperate more with the IAEA to better detect and respond to cases of potential trafficking of illicit nuclear material.



- ① Reaffirm the fundamental responsibility of States, consistent with their respective international obligations, to maintain effective security of all nuclear materials, which includes nuclear materials used in nuclear weapons, and nuclear facilities under their control; to prevent non-state actors from obtaining the information or technology required to use such material for malicious purposes; and emphasize the importance of robust national legislative and regulatory frameworks for nuclear security;
- ② Call on States to work cooperatively as an international community to advance nuclear security, requesting and providing assistance as necessary;
- ③ Recognize that highly enriched uranium and separated plutonium require special precautions and agree to promote measures to secure, account for, and consolidate these materials, as appropriate; and encourage the conversion of reactors from highly enriched to low enriched uranium fuel and minimization of use of highly enriched uranium, where technically and economically feasible;
- ④ Endeavor to fully implement all existing nuclear security commitments and work toward acceding to those not yet joined, consistent with national laws, policies and procedures;
- ⑤ Support the objectives of international nuclear security instruments, including the Convention on the Physical Protection of Nuclear Material, as amended, and the International Convention for the Suppression of Acts of Nuclear Terrorism, as essential elements of the global nuclear security architecture;

- ⑥ Reaffirm the essential role of the International Atomic Energy Agency in the international nuclear security framework and will work to ensure that it continues to have the appropriate structure, resources and expertise needed to carry out its mandated nuclear security activities in accordance with its Statute, relevant General Conference resolutions and its Nuclear Security Plans;
- ⑦ Recognize the role and contributions of the United Nations as well as the contributions of the Global Initiative to Combat Nuclear Terrorism and the G-8-led Global Partnership Against the Spread of Weapons and Materials of Mass Destruction within their respective mandates and memberships;
- ⑧ Acknowledge the need for capacity building for nuclear security and cooperation at bilateral, regional and multilateral levels for the promotion of nuclear security culture through technology development, human resource development, education, and training; and stress the importance of optimizing international cooperation and coordination of assistance;
- ⑨ Recognize the need for cooperation among States to effectively prevent and respond to incidents of illicit nuclear trafficking; and agree to share, subject to respective national laws and procedures, information and expertise through bilateral and multilateral mechanisms in relevant areas such as nuclear detection, forensics, law enforcement, and the development of new technologies;
- ⑩ Recognize the continuing role of nuclear industry, including the private sector, in nuclear security and will work with industry

to ensure the necessary priority of physical protection, material accountancy, and security culture;

- ⑪ Support the implementation of strong nuclear security practices that will not infringe upon the rights of States to develop and utilize nuclear energy for peaceful purposes and technology and will facilitate international cooperation in the field of nuclear security; and
- ⑫ Recognize that measures contributing to nuclear material security have value in relation to the security of radioactive substances and encourage efforts to secure those materials as well.<sup>12</sup>

In sum, the first Nuclear Security Summit succeeded in building a consensus on the seriousness of the threat of nuclear terror, reaching an agreement on implementing domestic nuclear security measures, reconfirming the essential role of the IAEA in the international nuclear security framework, and supporting international agreements and cooperative plans related to nuclear security.

Another outcome was the announcement in the second day of the Nuclear Security Summit that Chile and Canada had agreed to ship their highly enriched uranium to the United States while Ukraine agreed to ship its highly enriched uranium out of the country within two years.<sup>13</sup> Also, the United States and Russia reached an agreement to eliminate enough total plutonium for approximately 17,000 nuclear

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<sup>12</sup>- Office of the Press Secretary, The White House, “Communiqué of the Washington Nuclear Security Summit,” (13 April 2010), <<http://www.whitehouse.gov/the-press-office/communiqu-washington-nuclear-security-summit>>.

<sup>13</sup>- The White House Blog, “An Opportunity-Not Simply to Talk, But to Act,” (13 April, 2010), <<http://www.whitehouse.gov/blog/2010/04/13/opportunity-not-simply-talk-act>>.



weapons, an agreement that had been stalled since 2000.<sup>14</sup> Finally, it was announced at the Summit that South Korea will host the next Nuclear Security Summit in 2012.

### 3. Why South Korea?

President Obama proposed that South Korea host another such summit. In a telephone conversation between President Obama and President Lee Myung-Bak on 1 April, 2010, Obama asked Lee to host a second Nuclear Security Summit, citing its significance and potential for it to become a regularized event.<sup>15</sup> Aside from the good personal relations between the two presidents of the United States and South Korea that may have prompted Obama to ask Lee to host a second summit, South Korea is a good locus for the summit, because the Korean peninsula possesses both the downside of a nuclear weapons program in North Korea and the upside of a peaceful civilian nuclear program in South Korea.

South Korea willingly accepted the proposal.<sup>16</sup> The strategic significance of hosting the second Nuclear Security Summit can be summarized as follows. First, South Korea can highlight its peaceful use of nuclear energy. The peaceful use of nuclear energy constitutes one

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<sup>14</sup>- *Ibid.*

<sup>15</sup>- Myo-ja Ser, "Korea will host nuclear security summit in 2012," *JoongAng Daily* (14 April, 2010).

<sup>16</sup>- *Ibid.* According to Korean officials, South Korea agreed to host the summit because of its promotion of peaceful use of nuclear technology whereas the North has been pursuing a destabilizing nuclear arms program.



of the three pillars of the NPT along with nuclear disarmament and non-proliferation. Though South Korea has been peacefully operating active civilian nuclear energy programs, it does not possess nuclear fissile material or facilities for enrichment and reprocessing. It can be said that South Korea is an exemplary state with respect to the peaceful use of nuclear energy.<sup>17</sup>

Second, South Korea can enhance the level of awareness in the international community of the threat that the North Korean nuclear program poses and strategically facilitate international public opinion that would work favorably in resolving the North Korean nuclear issues. By focusing international attention on and garnering the will for resolving the North Korean nuclear issues, South Korea can put more pressure on North Korea to denuclearize.

Third, South Korea can highlight and publicize its efforts for nuclear security to the international community. Some security experts and policy makers in neighboring countries are suspicious of a unified Korea going nuclear. To dispel such a concern, South Korea can clearly publicize its efforts for nuclear security and its will for a nuclear weapon-free Korean peninsula.

Fourth, by hosting a large scale international conference, South Korea can enhance its international status. Hosting this summit is in line with President Lee Myung-Bak's policy of raising the profile of South Korea in the international community. In November 2010,

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<sup>17</sup>- Bong-Geun Jun, "Haeg-anbo Jeongsanghoeui-ui Seonggwa-wa Gwaje (Results and Tasks of the Nuclear Summit)," *Ju-yogugjemunjabunseog (Analysis of Major International Events)* (Seoul: IFANS, 18 May, 2010).



South Korea hosted the G20 Summit as the first non-G8 country and the first Asian country to do so. The second Nuclear Security Summit will surpass the G20 Summit as the largest summit ever hosted by the Korean government.

Therefore, South Korea should contribute to gathering the international community's capabilities for nuclear security while hosting such a large summit and should, above all, put every effort toward making the summit a turning point in resolving the North Korean nuclear problems.

#### 4. Nuclear Security and the Nuclear Programs on the Korean Peninsula: North Korea's Nuclear Weapons Program vs. South Korea's Peaceful Civilian Nuclear Energy Program

The on-going nuclear standoff between North Korea and the rest of the world continues to destabilize regional security, as well as chipping away at the Non-Proliferation Treaty(NPT). Although North Korea signed the Nuclear Non-Proliferation Treaty in 1985 and ratified it in 1992, it withdrew from the NPT in 1993. The tortuous negotiations to denuclearize North Korea between North Korea and concerned parties including the United States have yielded little result in the past two decades. Rather, while negotiations have been on-going via the Six Party Talks and in other formats, North Korea has conducted two underground nuclear tests in October 2006 and in May 2009.



It can be pointed out that North Korea's nuclear weapons program poses threats to non-proliferation in at least two ways. First, North Korea sets a bad precedent for other countries that would like to follow in its footsteps, such as Iran and Syria. Second, North Korea has the potential to provide nuclear devices, material, and technology to other states and/or networks. For instance, Syria was constructing a clandestine reactor in 2007 with the assistance from North Korea when it was destroyed by an Israeli airstrike.<sup>18</sup> Recent press reports have speculated that North Korea and the military regime in Burma/Myanmar may have had discussions on some aspects of nuclear cooperation.<sup>19</sup> Security experts fear that the real danger North Korea poses is its ability to proliferate nuclear material and technology along with their sales of missiles and missile technology.

On the South Korean side, it has had a successful civilian nuclear program for the past forty years. South Korea built its first commercial nuclear power plant in 1978. Since then, it has built and operated 19 reactors; South Korea now has the sixth largest nuclear capacity in the world.<sup>20</sup> In 2009, a South Korean consortium led by Korea Electric Power Corporation(KEPCO) sealed a deal with the United Arab Emirates to build four nuclear power plants costing \$40

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<sup>18</sup>- See in this book Jim Walsh's chapter "Three States, Three Stories: Comparing Iran, Syria and North Korea's Nuclear Programs."

<sup>19</sup>- Julian Borger, "Burma suspected of forming nuclear link with North Korea," *The Guardian* (21 July, 2009), <<http://www.guardian.co.uk/world/2009/jul/21/burma-north-korea-nuclear-clinton/print>>.

<sup>20</sup>- Jisup Yoon, "Korean Nuclear Energy and Approach to Spent Fuel Management," A Presentation at the U.S.-Korea Institute, Johns Hopkins University School of Advanced International Studies (1 November, 2010).

billion over the life of the projects.<sup>21</sup> In early 2010, a South Korean consortium led by the Korea Atomic Energy Research Institute and Daewoo Engineering and Construction Company signed a \$130 million deal with Jordan to build its first nuclear research reactor.<sup>22</sup> By 2030, South Korea hopes to have exported 80 nuclear power reactors worth \$400 billion.<sup>23</sup> If these plans are successfully executed, South Korea would be the world's third largest exporter of nuclear reactors, garnering 20 percent of the global market.<sup>24</sup>

## 5. The Second Nuclear Summit: South Korea's Main Policy Agenda and Strategy

As the host of the second Nuclear Security Summit, South Korea has an opportunity to strengthen and promote not only international standards and institutions for safeguarding nuclear materials but also resolve peninsular nuclear issues. In preparation for the summit, South Korea should make a comprehensive review of what has been achieved since the first summit, identify the areas that need improvement, and put forth ideas or initiatives that could be identified as having originated in Seoul. The follow up issues from the first summit include how well

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<sup>21</sup>– Yoon, “Korean Nuclear Energy and Approach to Spent Fuel Management,”

<sup>22</sup>– “South Korea-Jordan Sign \$130M Nuclear Deal,” *United Press International* (31 March, 2010), <[http://www.upi.com/Science\\_News/Resource-Wars/2010/03/31/South-Korea-Jordan-sign-130M-nuclear-deal/UPI-16251270062075](http://www.upi.com/Science_News/Resource-Wars/2010/03/31/South-Korea-Jordan-sign-130M-nuclear-deal/UPI-16251270062075)>.

<sup>23</sup>– Richard Weitz, “Another Korean Nuclear Issue,” *The Diplomat* (19 July, 2010), <<http://the-diplomat.com/2010/07/19/another-korean-nuclear-issue/3>>.

<sup>24</sup>– *Ibid.*

the Work Plan has been implemented. The Work Plan called for the strengthening of United Nations Security Council Resolution 1540 and other international agreements, which call for member states to do their utmost to prevent non-state actors from acquiring nuclear weapons and material.

Some of the specifically proposed actions include more and better cooperation among states and with the IAEA in information sharing; providing additional funding, either for the IAEA or for many of the national governments to implement the Work Plan; and greater improvement in securing nuclear material at reactor sites and at storage sites by having armed guards and surveillance systems.

Some of the contentious issues not raised in the first summit may be raised in Seoul due to either an improvement or a worsening of the political and security climate. For instance, the sanctioning of Iran's nuclear program was not addressed in the first summit. If in 2012 the Iranian nuclear program continues to defy the standards and demands set by the IAEA, Iran's nuclear program could be raised at the summit for some kind of punitive action. For South Korea, this issue hits close to home as it continues to deal with a belligerent and recalcitrant North Korea that remains unwilling to curb its nuclear program. That Iran may be close to following in North Korea's footsteps may require the summit participants to raise the Iranian issue. Also at the summit, the North Korean nuclear program will most likely be raised, although any actionable course may be very limited. As mentioned before, South Korea and the United States can use the international stage to seek to dissuade pressure North Korea from



further escalating the nuclear standoff.

Another issue that should be raised is the spent fuel recycling issue, especially since this issue directly involves South Korea. In 1974, the United States and South Korea agreed that any “nuclear material supplied to South Korea may be reprocessed only in facilities acceptable to both parties upon a joint determination that IAEA safeguard may be effectively applied.”<sup>25</sup> This agreement will expire in 2014. The South Korean government has proposed reprocessing through what it calls a “proliferation-resistant” technology called pyroprocessing but the U.S. has halted the use of this technology because it “would partially separate plutonium and uranium from spent fuel.”<sup>26</sup> The concern is that pyroprocessing is not completely proliferation resistant, and that allowing South Korea to reprocess may weaken the international community’s resolve to prevent North Korea from further reprocessing.

Therefore, on this issue of fuel recycling, South Korea could, in coordination with the United States, propose several spent fuel management options. It could call for an international collaboration on advanced fuel cycle, a multilateral approach for spent fuel management and energy sustainability, and protocol for enhancing proliferation resistant safeguards. All of these actions should be consistent with the rules and regulations of the NPT.

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<sup>25</sup>– Fred McGoldrick, “New U.S.-ROK Peaceful Nuclear Cooperation Agreement: A Precedent for a New Global Nuclear Architecture,” Center for U.S.-Korea Policy (November 2009), p. 3.

<sup>26</sup>– Mark Holt, “U.S. and South Korean Cooperation in the World Nuclear Energy market: Major Policy Considerations,” *CRS Report for Congress* (21 January, 2010), p. 10.

## 6. Working for U.S.–ROK Strategic Cooperation

The security climate on the Korean Peninsula at the end of 2010 is one of tense confrontation not seen on the Peninsula in almost four decades. On 26 March, 2010, a 1,200-ton South Korean naval ship, the *Cheonan*, sank off the western coast in the Yellow Sea, killing 46 sailors. Two months later, a South Korea-led investigating team that included Australia, Britain, Sweden, and the United States concluded that a torpedo had sunk the ship. The investigating team also concluded that North Korea was behind the sinking. The March sinking froze inter-Korean relations through much of 2010; the relations appeared to be thawing at the end of the summer, as evidenced by nominal provisions of aid to the North by the South and reinstated family reunions. The thaw went into a deep freeze at the end of November when the North Korean military fired scores of artillery shells onto a South Korean island, the Yeonpyeong, killing two civilians and two soldiers. South Korea has vowed to take tough military counter measures if North Korea repeats its provocations. For the time being, the Six Party Talks, a framework of negotiations intended to denuclearize North Korea, appears to be dead in its tracks.

In 2012 when South Korea hosts the Nuclear Security Summit, the political-military security around the Korean Peninsula may have improved. While this improvement is hoped for, given North Korea's pattern of provocations to extract concessions or designed for domestic political consumption, one can expect periods of political lull punctuated by North Korean military provocations. Therefore, in preparation for



the Summit South Korea should continue and intensify cooperation with the United States on a range of issues relevant to nuclear security. The Summit can provide a useful international forum to place additional constraints on North Korea's nuclear weapons program. Even if this has a limited impact, the international community benefits from repeated calls for a complete denuclearization of North Korea because acceptance of North Korea as a nuclear weapons state will undermine the integrity of the non-proliferation regime.

On issues that are more directly tied to South Korea's civilian nuclear programs, here too, only cooperation with the United States can result in outcomes that the South Korean government seeks. As South Korea's domestic nuclear program, as well as its export of nuclear reactors, expands, it will have to resolve the issues of spent fuel storage. This resolution can only come about through nuclear cooperation with the United States. The Nuclear Security Summit 2012, therefore, can be a useful catalyst to achieving agreements that would be mutually beneficial. Finally, hosting the 2012 Summit will continue to highlight South Korea's increasingly important presence on the global stage.

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## II . The Evolution of U.S. Nuclear Strategy: From Massive Retaliation to the Nuclear Posture Review

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# 1. Introduction

Nuclear weapons, as Henry Kissinger often remarked during the Cold War, are weapons continually in search of a doctrine. The history of the evolution of nuclear strategy in the United States - as in the other nuclear powers - is a story of the ongoing attempt to find military meaning and political relevance in weapons so fantastically destructive that they defeat traditional notions of strategy. As early as 1946, Bernard Brodie was already writing that nuclear weapons represented the end of strategy, since any attempt at strategic reasoning collapsed in the face of the twin facts that nuclear weapons existed and were unimaginably powerful.<sup>1</sup> Thirty-five years later, as the United States embarked on yet another attempt to create a nuclear strategy that could actually be executed in time of war, Robert Jervis was to echo Brodie: "A rational strategy for the employment of nuclear weapons is a contradiction in terms. The enormous destructive power of these weapons creates insoluble problems;" accordingly, the history of nuclear strategy "has been a series of attempts to find a way out of this predicament and return to the simpler, more comforting prenuclear world."<sup>2</sup>

This anxiety was keenly felt by policymakers during the Cold War. They had never experienced an actual nuclear exchange, and had difficulty grasping the enormity of the kind of war they were

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<sup>1</sup> See Bernard Brodie, *The Absolute Weapon: Atomic Power and World Order* (New York: Harcourt Brace, 1946).

<sup>2</sup> Robert Jervis, *The Illogic of American Nuclear Strategy* (Ithaca, NY: Cornell University Press, 1984), p. 19.



contemplating. They had seen the devastation wreaked upon Hiroshima and Nagasaki, but these were one-sided attacks that had taken place in the wake of four years of grinding war and hundreds of thousands of U.S. casualties. (And even in the 21<sup>st</sup> century, only 59% of Americans still think the bombings were an acceptable act of war.)<sup>3</sup> These relatively small weapons had inflicted a huge amount of destruction in a day, but it was still comparable to the ruin inflicted in slow-motion over weeks of relentless firebombing. It was a different thing entirely, however, to contemplate the instant destruction of dozens of major cities from long distances, especially once ballistic missiles entered the equation. American leaders then, as now, could not fully absorb the sheer magnitude of a nuclear exchange. “You can’t have this kind of war,” President Dwight Eisenhower said in private in 1957. “There just aren’t enough bulldozers to scrape the bodies off the streets.”<sup>4</sup>

And yet, for 65 years, right up through the most recent Nuclear Policy Review released by the administration of U.S. President Barack Obama in 2010, the United States and its allies (and, one hopes, the Russians and Chinese as well) continue to struggle with just what kind of war can be had with nuclear weapons and what purpose they serve - if any. The world-destroying strategies conjured by “The Wizards of Armageddon,” in Fred Kaplan’s famous phrase, are largely relics of the past, relegated to history by the generation who lived through

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<sup>3</sup>- The poll was taken by the Rasmussen organization. “59% Say A-Bombing of Hiroshima, Nagasaki was a Good Decision,” *Rasmussen Reports* (10 August, 2010), <<http://www.rasmussenreports.com/>>.

<sup>4</sup>- Quoted in John Newhouse, *War and Peace in the Nuclear Age* (New York: Vintage, 1988), p. 120.

the Cold War and regarded as curiosities by younger generations who did not.<sup>5</sup> But even though the Cold War is gone, the weapons remain: the global count in 2010 stands at roughly 22,000 nuclear devices, most of them Russian and American. The questions that arose as soon as the first bomb exploded in the New Mexico desert in 1945 remain as well: What do these weapons actually do?

The answer, over seven decades, has vacillated between two basic positions: nuclear arms exist to fight wars, or they exist to prevent wars. There was little clarity on this issue after World War II, and there is arguably even less such clarity today. This chapter will examine how U.S. nuclear strategy evolved since World War II, and how it is being reinterpreted in the current security environment.



## 2. “At Times and Places of Our Own Choosing”

For the first few years after the attacks on Hiroshima and Nagasaki, America did not have a nuclear “strategy” so much as it had a nuclear “problem.” Until 1950, the U.S. arsenal was less than a thousand weapons, and the strategic weapons aimed at the USSR would have to be delivered by bomber aircraft. The Soviet arsenal in this period was tiny, but would cross the 1,000 mark within a decade; Soviet weapons could not, however, reliably reach the United States until the development of a missile force in the late 1950s. The American

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<sup>5</sup>– Fred Kaplan, *The Wizards of Armageddon* (Stanford: Stanford University Press, 1983).

problem was that unarguable nuclear superiority did not seem to buy very much capability, especially with regard to the defense of Europe or other allies in the face of Soviet conventional superiority. Nuclear weapons had not prevented the invasion of South Korea, or thwarted Stalin's gambles in Berlin and elsewhere. The Americans felt that "The West was being forced into fighting the [Cold War] and would have to fight any future hot war according to ground rules laid down by the communists in order to exploit their tactical advantages."<sup>6</sup>

The solution was the strategy of Massive Retaliation, foreshadowed in a 1953 U.S. National Security Council paper and enunciated a year later in more detail by Secretary of State John Foster Dulles. Although President Dwight Eisenhower's initial "New Look" at strategy only affirmed that the United States would consider nuclear weapons to be a fundamental part of any repulse of a Soviet attack, Dulles went farther and warned that the utility of nuclear arms extended beyond the battlefield. Dulles, like many American strategists, saw no alternative to letting the Soviet bloc make the first move, and that Western moves would necessarily be reactive. "If the enemy," he said in 1954,

could pick his time and his place and his and his method of warfare — and if our policy was to remain the traditional one of meeting aggression by direct and local opposition — then we had to be ready to fight in the

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<sup>6</sup>— Lawrence Freedman, *The Evolution of Nuclear Strategy* (New York: St. Martin's, 1983), p. 76.

Arctic and the tropics, in Asia, in the Near East and in Europe; by sea, by land, by air; by old weapons and by new weapons.<sup>7</sup>

The idea was not to match the USSR pound for pound, but to bring U.S. nuclear superiority to bear beforehand, and to warn Moscow that major offenses would result in America exercising its “great capacity to retaliate, instantly, by means and at places of our choosing.”<sup>8</sup> No longer would the West meet the East head-on; now, the Americans would destroy targets possibly unrelated to the conflict at hand, and on their own schedule rather than that of the enemy.

This was an asymmetric solution to an asymmetric dilemma. But there was a larger problem with the whole strategy: it was unclear and increasingly non-credible. The first logical question centered on what might trigger U.S. retaliation. An invasion of Europe, certainly, but beyond that? Aggression in Indochina? Soviet abuse of its own allies? Proxy warfare conducted by a third power? Massive Retaliation was a hammer, not a scalpel, and could not be tailored very well to anything less than a direct, punishing attack on the Soviet Union. The second question was obvious and inevitable: what happens to such a strategy once the USSR develops the ability, as it surely would, to retaliate in kind? In the end, “Massive Retaliation” was less a strategy than an expression of desperation, and it was not to last.

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<sup>7</sup>- Quoted in Newhouse, *War and Peace*, p. 95; for the full article, see J. F. Dulles, “Policy for Security and Peace,” *Foreign Affairs*, Vol. 32, No. 3 (April 1954).

<sup>8</sup>- Quoted in Newhouse, *Ibid.*, p. 95.





### 3. The 1960s and the Rise of the Strategists

As the Soviet arsenal grew in both size and capability, Massive Retaliation was quickly overcome as an option, if it ever was one, and the Americans were forced to rethink the purpose of their rapidly increasing arsenal in the face of a rising nuclear peer. The destruction of the USSR with impunity was now well out of reach; President John F. Kennedy was told in 1962 that even if the West launched everything it had at every target it could reach, some portion of the Soviet arsenal would survive and inflict ghastly damage on the United States.<sup>9</sup> U.S. Secretary of Defense Robert McNamara was instrumental in this period in seizing control of the nuclear question away from the military (whose primary approach was to match weapons to targets) and returning it to the civilians.<sup>10</sup> This set the stage for the rise of the U.S. nuclear strategists, who would generate the many scenarios and strategies that dominated American nuclear thinking well into the 1980s.

The first order of business was to give the President more options to deal with Soviet aggression than the single choice of incinerating the entire USSR. Initially, some thought was given to a “no-cities” strategy in which the United States would offer to keep a nuclear conflict from raging out of control by avoiding strikes on Soviet cities and limiting U.S. attacks to military targets. Such a strategy, however, relied on a cooperative adversary in the midst of a holocaust, and in any case could not account for the reality that many Soviet targets

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<sup>9</sup>– Newhouse, *War and Peace*, p. 162.

<sup>10</sup>– See *Ibid.*, pp. 162–164; Freedman, *Nuclear Strategy*, p. 228.

(and no small number of American assets) were located close to population centers. The real fear, as always, was war in Europe. Protecting the American and Soviet heartlands was not really the issue; any direct assault on North America or the Soviet empire would lead to the prompt destruction of the attacker and both sides knew it. But would the Americans risk their country for NATO? Once the Soviets had a secure ability to retaliate, the increasingly pressing question was whether a U.S. president would really trade Chicago for Bonn or New York for Paris.

Both superpowers continued to acquire nuclear arms at almost unimaginable rates, with the United States soon reaching levels topping over 30,000 weapons. Limiting a nuclear exchange to the battlefield was increasingly unlikely, and the strategic nuclear standoff meant that deterrence was now a matter of punishment, rather than denial; in other words, deterrence increasingly relied on the ability to inflict pain on an aggressor, rather than deny the enemy their goals or make their attack fruitless. This was an inevitable result of the inherently offensive nature of long-range strategic weapons, and it sharpened the dilemma of how to defend Europe - or anywhere, for that matter - when the USSR could always counter American nuclear threats.

After a period of extended debate (during which the 1962 Cuban missile crisis nearly rendered the whole nuclear problem moot), NATO in 1967 embraced “flexible response,” which NATO itself described as “a flexible and balanced range of appropriate responses, conventional and nuclear, to all levels of aggression or threats of



aggression.” (emphasis added)<sup>11</sup> Here, the Americans and their allies were trying to overcome the credibility gap between the defense of North America and the defense of the entire North Atlantic community. Rather than threaten either cold blooded retaliation at “times and places” of our choosing, or the senseless killing of millions of civilians, U.S. and NATO strategists were trying, through a strategy of deliberate escalation backed by a wider menu of military choices, to tie the first bullet fired in Europe to the last ICBM launched in the United States or the Soviet Union. At each level of violence, the West would escalate to the next, forcing the Soviets to escalate as well or risk defeat.

Accordingly, NATO made clear that it would not adopt any pledges of “no first use,” and Western strategy and instead accepted that the only way to hold back a Soviet advance would be to bring tactical nuclear weapons into play and thus risk general nuclear war. The practical effect, and the one with the most deterrent value, was that a strategic nuclear exchange would then become not only thinkable, but almost impossible to avoid. The Western use of nuclear weapons would be credible not because Washington or London or Paris had chosen to use them, but because they would be forced into such a choice by the Soviets themselves. A war in Europe could not be won, and was likely to lead to ghastly consequences; theoretically, deterrence by denial and deterrence by punishment had finally been united.

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<sup>11</sup>– Quoted in Freedman, *Nuclear Strategy*, p. 285.

## 4. Defenses and the Meaning of MAD

By the mid 1960s, ICBMs constituted the main Soviet and American deterrent forces, and it logically followed that each side began to consider defenses against nuclear missiles. If missile defense seems difficult in the 21<sup>st</sup> century, it was virtually impossible in the era before the ascension of the advanced microchip. The Americans grasped this quickly, especially since “defense” might well come down to exploding nuclear weapons over North American territory in a last-ditch attempt to stop incoming waves of Soviet warheads upon re-entry into the atmosphere. The Soviets, for their part, stubbornly insisted on their right to work on ballistic missile defenses, arguing that any state that did not protect its citizens was derelict in its duty—words that would later haunt them during the Reagan administration.

But there was more to the American rejection of defenses than technological impossibility. McNamara and his strategists were moving U.S. policy toward the idea that any sizable nuclear exchange with the Soviets would be mutually suicidal, no matter how it was conducted. This came after years of debates (which continue to this day) among the various schools of nuclear theology that blossomed in the 1960s. Theories about how nuclear arms deterred war ranged from “minimum deterrence,” in which an aggressor is deterred by almost any use of nuclear weapons, to “finite deterrence” (the attacker is deterred by the target’s ability to inflict some basic level of unacceptable destruction) through to parity and even superiority. The development of these theories was only possible, of course, once nuclear arms moved from



bombs being pushed out of airplanes to the plethora of more reliable weapons and delivery systems that finally existed by the late 1960s. But the development of these faster and more capable systems also meant that scenarios for nuclear use tended toward escalation, preemption, and a central exchange. This led to subsequent debates about nuclear “victory” and whether such a term was even meaningful.

McNamara and his analysts in Lyndon Johnson’s administration decided that the more direct and stabilizing approach was to avoid the question of victory and to stress to the Soviets the damage that both sides could do to each other. The Americans proposed, in effect, to enter into a mutual hostage arrangement with the Soviet Union, where each side would forego defenses, cap limits on strategic arms, and do their best to avoid all-out nuclear war. Failure would mean the extinction of both combatants. At first, this was called “assured retaliation,” and then later, “assured destruction,” and finally, the acronym that its founders believed best described it: “MAD,” or mutual assured destruction. Although MAD seemed like a simple idea, it was actually more complicated and even its various proponents did not fully agree on what it meant. There were competing notions of “MAD” during the Cold War, with some accepting the possibility of limited nuclear use, and the most pristine version assuming that nuclear war inevitably meaning the annihilation of the entire Northern Hemisphere, but in the end, MAD itself was a fact rather than a policy.<sup>12</sup> Even the

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<sup>12</sup>– Jervis, for one, identified at least four “MADs” during the late Cold War. Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca, NY: Cornell University Press, 1989), Chapter. 3.

Soviets (or at least, their political leaders)<sup>13</sup> reluctantly accepted the implication of massive and matched levels of nuclear weapons between the superpowers.

The emergence of MAD and its putatively irresistible logic did not end the nuclear debate in either the United States or the Soviet Union. Strategists on both sides continued to look for ways out of the mutual destruction cage, and to find actual military uses for nuclear weapons. (Two critics of this approach rather sarcastically referred to this effort as “Nuclear Utilization Target Selection,” or “NUTS”) By the 1970s, however, MAD was inescapable, and U.S. strategy, regardless of the intricate scenarios generated in Washington and Moscow, would remain essentially one centered on the need to avoid nuclear war with the Soviet Union.



## 5. The Countervailing Strategy and the Collapse of MAD

The 1970s were not kind to the United States. From the defeat in Vietnam to the economic shock of an oil embargo, the Americans and their NATO allies were reeling from a loss of confidence at a time when it seemed the USSR was surging in power and influence. In part, this was due to the unholy bargain that came with MAD: the desire to avoid war at the strategic level encouraged mischief and

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<sup>13</sup>- Spurgeon M. Keeny, Jr. And Wolfgang K. H. Panofsky, “MAD Versus Nuts: Can Doctrine Or Weaponry Remedy The Mutual Hostage Relationship Of The Superpowers?” *Foreign Affairs*, Vol. 60, No. 2 (Winter 1981).

competition at lower levels of conflict. Glenn Snyder long ago famously dubbed this the “stability-instability paradox,” the vexing notion that frozen bipolarity at the strategic nuclear level, in which neither side would dare war, could open the door to more instability at lower levels of violence. By the late 1970s, critics of MAD could argue that the concept had done little more than self-deter the United States from confronting an increasingly aggressive Soviet Union, while supporters could claim that all MAD was ever supposed to do was to prevent a global catastrophe, and not to bring international peace.

President Jimmy Carter initially came to office believing both that the United States had too many nuclear weapons and that Americans themselves had “an inordinate fear” of communism.<sup>14</sup> During his briefing as president-elect, he even suggested that the United States could do with a submarine-deployed nuclear force of some 200 weapons, a proposal which reportedly left the Chairman of the Joint Chiefs “speechless.”<sup>15</sup> But before his first two years as president were out, Carter would ramp up several weapons systems in a vain attempt to catch up with the perceived American lag behind Soviet capabilities, including initiating the B-2 bomber project, the MX ICBM, and the Trident submarine program. By 1979, Carter would be a revived Cold Warrior, even to the point of accepting the deployment of improved U.S. nuclear arms in Europe.

In fairness to Carter, there was much that he inherited rather than

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<sup>14</sup>– Carter used the expression in a 1977 speech at Notre Dame University.

<sup>15</sup>– Newhouse, *War and Peace*, p. 294.



created. American foreign policy in general had gone adrift in the 1970s, and the Soviets took full advantage of the situation. In particular, the 1975 Soviet deployment of the SS-18 intercontinental ballistic missile - a “heavy” ICBM armed with at least ten highly-accurate warheads - generated the panicky mathematics of the so-called “window of vulnerability” debate in the United States: with over 3,000 warheads on the SS-18, the Soviets theoretically had acquired the ability to destroy all 1,054 U.S. land-based ICBMs using only a fraction of their forces, which subsequently would be used to coerce an American surrender. Whether the Soviets really believed they could do this and escape catastrophic retaliation from American submarines and bombers is doubtful, but to many of Carter’s critics the SS-18 and other Soviet nuclear improvements were symbolic of the unchecked growth of Soviet power and required a response.

In the summer of 1980, Carter upended nearly two decades of American policy by moving the United States away from MAD and toward a denial-oriented warfighting strategy. Presidential Directive (PD) 59, or the “countervailing strategy,” sought to deter the USSR by actually trying to convince Moscow that the United States, like the Soviet Union, was ready and willing to fight a nuclear war, and that America would not be self-deterred by the consequences of nuclear conflict.<sup>16</sup> More to the point, the countervailing strategy was predicated on two assumptions: that the United States could meaningfully deny

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<sup>16</sup>- For more on the rationale behind the countervailing strategy, see Walter Slocombe, “The Countervailing Strategy,” *International Security*, Vol. 5, No. 4 (Spring 1981). Jervis dissects its flaws in detail in *The Illogic of American Nuclear Strategy*.



the Soviets their goals - whatever those might be - and more important, that war would only deprive Soviet leaders of their control of Eurasia.

Here, the Americans were confronting a puzzle they would face again in the 21<sup>st</sup> century with ruthless regimes like North Korea: how can a state that does not value the lives of its own citizens be deterred? Rather than promising the retaliatory killing of millions of Soviet citizens, PD 59 instead created a kind of wish-list of targets that not only envisaged striking the Soviet political leadership in its bunkers, but a host of other locations ranging from military bases to important economic installations that would ensure that no matter what happened in a nuclear conflict, the outcome would not be the general destruction of the entire USSR, but rather the specific end of the Communist Party of the Soviet Union. The actual execution of the strategy in PD 59 was problematic almost to the point of absurd, since striking so many targets, and in the process decapitating the entire Soviet command structure, rendered the whole idea of a “limited” nuclear war contradictory. The goal, however, was to impress upon the Soviets that they were no longer alone in their blustery willingness to risk a nuclear exchange. The Soviet leadership was so alarmed by this turn in American strategy that by the 1980 U.S. election, they actually preferred Ronald Reagan over Carter, thinking that things could not possibly get worse.<sup>17</sup>

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<sup>17</sup>- As Soviet Ambassador Anatolii Dobrynin later recalled, “It had been quite impossible for me to imagine anything much worse than Carter.” Quoted in Thomas M. Nichols, *Winning the World: Lessons for America’s Future from the Cold War* (Westport, CT: Praeger, 2002), p. 143.

The Soviets misjudged Reagan, who not only accepted the fundamental logic of PD 59, but expanded upon it. Ironically, this was not because Reagan was enamored of nuclear weapons, but rather the exact opposite. Reagan's thinking about nuclear weapons was essentially binary: complete elimination or American superiority. Either nuclear weapons would be universally abandoned, or the United States would keep the peace by maintaining a qualitative and quantitative nuclear edge, coupled to strategies for the use of those weapons that would make it clear to Moscow that the days of MAD, and the reticence it bred in Washington, were over.

In early 1983, Reagan added a new complication to the East-West nuclear competition. Turning the Soviet arguments of the 1960s on their head, he completed the discarding of MAD and embraced the possibility of defenses against ICBM attack. The launch of the Strategic Defense Initiative opened a new frontier in U.S. strategic thinking; despite being declared dead in later years (notably by then-Defense Secretary Les Aspin in the early days of Bill Clinton's administration), ballistic missile defense has now survived as a key U.S. strategic goal for almost three decades, and it remains a concept unlikely ever to be abandoned by either U.S. political party. In part, this is because there is now a bureaucracy dedicated to creating missile defenses, and bureaucracies rarely surrender their own existence willingly. But it is also undeniable that the idea is popular with the American public, who understandably support the idea of knocking down incoming nuclear missiles, even if they rarely have the costs



and technical challenges explained to them.<sup>18</sup>

The Reagan administration's approach to nuclear strategy was, in a way, too successful. The old men of the Kremlin were soon convinced that the United States was determined to launch a nuclear first strike against the USSR. In late 1983, a NATO exercise code-named "Able Archer" triggered a Soviet nuclear alert in Eastern Europe, surprising Reagan and his advisors and serving as one of several incidents that convinced the president that he had to scale down tensions with the USSR.<sup>19</sup> When the Soviet leadership chose Mikhail Gorbachev as their new chairman in 1985, Gorbachev and Reagan both quickly and jointly affirmed that "a nuclear war cannot be won and must never be fought." By 1987, the denuclearization of Europe was underway, and it would fall to President George H. W. Bush after 1988 to complete large and unilateral reductions in U.S. nuclear inventories as the Americans stepped away from the pressures of the Cold War.

## 6. After the Cold War: "Ambiguity" and the Nuclear Posture Review

Current policy regarding the use of U.S. nuclear weapons, insofar as there is one, is still predicated on a notion of "ambiguity" that

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<sup>18</sup>– The U.S. public's fascination with missile defense is discussed in Joan Johnson-Freese and Thomas M. Nichols, "Space, Stability and Nuclear Strategy: Rethinking Missile Defense," *China Security*, Vol. 6, No. 2 (Summer 2010), pp. 4–7.

<sup>19</sup>– Reagan's change of heart, the cumulative effect of a series of scares during 1983, was detailed by Beth Fischer in *The Reagan Reversal* (Columbia, MO: University of Missouri Press, 1997).



dates back to the 1990s. The concept was designed primarily to deter chemical or biological attacks, but has become a kind of default answer to the general question of how Washington would react to anything less than an all-out strategic nuclear attack on the U.S. or its allies. “Ambiguity,” in its simplest exposition, is an intentionally vague threat to visit severe punishment on a small aggressor that may or may not include the use of nuclear arms. “We think that the ambiguity involved in the issue of the use of (U.S.) nuclear weapons contributes to our own security,” then Defense Secretary William Cohen said in 1998, “keeping any potential adversary who might use either chemical or biological (weapons) unsure of what our response would be.”<sup>20</sup> Presumably, a nuclear attack would in some way generate a nuclear response, but even this has become less clear in ensuing years, since by its very nature the policy is a minimalist construction that does not rule out, or rule in, specific courses of action.

Logically, the idea is sound. Why assure an enemy of anything, in any way, other than that bad behavior will bring about bad consequences? Uncertainty - the “threat that leaves something to chance,” in Thomas Schelling’s often-quoted expression - is the cornerstone of classical deterrence theory, and it makes no sense to lay out to an opponent the matrix of possible responses to an array of unrealized situations. In theory, “ambiguity” adapts the American nuclear deterrent to the vast changes in the international security environment after the Cold

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<sup>20</sup>- Dana Priest and Walter Pincus, “U.S. Rejects ‘No First Use’ Atomic Policy: NATO Needs Strategic Option, Germany Told,” *The Washington Post* (24 November, 1998), A24.

War. Likewise, as a practical matter, it solves the ongoing political problem of having to discuss thorny possibilities that do not neatly fit into previous Cold War thinking.

However, such a malleable policy has also allowed successive U.S. administrations to avoid clarifying important and specific questions about the use of nuclear force, including the fundamental question of why America's nuclear weapons exist at all. At first, the incoming Obama administration seemed more interested in these questions than its predecessors, and after several delays finally issued the official U.S. Nuclear Posture Review in April 2010.<sup>21</sup> This was the third such report since the mid-1990s, with the previous two issued by Clinton in 1994 and George W. Bush in 2002. Neither broke new ground in U.S. nuclear thinking; the 2002 review in particular was not only vague and confusing, and in places almost wincingly strident. In any case, it was all but forgotten in the wake of the 9·11 terror attacks.<sup>22</sup>

Unfortunately, the most recent NPR is not much of an improvement on its predecessors. While it reiterates Obama's goals for a nuclear-free future, it nonetheless codifies preexisting policies (in gentler language) for the near-term. In fairness, the report does back away from some

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<sup>21</sup>– The 2010 Nuclear Posture Review is available at <<http://www.defense.gov/npr>>.

<sup>22</sup>– Details of the report, including planning for nuclear strikes on several countries, were leaked to the *Los Angeles Times*. See William Arkin, “Secret Plan Outlines the Unthinkable,” *Los Angeles Times online* (22 March, 2002). Critics, such as the Union of Concerned Scientists, pointed out that the report was essentially a restatement of Cold War policies coupled to “a dangerous and destabilizing road map for U.S. nuclear forces.” See Stephen Young and Lisbeth Gronlund, “A Review of the 2002 U.S. Nuclear Posture,” (14 May, 2002), available at <[www.ucsusa.org](http://www.ucsusa.org)>.

of the most worrisome threats implied in the Bush 2002 review, which included a U.S. claim to a right to use nuclear weapons against almost any kind of nuclear, chemical, or biological attack from any quarter. Perhaps more important, the 2010 NPR directly acknowledged the existence of the great debate, dating from the dawn of the nuclear age, over whether nuclear weapons have actual military use or serve only to deter the use of similar weapons.

But in the end, the 2010 NPR retreated from any categorical determination on this and many other important questions. Much still remains unclear about U.S. policy, such as the role of the land/sea/air nuclear “triad” (and why anyone needs one anymore), the thresholds of nuclear use, the required size of the U.S. arsenal, the role of coercive nonproliferation, and a number of other questions. Indeed, despite changes in the size and disposition of U.S. nuclear forces, many traditional concepts and practices regarding the use of nuclear weapons, such as maintaining a significant proportion of U.S. strategic forces on high alert, seem to have remained inexplicably unchanged. American officials dispute this, even while some of their harsher critics claim that there has been no meaningful evolution of any kind in U.S. or Russian nuclear strategy since the Cold War. But even if such charges are not entirely accurate, they do raise the more salient question of why one of the most dramatic changes in modern international affairs - the end of the Cold War - has produced only incremental changes in strategy.<sup>23</sup>

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<sup>23</sup>- Analysts at The Center for Defense Information, for example, have argued that



## 7. The Purpose of Nuclear Weapons in the 21<sup>st</sup> Century

Over fifty years after the proclamation of Massive Retaliation, the tension between the deterrent and military uses of nuclear weapons remains unresolved. The 2010 NPR split the difference on this question and reiterated a goal, rather than advancing a policy. “The United States,” according to the NPR, “is … not prepared at the present time to adopt a universal policy that the “sole purpose” of U.S. nuclear weapons is to deter nuclear attack on the United States and our allies and partners, but will work to establish conditions under which such a policy could be safely adopted.”<sup>24</sup> The report, understandably, did not dwell on the details of those future conditions. Stephen Walt rightly points out that such careful language might be of some public relations value, but “from a purely strategic perspective,” the report itself is “largely meaning-less.”<sup>25</sup> Arms control analyst Bruce Blair put it more plainly: the NPR is a “status-quo document in every respect.”<sup>26</sup>

The NPR, like all previous declarations about U.S. nuclear arms, is

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“The end of the Cold War did not lead the United States and Russia to significantly change their nuclear strategies or the way they operate their nuclear forces.” (emphasis original). See The Center for Defense Information, “A Rebuttal of the U.S. Statement on the Alert Status of U.S. Nuclear Forces,” (6 November, 2007), <www.cdi.org>.

<sup>24</sup>– 2010 *Nuclear Posture Review*, p. 16.

<sup>25</sup>– Stephen Walt, “Nuclear Posture Review(or Nuclear Public Relations?),” *Foreign Policy online*, (6 April, 2010).

<sup>26</sup>– Quoted in Jonathan Weisman and Peter Spiegel, “U.S. Keeps First-Strike Strategy,” *The Wall Street Journal online* (6 April, 2010).

admirably clear in only one area: the obvious case for a major nuclear exchange in response to an existential nuclear attack from a peer or near-peer. At this point, such a threat resides only in an all-out assault from Russia, or possibly China. The answer today, as it has been since the 1960s, is that an attack aimed at the crippling of U.S. military power and the subsequent eradication of the political and social system of the United State will result in a retaliatory strike and the utter devastation of the attacker. In the case of Russia in particular, a nuclear exchange of any serious size will certainly mean tens of millions of deaths and chaos throughout the Northern Hemisphere. This, as grisly as it sounds to say it, is the “easy case,” but also the one least likely to occur.

Unfortunately, the harder questions in the 21<sup>st</sup> century revolve around less dire but more likely scenarios. The Americans are now wrestling with a problem never seen before in the nuclear era: how to deal with asymmetric threats created by much smaller and less capable states that may nonetheless possess small arsenals of nuclear arms or other weapons of mass destruction. How should the United States respond to attacks from small actors that could inflict huge damage with deaths in the tens of thousands or more, but which do not threaten the very existence of America or its allies?

An attack from a small nation against the United States, its armed forces, or its friends overseas is more likely than a major nuclear exchange between the established nuclear powers. While it is a refrain that has been heard before, it is difficult to disagree with Kissinger’s 2006 observation that “contrary to historical experience … what used





to be called the ‘great powers’ have nothing to gain by military conflict with each other. They are all more or less dependent on the global economic system.”<sup>27</sup> The imbalance of interests between the United States and a smaller aggressor, however, could mean that an issue that is only of limited value to the U.S. could be considered a matter of life or death to new opponents, potentially including the collapse of their regimes, and thus lead to a catastrophic choice by desperate, delusional, or even suicidal leaders. As Richard Betts has put it, “a threat to destroy the downtown of one or two American cities would be puny, indeed infinitesimal, by comparison to the old standard of Soviet capabilities. It could, however, more than offset whatever is at stake in a confrontation with some Third World trouble maker or non-state actor.”<sup>28</sup>

So far, Washington’s answer is much like the one heard often in Moscow and Paris: nuclear weapons are the final trump card, the ultimate punishment, to be inflicted on unrecalcitrant or undeterrable opponents. The Obama administration included a “negative assurance” in the NPR, a vow not to use nuclear weapons against states that observe the Non-Proliferation Treaty, but pointedly excludes North Korea and Iran from any such promises. Although the 2010 Nuclear Posture Review and subsequent statements by the U.S. have tried to carve out a safe space for law-abiding, status-quo nations, these are

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<sup>27</sup>– Henry Kissinger, “The Rules on Preventive Force,” *The Washington Post* (9 April, 2006), B7.

<sup>28</sup>– Richard K. Betts, “What Will It Take to Deter the United States?” *Parameters*, Vol. 25, No. 4 (Winter 1995–1996). p. 72.



not the states that are threatening to make a sudden leap to nuclear status or to commit mass murder against the West.<sup>29</sup> And while the NPR does make reference to some sort of highly damaging, even “devastating,” conventional response should WMD be used against America or its allies, what form that response might take, whether it would be coupled to eventual nuclear use, or even the what the object of such attacks beyond inflicting punishment would be, is unstated.<sup>30</sup> Also left in question is what action the United States might take if the enemy regime and its leaders survive (as Saddam Hussein so often did) after some unspecified U.S. retaliation.

The indeterminate nature of this punishment reflects ongoing confusion over far more than how to deter threats from small states. Rather, it stems from a more general problem: that the United States does not have a coherent nuclear doctrine, a set of overarching beliefs and assumptions about nuclear arms and their purpose that guide nuclear strategy, planning, and forces.

One rejoinder to this observation might be to note that the United States and the other major nuclear powers, including China, have adopted a fairly clear view on the role of nuclear weapons, with all accepting the minimum deterrent position that nuclear war is

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<sup>29</sup>– The “negative assurance” is not that significant a change; it expands on a similar promise put forward by the United States over fifteen years ago. See Scott D. Sagan, “The Commitment Trap: Why the United States Should Not Use Nuclear Threats to Deter Biological and Chemical Weapons Attacks,” *International Security*, Vol. 24, No. 4 (Spring, 2000), p. 86; George Bunn, “The Legal Status of U.S. Negative Security Assurances to Non-Nuclear Weapon States,” *The Nonproliferation Review* (Spring/Summer 1997), p. 9.

<sup>30</sup>– *2010 Nuclear Posture Review*, p. viii.

prevented by the reality that even the smallest nuclear attack would produce grievous and unacceptable damage.<sup>31</sup> A group of Russian and American scholars, for example, have argued that deterrence “would remain stable even if retaliation against only ten cities were assured,” rather than the 150 to 300 targets that many planners currently seem to assume they must be able to destroy, and which subsequently formed the basis for the numbers in the 2010 START Treaty.<sup>32</sup> Smaller powers are implicitly part of this doctrine, since they would face near-complete nuclear destruction as punishment for a nuclear attack on the U.S or its allies. Whether by design or default, the outcome is the same: massive reductions in the U.S. arsenal mean that Washington has drifted away from the bizarre warfighting scenarios of the past and adopted a much leaner approach that warns potential attackers that a nuclear strike on the United States means instant and catastrophic retaliation. Moreover, these large reductions show that the former superpowers are finally acting in the spirit of the Non-Proliferation Treaty, and that the United States in particular has at last gained the moral high ground from which to threaten even the smallest proliferators with the most dire consequences.

In theory, then, nuclear doctrine in the current era should be simple.

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<sup>31</sup>– The Chinese arsenal is so small it is not capable of a protracted or massive exchange, but the Chinese seem to have settled -for now- on a small force as a sufficient deterrent. See Jeffrey Lewis, *The Minimum Means of Reprisal: China’s Search for Security in the Nuclear Age* (Cambridge, MA: American Academy of Arts and Sciences, 2007).

<sup>32</sup>– Bruce Blair, Victor Esin, Matthew McKinzie, Valery Tarynich and Pavel Zolotarev, “Smaller and Safer: A New Plan for Nuclear Postures,” *Foreign Affairs*, Vol. 89, No. 5 (September/October 2010), p. 10.

Where once the United States and the Soviet Union employed armies of analysts to game out unrealistically complicated scenarios, the Russians, Americans, and Chinese can now rest assured that they are safer in a more transparent world. Smaller proliferators must accept that they will never be able to threaten unrecoverable damage to the United States, while themselves remaining vulnerable to exactly such a possibility. The arcane intricacies of brinkmanship would then be replaced by an attempt by all of the major powers not only to somehow get along with each other, but to get to lower numbers of nuclear weapons and keep them there. Indeed, since President Obama's April 2009 speech in Prague, the official U.S. position goes even further and now echoes the hopes of Ronald Reagan three decades ago: to reach "zero," a future world where nuclear weapons have been negotiated out of existence.

But even if we accept the arguable proposition that something like the classical model of nuclear deterrence will operate at minimum levels of weapons among the established nuclear powers, simply to leave it at that is to seize the easiest part of the nuclear dilemma and then declare the issue solved. North Korea, as of this writing, is possibly preparing a third nuclear test, and it is unclear what Pyongyang (or Tehran, should they cross the nuclear line) think about the utility of nuclear arms. It is here that the lack of a coherent U.S. nuclear doctrine becomes so problematic, because Washington's implicit assumption seems to be that small powers are subject to the same putatively iron laws of deterrence that constrain large powers. Missiles, and perhaps even bombs, have a return address, the reasoning goes,



and so no leader would ever invite certain nuclear retaliation. While that might be clearly understood in the halls of the Kremlin or around the table in the Chinese Politburo, is nuclear retaliation so firmly assured as a universally credible threat that Western security should rest upon it? Conversely, would opponents of the liberal international order that the West seeks to protect be deterred by anything less than nuclear force?<sup>33</sup>

Although the current Nuclear Posture Review notes the existence of large-scale U.S. conventional options, other analysts have suggested going further toward major nuclear reductions, “no-first-use” pledges, and even stronger threats of conventional retaliation.<sup>34</sup> These moves seem unlikely in the near future; the United States and its NATO partners cannot yet agree even to complete the removal of tactical nuclear weapons from Europe, arms scattered about Western Europe which now have no obvious purpose other than to reassure newer members of the Alliance who still are haunted by the recent memory of Soviet domination. Even the Germans, as of late 2010, have reversed their position on nuclear disarmament in Europe.<sup>35</sup> And should the U.S. Senate finally ratify the renewed START Treaty, the price might

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33– “Can one believe,” French analyst Bruno Tertrais asks, “that Tehran or Pyongyang would feel reassured by Western no-first-use statements?” Tertrais then repeats Margaret Thatcher’s famous quip that “there is a monument to the failure of conventional deterrence in every French village.” Morton Halperin, Bruno Tertrais, Keith Payne, K. Subrahmanyam and Scott Sagan, “Forum: The Case for No First Use: An Exchange,” *Survival*, Vol. 51, No. 5 (April/May 2010).

34– See, for example, Michael S. Gerson, “No First Use: The Next Step for U.S. Nuclear Policy,” *International Security*, Vol. 35, No. 2 (Fall 2010).

35– “Merkel Shifts Stance to Say NATO Must Keep Nuclear Defence,” *Deutsche Presse-Agentur* (22 October, 2010).

well be high. Opponents of the Treaty believe it should be coupled to tens of billions of dollars in funding for a 21<sup>st</sup> century warhead to replace the 1970s-vintage strategic nuclear weapons now crowning U.S. missiles. Critics argue this modernization would undercut American attempts to extend the Non-Proliferation Treaty and will complicate U.S. relations with Russia and China; supporters argue that it would strengthen a smaller but more reliable deterrent. In either case, major reductions of the U.S. arsenal (to say nothing of “zero”) are not probable in the coming decade, and as long as the conventional options remain costly in lives and treasure, there is no reason to think that the Americans or any of the other major nuclear powers are going to cancel their nuclear insurance policies just yet.



## 8. Conclusions: “What is This War About?”

The United States at the end of the first decade of the 21<sup>st</sup> century still faces the unanswered questions left over from the struggles of the previous six decades. With the collapse of the Soviet threat, there is a clear urge in the West, reflected in the 2010 Nuclear Posture Review, to move toward proclaiming that deterring the use of other nuclear weapons is the only role of nuclear arsenals. Proliferators, however, recognize the asymmetries of power in the new century, and do not seem eager to be bound by rules made by larger and more capable nations. In a sense, the Americans are victims of their own military superiority; small states who cannot prevail against any other form of Western power will disingenuously claim that their only hope

of deterring the United States is to possess nuclear arms. It is instructive to recall that when the dust had settled from the 1991 Gulf War, the chief of staff of India's armed forces was asked what lessons smaller powers might take from the conflict. "Never fight the U.S. without nuclear weapons," he answered.<sup>36</sup> For now, North Korea and Iran seem to be taking that advice seriously: North Korea has conducted two nuclear tests since 2006, and the Iranians are rebuking even their Russian friends in their apparently unstoppable quest for nuclear weapons.<sup>37</sup>

During the Cold War, the Americans faced a known opponent and a relatively straightforward nuclear challenge. The scenarios were more complicated, in part because it was difficult to foresee exactly which stray spark might ignite a nuclear war. Still, both sides understood the overall ramifications of a nuclear exchange between them, and the two rivals communicated with each other in ways both understood. But while the collapse of the bipolar regime between the U.S. and USSR has reduced the chance of a global thermonuclear conflict - which was improbable in any case - it has consequently increased the possibilities for some sort of nuclear event, whether by

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<sup>36</sup>- This comment was first recounted in a 1992 speech by then-Defense Secretary Les Aspin. See T. V. Paul, Richard J. Harknett and James J. Wirtz, *The Absolute Weapon Revisited* (Ann Arbor: University of Michigan Press, 2000), p. 271.

<sup>37</sup>- In July 2010, Iranian President Mahmoud Ahmadinejad called Russian President Dimitry Medvedev the "mouthpiece for the plans of Iran's enemies" after Medvedev warned the Iranians that they do not "live in space" and that Russia cannot be "indifferent to how Iran is developing its nuclear program." See, "Medvedev 'mouthpiece' of Iran enemies: Ahmadinejad," *Associated Press online* (26 July, 2010).

accident or design. Neither U.S. strategy nor U.S. forces emerged after the Cold War configured, conceptually or intellectually, for a new era, and American strategy today is still seeking to situate itself in some sort of doctrine that makes sense in a world without the Soviet Union.

Part of the problem, of course, is that we are groping in the dark when it comes to scenarios. As Michael Howard once famously asked in exasperation, faced with the multitude of nuclear options being debated in the 1980s: “What is this war about? How do we know when we win?” Communism, for all of its bizarre rhetoric, was essentially a Western ideology, and containing its Soviet avatars was a difficult but comprehensible task. The Western alliance knew, in the grandest sense, what the war would be about, even if the exact form it would take was less clear. Today’s nuclear threats, however, are more diffuse. From a paranoid, paleo-Stalinist Korean regime in one theater, to a determined Islamic extremist regime in another, the paths to nuclear war are so numerous that it seems fruitless to try to trace each one of them. In the meantime, the shadow of nuclear terrorism hangs over all of the major powers, including Russia, and in time, the differences between Russia, China, and the West may pale in comparison to the threats that all of these great powers collectively face.

How the United States and its allies will meet these new challenges is the central question for nuclear strategy in the coming decade. So far the answers have been reflexive imitations of Cold War strategies, including notions of classical deterrence and an outdated force structure based on the traditional nuclear triad. For twenty years, “ambiguity”





has allowed the Americans to avoid confronting this lack of innovation in nuclear strategy. But as previous threats recede and new, more intricate problems arise, the inertia of the Cold War will have to be overcome, and U.S. strategy and forces will have to change to contend with the chaotic and unpredictable world left after the peaceful end of the conflict between the Eastern and Western nuclear titans.

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# Ⅲ. The Current Status of the Non-Proliferation Regime

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## 1. Introduction

North Korean nuclear weapon possession has been the primary issue of the ROK-U.S. alliance for the last 20 years. The reason for the existence of the ROK-U.S. alliance has been to deter threats by North Korea (*raison d'être*). However, for the past decade, the progressive government in South Korea, which wanted to implement appeasement, and the Bush administration, which wanted to keep a hard-line policy toward North Korea, have been in constant disputation concerning the strategic and doctrinal path of foreign policy toward North Korea. Paradoxically, the quality of North Korean threats, which are the essential reason for the ROK-U.S. alliance, has increased while the strategic bond of the ROK-U.S. alliance has weakened. There are two main reasons behind this. The first reason concerns the appearance of a progressive government in South Korea. Due to their worries that a hard-line policy toward North Korea might impede reconciliation and cooperation between the two Korean countries, the South Korean government of the past chose a passive strategy against the threat of North Korean nuclear power under the aim of shifting the competitive structure for hegemonic unification, which is the basic structure for division, to a peaceful coexistence structure with increasing economical assistance. This appeasement policy changed the quality of the dynamics of the Korean Peninsula. North Korea executed nuclear tests and launched the Taepodong antiballistic missiles. The second reason concerns the identity of North Korea itself. Although there was a lot of tension after North Korea abandoned the Nuclear Non-Proliferation





Treaty (NPT) in 1993, including military attack consideration under the Clinton administration, the issue was sealed after the Geneva Convention between North Korea and South Korea a year later. However, the North Korean nuclear issue once again became the most critical issue for global nuclear non-proliferation strategy after it expelled International Atomic Energy Agency (IAEA) inspectors in December 2002, subsequently withdrew from the NPT in January 2003, conducted its first nuclear weapons test in October 2006, and conducted its second nuclear weapons test in May 2009.<sup>1</sup>

Even though some government officers and civilians in the United States claim that the world needs to acknowledge the possession of nuclear weapons by North Korea and shift the focus to non-proliferation policy, it is possible to expect that under the lens of the international security sector of the global governance system, the North Korean provocative actions of withdrawing from the NPT and continuing its nuclear development program will cause more a resolute and stronger response by international society. The resolution of the North Korean nuclear issue has been handled at four different levels: the inter-Korean relation level, the North Korea and the United States relation level, the Northeast Asian regional level with Six Party Talks, and the international regime level with the NPT. After considering the recently tightened inter-Korean relations since the conservative party took power in South Korea, the tension between

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<sup>1</sup>-Joel Wit, Daniel Poneman and Robert Gallucci, *Going Critical: The First North Korean Nuclear Crisis* (Washington D.C.: Brookings Institution Press, 2005).

North Korea and the United States after the second nuclear weapons test, and the difficulty of the Six Party Talks due to China's uncooperative attitude, the international regime level approach will need to become a more considerable part in the future when it comes to resolving the North Korean nuclear crisis issue. First, this paper looks at the meaning of the NPT structure within the international security fields and global governance; second, it analyzes the process of nuclear armament and denuclearization; and finally, it suggests policy implications after studying the birth and limitations of the NPT. The paper concludes with an analysis of what the future of the NPT means to resolving the North Korean nuclear issue.



## 2. The Change in International Security Dynamics and Global Governance

The effect of globalization within the international security division can be narrated into the diversification of security subjects, the appearance of new threats, and cooperation-oriented governance. The traditional ideas of national security are composed of the survival of the state, the integrity of national territory and institutions, the freedom of action to preserve these core interests, and the prosperity of the state and its citizens.<sup>2</sup> Simply put, survival, sovereignty, power, and prosperity are the key ideals of traditional national security. In

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<sup>2</sup>- Graham Allison, "National and International Security," Joseph Nye and John Donahue (ed.), *Governance in a Globalizing World* (Washington D.C.: Brookings Institution Press, 2000), p. 76.

1979, the prominent scholarly journal *International Security* analyzed the influence of the interdependence of the global dimension on sovereignty, power, survival, and prosperity. It further looked at the effectiveness of primary means to achieve those key ideals while arguing that the world needs to consider the effect of transnational factors, including trade, terrorism, and the environment, as well as non-traditional factors, like energy security, technology, natural resources, and food, on national security and development at the comprehensive level rather than the state level. Hence, it forecasted the inevitability of the shift in state objectives and policy as globalization changed the international security environment.<sup>3</sup>

Brzezinski emphasized the trans-nationality of security threats, the strengthening of underground organizations, the contradiction between security and democracy, and the networking of the global order as characteristics of the international order of the 21<sup>st</sup> century.<sup>4</sup> This points out that the role and authority of the sovereign state is relatively getting weaker. The new security environment of the post-Cold War and globalization era has changed rapidly. First of all, competition of ideology no longer exists and individual states pursue their own interests freely. At the same time, a new international order has emerged with a relatively weakened authority of the sovereign state and the appearance of international, transnational, and regional organizations. Therefore, global and regional conflicts, which transcend

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<sup>3</sup>- Center for Science and International Affairs, *International Security*, Vol. 1 (Cambridge, MA: MIT Press, 1976).

<sup>4</sup>- Zbigniew Kazimierz Brzezinski, *The Choice* (New York: Basic Books, 2001).



the scope of a state, require worldwide and regional responses. State sovereignty faces challenges from the weakening of its power due to the strengthening of transnational networks and the increase of sub-state level influence. The emergence of a variety of actors is due to an increase in the power of civil society and the state's failure to deter and control conflicts of race, civilization, ethnicity, and religion. Now, states tend to handle national security issues by way of economic and diplomatic means rather than military and political ones as the level of interdependency increases. This attempts to enlarge security assurance by increasing the cooperation of sub-level politics rather than that of high-level politics, and this trend shows differences with the realist concept of sovereign state-centered security.<sup>5</sup>

The weakening of state-centered security logic is because of new threats that states cannot handle alone. The security concept is changing in a more comprehensive manner due to the increase of asymmetrical security threats, which are caused by actors' inclination to use others' weak points so they can maximize their own advantages. Moreover, transformation of nonessential issues, including global recession due to financial crises, terrorism, drug trafficking, human rights violations, global warming, cyber war and many others, into global level threats also contributes to the change. Many are suggesting new forms of social security to deal with threats such as poverty, civil

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<sup>5</sup> Man-kwon Nam, "Anbo: Anboyoungyeok global governance hyeonhwanggw Hanguk (Security: The Current Status of Global Governance in the Area of Security and Korea)," in Seung-Chul Lee (ed.), *Global Governance-wa Hanguk* (Global Governance and Korea) (Seoul: Hanyang University Press, 2007), pp. 267–302.

war, ethnic conflict, and religious conflict<sup>6</sup>; and economic security to handle defense weakening due to economic crisis and national security emergency; environmental security to manage environmental threats including destruction of ecological space, ozone destruction, climate change, desertification, pollution of sea, and natural erosion<sup>7</sup>; cyber security to protect a state from cyber attack<sup>8</sup>; human security to protect the safety of society, groups, and individuals from non-military threats<sup>9</sup>; and numerous others. These trends imply that the shift of the international security idea and governance paradigm is occurring because of globalization, which causes the convergence of the traditional state-centered security and the global-centered security paradigms.

The information technology, transportation, and communication revolutions had great influence on the formation of transnational networks and their effect on the international order. CNNization, often referring to the spatial and temporal compression of intelligence and information, facilitates accessibility to information on incidents in remote areas, and this effect increases the influence of public opinion on state behavior in the context of international society. As people witnessed American military warfare during the Kosovo Crisis in 1999,

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6- Barry Buzan, Ole Waever and Jaap de Wilde, *Security: A New Framework for Analysis* (Lynne Reinner Publisher, Inc., 1998), pp. 120–121.

7- Marc A. Levy, “Is the Environment a National Security Issue?” *International Security*, Vol. 20, No. 2 (Fall 1995), pp. 35–62; William C. Clark, “Environmental Globalization,” Joseph S. Nye Jr. and John D. Donahue (ed.), *Governance in a Globalizing World* (Washington D.C.: Brookings Institution Press, 2000), pp. 86–108.

8- Seongyi Yoon, *Jeongbosahoewa gookjepyonghwa* (Information Society and International Peace) (Seoul: *Oreum*, 2002), pp. 81–104.

9- Ronald Paris, “Human Security: Paradigm Shift or Hot Air?” *International Security*, Vol. 26, No. 2 (Fall 2001), pp. 87–102.



military leadership groups started to show image making for the public during the warfare. This trend shows a significant difference from the realist perspective since security – the state’s exclusive authority – started to be controlled by domestic politics and global public opinion.<sup>10</sup> The expansion of transnational networks is also changing the dynamics of warfare. Traditional war is often prevented while the possibility of the breakout of limited and/or nontraditional war is increasing. As the world witnessed in Bosnia, Croatia, Kosovo, Macedonia, and other states, clashes between local militias, conflicts between local militia and regular military troops, intervention by peacekeeping forces, and humanitarian intervention by great powers show a different style of warfare than compared to the Cold War era.<sup>11</sup> The development of technology, transportation, and communication not only brought shifts in the qualitative aspect of military power by changing the relative importance of military power components from troops to weapons but also increased threats by weapons of mass destruction(WMDs). As WMDs – the exclusive property of great powers – proliferate to terrorists and non-state organizations, counter-proliferation and non-proliferation have become the most critical issues within the international security division of global governance.<sup>12</sup>

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<sup>10</sup>– Graham Allison, “National and International Security,” pp. 81–83.

<sup>11</sup>– William R. Schilling (ed.), *Nontraditional Warfare: Twenty-first Century Threats and Responses* (Washington D.C.: Brassey’s Inc., 2002), p. xv.

<sup>12</sup>– The White House, *The National Strategy of the United States* (December 2005), p. 14.

### 3. The Emergence of Global Governance

The Vienna System after the Napoleonic War, international federations to achieve a peace regime after World War I, and international organizations after World War II were all created to provide a favorable security environment for the winners of the. In other words, international organizations and national security systems were primarily part of a state-centered governance system that represented the interests of hegemonic states. The period of post-Cold War global governance shows a trend of intersecting state-centered, regional-centered, and international organization-centered governance. For example, the current governance system shows collective security like the Gulf War; multinational peace-keeping forces like in the Rwanda, Somalia, and Bosnia crises; humanitarian military intervention under NATO and other regional force alliances like executed in Kosovo; and unilateral action by hegemonic powers like in the situations of Iraq and Afghanistan. Although the international security system has stability in terms of polarity, this trend continues because of the increased possibility of regional disputes due to instability within the region, weakened deterrence power as a result of bipolarity during the Cold War, increased freedom of action by individual states, and the decreased level of ties between the global and regional level.

The central questions are: How much does global governance change the national status? Can new security phenomena at the global level be analyzed without national security? The supporters of globalization argue for the degeneration of the state. That means the role of the state



will be weaker and the influence of global governance will be greater in the future since there will be a larger number of issues that need to be addressed by the global governance dimension and there will be an increase of transnational security threats.<sup>13</sup> On the other hand, arguments that transnational phenomena do not regress the state but supplement the state are also convincing. There is no dispute of the fact that the state is the central actor of global governance in reality, even though the current international order within the context of globalization shows both the weakness of the state as a central actor in security and the diversification of threats.<sup>14</sup> However, it is obvious that state-centered governance is shifting toward global governance in which a variety of actors are taking parts, especially with the increasing role of the international system or regime. On the issue of nuclear non-proliferation, analyzing the relationship between the interests of hegemonic powers and the nuclear non-proliferation system, and the latter's roles, can be one of the ways to approach the North Korean nuclear issue.

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<sup>13</sup>- Ian Clark, *Globalization and International Relations Theory* (Oxford University Press, 1999); James Rosenau, *Along the Domestic-Foreign Frontier: Exploring Governance in a Turbulent World* (Cambridge, U.K.: Cambridge University Press, 1997); Audrey Kurth Cronin, "Rethinking Sovereignty: American Strategy in the Age of Terror," *Survival*, Vol. 44, No. 2 (Summer 2002), pp. 119–140.

<sup>14</sup>- Stephen J. Flanagan, "Meeting the Challenge of the Global Century," in Richard I. Kugler and Ellen I. Frost, *The Global Century: Globalization and National Security*, Vol. 1 (University Press of the Pacific, 2002), pp. 16–22.



## 4. Nuclear Non–Proliferation Governance

The non-proliferation regime, the Treaty of Non-Proliferation and its enforcement are the issues that need to be considered when studying the NPT system in governance. The non-proliferation regime includes various concerns such as nuclear proliferation constantly threatens international peace, security, and individual life, doctrinarian of nuclear nonproliferation, expansion of the NPT, and a large frame of governance with regional organization and bilateral/multilateral cooperation structure. The NPT is a legal entity where the doctrine of non-proliferation and the rules and procedures of its execution are embodied under shared under-standings among state. The enforcement mechanism means actors like IAEA, UN, Nuclear Supplier Group (NSG) who carry out the NPT, control its execution or put pressure it implementation when violence occurs.

### *The Development Process of the Nuclear Non-Proliferation System*

#### (1) The Establishment of the NPT System

The conception of nuclear nonproliferation system can be found from IAEA. In 1953 at UN General Assembly, President Eisenhower emphasized “Atom for Peace” and proposed the establishment of an international mechanism that would manage nuclear materials at the international level, while encouraging and promoting the use of nuclear energy for peaceful purposes, and through the conference among 12 countries which held in February 1956 at Washington D.C., IAEA



draft charter has been adopted in April.<sup>15</sup> But it can be seen that full-fledged initiative building the NPT regime came from the non-nuclear states. The debate about the NPT system was started from the nuclear nonproliferation proposals of Poland, Ireland, Sweden. Especially, the main ideas of Ireland's proposal were the non-nuclear production which banned the possession of nuclear weapons and production by nonnuclear states, and nuclear nonproliferation which banned the supply of nuclear weapons by nuclear states, and afterwards it was adopted by UN and became the model of the NPT. The important thing here is either duality or discrimination between nuclear states and nonnuclear states.<sup>16</sup> Due to discrimination of not mandating nuclear disarmament of nuclear states, it was true that nuclear states such as the U.S., U.K., Soviet Union were able to participate with some leadership, this duality weakened the legitimacy and effectiveness of the NPT. In 1968, the U.S., U.K., Soviet Union, including France and China, which all possessed nuclear, proposed nuclear nonproliferation of outside those five countries, security of nonnuclear states, allowance of the peaceful uses of nuclear energy, implementation of nuclear non-proliferation and nuclear disarmament on nonnuclear states by nuclear states, induced consent for abandoning nuclear weapons development by nonnuclear states, submitted to UN General Assembly in March 1968.<sup>17</sup> And in June 1968, UN Security Council resolution

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<sup>15</sup>- Gwang-cheol Ryu, *et al.*, *Gunchugwa bihwaksaneewi segye* (The World of Arms Reduction and Non-Proliferation) (Seoul: *Pyeongminsa*, 2005), pp. 97–99.

<sup>16</sup>- Young-chae Hwang, *NPT, eoddeon joyakinga?* (NPT, What Kind of Treaty Is It?) (Seoul: *Hanwool*, 1995), pp. 38–40.

which supported the NPT treaty was adopted, and the NPT treaty came into effect in March 1970. The member states opens an evaluation meeting once every five years to examine progress and seek for improvements. Also in 1995 when 25 year validity was expired, the NPT system was extended indefinitely, at the same time, the principle of nuclear nonproliferation and nuclear disarmament was adopted. As assessment procedures were strengthened, it decided to hold a preparatory meeting every year. Also it agreed that it would conclude Comprehensive Nuclear-Test-Ban Treaty(CTBT) by 1996 and begin negotiations on banning nuclear materials production.<sup>18</sup> The current number of the NPT member states is 189. But in case of states such as India, Pakistan, Israel which possessed nuclear weapons but were not member of the NPT, in case of North Korea which developed nuclear weapons under the NPT regime and withdrew, in case of Iran which was a member of the NPT and developed nuclear weapons, the NPT system's viability has been challenged continuously.

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<sup>17</sup>- Su Seok Lee, "*Haekbihwansanchejewha junggyeongukgaeui yeokhal* (The Non-Proliferation System and the Role of Mid-size States)," *Dongseoyeongu* (East&West Studies), Vol. 21, No. 2 (Yonsei University, Institute of East&West Studies, 2009), p. 84.

<sup>18</sup>- Seongwhun Cheon, "*Haekbihwasanchejeeui jaengjeomgwa gaeseonbangan* (Controversial Issues in the Non-Proliferation System and Proposals for Its Reform)," *Journal of International Politics*, Vol. 49, No. 4 (The Korean Association of International Studies, 2009), pp. 273 – 274.

## (2) Nuclear Non-Proliferation Cases

### (a) Nuclear Non-Proliferation of Brazil and Argentina

Brazil and Argentina, as historical and territorial conflicts, have continued their nuclear development since the 1950s. Although nuclear negotiation was promoted and bilateral nuclear cooperation mechanism was configured in the early 1960s, due to domestic political situations, it has resulted in heightening tensions between the two countries rather than having positive results. In the 1970s, relations between the two countries began to improve gradually due to agreement on the territorial dispute of the Parana River, and a cooperation protocol about the peaceful use of nuclear energy was signed on 17 May, 1980. However, full-fledged cooperation began after the civilian government took office in both countries. As economic and political cooperation deepened in 1985, President Alfonsin of Argentina and President Sarney of Brazil adopted the Joint Declaration of Foz do Iguacu in order to resolve the nuclear problem. They installed measures on nuclear policy in order to provide the institutional framework for nuclear cooperation. In July 1987, during his visit to nuclear facilities in Argentina, President Sarney proclaimed the Declaration of Viedma to clarify that nuclear cooperation was for peaceful purposes. On 28 November, 1990, President Menem of Argentina and President Collor of Brazil announced the Declaration on Joint Nuclear Policy. The following information was included in the declaration:

First, we establish a Common System of Accounting and Control (SCCC) for the estimation and control of nuclear material, and this shall



apply to all nuclear activities of both countries. In addition, the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) is formed to implement that. Second, we begin negotiations with IAEA to achieve a pact regarding safeguard inspections which is based on SCCC. Third, after signing the protection inspection pact, we will undertake the necessary measures to implement the Treaty of Tlatelolco perfectly.

On 18 July, 1991, both countries completed legal actions to inhibit testing, manufacturing, possession and deployment of nuclear weapons by signing all the bilateral agreements and cooperation, covering the contents of agreements on the peaceful uses of nuclear energy, which were signed in the past (Guadalajara Treaty, Agreement for the Exclusive Peaceful Use of Nuclear Energy). Both countries also began negotiations with the IAEA and, on 13 December, 1991, the Quadripartite Agreement was concluded with the approval of the IAEA. Argentina joined the NPT in 1995 and Brazil joined in 1997.<sup>19</sup> The abandonment of nuclear development in Brazil and Argentina was a crucial contribution to the denuclearization of Latin America. In the case of Brazil and Argentina, the two countries had a nuclear race because of geopolitical relations at first, however, they voluntarily abandoned nuclear armament as the domestic political situation and

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<sup>19</sup>- Julio C. Arasales, "The Argentina-Brazilian Nuclear Rapprochement," *The Nonproliferation Review* (Spring/Summer 1995); Seongwhun Cheon, "Brazil, Argentina Wonjaryeokhyupryeok gyeongheom-eui hanbando jeokyeong (The Application of Brazilian and Argentinean Nuclear Cooperation Experiences to the Korean Peninsula)," *Journal of International Politics*, Vol. 35, No. 2 (The Korean Association of International Studies, 1996).

diplomatic relations improved and enhanced the non-proliferation system by joining the NPT. This case shows the importance of national political systems and geopolitical relations regarding nuclear non-proliferation. In this case, it is difficult to see that the NPT reproduced and enhanced nuclear non-proliferation but, instead, this was a case where NPT norms were enhanced at the regional level - Latin America - due to the abandonment of nuclear armament by Brazil and Argentina.

(b) The Cases of Egypt, South Africa, and Libya

In 1960, Egypt was actively seeking to develop nuclear weapons after Prime Minister of Israel Ben-Gurion revealed the construction of nuclear reactors in the Dimona area, which prompted President Nasser of Egypt to give a warning that Egypt would develop nuclear weapons at any costs if Israel pursued nuclear armament. The international community was especially concerned about pan-Arabism against Israel that provides a legitimacy to the nuclear development of Egypt. However, due to 1968 Six-Day War, the closure of Suez Canal, the reduction of foreign support, and more, the Egyptian economy was weakening and the budget for the nuclear program was frozen. Egypt, which lacked economic competence, instead sought peace and stability in the Middle East through a peace treaty with Israel and eliminated the development of nuclear arms in late 1970s. After joining the NPT in 1981, Egypt became an active participant of nuclear non-proliferation and when the nuclear armament of South Africa



became a problem in 1980s, Egypt induced the nuclear abolition of South Africa by generating anti-nuclear public opinion in Africa. Egypt is currently a leader in the Middle East by their efforts to promote nuclear non-proliferation and establish zones free of weapons of mass destruction.<sup>20</sup>

South Africa is the only NPT member state which dismantled its nuclear weapons on its own. In response to communist threats during the Cold War, South Africa acquired plenty of uranium in order to protect its sovereignty with nuclear weapons. But with the end of the Cold War and the imminent domestic regime change, there exist no longer justification for obtaining the nuclear sovereignty. The South African government decided to abolish nuclear armament and joined the NPT in 1993 in order to become an active participant in the international community. In 1994, the IAEA completed nuclear inspections in South Africa and declared that the nuclear weapons program had been completely eliminated. In contrast, Libya was covertly developing nuclear weapons after joining the NPT. Libya developed Chinese nuclear armament through the international nuclear proliferation network of Pakistani scientist A. Q. Khan. But through several secret negotiations with the U.S. and the U.K., Libya promised to abolish the development of nuclear armament and declared the abolishment of nuclear armament in 2003. The case of Libya may be viewed as a success story of nuclear diplomacy by the U.S. and the

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<sup>20</sup>- Egypt Profile, "NTI Country Profiles," (April 2009), <[www.nit.org](http://www.nit.org)> (Accessed on 2010.10.29).

U.K. On the other hand, the Libyan case can be seen as Gaddafi political diplomatic breakthrough to receive economic aid by using the abolishment of nuclear armament to overcome diplomatic isolation, economic backwardness, and political crisis in the Middle East, to secure recognition from the international community.

### (3) Nuclear Proliferation Cases: India, Pakistan, Israel and North Korea

India, Pakistan and Israel are not members of the NPT but possess nuclear weapons. India carried out nuclear tests in 1974, Pakistan carried out nuclear tests in 1998 respectively. Pakistan, which was threatened by nuclear-armed India, determined to have nuclear weapons for the purpose of national survival. Although India declares that it won't strike preemptive, it declines to join NPT because of China. Currently, it is estimated that India possesses about 150 nuclear warheads and Pakistan possesses about 80–120 nuclear warheads. Israel has started stockpiling nuclear warheads in Dimona area since 1958, it has been estimated that Israel currently possesses about 100–200 nuclear warheads, but it has kept the strategy of “NDNC(Non-Denial, Non-Confirmation).” These countries take the position of not accepting the moral validity, because the NPT is composed of majority of non-nuclear countries and small number of nuclear countries, and applies double standards. In 2007, the foreign minister of India declared “Just because India didn't sign the NPT, that doesn't mean India won't participate in nuclear nonproliferation.





We see that the NPT treaty has some problems. The NPT doesn't admit the need of universal, nondiscriminatory verification and processing."<sup>21</sup> Moreover, in March 2006, the U.S. completed the treaty of transferring civilian nuclear technology to India. According to this treaty, India specified 14 of the 22 nuclear power plants to use in the private sector which would be under the IAEA safeguards. The U.S. Congress approved 'The United States- India Peaceful Atomic Energy Cooperation Act' in December and IAEA approved 'The India Safeguard Agreement' in August 2008. In addition, as NSG admitted India as an exception case, India became the only country that existed outside the NPT and used nuclear energy for peaceful purposes under the support of the international community.<sup>22</sup> NSG inhibits the nuclear exports of Israel and Pakistan, because they were not inspected by IAEA. IAEA General Assembly requested IAEA's inspection acceptance and treaty compliance in the resolution of "Israel Unclear Capabilities", but Israel declined.

Although Iran is a NPT member state, it does not comply with NPT safeguards agreements. In 2003, IAEA Board of Directors decided that Iran did not comply with safeguards agreements, and reported to the UN Security Council. The UN Security Council demanded Iran to give up its uranium enrichment program, but Iran has propelled to develop nuclear continuously. The NIE(National Intelligence Estimate)

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<sup>21</sup>- "India Seeks Japan's Support, Calls NPT 'Flawed'," <[www.whereincity.com/news/3/15197](http://www.whereincity.com/news/3/15197)> (Accessed on 2010.10.29).

<sup>22</sup>- "IAEA Board Approves India-Safeguards Agreement," <[www.iaea.org/NewsCenter/News/2008/board010808.html](http://www.iaea.org/NewsCenter/News/2008/board010808.html)> (Accessed on 2010.10.29).



of the U.S. reported that Iran had stopped its nuclear development program from 2003 to mid 2007, it had stopped nuclear weaponization only temporarily and had stored up enriched uranium continuously, the U.S. began sanctions on Iran in 2010. But Iran claims that producing enriched uranium for peaceful purposes is not contrary to the NPT treaty. Iran's nuclear armament heightens tensions between Israel and Iran and is likely to be connected to Israel's tough stance on Palestine, also arouses Saudi Arabia's nuclear development, it may cause nuclear proliferation concerns in Middle East area. Another case of nuclear proliferation is the U.S.'s nuclear deployment in NATO. The U.S. had supplied about 180 B61 nuclear warheads to Belgium, Germany, Italy, Netherlands, Turkey, etc. by 2005. Many countries including nonaligned countries claim that the NATO nuclear deployment was a violation of the NPT treaty, while NATO and the U.S. claim that nuclear deployed in NATO nations is controlled under the U.S., the control power of nuclear weapons won't be transmigrated until deciding to go on war, so it is not contrary to the NPT treaty which doesn't apply once war breaks out. Over the validity of both claims, to nonnuclear states proposing questions on the moral validity of the NPT which applies double standards on both nuclear states and nonnuclear states, NATO nuclear deployment can worsen the righteousness of nuclear nonproliferation system.

North Korea case harms the NPT system in three ways. First, North Korea, as a member of the NPT, violated nuclear non- proliferation, the top priority goal of the NPT system, by having propelled to develop nuclear weapons continuously. It seems that since 1950s

North Korea has propelled to nuclear armed in order to defend its sovereignty in complete manner from the possession of nuclear weapons by the great powers around. But in 1993, through the first nuclear crisis, North Korea realized that nuclear weapons could be used as a leverage to take military, economic advantages, has used nuclear development threat as diplomatic means by provoking intermittently. However the second nuclear test in 2009 implies that North Korea propels the nuclear development as the only strategic choice in order to manage the internal turmoil and crisis in the process of succession and live out in the diplomatic isolation. In other words, it can be seen that North Korea case not only had political system issues, but also was strongly affected by the external requirements that nonnuclear states were tempted to nuclear armed, just like India, Pakistan, Israel. Second, North Korea also emerges as a very threatening presence to the NPT System which closely cooperates with A. Q. Khan Network and seeks economic gains through exporting nuclear weapons. Third, North Korea, as a member of the NPT, had secretly propelled to develop nuclear and withdrew from the NPT. This suggests that countermeasures towards those nations that received support from the NPT as member states and withdrew are needed urgently.

### *The Problems of the NPT Treaty*

The NPT Treaty is consisted of the preamble and the 11 provisions, and its implementation details are reviewed once every five years

(Review Conference of the Parties to the Treaty of Non-Proliferation of Nuclear Weapons). And during that period, the preliminary commission takes place to check the progress details (Sessions of the Preparatory Committee for the Review Conference).

(1) Contents

The three main goals of the NPT Treaty are nuclear non-proliferation, nuclear reductions and promoting peaceful uses of nuclear energy. Nuclear nonproliferation is stated in the preamble section 1–3, and Article 1, 2, the duty of nuclear states stipulates not to transfer nuclear weapons and the control power of nuclear weapons to nonnuclear states, not to assist the nuclear weapons development of nonnuclear states. The duty of nonnuclear states stipulates not to receive nuclear weapons or the control power of nuclear weapons from nuclear states, not to manufacture or acquire nuclear weapons. Member states agreed not to use nuclear except corresponding to a nuclear attack or conventional attack which was allied with a nuclear state, treaty didn't include this.

Nuclear reductions or nuclear disarmament is consisted of the preamble section 8–12, Article 6 was added because of the request of nonnuclear states that tried to associate with horizontal, vertical nuclear proliferation prohibition. Accordingly, in the preface it clearly reveals the purpose of creating a treaty that makes an environment where to ease international tension and to ban production of nuclear weapons, and removes nuclear weapons and nuclear transfer equipment,



general and complete disarmament, Article 6 evinces to pursue negotiations for this, but does not strictly require member states to conclude disarmament treaties, but instead, requires them to negotiate “in good faith.” It obliges nuclear disarmament of nuclear states officially, but does not comply with the conditions, the treaty about nuclear disarmament is currently absent. Moreover the withdrawals from the NPT and nuclear development by nonnuclear states are increasingly spread, this nuclear proliferation has become an impediment to nuclear disarmament. Another dilemma of nuclear disarmament is that the temptation of nuclear development may increase, as the number of nuclear weapons decreases, the effectiveness of nuclear weapons increases, in order to ensure its own security and project forces to the international community.

NPT Treaty preamble section 6–7 and Article 4, 5 acknowledge the inalienable right of all countries to use nuclear energy peacefully. However, member states should prove that they do not use to develop nuclear weapons. Member states without nuclear should accept IAEA’s stabilizer device in order to prove that they do not convert from the peaceful purpose of nuclear energy use to the military purpose of nuclear energy use by developing nuclear weapons or other explosive mechanism. While IAEA allows sovereign countries’ use of nuclear energy for peaceful purposes, it still restricts rights according to nuclear nonproliferation provisions. However, the IAEA inspection requires full cooperation of the parties, in fact, it is not easy to distinguish between peaceful uses of nuclear energy and military uses of nuclear energy clearly. Moreover, since enriched uranium can be

purchased on the international market, it is urgently needed to prevent the spread of enrichment and reprocessing technology. As of 2007, it was estimated that 13 countries had uranium enrichment technology.

In addition to the three main purposes, the NPT Treaty contains information about safety devices, secured guarantee on nonnuclear states, and treaty withdrawal. The preamble section 4–5 and Article 3 state that nonnuclear states should accept IAEA inspections, otherwise nuclear-related exports on those non-nuclear states are banned, provide reasons for economic sanctions. The safety on nonnuclear states is evinced in Article 7 and admits the rights of the nonnuclear zone in its territory for stability of nonnuclear states. But the temptation to develop nuclear is due to the existence fact of nuclear states, the real problem is security for nonnuclear states must be made fully on nuclear reductions. Treaty withdrawal is stipulated on Article 10, acknowledges the rights of special withdrawal cases which members of the highest national interests are infringed, needs to notify other member nations and the UN Security Council prior to.<sup>23</sup>



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<sup>23</sup>- Seongwhun Cheon, “*Haekbihwasanchejeeui jaengjeomgwa gaeseonbangan*”; Jang-hie Lee, “NPT *cheje-eui bunseokgwa gugjebeopjeok pyungga* (Analysis & Evaluations of NPT regime from International Law Point of View),” *Goryobeophak* (Korea Legal Studies), Vol. 50 (Korea University Legal Institute, 2008); U.S. Department of State, “Treaty of the Non-Proliferation of Nuclear Weapons,” <[www.state.gov/www/global/arms/treaties/npt1.html](http://www.state.gov/www/global/arms/treaties/npt1.html)> (Accessed on 2010.10.29).

## (2) The Inherent Problem of the NPT System

The NPT system distinguishes between nuclear powers and non-nuclear powers in assigning differing requirements. Article 9, Clause 3 defines a “nuclear state” as a “one which manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January, 1967” and excludes these nations from the restriction of nuclear development. Therefore, nuclear powers are not restricted from producing nuclear weapons even in the NPT system. At the time the agreement was made, the countries which officially possessed nuclear weapons were the United States, Russia, England, France, and China. All of them are permanent members of the UN Security Council and the fact that they created the definition based on a date much earlier than when the NPT Agreement was agreed upon at the United Nations can be interpreted as the five superpowers’ intention to prevent other countries from acquiring nuclear weapons. The requirement for nuclear arms reduction by nuclear powers was later added to the Agreement, but the NPT system is criticized for overly emphasizing the legal obligation for horizontal non-proliferation which limits the increase in nuclear powers, while merely declaring vertical non-proliferation which requires the nuclear powers to reduce their nuclear arms.<sup>24</sup> Such an inherent

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<sup>24</sup>– Sang-Wook Ham, “*NPT cheje-eui hyeonhwang mit jeonmang: 2010 NPT pyunggahoeui je ilcha junbiwihonhoe gyeolgwareul jungsimuro* (The Current Status of NPT System and Its Prospects: with a Focus on the Results from the First Preparatory Committee of the 2010 NPT Review Committee),” The 46<sup>th</sup> Institute of Asian Social Science Conference: the Evaluation of the NPT system and its Policy Implications (Seoul: Institute of Asian Social Science, 2010), pp. 16–18.



discrimination in the NPT system and the poor execution of nuclear arms reduction by the superpowers are provoking non-nuclear powers' opposition.<sup>25</sup> From the realist perspective, the development of nuclear weapons is the most certain method of ensuring one's nation's security. From the view of defensive realism, the possession of nuclear weapons by all countries can even prevent a nuclear war by strengthening deterrence.<sup>26</sup> Driven by this logic, non-nuclear powers who feel threatened by nuclear powers are developing and increasing nuclear arms, which currently poses a problem.<sup>27</sup>

Another inherent limit of the NPT system is the dualism of nuclear weapons having both military and peaceful functions. Massive murder weapons called nuclear weapons should be restricted but their peaceful use as alternative energy sources should be promoted at the same time. Therefore, the NPT would allow countries who give up nuclear arms production to use nuclear weapons peacefully. However, the technology for creating nuclear explosive devices for peaceful purposes is very similar to that which is necessary for regular nuclear arms production, making the implementation of the NPT system difficult. Nuclear proliferation in the 20<sup>th</sup> century has not progressed much relatively. In this respect, the NPT system can be said to have been effective to some extent. However, while nuclear proliferation

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<sup>25</sup>- Hwang, *NPT, eoddeon joyakinga?* pp. 28–30.

<sup>26</sup>- Michael Mandelbaum, *The Nuclear Future* (Ithaca, NY: Cornell University Press, 1990), pp. 19–20.

<sup>27</sup>- Kenneth Waltz, "Nuclear Myths and Political Reality," *American Political Science Review*, Vol. 84, 1990, p. 740.



took place among the superpowers in the 1940s and 1950s, it has extended to non-superpowers since the 1960s, thus exposing the problems of the NPT system. The suspicion of North Korea and Iraq's possession of nuclear arms at the beginning of the 1990s, and Indonesia and Pakistan's nuclear experiments in May 1998, can be said to have demonstrated the limitations of neoliberalist thought with regard to the NPT in a realist situation of nuclear politics. Non-nuclear powers have been driving nuclear development under the logic of threat from nuclear superpowers within the NPT system. Under the safety measures of the IAEA, nuclear development is possible for member nations through uranium enrichment and plutonium reprocessing.<sup>28</sup> The inspection by IAEA is limited because it is in most cases allowed only for facilities and equipment reported by the nations concerned.<sup>29</sup> The existence of terrorist organizations and cross-border networks for nuclear proliferation are also acting as factors weakening the NPT system.

### *Measures for Improvement*

#### (1) Critical Issues

Some critical issues about the NPT system were exposed at the third NPT Review Conference which took place in New York in May

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<sup>28</sup>- Su Seok Lee, "*Haekbihwanksanchejewa junggyeongukgaeui yeokhal*," p. 87

<sup>29</sup>- Sang-hwan Lee, "*Je-samsegyegukgadeul-eui haekjeongchaek saryeyeongu* (A Case Study of the Third World Nations' Nuclear Policies)," *Gookbang jeongchaekyeongubogoseo* (Report on Defense Policy) (Seoul: Korea Research Institute for Strategy, 2004), pp. 13–20.



2009. The main point was moving away from the Bush administration's unilateralism to executing nuclear proliferation and denuclearization within a multilateral framework. The two most important provisions were "The Principles and Objectives for Nuclear Non-Proliferation and Disarmament" selected at the 1995 NPT Review and Extension Conference and "The 13 Practical Steps for the Systematic and Progressive Efforts to Achieve Complete Disarmament" from the 2000 Review Conference. The member nations viewed nuclear disarmament between the United States and Russia as the most critical issue and pressed for "transparent, verifiable and irreversible" nuclear disarmament. They also pressed the United States and China to establish a nuclear-free zone by quickly ratifying the Comprehensive Test Ban Treaty. In regards to non-proliferation, thinking that a universalization of the NPT should take place whereby all countries would become NPT member nations, they urged for Israel, Indonesia, and Pakistan's registration, called on North Korea's return, and demanded a stronger restriction of countries like Iran who utilize uranium enrichment programs. In addition, they promoted a peaceful use of nuclear energy as a measure to prevent climate change, likening it to a "renaissance of nuclear energy," while also expressing concern that the dissemination of nuclear energy technology could negatively affect non-proliferation. As a measure to support each nation's nuclear energy improvement without grossly violating the belief in the peaceful use of nuclear energy, IAEA's nuclear fuel bank and Russia's International Uranium Enrichment Center(IUEC) in Siberia were specifically mentioned, which could serve as multi-national nuclear fuel facilities

to curb each nation's reprocessing and establishment of uranium enrichment facilities. However, there is also concern that nations which provide nuclear fuel could abuse their power for their own good, disrupt IAEA activity, or damage the NPT's legitimacy by helping certain other countries in a discriminatory way like the recent conclusion of the U.S.-Indonesia nuclear energy agreement demonstrates. Also emphasizing the need for generalization of the IAEA's additional protocols and for strengthening the security measures, the conference suggested that no nations should be able to withdraw from the NPT after receiving support and, in the case of withdrawal, should still not violate NPT regulations.<sup>30</sup>

## (2) Measures for Improvement

Lewis Dunn suggested the following points for discussion at the 2010 8<sup>th</sup> NPT Review Conference for strengthening the nuclear non-proliferation system. First, in order to prohibit the relocation and provision of nuclear weapons, Article 1 of the NPT should be double-checked and the prohibition of nuclear development should be applied to all member nations possessing nuclear weapons. Progress in the development of nuclear technology both for peaceful and military purposes and in transportation and communication systems has enabled non-nuclear powers to provide direct and indirect support

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<sup>30</sup>- Miles Pomer, "Report from the NPT Preparatory Committee 2009," *CNS Feature Stories, Monetary Institute of International Studies* (26 May, 2009), <cns.miis.edu/stories/090526\_npt\_report.htm> (Accessed on 2010.10.29).



to each other. The secret trafficking of Pakistani Dr. Khan goes through Malaysia, Dubai, and others. The Security Council resolution 1540, which called for nuclear non-proliferation measures, needs to be approved and determined as an obligation for all member nations so that nuclear proliferation of non-governmental actors, such as terrorist organizations, can be prevented. Second, in order to prohibit the registration, production, and acquisition of nuclear weapons, Article 2 should be strengthened and, for this to happen, there should be a detailed agreement between member nations about what production of nuclear weapons means and what actions violate Article 2. Also, we should make an example out of North Korea, who has withdrawn its membership, thus violating Article 2 by reacting aggressively against it. Third, all the NPT-registered non-nuclear powers should be obligated to sign up for the IAEA's additional protocols and the IAEA's right to special inspection should be strengthened.<sup>31</sup> Fourth, all member nations should agree that the right to peaceful use of nuclear energy provided by Article 4 is granted only to nations who faithfully fulfill the nuclear non-proliferation duty and, in order to receive agreement from non-nuclear powers, nuclear powers should fulfill their duty of nuclear arms reduction.

Fifth, nuclear disarmament evinced on Article 6 "As nuclear states fully dispose their holdings of nuclear weapons, all of the NPT members should reaffirm the clear mission of realizing nuclear

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<sup>31</sup>- General inspection is the authority the IAEA holds to inspect nuclear sites and facilities only declared by inspected states, however, with special inspection IAEA is authorized to inspect non-declared ones.

disarmament that promised in Article 6” declaration pledges and specific measures should be taken. Especially, they should execute CTBT ratification and 13 steps which were agreed at the evaluation meeting in 2000 immediately, in order to increase providing information and transparency of nuclear policy and nuclear disarmament of nuclear states, “systematized report” on the NPT implementing progress should be accomplished. Also, by substantial efforts on nuclear disarmament ‘Military Fissile Material Cut-Off Treaty(FMCT)’ which was proposed by President Clinton should be propelled. And it must be stipulated that nuclear states beyond their territory will not possess, deploy or use nuclear weapons towards nonnuclear states. The nonnuclear states in the third world realize nuclear weapons’ political military usefulness, their system maintenance interests help decided to develop and try to develop nuclear.<sup>32</sup> Nuclear weapons illegalization rules such sentiments extirpate and possession of nuclear and validation of use extirpate.

Sixth, nuclear weapon free zone deployment of nuclear weapons and use to mortify nonnuclear states can use as a primary mean nuclear weapon free zone positively support. Currently five nuclear states nonnuclear states’ security guarantee positive secured guarantee and conditions affix negative secured guarantee provide, nonnuclear states want more comprehensive and perfect secured guarantee. Therefore the concept of new comprehensive secured guarantee is needed, it needs

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<sup>32</sup>– George Quester and Victor Utgoff, “Toward an International Nuclear Security Policy,” *The Washington Quarterly*, Vol. 7, No. 4 (Fall 1994).

to be differentiated between the NPT members and the NPT nonmembers. Seventh, it needs to restrict withdrawal rights and conditions of the members. Especially, the UN Security Council withdrawal problems intervene situation and specific rules on member states' agreement needed, in case of withdrawal the additional plans on nuclear exporting countries also need to be taken. For example, in case of North Korea, after withdrawal NPT requirements declined IAEA inspections there could be an empty space in monitoring. Therefore, a member which declared withdrawal even if declined IAEA inspection nuclear materials and nuclear technologies provided by advanced countries by separate inspections can be processed action is needed.



## 5. Conclusion

Due to the changes in the environment of the international security because of globalization, the problem of nuclear non- proliferation has also become one which has to be solved through the nations' and various actors' cooperation, like other global issues. Therefore, despite its inherent and realistic limitations, it seems that the importance of the NPT for nuclear non-proliferation global governance will continue to increase. Of course, this does not mean that the superpowers' like the United States, China, Russia's political logic will be eliminated, but that the international regime will control and supplement the nations' political logic. Concerning the problem of North Korea's nuclear weapons, solutions have been searched for in respect to the

U.S.-North Korea relations and to the region of Northeast Asia. However, due to the lack of trust between North Korea and the United States and China's geopolitical issues, a fundamental resolution of this problem is difficult at present. The activation of the NPT can not only increase the probability of regional and certain nations' denuclearization by normalizing nuclear non-proliferation, but also strengthen the legitimacy of nuclear non-proliferation. In similar ways, the activation of the NPT cannot be a complete alternative to a solution in respect to the U.S.-North Korea relations and certain regions, but can be a useful supplement for also solving North Korea's nuclear problem. Only, in order for the NPT to become a substantial/real central axis, the inherent conception of superpowers should be lessened. And considering that the fundamental reason for possessing nuclear weapons is the existence of other nuclear powers, the goal of the NPT is for nuclear powers to normalize nuclear non-proliferation, substantially and effectively executing nuclear reductions.

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# IV. Combating North Korea's Nuclear Blackmail: Proactive Deterrence and the Triad System

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# 1. Introduction

The sinking of the ROK naval corvette *Cheonan* on 26 March, 2010, which cost the lives of 46 crew members, and the indiscriminate shelling of North Korean forces on the South Korean island of Yeonpyeong on 23 November, in which two ROK marines and two civilians were killed and many other civilians and soldiers were injured, have become part of South Korea's poignant history, not only marking a humiliation for the ROK military but also vividly confirming North Korea's asymmetric threat. Most significantly, these events compelled the South Korean public to reassess their sense of national security. For South Korea, the possibility of an all-out war has been by far the most serious threat in terms of intensity among all the threats posed by North Korea. Yet, as a result of these two incidents, regional limited provocations have emerged as the most serious threat in terms of frequency and repercussions for peace-time South Korean society. These incidents shockingly reminded South Koreans of the stark fact that North Korea can jolt everything in South Korea merely by perpetrating limited provocations. While "asymmetric threat" is not an unfamiliar term to the security community, these two incidents strongly imprinted the concept in the minds of ordinary South Koreans.

With this background, this paper revisits the nuclear threat as the most substantial symbolic asymmetric threat posed by North Korea, illuminates the military and political dilemmas forced by the asymmetric threats at three different levels, and suggests what South Korea can



do to combat them.

Right after the *Cheonan* incident, some South Korean teenaged netizens hotly debated the numerical asymmetry in the two Korea's submarine forces, citing this as the fundamental factor that made the provocation possible. They asked: "Why do we have only a dozen of submarines while they have more than 70?" Similarly, these young netizens inquired after shelling of the Yeonpyeong Island: "Why do we have only six K-9 guns on the island while they deploy some 1,000 artillery pieces on the opposite coast?" However, the problems are not limited to the sheer numerical asymmetry of particular weapons in specific areas. A more serious problem is that unilateral superiority in many areas makes North Korea intrepid enough to torpedo a South Korean corvette within South Korean territorial waters and bombard its territory. In fact, North Korea now enjoys asymmetry in various areas: weapons of mass destruction(WMDs), a large standing army, well-trained special operation forces, artillery forces deployed along the truce line, etc. Nuclear capability is by far the most substantial asymmetric threat leading the North's leadership to believe that South Korea cannot respond in kind. Without such an asymmetric threat, a torpedo attack on a South Korean naval ship in South Korean territorial waters or the shelling of a peaceful island might not have been conceivable.

So far South Korean society has not been ready to fully absorb the socio-political repercussions which the North's bold provocations have brought, while military concerns have centered on military vulnerabilities. It is understandable that South Koreans' awareness of nuclear insecurity has

been diluted by the twenty-year-long history of the North's nuclear programs, the persistent rivalry between the idealistic optimist camp and the realistic pessimist camp concerning North Korean issues has prevented national consensus, and that political leaders have therefore easily dismissed the nuclear threat as a solely military matter. Nevertheless, the *Cheonan* and Yeonpyeong Island incidents prove that the North's bold provocations can scare ordinary South Koreans, manipulate public opinion, distort the political process in South Korea, and eventually devastate inter-Korean relations. In this sense, deterring the North's provocations is not just a military matter, but also a socio-political conundrum which both government and the people should grapple with together. This is why South Korea needs to refocus attention on the dilemmas posed by North Korea's never-ending nuclear adventurism and explore optimal solutions.



## 2. Asymmetric Threats

Currently, North Korea enjoys a superior position in a wide array of military forces. In addition to its increasingly formidable WMD capability, North Korea has some 1,200,000 regular army troops supported by 7,000,000 reserve forces, overwhelming the South's 650,000, deploys thousands of field artillery pieces along the truce line capable of firing a maximum of 500,000 shells per hour into Seoul and the vicinity of the DMZ, and operates some 200,000 special operations forces(SOF), the single largest SOF in the world. Its more than 70 submarines dwarf the South's submarine fleet, and



its hackers infiltrate and disturb South Korea's cyber systems. Unlike South Korean soldiers who serve less than two years,<sup>1</sup> North Korean soldiers serve at least seven years, during which time they undergo notorious brainwashing and intensive training. This in turn produces an asymmetry of spiritual strength between the two military forces.

Unfortunately, many of these asymmetries are structural and unavoidable. For example, unlike North Korea, which walked out of the Nuclear Nonproliferation Treaty(NPT) and desperately pursued nuclear capabilities, South Korea, as a responsible member of the international community, must live up to its non-nuclear obligations and therefore has no way of correcting the nuclear asymmetry as long as the North clings to its nuclear ambitions. Cyber threats are another example. South Korean hackers, even if so inclined, would hardly find any worthy targets in the North, whereas North Korean hackers can easily find targets in South Korea where all kinds of cyber systems abound. Likewise, South Korea's artillery forces have a very limited number of targets, while South Korea's economic prosperity has provided the North's artillery forces with abundant targets of strategic significance, including Seoul. The numerical asymmetry in artillery forces, therefore, can be considered a structural asymmetry

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<sup>1</sup>- In 2007 the Roh Moo-hyun government decided to reduce the military service term from 24 months to 18. However, in 2010 this author raised the issue of restoration of the service term through the Presidential Commission for Defense Reform of which he is a member. The issue had been debated in the government, the military, and the National Assembly, and the government finally decided to reduce the term to 21 months, instead of 18 months. For more discussion, see: Taewoo Kim, "Byeong Bokmugigan 24gaewollo Hwaneondoeoya Handa (Military service term should be restored to 24 months)," *The Monthly Chosun* (July 2010).

compelled by geographic conditions and differences in economic development.

One may argue that asymmetry in amounts of military manpower, special operation forces, submarines, etc. should not be a structural problem since South Korea can quickly fill the gaps once it decides to do so. This is not true. North Korea's overall military strategy against the South is intrinsically offensive and invasive, while that of South Korea should remain defensive. The irrational magnitude of the North's military manpower, special operation forces, submarines fleet, etc. reflects its offensive strategy and is possible only under an irrational dictatorial government. In contrast, these things are unthinkable in democratic South Korea, where economic growth and prosperity are at the top of the national agenda.

Under its defensive strategy, the ROK navy has preferred surface ships for patrol and control of its territorial waters, while North Korea has continued to invest intensively in the construction of submarine forces for offensive purposes. Likewise, the ROK navy has built large ships for use in international actions, such as peacekeeping operations, as a responsible stakeholder of the international community, whereas North Korea has built many smaller naval vessels such as torpedo boats, submersibles, hovercrafts, etc. tailored for ambush and infiltration operations. Therefore, the 800–180 numerical gap in numbers of total naval vessels and the gap in numbers of submarines must also be considered a structural asymmetry necessitated by intrinsic differences in military strategy. Such asymmetric capabilities embolden North Korea.



### 3. Dilemmas at Three Levels

Since the inauguration of the Lee Myung-Bak government, North Korea has constantly threatened South Korea with aggressive rhetorical references to “a sea of fire”, “turning Seoul into debris”, “flaming thunder”, and “merciless punishment to traitors”, obviously using its nuclear weapons for blackmail or boasting of the enormous fire power of its artillery forces. The North Korean leaders must be well aware that the extended deterrence promised by the U.S. will be activated only by actual use of nuclear weapons, not by threatening rhetoric. The bottom line is that North Korea can create “nuclear fear” among South Koreans irrespective of the U.S. nuclear umbrella. Put differently, extended deterrence deters only the North’s use of nuclear weapons, not its nuclear blackmail and its bold provocations supported by nuclear blackmail. Such nuclear blackmail alone is powerful enough to give many South Koreans nightmares and lead them to judge a war with nuclear-armed North Korea as unthinkable.

Under this situation the first problem for the Seoul government is the lack of ways to respond to provocations. Right after the *Cheonan* incident, not a few citizens were afraid of war, while many South Koreans filled with resentment demanded firm punishment. North Korea sympathizers and leftists criticized the Seoul government for its “hard-line” policy, and some opposition political leaders loudly demanded an immediate return to the “Sunshine Policy.” On the internet, claims that the government had fabricated the *Cheonan* incident were rampant, seriously distorting public opinion. Of course, some of the malicious posts must have originated from



or been instigated by North Korea. In a democratic country like South Korea, when facing such acute split in public opinion, the government cannot easily decide to enact a firm response in kind, when doing so may precipitate an escalation of the crisis. This left only two other options for South Korea: to blame its own military or to take the matter to the United Nations. However, the Seoul government got an exasperating result from the UN. The UN Security Council(UNSC) chairman's statement adopted on 9 July defined the incident as "a sinking by an attack" and "deplored and condemned" it, but neglected to identify the attacker due to China's opposition. Moreover, the statement said the council would "take note of North Korea's position."<sup>2</sup> This clearly showed that the UNSC can do very little to control the dangerous brinkmanship on the Korean peninsula as long as China values the traditional China-DPRK alliance.<sup>3</sup>

In a nutshell, so long as the South Korean government and military have no way to punish the culprit, and so long as the North Korean leadership believes that nuclear fears in the South compel the Seoul government to remain sandwiched between competing public opinions, they will think they can repeat such provocations with impunity and will not stop their dangerous brinkmanship. The next time, they may even attempt a military occupation of South Korea's northernmost

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<sup>2</sup>- Upon seeing that the UNSC chairman's statement included no reference to either North Korea or sanctions, North Korean Ambassador to the UN Sun-ho Shin claimed "North Korea's diplomatic victory."

<sup>3</sup>- In his statement to the nation on November 29 after the Yeonpyeong Island incident, President Lee Myung-Bak emphasized "national unity" and "a firm response," but never mentioned the UN, obviously reflecting his disappointment over China's role in the UNSC with regard to the *Cheonan* incident.

island of Baekryeong.

At the second level, nuclear fears and distortions of public opinion may one day lead to the North's domination of South Korean politics. In the past, South Korean voters tended to support so-called "conservative" political forces whenever major security crises occurred. However, if an increasing number of voters feel frightened by the North's nuclear blackmail, as they did in the wake of the *Cheonan* incident, and favor appeasement, and if this change in voting attitudes is coupled by leftists within South Korea aided by the North's effective cyber attacks to manipulate public opinion, then South Korean politics will become increasingly subject to North Korean manipulation, and some day Pyongyang may have the power to determine the government in Seoul.<sup>4</sup> Now the North's signature brinkmanship can complicate South Korean politics and rock the nation's democracy as a whole.

The final problem, at the third level, is the inevitability of the destruction of all progress in inter-Korean relations. The vicious circle of brinkmanship, if allowed to continue, will surely cause inter-Korean relations to deteriorate until they resemble the become like coexistence of "cow and wolf" or "herbivore-predator." Despite South Korea's economic dominance, North Korea will try to force South Korea into

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<sup>4</sup>- Right after the *Cheonan* incident, it was reported that some ROK soldiers telephoned their parents expressing fears of war, and their parents then called their military commanders pleading to avoid war. Citing this story, some newspapers analyzed that fear of war escalation in the wake of the *Cheonan* incident contributed to the opposition party's sweeping victory in the local government elections in June 2010.

submission over all important issues. While the North can choose carrots or sticks without any restraint, South Korea will have to try to buy a humiliating peace, leaving the destiny of the peninsula to the benevolence of the Pyongyang government. In sum, the North's nuclear blackmail and continued unhampered provocations will eventually ruin the relations between the two Koreas, exasperating all Koreans on both sides of the truce line who have long yearned for mutually reciprocal relations.

#### 4. The Nuclear Solution as a Mirage

While the nuclear threat is the centerpiece of the asymmetric threats against South Korea, what makes South Koreans even more depressed is the dark cloud cast over the future by North Korea's nuclear endgame. For those who remember the 1994 Agreed Framework, the 2·13 Agreement of 2007, or the demolition of the cooling tower annexed to the 5MW Yongbyon reactor in 2008, the twenty-year-long history of the North Korean nuclear issue may look like a mixture of successes and failures. For those who can see the whole picture, it must look like a total failure. For them, it is not difficult to see that every bit of "progress" in the negotiations has been outweighed by the subsequent "retreat," that every moment of relief has been overwhelmed by the subsequent frustration, and that previous nuclear dialogues including the Six-Party Talks have only bought time for North Korea. In the early 1990s, the international community was concerned about the possibility of plutonium production by North



Korea. In the early 2000s, it tried to prevent the Communist state from showing off its nuclear weapon capability. Today, it worries about the nation's third nuclear test. Today, South Korea faces a direct threat from a nuclear-armed neighbor that has already conducted two nuclear tests.<sup>5</sup>

In the meantime, the U.S. red line has retreated from “no plutonium production” in 1990s and “no nuclear test” in the early 2000s to “no proliferation of nuclear weapons and material” now. Since the start of the Obama administration, the U.S. nuclear strategy has revolved around “nonproliferation of nuclear material” and “prevention of nuclear terrorism” under the slogan of a “nuclear weapon-free world(NFWF).” President Obama’s NFWF scheme seems overly idealistic, if not futile, in theory and dangerously unrealistic in practice. Put differently, while the final goal is invaluable and unimpeachable, the process is too rocky and dangerous since it can benefit violators like North Korea. In practice, the NFWF initiative is most likely to be misused in Northeast Asia. To North Korea, the nuclear peace initiative can give it more leeway to evade international accusations and help the Pyongyang regime to sustain its time-wasting, muddling-through tactics while pursuing the status of a nuclear weapon state as an international *fait accompli*. A key question

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<sup>5</sup>- The author has insisted that one should see the forest, not the trees, to properly understand the reality of the North Korean nuclear issue. See: Taewoo Kim, “*Bukhaek Gjahoedam Pyeonggawa Hanguk-ui Jeollyakjeok Seontaek* (The Six Party Talk and South Korea’s Policy Choice),” in Chang-kwon Park, *et al.*, 2009 *Hangukui Anbowa Gukbang: Jeollyakgwa Jeongchaek* (Security and Defense of Korea: Strategy and Tactics) (Seoul: KIDA Press, 2009). pp. 229–267.



in this regard is: Can the NFWF initiative simultaneously dissuade North Korea and reassure South Korea? For China, so eager to fill the “nuclear gap” with the U.S., President Obama’s initiative offers time to narrow the gap, thus making it more difficult to find reasons to press North Korea. Unsophisticated implementation of the NFWF initiative could put South Korea and Japan in a more difficult position as those nations must both abide by non-nuclear obligations and combat North Korea’s nuclear ambitions.<sup>6</sup>

Today, an important aspect of the North Korean nuclear issue drawing the attention of the Western press is whether North Korea has succeeded in achieving weaponization. A question frequently asked is whether or not North Korea has developed a way of miniaturizing nuclear bombs and mounting them on missiles. This question has nothing to do with inducing North Korea to give up its bombs, reflecting Western indifference to South Korea’s nuclear insecurity. It should be noted that North Korea has many ways to attack South Korean cities without miniaturization capability. It can simply use an aircraft as a delivery platform or deploy a special force to penetrate into South Korea territory and detonate the bomb. Even a primitive ‘radiological dispersal device(RDD)’ or “dirty-bomb” can send a South Korean city into a panic.<sup>7</sup>

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<sup>6</sup>- For more analyses on the Obama initiative, see: Taewoo Kim, “Security, Deterrence and Extended Deterrence in Northeast Asia: A South Korean Perspective,” presented at the ROK-U.S.-Japan Trilateral Dialogue (Tokyo, 7–8 September, 2010) co-hosted by the Center for Strategic and International Studies(CSIS) and the Japan Institute of International Affairs(JIIA).

<sup>7</sup>- For more details on South Korea’s vulnerability, see: Taewoo Kim and Hyungpil



A fundamental dilemma for the international community is that it cannot provide North Korea with an incentive powerful enough to induce the Pyongyang regime to give up its nuclear option. For the leadership and military of the Communist state, which have ruled the nation with an iron-fist for 60 years and witnessed the tragic collapse of the communist regimes in Eastern Europe in the 1990s, nuclear weapons are considered the ultimate means to safeguard their political system as well as their lives. This is why any incentive short of a complete guarantee of their regime and system, which is not available anywhere in the world, is destined to fail to persuade them. For the U.S., guaranteeing the survival of the North Korean political system, which will continue to abuse human rights even after denuclearization, would conflict with public opinion and the nation's founding principles.

International sanctions are not a sufficient tool, either. Unlike many democratic countries in which government must respond to the suffering of the public, the hereditary dictatorship of the Kim family has no reason to worry about re-election. Rather, the ordinary North Korean people are held hostage by the regime. For the regime, the suffering of the people caused by international economic sanctions and isolation has always been a secondary concern. This is why the UN resolutions 1695, 1718, 1874 and other sanctions have failed to change the nation's nuclear path. They will continue in this way unless the nation becomes more open and democratic.

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Hahn, "*Bukhaekwihyeop Daeung Hangukui Gunsa Anbo Jeollyak* (South Korea's Security and Defense Strategy in Response to North Korean Nuclear Threat)," 2007 Research Paper at Korea Institute for Defense Analyses (KIDA).



To make things worse, the power succession to the third generation, which emerged through the Worker's Party Conference of 28 September, is another looming obstacle. Kim Jong Il is ill, but the successor Kim Jong-Eun lacks in power base, policy ability, and charisma. Attempts to idolize a 27-year-old man will surely face resistance, making the longevity of his father the most critical variable in the stability of the power succession structure. This being the case, the Pyongyang regime is more likely to cling to nuclear weapons<sup>8</sup> and use external crises to maintain internal unity. In this situation, expecting the Six-Party Talks, once resumed, to achieve the denuclearization of North Korea is like grasping a mirage or chasing *ignis fatuus*. This is why Chinese State Councilor Dai Bingguo's sudden visit to Seoul on 27 December and his ill-timed proposal for a resumption of the stalled Six-Party Talks received a cool reception in South Korea.

North Korea will continue to employ its two-track diplomacy, both continuing nuclear weapon development and pursuing dialogue whenever deemed necessary. North Korea might return to the Six-Party Talks and engage actively in dialogue, yet what they will offer will be the same dazzling brinkmanship diplomacy and negotiation tactics we have seen for the past twenty years: crisis creation, abrupt reconciliation, agenda additions, agenda slicing, salami tactics, muddling through, etc. At best, one will see another round of malign confessional

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<sup>8</sup> For more analyses on the prospects for the nuclear issue after the emergence of the power succession structure in North Korea, see: Taewoo Kim, "Kim Jong-Eun Hoogyaja Deungeukgwa Hanbando Jeongse (The Successor Kim Jong-Eun and Political Environment of the Korean Peninsula)," *The Heonjeong* (November 2010).

diplomacy.<sup>9</sup>

To untie the nuclear knot is by no means an easy job. Thus, at least for the time being, it will be impossible for South Korea to remove the asymmetric WMD threat. Anyone who examines the dilemmas imposed on South Korea at various levels by this threat will understand why South Korea needs to do something to break the vicious circle of dilemmas forced on it by North Korea.

## 5. Proactive Deterrence and the Triad System

Theoretically speaking, not all asymmetric threats are dangerous. Many of them are controllable if South Korea develops proper counter-asymmetric measures. For instance, the North's numerical superiority in tanks is not a real danger if South Korea can deploy tank-killing air power. Likewise, numerical superiority in military forces may mean little if properly countered by qualitative superiority. After all, not every North Korean asymmetric threat is an undefeatable danger. Nevertheless, the aggregate asymmetric threat is certainly a heavy military and psychological burden to South Korea, while the North's nuclear threat surpasses all other threats combined. It behooves

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<sup>9</sup>- This term refers to the tactic of making a false confession in negotiations to maximize the returns while giving up the minimum cost. For example, North Korea agreed to give up reprocessing and enrichment when it signed the Joint Declaration of the Denuclearization of the Korean Peninsula in 1991. And it reaffirmed this pledge by signing the 1994 Agreed Framework. But it did not comply with it. In 2007 and 2008, North Korea took such appeasement gestures as opening its nuclear facility and dismantling the cooling tower, but this did not lead to denuclearization. Later, it was revealed that North Korea was working on an enrichment program.

South Korea to find ways to offset the North's nuclear blackmail tactics. This should start from a precise recognition of what extended deterrence can and cannot do.

### *Limits of Extended Deterrence*

Contrary to what many South Koreans expect, extended deterrence is not a cure-all. While it deters the actual use of nuclear weapons, it does not deter North Korea's regional provocations perpetrated under the umbrella of nuclear blackmail. In this regard, it is necessary to heed the subtle difference between the 2002 Nuclear Posture Review(NPR) published by the Bush administration and the one released in 2010 by the Obama administration. In the previous NPR, the Bush administration explicitly specified North Korea as a target of possible nuclear retaliation and affirmed its political will to use nuclear weapons against bio-chemical as well as nuclear attacks by North Korea against the South. It also introduced the "new triad" concept, which included state-of-art conventional weapons integrated into the retaliatory forces, thus making the retaliation more credible. Though the 2002 NPR was internationally criticized for being too unilateral and aggressive, it reflected a strong will to protect non-nuclear allies.

Since the Obama administration began its nuclear weapon-free world initiative, many security experts have expressed concerns that such a nuclear peace initiative should not weaken the extended deterrence guarantee provided to U.S. allies.<sup>10</sup> The 2010 NPR falls

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<sup>10</sup>- For example, see: Taewoo Kim, "ROK-U.S. Defense Cooperation against the



slightly short of this expectation in the sense that some of the expressions in the 2002 NPR providing assurances to allies have been deleted or softened. Instead, the 2010 version singles out “alliances,” “forward-deployment of U.S. forces,” and “missile defense” as the centerpiece deterrent elements, indicating a shift of focus from nuclear retaliation to a reduction in number and role of nuclear weapons and reflecting President Obama’s emphasis on “smart power” and “international harmony” in his foreign policy.<sup>11</sup>

Of course, this does not mean a loss of credibility of extended deterrence. To maintain credibility, the 2010 NPR excludes Iran and North Korea from the Negative Security Assurance(NSA).<sup>12</sup> Considering this and the unprecedentedly robust ROK-U.S. alliance under the Lee Myung-Bak government, one need not question credibility. A central

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North Korean Nuclear Threat: Strengthening Extended Deterrence,” in Jung-Ho Bae and Abraham Denmark (eds.), *The U.S.-ROK Alliance in the 21st Century* (Seoul: Korea Institute for National Unification, 2009); Taewoo Kim, “*Bukhan Haeksilheomgwa Hwakdaeokje Ganghwa-ui Pilyoseong* (North Korean Nuclear Tests and Reinforcement of the Extended Deterrence),” KIDA the 3<sup>rd</sup> North Korean Military Forum (12 December, 2009). In addition, this author suggested ways to maintain the strength of extended deterrence at the KIDA-Brookings Joint Seminar held in June 2009 in Washington and at the 1<sup>st</sup> ROK-U.S. Strategic Dialogue in 2009 in Hawaii sponsored by the Center for Strategic and International Studies(CSIS).

<sup>11</sup>– The difference between the 2002 NPR and the 2010 NPR is discussed in detail in: Taewoo Kim, “*Obama Daetongryeong-ui Haek Initiative-wa Hwak daeokje* (President Obama’s Nuclear Initiatives and the Extended Deterrence),” *Jayu* (June 2010). This author also suggested deployment of a SSBN around the Korean peninsula and U.S. military drills tailored to WMD deterrence at the 2010 NPR at the 2<sup>nd</sup> ROK-U.S. Strategic Dialogue in April 2010 in Hawaii and the Trilateral Nuclear Dialogue held 7–8 September 2010, in Tokyo.

<sup>12</sup>– To reconfirm credibility, President Obama telephoned President Lee Myung-Bak right before release of the 2010 NPR and personally explained the exclusion of North Korea from the NSA.

point here is that extended deterrence deters nuclear attacks on allies but not North Korea's nuclear blackmail-based provocations against the South, while the issue of whether and how to strengthen extended deterrence remains a separate question. It seems that this remains a "blind spot" for strategic planners in Washington. Therefore, South Korea will have to rethink its strategy, institutions, and military capabilities to fill the gap.

### *The Strategy of Proactive Deterrence*

First of all, South Korean strategic planners need to acknowledge that the existing strategy of "deterrence by denial", whatever its benefits may be, has failed to deter North Korea's series of pro-vocations backed by its asymmetric threats. It was against this backdrop that the Presidential Commission for Defense Reform suggested in December 2010 suggested a new strategy called the "strategy of proactive deterrence." This new strategy, if adopted, will place greater emphasis on the instantaneousness of punitive reprisals, flexibility in choice of reprisal weapons, the discretion of commanding officers of first-line troops, self-defensive preemptive strikes,<sup>13</sup> etc. Rules of engagement should be revised in that direction, too. For example, if North Korea's artillery batteries along the DMZ are seen preparing to fire shells southward, South Korea may strike first using jet fighters, artillery, or

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<sup>13</sup>-The right to preemptive strike for self-defense, recognized by the UN Charter, should be distinguished from a preventive strike, which is both legally and morally problematic.



missiles, rather than waiting for shelling to start. If the North's coastline artilleries begin bombardment against South Korean islands as they did in November 2010, an air strike using precision guided missiles like JDAMs, AGM-64s or SLAM-ERs is not unconceivable. A basic truth applicable to this strategic posture is: An escalation becomes more likely when one is afraid of it.

A new targeting policy may be necessary, too. The target list may need to be expanded to respond in kind in the event of indiscriminate shelling by the North like what was suffered by the civilians on Yeonpyeong Island in November 2010. If North Korean guns and missiles aim at not only military targets but strategic bases, cities, population centers, and industrial complexes, the best way to deter a real attack may be to have a similar counter-value targeting policy. If North Korea repeatedly threatens to create a "sea of fire in Seoul", a best way to protect the citizens of Seoul may be to prepare to "turn Pyongyang into debris."

Under the new strategy, South Korea may have to rethink how to arm and defend geographically remote and isolated regions like Baekryeong Island. South Korea may need to fortify its remote islands and deploy weapons for strategic strikes as well as short-range weapons to demonstrate its will to repel any provocation. To show even stronger will, South Korea may need to consider establishment of a separate special command in charge of defending the Northern Limit Line(NLL) and the islands of the West Sea. Nevertheless, the strategy of proactive deterrence is in essence a strategy intended to better deter provocations, rather than one intended for offensive strikes.

### *Constructing a Triad System*

However, a new strategy alone does not suffice to break the vicious circle of provocations. The new strategy will suffer from credibility problems without the means to corroborate it. This is why South Korea needs its own conventional triad system under which critical second strike forces will be deployed in the air, on the land and under the sea. This is because a water-tight defense against the North's asymmetric attacks is technically impossible and deterrence should be at the center of the new strategy. Without sovereign means to offset North Korea's signature blackmail tactics, South Korea can neither give its new strategy credibility nor stabilize its own citizens psychologically. Therefore, the triad system, if adopted, must include all sorts of strategic strike weapons ranging from powerful ballistic and cruise missiles to bunker-busters to other guided weapons with high accuracy, penetrating capability, survivability, fatality, precision, etc., mounted on fighter bombers, UACVs, mobile ground launchers, and submarines. They should outnumber the North Korean missiles targeted at the South, while the TEL-based and submarine-based missiles need 500–800km ranges so that they can threaten any target within North Korea.<sup>14</sup>

Once such a triad system is established, it will serve multiple purposes at various levels. Above all, it will help deter an all-out war or prevent accidental clashes from flaring into bloodier battles. Escalation

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<sup>14</sup>- The author believes that a maximum 800km range will not threaten any neighboring countries other than North Korea.





occurs when one side is convinced of its victory. The triad system, by frustrating such confidence, will deter an escalation of the crisis. More importantly, a triad system with unambiguous credibility will work as a central tool in cutting off the vicious circle of the North's bold provocations, preplanned and perpetrated under the aegis of its formidable asymmetric capabilities. With the transfer of war-time operational control(OPCON) coming soon, such a strong triad system in the hands of South Korea will help prevent North Korea from underestimating the will of the ROK-U.S. alliance to punish its misbehavior. Eventually, the triad system will provide assurance to the South Korean public and reduce the chances for North Korea to distort South Korean public opinion, thus helping to safeguard democratic order and values in South Korea.

Once South Korea decides to construct a triad system, there seems to be no serious technological or financial bottleneck to achieving it. While overseas purchases of advanced weapon systems and technological cooperation remain available, South Korea's advanced defense capability can play a key role. In terms of the economy, the prospects are not bad. The key of the triad system is platforms and strike weapons. The ROK air force already has plans to purchase 5th generation stealth fighters, and its navy is executing an ambitious plan to build KSS-III class submarines. These fighters and submarines will serve as platforms for the triad system. There will be no problem installing vertical launch tubes in the 3,000 ton class KSS-III submarines. Producing less precise ground-based ballistic missiles and TELs for them will be an easier and less expensive job. Given the

size of South Korea's defense budget, which totaled some \$30 billion for 2010, constructing the triad system will be a matter of prioritization rather than of financial capability.

## 6. The Triad System and the ROK–U.S. Alliance

Seoul and Washington will continue their strategic dialogue over how to strengthen extended deterrence with the OPCON transfer in 2015 in mind. At this point, they need to add the proactive deterrence strategy and triad system to the agenda. As long as the alliance remains a pillar of South Korea's national security, South Korea need not and should not bypass its U.S. ally in every important strategic decision. Bypassing its ally in pursuing proactive deterrence and a triad system will eventually result in higher costs.

In this regard, both nations should recognize that Seoul's initiative to adopt a proactive deterrence strategy and its readiness to spend more for a triad system exactly coincide with the new alliance policy of the U.S., in which Washington wants its allies to spend more and play leading roles in their own defense. This is what "strategic flexibility" is all about. South Korea has reasons to closely consult with the U.S. over how to better deter the provocations of the world's most bellicose state, and the U.S. also has reasons to cooperate. For example, the U.S., if requested by South Korea, has no reason to hesitate to provide technological cooperation on radar and precision weapons technologies or on sales of fighters and arms for submarines.



In the same context, revision of the 2001 New Missile Guidelines should be an immediate agenda item. Limiting the range of South Korea's ballistic missiles to 300km and their payloads to 500km is no longer make sense at a time when North Korea has deployed 1,000 mid- and long-range missiles targeted at South Korea and is even developing inter-continental ballistic missiles(ICBM). Restrictions on cruise missiles do not make sense, either, at a time when South Korea needs to develop the means to offset the North's asymmetric threats. Above all, such restrictions are inconsistent with Washington's new alliance policy. The New Missile Guidelines, if not revised, will widen the dangerous missile gap between the two Koreas and constitute a stumbling block to ground-to-ground ballistic missile development. Restrictions on payload for cruise missiles will hamper South Korea's development of high-altitude UAVs loaded with advanced reconnaissance and surveillance devices at a time when South Korea badly needs to upgrade its own C4ISR capabilities.

## 7. Conclusion

Selig Harrison was wrong when he argued that election of the "hard-liner" Lee Myung-Bak as the president of South Korea in December 2007 prompted North Korea's hostile responses such as the build-up of its shore artilleries and that Northern Limit Line (NLL) needs to be redrawn to prevent further disputes.<sup>15</sup> North Korea has pursued its

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<sup>15</sup>- Selig S. Harrison and John H. Cushman, "Drawing a line in the water," *International Herald Tribune* (13 December, 2010).

military build-up and southward provocations irrespective of Seoul's North Korea policy. During the period of so-called "sunshine policy" from 1998 to 2007, the North added new ground forces divisions, sharply strengthened its special operation forces, tanks and artilleries, and-most significantly-produced more plutonium, clandestinely constructed enrichment facilities, and exploded nuclear devices. It was also during this period that the North set off bloody naval battles, most notably in 1999 and 2002. While many in South Korea do not agree that the current North Korea policy is a hard-line one since it is not much different from those of previous governments except requesting the North Korea to abide by the global standards, even more South Koreans have observed that a soft or tough stand toward Pyongyang is not a significant variable affecting the identity of North Korea as a garrison state.

Right after the Yeonpyeong Island incident, some Chinese analysts argued that the North's shelling of the island was a response to the South Korean navy's shelling drills in nearby "disputed waters." They are wrong, too. At the time of the armistice agreement in 1953 North Korea thanked the United Nations Command(UNC) for drawing the NLL giving the North control of all islands under its occupation except for five tiny islands in the West Sea. Since then, the NLL had been the unequivocal line of sovereignty between the two Koreas, and life line for South Korea strategically protecting the flank of the metropolitan Seoul, Port of Incheon, and the Incheon International Airport. Such status was reconfirmed in the Basic Agreement in 1991, in which the two sides agreed to "respect the sea zones that have so far been under respective jurisdiction." Thus, the NLL is not a line that



can be redrawn or refashioned, as Harrison argues so nonchalantly. It can be redrawn only through the outcome of another all-out war.

What the Chinese watchers and Harrison ignore is the North's motive of making the NLL a "disputed sea boundary," and more importantly the factors which embolden Pyongyang to make such outrageous violations. If they really want peace in the West Sea, they have to find ways to eliminate the motives behind North Korea's provocations or remove the elements which embolden the dictatorial state to repeatedly instigate border clashes.

While the North's belligerent motives combined with its die-hard nuclear ambitions seem uncontrollable, Seoul's strategic thinkers have no other choice but to search for ways to neutralize its asymmetric threats, at least until a new peace mechanism emerges. A strategy of proactive deterrence and a triad system are ideas that South Korea should immediately consider. Of course, these do not suffice as a show of will strong enough to break the cycle of provocations. For example, South Korea may have to rethink its original plan to dismantle the army divisions deployed along its coasts or consider adding rapid-response forces to the ROK Marine Corps. Reshuffling reserve forces, reinforcing the special operations forces, building smaller submarines, establishing a new joint command to defend the NLL and the islands on the West Sea, etc. should also be included on the list of potential actions.<sup>16</sup>

All of these measures, if adopted, will of course demand greater

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<sup>16</sup>- These were also suggested to the President in December 2010 by the Presidential Commission for Defense Reform.

inputs of budgets, time, and efforts. They are worthwhile as long as they help diminish the North's asymmetric capability, block its recurrent brinkmanship and provocations, and protect the democratic order and values which South Korean citizens cherish. The U.S. ally has reasons to cooperate with any such South Korean endeavors.



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# V. Three States, Three Stories: Comparing Iran, Syria and North Korea's Nuclear Programs

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## 1. Introduction: Three of a Kind?

Two regions of the world draw the most concern from analysts worried about the spread of nuclear weapons: the greater Middle East and East Asia.<sup>1</sup> In the Middle East, Israel possesses nuclear weapons, Iran is seeking to master the fuel cycle (which would, in principle, provide with a weapons capability), and Syria built a clandestine nuclear reactor that was later destroyed by Israeli aircraft. In East Asia, the Democratic People's Republic(DPRK) or North Korea has maintained a nuclear weapons program despite increasing isolation and pressure from the international community.

American pundits tend to ignore Israel's program and lump Syria, Iran, and North Korea together.<sup>2</sup> Neither practice is wise. Israel is one of the few nuclear weapon states that might plausibly use its weapons, and lumping Syria, Iran, and North Korea together is convenient but conceptually dangerous.

It is understandable that the three are treated as a set given the fact that North Korea assisted Syria with its nuclear reactor and the ongoing rumors of Iranian-DPRK collaboration. The problem is that these linkages (real or imagined) do not mean that these countries have the same nuclear profile or that nonproliferation polices geared

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<sup>1</sup>- The author is indebted to a number of people who assisted with the research, commented on ideas, and provided suggestions for this chapter. They include Jae H. Ku, Jack Walsh, Brennan Foxman, Alisa Deychman and Marlene Cole.

<sup>2</sup>- On Israel's nuclear program, see Avner Cohen, *Israel and the Bomb* (New York: Columbia University Press, 1998) and more recently, Avner Cohen, *The Worst Kept Secret: Israel's Bargain with the Bomb* (New York: Columbia University Press, 2010).



to one country will be appropriate for the others. It is true that what happens in one region can have political spill-over effects and consequences for other regions. For example, it was the International Atomic Energy Agency's failings in Iraq with Saddam Hussein that spurred the agency's get-tough approach with North Korea in the early 1990s.<sup>3</sup> Nevertheless, the tendency to view the three states as members of the same group invites intellectual and policy errors that could have consequence.

This chapter tries to look at Syria, Iran, and North Korea with greater factual precision and conceptual clarity. In what ways are these countries' nuclear efforts similar? In what ways are they different? What are the connections between them, and do developments in one area effect events in another? What do the histories and trajectories of these three states' nuclear endeavors suggest for policy-making and for the study of nuclear decision-making?

The analysis begins with a brief primer on bomb programs. It then provides profiles of the Syrian and the Iranian nuclear efforts, including their history, present status, and future prospects. Following that, the three countries are compared. This chapter concludes with a look forward and how lessons drawn from experiences with these three countries might be applied in future policymaking and scholarship.

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<sup>3</sup>- John Park, "An Examination of the IAEA's Special Inspections in North Korea, 1992 – 1994," (Ph. D. dissertation, Cambridge University, 2001).

## 2. Building the Bomb: Distinguishing a “Nuclear Program” from a Nuclear Weapons Program

Before reviewing the status and possible future of Syria’s, Iran’s, and North Korea’s nuclear efforts, it makes sense to take note of the important differences between various kinds of nuclear programs: ① a civilian nuclear program that is technically unable to produce nuclear weapons, ② a civilian program that is technically capable of producing nuclear weapons given a decision by the political leadership, and ③ a dedicated weapons program. These three possibilities represent very different situations with very different prospective outcomes, but public discussions of proliferation often lump them together.

At its most basic, building a nuclear weapon requires at least one of two materials: highly enriched uranium (HEU) or plutonium (PU).<sup>4</sup> Neither substance exists in nature. They must be created by human effort and technology. There are many other aspects of nuclear technology that have almost nothing to do with the production of HEU and PU or with nuclear weapons. Put another way, the possession of these other technologies does not appreciably advance a country’s ability to build the bomb. Nuclear materials and technology are used in medicine (e.g., to treat cancer), in agriculture (e.g., to kill insects and diseases), and in industry. Few of these applications are relevant to a weapons program. Thus, in principle, a country could

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<sup>4</sup> For a more detailed introduction to the fuel cycle and its relationship to nuclear weapons, see P. D. Wilson (ed.), *The Nuclear Fuel Cycle: from Ore to Wastes* (Oxford: Oxford University Press, 1996).



have a large and robust nuclear program and yet no practical ability to become a nuclear weapons state. For a nuclear weapon, the key is HEU or plutonium.

### *The HEU Route*

The HEU path to the bomb does not require a nuclear power plant. All it requires is that a country have an enrichment technology and a source of feedstock that can be enriched. Enrichment technologies come in several varieties, the most common being the centrifuge. Historically, weapons states have developed an enrichment capability for their bomb programs prior to having built nuclear power plants for the generation of electricity, because their primary objective was developing a nuclear weapon.

As civilian nuclear power plant technology developed over the decades, the model that came to dominate the market was the light water reactor, a design that uses low enriched uranium (LEU) as a fuel for electrical power generation. A country cannot make a nuclear weapon with low enriched uranium, typically defined as uranium enriched to 3–5% and no more than roughly 20%. Nuclear weapons by require HEU, which as a practical matter has meant uranium enriched to a level of 90% or greater.

The problem, however, is that the very same technology that enables a country to produce LEU for a power plant can be turned around and used to produce HEU for a bomb. Again, one does not need a power plant, but a power plant can provide justification or

cover for the acquisition of technology that could then be used for weapons production. One of the reasons the Iranian program has drawn scrutiny is that, unlike most countries in the modern nuclear energy business, it launched a sizeable enrichment program before having completed a single power plant.

### *The Plutonium Route*

To build a plutonium bomb, a country needs a source of PU - typically a nuclear reactor - and the ability to reprocess the nuclear waste or spent fuel the reactor generates during the course of its operation. Reprocessing or recycling, in this context, means treating the spent fuel chemically so as to extract or separate out the plutonium from the other waste products. Again, a nuclear reactor by itself, be it a power plant or a research reactor, cannot by itself be used to build the bomb. It requires the reprocessing technology to capture the bomb material from the waste.

Today, reprocessing is generally viewed as a thing of the past, though advocates and some countries such Russia (and South Korea) still argue for it on economic and even environmental grounds. For potential proliferators, it was attractive, because the technology is less challenging than many forms of enrichment. Weighing against that, however, is the fact that it is a dirty and dangerous business that is easier for outsiders to detect. Moreover, since most civilian plants run on LEU and not fuel that is mixed with plutonium, interest in reprocessing almost always draws international suspicion. As a consequence, the



reprocessing route has proven less attractive over the decades, a major exception being North Korea's weapons program, which went the plutonium/reprocessing route in the 1980s.

Given the requirement that a bomb program have either enrichment or reprocessing, it is possible to distinguish between the three types of nuclear "programs." A purely civilian program can possess many kinds of nuclear assets including a power plant, but if it does not have enrichment or reprocessing, then it cannot be used for nuclear weapons. On the other end of the spectrum are dedicated bomb programs that pursue enrichment or reprocessing, not as part of a civilian program but expressly for the purpose of weapons acquisition. Most of the pre-1970 weapons states, together with Pakistan and North Korea fall into this category.

The third category consists of countries that have not made the "bomb decision" but have acquired enrichment or reprocessing capability justified in terms of their civilian nuclear aspirations. The good news is that, historically, countries that stake out this position typically do not end up as weapons states.<sup>5</sup> Instead, successful proliferators tend to be countries that make the bomb their top priority. The bad news is that this gray area of bomb- sensitive technology in the service of

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<sup>5</sup> During the nuclear age, more than twenty countries considered acquiring the bomb but did not become nuclear weapons states. Many of these countries wanted a bomb option without having to fully commit to constructing a weapon. For more on these nonproliferation success stories, see Mitchell Reiss, *Bridled Ambition* (Washington D.C.: Woodrow Wilson Center Press, 1995) and Jim Walsh, "Learning from Past Success: The NPT and the Future of Nonproliferation," *WMDC Paper*, No. 41 (Oslo: Weapons of Mass Destruction Commission, 2006).

a supposedly civilian program provides an opportunity for countries to get into the weapons game.

### 3. Syria's Nuclear Program

#### *Origins*

Syria's nuclear program, such as it was, got a late start. Damascus did not establish its national nuclear agency until 1976 (more than two decades after Egypt, for example.)<sup>6</sup> Since it possessed a limited scientific and industrial infrastructure, Syria had to depend on technical assistance from the IAEA and other governments. And as with many countries in the region, Syria's nuclear program was characterized by grand pronouncements of projects that never materialized. At different points in the 1980s, Syria appeared to have concluded deals with foreign countries for joint nuclear projects (e.g., Argentina), but nothing came of them, whether because of opposition from the United States and Israel, or because the parties could not agree on the terms.<sup>7</sup>

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<sup>6</sup> On Egypt's nuclear program, see Jim Walsh, "Bombs Unbuilt: Power, Ideas and Institutions in International Politics," (Ph. D. dissertation, MIT, 2000); Robert J. Einhorn, "Egypt: Frustrated But Still on a Non-Nuclear Course," Kurt M. Campbell, Robert J. Einhorn and Mitchell B. Reiss (eds.), *The Nuclear Tipping Point* (Washington D.C.: Brookings Institution Press, 2004), pp. 43–82; Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia & the Middle East* (Princeton, N. J.: Princeton University Press, 2007), pp. 229–246; and "Egypt," in Mark Fitzpatrick (ed.), *Nuclear Programmes in the Middle East: in the Shadow of Iran* (London: IISS, 2008), pp. 17–34.

<sup>7</sup> On Syria's nuclear efforts, see Leonard Spector and Deborah Berman, "The Syrian Nuclear Puzzle," in William Potter and Gaukhar Mukhatzhanova (eds.), *Forecasting Nuclear Proliferation in the 21<sup>st</sup> Century: A Comparative Perspective* (Palo Alto,





It was not until the 1990s that Syria acquired its first major nuclear asset, a miniature neutron source reactor(MNSR), constructed by China and completed in 1996. This small reactor was intended for experiments, training, and isotope production and was too small to be useful for a weapons program. In 1997, with the help of IAEA, Syria acquired a pilot plant for the purification of phosphoric acid. One byproduct of this purification process is triuranium octoxide(U3O8) or yellowcake, which in theory could provide starter material for the eventual production of uranium fuel.<sup>8</sup>

Most of Syria's nuclear work is located in Damascus at the Der Al-Hadjar Nuclear Research Center (where the MNSR is located) and the Scientific Studies and Research Center. And yet, its most famous nuclear facility, the Al-Kibar reactor, was located not far from the border with Iraq.

The Al-Kibar reactor was a secret, 20–25MW reactor in the process of being constructed with assistance from North Korea, when an Israeli air strike destroyed it in September of 2007. Three days later, to the consternation of the IAEA, Syria bulldozed the sight and carted off the debris, further raising suspicions about project. Seven months later, American intelligence officials told journalists that they could

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CA: Stanford University Press, 2010); Ellen Laipson, "Syria: Can the Myth Be Maintained Without Nukes?" in *The Nuclear Tipping Point*, pp. 83–110; "Syria," in *Nuclear Programmes in the Middle East*, pp. 73–82, and Nuclear Threat Initiative (NTI), "Syria Profile," <[http://www.nti.org/e\\_research/profiles/Syria/Nuclear/index.html](http://www.nti.org/e_research/profiles/Syria/Nuclear/index.html)>.

<sup>8</sup>- Though not suited for a bomb program, it is worth noting that the reactor was fueled with 980 grams of HEU (90%), but this amount has progressively been burned up in the course of the reactor's operation.

find no evidence of a reprocessing plant at the site, and thus could not conclude with high confidence that it was part of a weapons program, though use of the appearance of reactor design similar to North Korea's Yongbyon reactor certainly invited such concerns.<sup>9</sup>

Eventually, IAEA was allowed to visit the site and discovered trace amounts of "anthropogenic" uranium, which suggested that, contrary to Syria's denials, the facility was intended to house a reactor. In any case, the finding offered strong evidence that Syria was engaged in nuclear activities that it had not declared in accordance with its IAEA safeguards obligations.

### *Role of North Korea and Other Countries*

North Korea certainly appears to have played a central and surprising role in Syria's clandestine efforts, though it is still unclear how far the DPRK was willing to go. On past occasions, North Korean officials have gone out of their way to stress to American policymakers that they would not make weapons-related exports to

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<sup>9</sup>— On the Syria reactor, see IAEA, "Implementation of the NPT Safeguards Agreement in the Syrian Arab Republic," Report by the Director General, GOV/2010/47 (6 September, 2010), pp. 1–5; IAEA, "Implementation of the NPT Safeguards Agreement in the Syrian Arab Republic," Report by the Director General, GOV/2010/29 (31 May, 2010), pp. 1–4; IAEA, "Implementation of the NPT Safeguards Agreement in the Syrian Arab Republic," Report by the Director General, GOV/2009/75 (16 November, 2009), pp. 1–3; IAEA, "Implementation of the NPT Safeguards Agreement in the Syrian Arab Republic," Report by the Director General, GOV/2009/36 (5 June, 2009), pp. 1–4; IAEA, "Implementation of the NPT Safeguards Agreement in the Syrian Arab Republic," Report by the Director General, GOV/2008/60 (19 November, 2008), pp. 1–4. See also numerous reports by David Albright, *et al.* <<http://isis-online.org/isis-reports/category/syria/#2010>>.



third parties. For example, DPRK representatives made these claims in late 2004. Given the timeline, it is conceivable that the North had already made a commitment to Syria before arriving at that policy. It may also be that the Foreign Ministry was unaware of the Syrian arrangement or that DPRK officials were simply dissembling.<sup>10</sup>

Syrian-North Korean cooperation began with missiles, not reactors. Damascus purchased scuds from Pyongyang starting in the early 1990s. One can imagine that this relationship provided a ready avenue for discussions about other forms of cooperation, including nuclear.<sup>11</sup>

Pakistan and its frequent flyer, Abdul Qadeer Khan (A. Q. Khan), may have also contributed to Syria's program. U.S. intelligence reports have suggested that Khan may have aided the program. President Assad confirmed that Khan had approached the Syrian government but maintained that Syria refused the offer of help.<sup>12</sup>

### *Current Status*

The Syrian nuclear program is, for all intents and purposes, frozen. It continues to have technical cooperation projects with the IAEA and carry out nuclear research at the Der Al-Hadjar Nuclear Research

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<sup>10</sup>– The author was witness to these exchanges between DPRK and American officials.

<sup>11</sup>– On North Korea's Scud program and its ties to Syria, see Daniel A. Pinkston, *The North Korea Ballistic Missile Program* (Carlisle, PA: Strategic Studies Institute, United States Army War College, February 2008), <[www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA477526](http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA477526)>.

<sup>12</sup>– Bruno Tertrais, "Khan's Nuclear Exports: Was There a State Strategy?" Henry D. Sokolski (ed.), *Pakistan's Nuclear Future: Worries Beyond War* (Carlisle, PA: Strategic Studies Institute, United States Army War College, 2008), pp. 15–51.

Center. Still, the discovery of the Al-Kibar reactor, Syria's refusal to cooperate with IAEA's investigations, and the widening set of questions about undeclared activities involving the MNSR and fuel production-related activities means that ① Syria is under the microscope with little room for maneuver and ② potential international partners may be deterred from collaboration. Absent outside support, it is difficult to imagine how Syria could make progress with its nuclear program.

### *Future Prospects*

The future prospects for Syria's nuclear program are not promising. It has limited resources and little indigenous potential. Damascus will likely continue to stonewall the IAEA, and its continuing status as violator and suspect will all but cripple the program, as potential partners shun it. Of course, there are other scenarios. It could admit its transgressions and settle up with the IAEA, just as Libya and others have done. This might happen within the narrow context of resolving outstanding nuclear issues or within some broader framework of changing relations with Israel and the U.S. following a diplomatic resolution of regional issues. Still, the most likely outcome for the near and intermediate term is more of the same: intense scrutiny and suspicion about Syria's past activities, denials, and a program that goes nowhere and atrophies over time.



### *Unanswered Questions*

Not surprisingly, there are many unanswered questions about the program and Syria's intentions. Was there a reprocessing facility? Did the North Koreans promise to build one? Was the phosphate purification facility to be used as a source of nuclear material that might be used to fuel a clandestine reactor or to be enriched in its own right for military purposes? Does Damascus have a reserve of undeclared nuclear material and undeclared sources that are producing that material? Do the growing number of discovered undeclared activities associated with the MNSR suggest laxity or a broader, deliberate program of concealment? Given Syria's substantial cooperation with IAEA on the issues involving the MNSR, it seems more likely that issues with the MNSR reflect more error than intention. This would, in turn, imply that Syria had set up separate tracks, one that was secret and one that was clean. That is how it appears now, but firm conclusions would be premature at this point.

### *Challenge to NPT*

At one level, of course, the Syrian story is a challenge to the NPT. The country appears to have violated its safeguards agreements, and its continuing refusal to cooperate in the investigation of those violations is an affront to the agency and the Nuclear Non-Proliferation Treaty(NPT). The fact that a third party, Israel, intervened militarily to stop a program about which the agency was not aware or could not

muster the political support to investigate would appear to be a direct challenge to the non-proliferation regime. On the other hand, these events and IAEA's active investigation appear to have essentially ended any chance that Syria will have a substantial nuclear program - which is actually a victory for Vienna and the regime. The lesson: you cheat, you get caught, and you deny? Well, your program is dead. If governments take that conclusion to heart, it is not at all clear that the Syrian file has weakened the regime.

Moreover, the episode puts the agency and nonproliferation advocates in an even stronger position to argue that the Additional Protocol and related instrumentalities for strengthening safeguards are necessary, and that those that fail to adopt them warrant additional concern. Syria's refusal to cooperate might also finally push the IAEA to revisit the notion of special inspections. The agency has always had the power to demand access under the special inspections concept but has been reluctant to use this power. It might be argued that, like muscles, safeguards are only strong when exercised. If that is the case and the Syrian controversy leads to greater use of the special inspections authority, then Syria's actions will have had the paradoxical effect of strengthening the regime.

Finally, as a matter of outcomes, there is no evidence that Syria's behavior has triggered a broader abandonment of the regime. For potential proliferators, it would appear to be more of a cautionary tale than an encouragement. In any case, there has been no break for the bomb, no "let's follow Syria's example," at least so far. If these early results hold, they would be consistent with the historical record,



which strongly suggests that problem countries more often spur a strengthening of the regime, rather than its degradation.

## 4. Iran's Nuclear Program

### *Origins*

Iran's interest in things nuclear began under the reign of Shah Mohammad Reza Pahlavi. The Shah ascended to the throne in 1941 but did not fully take command of the state apparatus until after the 1953 British and American led coup. The mid-1950s was a period that coincidentally marked the dawn of Atoms for Peace. Iran signed a civil nuclear cooperation agreement with the U.S. in 1957 and became host to the regional Institute for Nuclear Science in 1959. That same year, the Shah established a nuclear research center at Tehran University and told the visiting President Eisenhower that he wanted a "crash program" to obtain highly mobile forces with atomic weapons, long-range missiles, effective anti-aircraft missiles, additional air bases, and improved aircraft."<sup>13</sup>

Iran's actual progress in the nuclear field was modest, however. It was not until 1967 that Tehran's first reactor went critical, a modest

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<sup>13</sup>– On the Shah's declaration to the Eisenhower administration that it was interested in nuclear weapons, see U.S. Department of State, "Memo of Conversation, President's Goodwill Trip to Tehran, December 14, 1959," in *Foreign Relations of the United States, 1958–1960. Near East Region; Iraq; Iran; Arabian Peninsula*, Vol. 12 (Washington D.C.: U.S. Government Printing Office, 1993), p. 659, Footnote. 2.

5MW research reactor supplied by the United States - along with 5.58kg of 93% enriched uranium. Nuclear technology remained a secondary priority for the king until the 1970s, when flush with oil revenues and at the urging of the U.S., he embarked on a plan to rapidly expand Iran's nuclear civilian program.

A key year was 1974, when the Shah created the Atomic Energy Organization of Iran(AEOI) and bought a 10% stake in Eurodiff, the European enrichment consortium. By 1975, AEOI was reported to have 150 personnel "trained in physics." In the two years from 1974 to 1976, AEOI's budget increased from roughly \$39 million a year to more than a billion dollars a year. Iran also received help from other countries. Argentina, South Africa, West Germany, France, India, and the United States all contributed to the Iran's nuclear program, though India's 1974 'Peaceful Nuclear Explosion' or PNE complicated international nuclear commerce.

On at least two occasions in the 1970s, the Shah publicly raised the possibility that Iran would one day possess nuclear weapons - statements that were quickly retracted. Despite the denials, Iran's membership in the NPT, and Iran's support for a regional nuclear weapons free zone, those around the Shah believed that his aspirations went beyond power plants and included nuclear weapons as well.

By 1978, however, visions of nuclear grandeur were put aside, a victim to financial difficulties, domestic political instability, and scandal. When the Shah left Iran in search of medical treatment, the dream of a nuclear Iran went with him - at least for a time. Iran's





nuclear effort had been slow off the mark and ended before it had completed any of its major projects.

The 1979 revolution brought a halt to the Shah's nuclear project, as both the demand for and supply of nuclear technology ended. Western countries abruptly canceled their nuclear transfers even as the Islamic Republic moved to withdraw from Eurodiff and other joint projects. Khomeini's government had multiple reasons for freezing the nuclear program. To begin with, it was the Shah's program, and thus tainted by association. Add to that a scarcity of funds, the emigration of nuclear and other scientists fleeing the revolution, a distrust of foreigners (who had a visible role in the program), and the more immediate challenges of domestic political consolidation and governance, and it is little wonder the program was suspended.

By the mid-1980s, however, the government's attitude changed. Despite the war with Iraq or perhaps because of it, Iran's leadership decided to reconstitute the nuclear program. In 1984, it opened a research center at Isfahan and began encouraging Iranian nuclear experts to return home. Despite the renewed interest, however, the program suffered a number of problems. In 1984 and again in 1985, Iraq bombed Iran's reactor site at Bushehr. Most foreign suppliers were skittish about working with Iran, especially at a time when it was at war with Iraq. Last but certainly not least, the nuclear program appeared to suffer from poor internal management. Despite help from A. Q. Khan, which began in 1989, Iran's nuclear program drifted without significant accomplishment.

Finally in 1997, the head of nuclear program was replaced. Gholam

Reza Aghazadeh, a well-regarded program manager, took the reins and progress followed soon after. By 2003, it became apparent that size and scope of Iran's nuclear program was far greater than outside analysts had believed.

### *Level of Development*

Iran's has announced plans for a very ambitious civilian nuclear program, and its efforts span a broad spectrum of activities across the fuel cycle, though some aspects are more advanced than others. On the front end, it has mined, milled, and processed indigenous deposits of uranium. It has a small, aging research reactor that is used to produce medical isotopes and that is fueled by uranium enriched to a little under 20%. Its first power reactor, the long delayed Bushehr plant, began initial start up activities in August of 2010.

The Bushehr plant, a project that date's back to the end of the Shah's reign, was built by Russia. Russia has also provided the LEU fuel for the plant, and by agreement, will take back the spent fuel at the end of the process. Russian technicians will stay on the ground working with their Iranian colleagues to operate the reactor for at least three years. Iran's atomic energy agency has announced intentions to build 20 additional power plants in the coming years, but these projects have not progressed beyond the planning stage. Much will likely turn on how well the Bushehr plant performs. It was originally of German design, then reconfigured by Russia, and built over a 15-year period characterized by multiple work stoppages. Given the



unique history of the project, it would not be surprising if there are technical problems going forward, which in turn could affect plans for additional plants.

Iran has put most of its indigenous effort into a centrifuge program. AEOI has built roughly 9,000 centrifuges and prototyped a series on upgraded centrifuge designs. The Iranian technical record here is mixed. On the one hand, Iran has made real, substantial progress over time and has produced more than 3,000 kilograms of LEU. Moreover, one should expect that Tehran will continue to progress and become more proficient over time. That said, there are continuing reports that the program has experienced technical setbacks and that its rate of progress is slower than might have been expected. Despite having prototype advanced centrifuge models, it has yet to build any of them in significant numbers. Much remains unknown about the program, so precise estimates of its true status are difficult.

More recently, Iran has moved to go beyond producing LEU with the standard enrichment rate of less than 5% and embarked on producing uranium to a level of just under 20%. Iran claims that it needs to do so because it is having trouble finding a country to re-supply the fuel rods for its medical reactor, and so it must do so on its own. There is a real question whether Iran ① has the technical capability to take that enriched fuel and fashion it into fuel rods, ② could do so within a relevant time frame, and ③ then operate the reactor without problems. Those issues lead some to suspect that the real motivation for going to 20% is that it would substantially enhance Iran's ability to produce bomb grade uranium at a later point if it

chose to do so. It also has to be said, however, that of all the issues in play concerning Iran's nuclear efforts, Tehran has shown the most flexibility on a negotiated solution to the TRR issue under which they would not produce the fuel for the reactor.

### *Role of North Korea and Other Countries*

While rumors persist about North Korean involvement in Iran's nuclear program, to date there has been no evidence of collaboration.<sup>14</sup> Indeed, the Islamic Republic has gone out of its way to distinguish itself from North Korea and insists that it is not seeking nuclear weapons. More telling is that the Iranian focus has been on enrichment and not reprocessing, while the DPRK program is based on reprocessing. The North Koreans are suspected of having an interest in enrichment but if anything, the Iran is ahead of them in that area. There is reason to suspect that the Pyongyang has assisted Tehran with its missile program or other non-nuclear military projects, but unlike the Syrian case, it does not appear that cooperation in one area created the grounds for nuclear cooperation. It has to be said, however, that this conclusion would be substantially stronger if the IAEA had full access

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<sup>14</sup>– On possible missile and trade business between North Korea and Iran, see, United Nations, *Report to the Security Council from the Panel of Experts established Pursuant to Resolution 1874(2009)* (New York: United Nations, 2010), pp. 17–19. The study authors refer to possible DPRK-Iran exchanges regarding missile technology but not with respect to nuclear technology. The North's November, 2010 announcement that it has a functioning enrichment facility with 2,000 centrifuges has nevertheless invited speculation regarding an Iran-DPRK nuclear relationship, but so far, there are no facts to support the suspicions.



to Iran's heavy water plant and other facilities and personnel related to reprocessing.

The country that seems to have made the greatest contribution to Iran's nuclear program is not North Korea but Pakistan. A. Q. Khan provided assistance beginning in the 1990s, and Iran's centrifuge enrichment program is based on the Pakistani P-1 centrifuge. Iran has doubtless relied on other networks and countries for parts and materials, but Pakistan appears to have played a critical role in its nuclear development.<sup>15</sup>

### *Current Status*

As of today, Iran's nuclear program continues to grow in size and to advance technically. It has already acquired the knowledge of how to construct and operate centrifuges and produce LEU. That is a significant milestone, and there is no turning that back. Military strikes against Iranian facilities, for example, would not alter the fundamental reality that Iranian technicians can build a centrifuge.

At this stage, however, the program does not appear to represent a short-term proliferation threat, even if one assumes that Iran is intent on producing nuclear weapons. It is important to underline that the worst-case assumption - that Iran is racing for a bomb - is viewed with skepticism in much of the analytical community. The predominant view is that Iran seeks a capability but has not taken a command

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<sup>15</sup>- Sharon Squassoni, "Iran's Nuclear Program: Recent Developments," *CRS Report for Congress* (22 February, 2007).

decision to build nuclear weapons, a distinction that has proven important in the history of nuclear proliferation.<sup>16</sup>

### *Future Prospects*

Over time and absent other changes, Iran will have sufficient technology and material that it could initiate a weapons program if it decided to do so. There are number of events that could alter that trajectory, including leadership changes, changes within the AEOI, natural disasters (such as earthquakes), or a Chernobyl-scale nuclear disaster at Bushehr that would de-legitimize the program. These are all low probability events.

Does this mean that it is inevitable that Iran will build the bomb? No. Japan and other countries have enrichment-related capabilities but have not crossed that line. Moreover, there are diplomatic agreements and institutional arrangements (rules for greater transparency, confidence building measures, multi-nationalization of the sensitive parts of the program, etc.) that would reduce the likelihood that any Iranian technical capability would later translate into actual weapons. These mechanisms would not reduce the risk of an Iranian bomb to zero, but they could discourage an Iranian government from going down that path.

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<sup>16</sup>– Dennis C. Blair, “Annual Threat Assessment of the U.S. Intelligence Community for the Senate Select Committee on Intelligence,” (Washington D.C.: Director of National Intelligence, 2 February, 2010), p. 14. The agency assesses that Iran is “... keeping open the option to develop nuclear weapons.”



### *Unanswered Questions*

Iran has been subject to over 40 IAEA inspections since March of 2003. It is also the object of intense interest by various national intelligence agencies. Still, there is much that is not known about the program, in part because of the limitations Iran has imposed on the IAEA and Tehran's refusal to abide by the Additional Protocol.

The real unknowns, however, are political, not technical. What are the intentions of the leadership? Have those intentions changed following the controversial 6·12 presidential election in 2009? In what ways and to what extent have changes in the decision-making group post-6·12 affected nuclear policy? What is the relationship between the nuclear engineer or scientist and his or her employer (the AEIO), and what is the relationship between AEIO and the Supreme Leader? This last question arises because following the 6·12 election, the AEIO's very competent director, Mr. Aghazeda, resigned. All these factors have the potential to influence the pace and direction of the program. Indeed, they are as likely as or more likely than technical factors to determine whether Iran becomes a nuclear weapons state at some point in the future.

### *Challenge to NPT*

Iran is a member of the NPT and is obliged to abide by its safeguards agreements. Discrepancies and unanswered questions relating to its nuclear program have resulted in a series of negative findings by the IAEA and a referral of its case by the IAEA Board of Governors to



the UN Security Council(UNSC). Subsequently, Iran has been the subject of a series of UNSC resolutions, some of which have imposed sanctions. Tehran has often responded to these actions with retaliatory actions that have further diminished its cooperation with the IAEA.

The program has drawn the international scrutiny and suspicion for a variety of reasons. First, enrichment is a sensitive technology that has a direct link to potential weapons acquisition. Second, the program was started in secret and aided by A. Q. Khan's illicit network. Third, it is unusual for countries to build enrichment facilities when they do not have any power reactors. (The one reactor that was due to come on line, Bushehr, would use Russian fuel.) Finally, Iran's refusal to grant the IAEA full access to its facilities, personnel, and records is a cause of ongoing doubt about Iran's intentions. The Agency contends that "Iran remains the only State with significant nuclear activities which has a comprehensive safeguards agreement in force that is not (fully) implementing" it.<sup>17</sup>

One of the facilities in question to which IAEA has requested and been denied access is a heavy water production plant. This raises concern because a reactor using heavy water, like the one being built in Arak, could be used to generate plutonium, which could then be reprocessed and used for weapons. Even building a heavy water reactor, as opposed to the standard light water reactor, raises eyebrows among nonproliferation specialists, and denial of access compounds

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<sup>17</sup>- IAEA, "Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran," Report by the Director General, GOV/2010/46 (6 September, 2010), p. 8.



those suspicions. It is also important to note, however, that IAEA has not observed any significant work at Iran's reprocessing-related laboratories.

Iranian officials have consistently denied that they are interested in nuclear weapons, citing both religious and strategic rationales.<sup>18</sup> They insist that past violations of their safeguards obligations were narrow or technical or have subsequently been addressed. Iran also points out the often forgotten fact that it voluntarily suspended its program for two years as a result of negotiations with the EU<sup>3</sup>. Iranian officials complain that despite that good faith step, pressure against Iran's nuclear program persisted.

The case of Iran, narrowly drawn, is certainly a challenge to the NPT and its implementing agency, the IAEA. In particular, Iran's backing away from its safeguards commitments and the limitations it

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<sup>18</sup>– Iranian officials claim that a fatwa issued by the Supreme Leader forbids that production of nuclear weapons. *CNN*, “Iran Warns Over Nuclear Impasse,” (11 August, 2005), accessed on the website of CNN.com at <[www.cnn.com/2005/WORLD/europe/08/10/iran.iaea/index.html](http://www.cnn.com/2005/WORLD/europe/08/10/iran.iaea/index.html)>. See also Karl Vick, “In Iran, Gray Area on Nuclear Weapons: Religious View Is Not Absolute,” *The Washington Post* (21 June 2006), A15. During the Iran-Iraq War, Iranian religious officials were reported to have resisted the development of chemical weapons on religious grounds, despite their use by Iraq. See, for example, Javed Ali, “Chemical Weapons and the Iran-Iraq War: A Case Study in Noncompliance,” *The Nonproliferation Review*, Vol. 8, No. 1 (Spring 2001), pp. 43–58; Gregory F. Giles, “Iranian Approaches to Chemical Warfare,” Paper prepared for the U.S. Naval Postgraduate School Conference, *WMD Employment Concepts and Command and Control* (6–8 August, 1997); Joost R. Hiltermann, “Outsiders as Enablers: Consequences and Lessons from International Silence on Iraq's Use of Chemical Weapons during the Iran-Iraq War,” Lawrence G. Potter and Gary Sick (eds.), *Iran, Iraq and the Legacies of War* (New York: Palgrave Macmillan, 2004), pp. 151–166. A scholarly treatment of these ideas can be found in Sohail H. Hashimi and Steven P. Lee (eds.), *Ethics and Weapons of Mass Destruction: Religious and Secular Perspectives* (Cambridge, U.K.: Cambridge University Press, 2006).

has imposed on the agency - even while being fully cooperative in other areas - is troubling. From a broader perspective, however, it is not clear that these problems with Iran have damaged the NPT or threaten the future of nonproliferation. The Iranian nuclear dispute is now entering its 9<sup>th</sup> year. Despite dire prognostications about the collapse of the nonproliferation regime and a new wave of proliferation in the Middle East, the situation has remained more or less the same, with the primary near-term concern being an Israeli attack on Iranian facilities. Other countries have expressed interest in restarting nuclear power programs and some have taken steps in that direction, but there has been no regional rush to the bomb, and the Treaty arguably had a more productive conference in 2010 than it had in a number of years.

None of this should be taken as reason to relax. The Iranian nuclear dispute has the potential to negatively effect both regional security and the cause of nonproliferation. But it has not done so yet, and there is no reason to think that it will inevitably do so.

## 5. Syria, Iran, North Korea: Similarities, Differences and Lessons

So far, this analysis has examined the nuclear programs in Syria and Iran, as well as each country's relations with North Korea and other nuclear suppliers. Having described each, it is now possible to compare them. Not surprisingly, there are important similarities and important differences. We begin with the similarities.



## *Similarities*

One could compare Syria, Iran, and North Korea across a variety of dimensions, but two areas of similarity seem especially relevant: ① their domestic politics and ② their relations with the IAEA.

Governance in all three countries runs from authoritarian to totalitarian, this despite the fact that each country offers a different ideology: theocratic, Baathist, and Communist. One could have argued that prior to the 2009 6·12 disputed election in Iran, that the Islamic Republic was the most democratic of the three. At least it had contested elections that could produce surprise winners, e.g., Mohammad Khatami in 1997. In Syria, Bashar al-Assad's succession was marked by a brief opening in Syrian politics ("The Damascus Spring"). Today, however, both Iran and Syria have moved in a more authoritarian direction. Syria, like North Korea, has had hereditary succession. North Korea has a communist system mixed with inherited familial rule and decidedly non-communist deistic elements, i.e., the rulers are said to have supernatural, even godly powers.

Perhaps the most important domestic political similarity worth highlighting is that two of the three are undergoing a major political transition. Kim Jong Il has selected his youngest son as a successor and named his brother-in-law as regent until the young Kim can assume his duties. Iran is in a post-6·12 election phase and confronts ① a sizeable fraction of the public that opposes the government, ② deep infighting between pro-Ahamdinejad and anti-Ahamdinejad hardliners, ③ an aging Supreme Leader, ④ a president who wants



to reshape the structure of governance towards a presidential system, and ⑤ an increasingly powerful and vocal Iranian Revolutionary Guard. With both Iran and North Korea, it is virtually possible to predict how the transition and competition for power will play out. Syria is arguably the most stable of the three, since it has already gone through its transition. Still, it is not obvious that the son has accumulated the power of the father or that the future will be uneventful.

The domestic political situation is of central importance to the future of the nuclear efforts in each country. Changes in leadership can lead to changes in policy, for good or for ill. Contested transitions and internally divided governments also make negotiations, for example negotiations on a country's nuclear program, very difficult. The expanding role of the military in each society may also have implications for the nuclear programs, if those militaries develop a taste for nuclear weapons, even if their leadership is willing to bargain them away.

Another similarity these three nations share is a poor relationship with the IAEA. Technically, the DPRK has almost no relationship with the agency after having pulled out of the NPT. IAEA relations with Syria are modest, as Damascus continues to stonewall Vienna about the surreptitious reactor that was bombed by Israel. Of the three, IAEA has the most interaction with Iran, but despite or more precisely because of their frequent interactions, relations between the two appear to be the worst of the group. Ironically, despite the bitterness of the IAEA-DPRK disputes in the early 1990s, North Korea may have had the best relationship with the agency. Once it

decided to open up, first with the Agreed Framework and then with the 2·13 Agreement, the North appeared to be more forthcoming in its cooperation than Iran or Syria have ever demonstrated.

### *Differences*

Public commentators focus on the perceived similarities between Syria, Iran, and North Korea - that they are proliferators or nuclear threats, that they are dictatorships and rules violators, that they may have worked together, and that their leaders seem erratic. Still, a careful comparison would suggest that despite the veracity of some of these claims, their differences are at least as prominent, if not more prominent, than their similarities.

The chief and most important difference is that they are each at a very different stage of nuclear development. North Korea has built and tested a nuclear device. And while the North may not yet have traversed the technical distance between nuclear device and useable nuclear weapon, it has clearly crossed a threshold. Moreover, the DPRK openly acknowledges that they have done so and now seek either a buyout or “arms control.”

If North Korea is at one end of the continuum, then Syria is at the other. It barely has a nuclear program, and its prospects for future progress in the field are anything but promising.

Iran, unlike North Korea, vigorously denies that it is seeking nuclear weapons. More importantly, most serious analysts have concluded that Iran has made a “capability decision,” not a “bomb

decision.” In other words, Iran seeks to have a capability to build a nuclear weapons should it decide to do so but has not, in fact, made the decision to build a bomb. In the popular imagination, this probably sounds like a distinction without a difference, but students of nonproliferation recognize that this is fundamental. The likelihood of becoming a nuclear weapons state is far greater when a country has made a bomb decision as compared to a capability decision. It must be said, however, that changes in Iran after the 6·12 election do not permit high confidence assessments about where Iran is headed.

These programs also differ in terms of the kinds of threats they might pose. Syria poses no nuclear threat. North Korea, the only one with nuclear weapons, has no intention of using them, and their possession of these weapons has not set off a wave of proliferation in East Asia. The real dangers with North Korea are collapse of the regime and the possibility of misperception, miscalculation, and crisis escalation as a desperate, secretive regime undergoes a difficult political transition.

Like Syria, Iran has no bomb, but some analysts fear an Iranian capability will set off a proliferation chain in the Middle East. Past predictions of this kind have fared poorly, but it is not impossible that Iran could have some effect on others in the region. More likely is scenario that Israel or the U.S. use military force against Iran’s program. Here the dangers are the political and security consequences of such an action rather than the nuclear capability itself. This is not to suggest that a nuclear weapons capability in Iran should be welcomed. It is simply to point out that the most serious near-term consequences are



likely to come from efforts to forcibly attrit Iran's capability.

In sum, these programs are at wildly varying points of development, are located in fundamentally different regional contexts, and pose very, very different kinds of dangers. These differences would suggest that analysts should be especially careful about distinguishing these cases when considering how to respond to them.

### *Lessons*

Despite their differences, it is possible to look at the three as a set and draw some preliminary conclusions or lessons. First, a policy of isolating countries will have the effect of increasing the incentives for them to cooperate with each other. North Korea's alleged cooperation with Burma and its documented cooperation with Syria may have taken place because ① sanctions had the effect of reducing alternative sources of income, thus giving greater importance to illicit or illegal activities, and ② isolation reduced the possibilities for transactions to those countries that also suffer international opprobrium. In short, the effect may have been to push international violators into each other's arms and to encourage them to engage in the worst forms of trade.

Second, military-to-military ties between countries in one area (missiles) may provide opportunities for cooperation in other areas (nuclear). This will be even more likely in cases where countries have a strong or politically autonomous military. Finally, there is little automaticity to be found in any of this. It was not inevitable that the North tested a nuclear device, though they eventually did so.

It was not inevitable that Japan or other countries in East Asia would rush to the bomb because of the DPRK. (They did not.) It is not inevitable that Iran will get the bomb, that others will follow suit, or that the death of the nonproliferation regime is upon us. Of course, all these continue to be possibilities, but the record to date does not suggest that they are fixed futures, despite the widespread belief to the contrary.

## 6. Going Forward

The purpose of this chapter has been to examine more rigorously the nuclear programs and challenges posed by three countries that are typically thought to be members of the same class. In the course of the analysis, both similarities and differences have been uncovered. The similarities, for example that two of the three are undergoing political transition, suggest that there may be areas where non-proliferation policies aimed at each country should also be similar. The similarities also suggest possible lessons that might be applied to future cases, e.g., that military-to-military ties in one area may provide the basis for cooperation on nuclear or other areas.

Still, while the similarities are worth noting, it is the differences that are most striking. Their differing levels of nuclear development, their regional contexts, and the different threats their nuclear ambitions pose suggest that scholars and policymakers should be cautious about using policy tools that may be appropriate for one





country and applying them willy nilly to another country, even if it is politically inviting to do so.

The record of these three cases also suggests that an unflinching pessimism about proliferation is unwarranted. Syria's program is going nowhere. North Korea still talks about giving up its program for the right price - something that is never heard from the other nuclear weapons states. And Iran, it appears, has yet to make the most consequential of all nuclear decisions - the bomb decision. Yes, there is much cause for concern, but the record suggests are good reasons to believe that these problems can be managed and that the nonproliferation regime will continue to grow stronger over time.

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# VI. South Asia and the Strategic Implications of Nuclear Weapons

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Both India and Pakistan have developed nuclear weapons (and platforms to deliver them) as a deterrent against a more powerful neighbor. Prompting each to do so was reluctance on both countries' behalf to trust the international community in protecting it against a stronger neighbor. India is concerned about a stronger China, and Pakistan about a stronger India. This dynamic has not changed much since independence for both countries. India refused to sign the Nuclear Non-Proliferation Treaty (NPT) that went into effect in 1970, arguing that the Treaty created a kind of nuclear apartheid (dividing countries into nuclear weapons states who possessed nuclear weapons in 1968 and non-nuclear weapons states which did not)<sup>1</sup> which strategically disadvantaged India (because China possessed nuclear weapons) and Pakistan refused to sign because India had not done so.<sup>2</sup> India conducted what it called a "Peaceful Nuclear Explosion" in May 1974, which triggered a more intensified Pakistani program to acquire nuclear weapons. Over the next 24 years, the two countries maintained a covert nuclear weapons program.

India's May 1998 nuclear tests similarly triggered a Pakistani decision to test just a few weeks later as both made it clear to each other and the world that they now were nuclear weapons powers. Sanctions imposed by the usual other countries had

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<sup>1</sup>- For an Indian argument on this nuclear apartheid see Jaswant Singh, "Against Nuclear Apartheid," *Foreign Affairs*, Vol. 77, No. 5 (September/October 1998).

<sup>2</sup>- India and Pakistan also refused to support the indefinite extension of the NPT in 1995. For a comprehensive review of the 1995 NPT Review Conference which ruled on this matter, see Berhanykun Andemicael, *et al.*, "Measure for Measure: The NPT and the Road Ahead," published in *The IAEA Bulletin*, Vol. 37, No. 3.



virtually no impact on their nuclear policies and most were quickly withdrawn, with a shift of policy toward diplomacy. Both South Asian states argue that possession of nuclear weapons is a significant force multiplier that serves as an effective deterrent against full scale warfare, though India and Pakistan have come close to war on at least two occasions since their tests in May 1998, and their relationship has been cool since the November 2008 attack on Mumbai by Pakistan-based terrorists. Both argue that they have constructed firewalls to protect their nuclear weapons and its technology, though senior Pakistani scientists in the recent past have run an international bazaar selling nuclear weapons information, and others have had reported links to terrorist groups, including Al Qaeda. Both countries support international non-proliferation measures, though they oppose some proposals as presently drafted, such as a Comprehensive Test Ban Treaty (Pakistan and India) and a Fissile Material Cut-off Treaty (Pakistan). The key issue now is to bring them within the international groups that address non-proliferation issues and President Obama in his visit to India (6–9 November, 2010) came out in support of India's full membership in the Nuclear Suppliers Group (NSG) and the Missile Technology Control Regime (MTCR), a pledge not simultaneously made to Pakistan. The U.S. will now need to convince other countries to accept new membership requirements into these organizations for India since it is not a signatory to the 1970 Non-Proliferation Treaty, which is now the entrance requirement. While the international community has not



formally accepted the legitimacy of the nuclear status of the two countries, India seems to be moving closer to formal acceptance, as demonstrated by the U.S. initiated international moves in 2008 to remove sanctions against export of nuclear fuel and technology exports to India and the more recent moves to include India in international nonproliferation regimes. How India, the far more powerful of the two, uses its nuclear status may play a significant role in managing the rise of an increasingly assertive China and safeguarding the critical Indian Ocean sea lanes that transport a large part of the world's gas and oil from the Persian Gulf area. Its possession of nuclear weapons is one important factor in its rise as a country affecting the Asian balance of power. Tension between a nuclear capable India and Pakistan, however, risks slide into a nuclear confrontation very quickly. Since neither will abandon its nuclear weapons, they need to put together structures to manage their tensions more effectively. The U.S. has abandoned a policy of rolling back their nuclear programs, but has done little so far to help them put together a regional regime addressing nuclear containment and regional tensions.

This paper will address ① the Indian and Pakistani nuclear weapons programs ② the approach of the two South Asian states to non-proliferation regimes, ③ implications of nuclear weapons for security in South Asia and beyond.

# 1. India and Pakistan and their Nuclear Weapons Programs

## *India*

In the waning days of the British raj, Indian leaders, especially Congress leader Jawaharlal Nehru, were determined to provide India an independent scientific capability, including research in the new field of nuclear physics. With the development of strategic threats from China in the 1960s, a strategic rationale for nuclear weapons emerged that also served the purpose of the core element in Indian foreign policy, strategic autonomy, though India's nuclear program remained covert until its first tests in 1974. India declared itself a nuclear weapons power following its 1998 tests.

Intimately associated with establishing India's nuclear research program was Dr. Homi J. Bhabha(1909–1966), a brilliant physicist who worked with Lord Ernest Rutherford, the pioneering scholar in nuclear physics at Cambridge University. Shortly after his return to India, Bhabha in 1945 established the Tata Institute of Fundamental Research at Bombay. Three years later, Bhabha was selected to head India's new Atomic Energy Commission where he laid the groundwork for an independent Indian capability on nuclear research and technology. India's first prime minister, Jawaharlal Nehru(1947–1964), strongly supported his efforts and, by personally taking charge of the cabinet's Department of Atomic energy, was able to provide Bhabha significant



freedom of maneuver and ample resources.<sup>3</sup>

India's first source of fissile material that, once reprocessed, could be used for a nuclear weapon came from the Canadian supplied CIRUS reaction, which came on line in 1960. India's second research reactor, designed and built entirely by Indians, came on line in 1961; a year later India's first heavy water plant was commissioned; and in 1964 its first plutonium separation plant was inaugurated to separate fuel produced by the CIRUS reactor. The testing of a Chinese nuclear weapon in 1964 gave India a strategic justification to develop its own nuclear weapons capability, though there is a heated debate by scholars over when India launched a dedicated nuclear weapons program.

India tested what it called a "Peaceful Nuclear Explosion" on 18 May 1974, using plutonium extracted from the Canadian supplied CIRUS reactor as the fissile material. Official statements of the peaceful intentions of the test (allegedly for mining and earthmoving operations) were largely discounted because there is no significant difference in the nuclear explosive technology for peaceful purposes or for weapons purposes.

Canada, whose fuel provided the plutonium used for the nuclear test, suspended its nuclear cooperation; the U.S. had a low key response; the Indian public was generally supportive and the nationalist Jana Sangh party (later to rename itself the Bharatiya Janata Party)

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<sup>3</sup>- For a background review of India's nuclear efforts, see Onkar Marwah, "India's Nuclear and Space Programmes: Intent and Policy," *International Security*, Vol 2 (Fall 1977).

reiterated its long term demand for an Indian nuclear weapons program. Reacting to the 1974 Indian test, the U.S. Congress in 1977 and 1978 passed legislation mandating various kinds of sanctions against any country not adhering to full scope safeguards administered by the International Atomic Energy Agency(IAEA). The U.S. also took the initiative to establish international technology control regimes such as the NSG and the MTCR.

Despite the prospect of U.S. sanctions mandated by U.S. law,<sup>4</sup> a newly elected pro-nuclear Hindu nationalist government, fulfilling a long term party demand, which was also repeated in its 1998 election manifesto, ordered tests on 11 and 13 May, 1998 just two months after coming to power, and unlike 1974, declared India a nuclear weapons power. The tests received widespread popular support in India. Pakistan expectedly followed suit on 28 May, and were similarly popular. The BJP-led coalition government of Prime Minister Atal Behari Vajpayee(1998–2004), unlike the Gandhi government in 1974, was quite clear that these were nuclear weapons tests. Prime Minister Vajpayee wrote letters to U.S. President Clinton and to the G8 heads noting that the major strategic purpose was as a counterweight to China.<sup>5</sup>

K. Subrahmanyam, the dean of Indian strategic writers, added that a nuclear weapons capability is now one important measure of power

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4- The U.S. legislation mandating sanctions were not applied retrospectively to India's 1974 tests.

5- See Arati R. Jerath, "Government Flashes China Card at the West," *The Indian Express* (1 May, 1998).



and a country of India's size must have it.<sup>6</sup>

These 1998 tests, which took the U.S. government totally by surprise, met with legislatively-mandated sanctions that are rooted in efforts to prevent any further nuclear testing. India was subject to sanctions imposed under the 1994 Glenn Amendment (also known as the Nuclear Proliferation Prevention Act), which specified a denial of new financing assistance from the U.S. Export-Import Bank, the Overseas Private Investment Corporation and the U.S. Trade Development Agency, as well as U.S. opposition to loans (except for basic human needs) from international financial institutions, and a prohibition on export of certain dual-use items.<sup>7</sup> Russia and France announced that they were opposed to sanctions. Despite being identified as the justification for India's nuclear weapons, China itself took a low key approach to the tests. The Clinton Administration, realizing that the sanctions had virtually no impact on their nuclear weapons policy, lifted most of them within months of their implementation. Rather they decided to focus on a diplomatic approach which led to an intensive set of fourteen talks between Deputy Secretary of State Strobe Talbott and Indian Minister of External Affairs Jaswant Singh in 1999–2000.<sup>8</sup> This shift in policy followed the prescription of a Council of Foreign

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<sup>6</sup> K. Subrahmanyam, *Nuclear Myths and Realities -India's Dilemma* (New Delhi: ABC Publishing House, 1981), pp. vi–vii.

<sup>7</sup> For a discussion of the sanctions and the gradual lifting of many of them, see Leonard S. Spector, "Status of U.S. Sanctions Imposed on India and Pakistan," <cns.miis.edu/archive/wtc01/pakind.htm> (Accessed on 2010.10.14).

<sup>8</sup> Strobe Talbott, *Engaging India: Diplomacy, Democracy and the Bomb* (Washington D.C.: Brookings Institution Press, August 2004), pp. 3–4.

Affairs in 1998 which described the sanctions as “obstacles to effective diplomacy” and further argued that the “sanctions can work against U.S. interests” including the goal of regional stability.<sup>9</sup>

Sanctions imposed under the Atomic Energy Act prohibiting U.S. nuclear fuel and nuclear technology to states (like India) that have not accepted IAEA inspections on all their nuclear facilities (‘full scope safeguards’) and had not signed the 1970 NPT were lifted when the George W. Bush administration waived these restrictions on India (though not Pakistan) and Congress permitted by legislation in 2008. The international community followed suit in 2008 when the IAEA and the NSG voted to permit such sales, though the U.S. had to exert diplomatic leverage to get some countries, like China, to go along.

These various sanctions on India had a very limited economic impact on India and the restrictions on arms sales was not consequential as India until very recently did not purchase U.S. weapons.<sup>10</sup> Nonetheless, some significant sanctions from 1998 remained even after the 2008 civil nuclear deal to lift sanctions on export of nuclear fuel and technology, such as dual use exports, and these remaining sanctions were a source of irritation in the U.S.-Indian relationship. President Obama in his visit to India addressed this issue and announced the lifting of sanctions on ISRO, the country’s premier space organization,

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<sup>9</sup>– Richard N. Hass and Morton H. Halperin, *After the Tests: U.S. Policy Toward India and Pakistan* (New York: Council on Foreign Relations, September 1998), p. 10.

<sup>10</sup>– For a review of the economic impact of the sanctions on India and Pakistan, see Daniel Morrow and Michael Carriere, “The Economic Impacts of the 1998 Sanctions on India and Pakistan,” in *The Nonproliferation Review* (Fall 1999).

and the DRDO, its major defense research body. This went a long way in affirming the Obama Administration's commitment to building a strategic relationship with India, though the bureaucratic fine print on what "lifting" means has not yet been worked out. The other significant confidence building step made during President Obama's visit to India was his announcement that the U.S. endorsed India as a permanent member of the UNSC, a pledge that also requires bureaucratic action in the U.S. and international support. Neither the nuclear exception nor the lifting of sanctions was granted to Pakistan, a sore point in the U.S.-Pakistani relationship.

India, by one reputable estimate for 2010, now possesses up to 100 nuclear warheads (and Pakistan with slightly less at 70–90).<sup>11</sup> India and Pakistan have a broad range of platforms on which to mount nuclear weapons. India has methodically built an indigenous missile production capability, using its highly developed commercial space-launch program to develop the skills and infrastructure needs to support an ballistic missile program. The strategic goal of course is to reach anywhere in China. India successfully test fired the Agni III, which is capable of carrying a nuclear payload up to 1,800km. It is now working on a submarine ballistic missile version of the Agni III, as well as the Agni V ICBM with a range of 5,000km. The goal of course is to get a nuclear strike triad(land, sea and air) that can strike anywhere in China.<sup>12</sup>

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<sup>11</sup>– "Arms Control Association: Who has what at a Glance," <[www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat](http://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat)> (Accessed on 2010.10.15).

<sup>12</sup>– Snehal Rebello, "India Will Soon have Potential to Launch N-Warhead from Land,





## *Pakistan*

Pakistan was much slower than India to develop any kind of nuclear program and had no charismatic dynamic figure like Homi Bhabha to lead the way and also lacked India's technical capabilities for a nuclear weapons program.<sup>13</sup> An Atomic Energy Commission was not set up until 1956 to develop peaceful uses of atomic energy and it had a very modest budget; the country lacked a cadre of trained scientists and technicians and no training facilities. The U.S. helped Pakistan set up its first research reactor at PINSTECH close to the military center of Rawalpindi in 1963 under IAEA safeguards, which went critical in 1965. A second reactor, known as the Karachi Nuclear Power Plant(KANUPP) was set up with Canadian help and this safeguarded facility went critical in 1971.

Pakistan's nuclear program took on a greater urgency when Zulfikar Ali Bhutto assumed power following the country's defeat by India in late 1971. He launched a talent search to bring Pakistani scientists back to Pakistan, and among those lured back in 1975 was Dr. Abdul Qadeer Khan(A. Q. Khan), who had hands-on experience working in Urenco's Gas Centrifuge Plant in Holland. He was to lead the effort to establish Pakistan's own gas centrifuge uranium enrichment facility at Kahuta, also close to Rawalpindi, and he almost immediately began

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Air or Water," *Hindustan Times* (31 October, 2010), <<http://www.hindustantimes.com/India-will-soon-have-potential-to-launch-N-warhead-from-land-air-or-water/Article1-620191.aspx>> (Accessed on 2010.11.17).

<sup>13</sup>- Naeem Salik, *The Genesis of South Asian Nuclear Deterrence: Pakistan's Perspective* (Oxford: Oxford University Press, 2009), Chapter. 3.



a program to develop nuclear weapons, using technology he had acquired in Holland and engaging in an international program of covertly acquiring the various parts required for building a nuclear weapons capability, a rather dramatic indication of the limited capabilities existing in the country. India's test in May 1974 prompted Prime Minister Bhutto to accelerate Pakistan's nuclear weapons program. The Pakistan Atomic Energy significantly expanded its budget, but it was Pakistan's decision to build a reprocessing plant to support a single and relatively small power plant that aroused international suspicion. The reprocessing plant made neither economic nor technical sense, raising suspicions about Pakistan's real motives and resulting in a reluctance of international suppliers to provide even equipments meant for peaceful applications.<sup>14</sup> This proposed reprocessing facility, to be built by the French, was opposed by the U.S. and the French backed out of the agreement Pakistan reacted by quietly embarking on an alternative uranium enrichment technology and covertly sought the parts to build an enrichment facility The U.S. was aware of this effort and cut off economic assistance in 1979 as mandated by the Symington Amendment (passed in 1976 in reaction to India's 1974 tests) for countries that acquire enrichment technology and do not comply with IAEA safeguards.

But the Soviet move into Afghanistan in late 1979 changed everything for the newly elected President Ronald Reagan moved to offer substantial military and economic aid, while relegating the

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<sup>14</sup>- See Salik, *The Genesis of South Asian Nuclear Deterrence*, pp. 84 – 85.

nuclear issue to the margins. But the strong nonproliferation lobby, most prominently Senator John Glenn, moved to impose sanctions specifically on Pakistan by requiring an executive determination each year that Pakistan neither had nor was developing a nuclear weapon. The legislation, known as the Pressler Amendment (to the foreign assistance act) after the senator introducing it, was enacted in 1985. There then followed a sort of masquerade of the U.S. executive annually certifying to the Congress that Pakistan did not “possess” a nuclear weapon while senior Pakistani officials hinted strongly that in fact Pakistan was developing a weapons capability, which indeed it was. At the same time, Pakistan proposed a series of diplomatic initiatives in what was mainly a public relations effort to demonstrate its concern for nuclear non-proliferation and to get the international community to put pressure on India; among its proposals were a Nuclear Weapons-Free Zone in South Asia(1974), Mutual Inspection of Nuclear Facilities(1979), simultaneous Indian and Pakistani adherence to the NPT(1979) and a bilateral nuclear test ban(1987).<sup>15</sup> By 1990, the available intelligence of a Pakistani program gave little room of maneuver for President George H. W. Bush on this issue and the U.S. imposed the Pressler sanctions, which cut off economic and military assistance programs, including the delivery of F-16 fighters which Pakistan had paid for.

The 1990s were a decade of difficulties for Pakistan economically

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<sup>15</sup>- See discussion of these efforts in Salik, *The Genesis of South Asian Nuclear Deterrence*, pp. 121 – 123.



and diplomatically. By way of contrast, India had adopted economic reforms that were beginning to show results in a faster annual GDP growth rates and diplomatically with much improved relations with the U.S. and China. The Indian nuclear tests in 1998 came as a major surprise to the U.S., but they turned out to be only a temporary slowdown in a larger positive trend in Indo-U.S. relations, motivated in part by U.S. and Indian efforts to better manage the rapid rise of China in Asia. But the Indian tests were a significant blow to international non-proliferation goals. Having failed to halt the May 1998 Indian nuclear tests, the U.S. put great pressure on Pakistan not to respond with testing of its own, offering to lift a series of earlier sanctions imposed because of Pakistan's covert nuclear weapons program. It would probably have required U.S. security guarantees to Pakistan for it to restrain from conducting its own nuclear tests, and neither the U.S. nor China were prepared to make any such offer.<sup>16</sup> What appears to have triggered the decision to respond with its own tests was fear of a strategic disadvantage to India. Pakistan's responding tests took place on 28 May and 30 May. Prime Minister Sharif referred to the tests as "Pakistan's finest hour" for standing up to India in a televised address to the nation.<sup>17</sup>

As the weaker power, Pakistan, unlike India, did not issue a no first-use pledge. Limited technical capabilities forced Pakistan to use covert means to acquire a uranium enrichment capability; this same

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<sup>16</sup>- See discussion of Pakistan's decision to test in Salik, *The Genesis of South Asian Nuclear Deterrence*, p. 143.

<sup>17</sup>- *Ibid.*

limitation forced it to take a similar approach to acquiring a missile capability - or to buy it from countries willing to sell to it. The enrichment and missile efforts came together in the person of A. Q. Khan, a Pakistani metallurgist who returned to Pakistan in the 1970s from The Netherlands to work on the country's covert enrichment efforts, reportedly with blueprints for enrichment centrifuges and other components obtained at Dutch laboratories working on centrifuge issues. He established a government-funded enrichment research facility that was later named after him by President Zia-ul-Haq in recognition of Khan's services to the nation. By the mid 1980s, his facility reportedly produced enough highly enriched uranium for a nuclear weapon and he was tasked with research and development of missile delivery systems. After a failed attempt to develop its own solid-fuel ballistic missiles, Pakistan turned to China and North Korea for assistance. China in the early 1990s sold an entire production line of M-11s and supplied a range of missile technologies that seems to be the basis of Pakistan's early "Hatf" missile, sales that led to the imposition of sanctions twice on China before Beijing agreed to abide by the MTCR.<sup>18</sup> The 300 mile radius of the M-11 and its derivatives, however, were insufficient to reach all of India. Pakistan began negotiations with North Korea for what amounted to between one and two dozen Rodong missiles, renamed the Ghauri when it was inducted into the military in 2003. It has a radius of 1200-1300km and thus can reach

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<sup>18</sup>- "China's Missile Exports and Assistance to Pakistan," published in Nuclear Threat Initiative, and available at <<http://www.nti.org/db/china/mpakpos.htm>> (Accessed on 2010.10.20).



most targets in India.

Many press reports note that Pakistan exchanged nuclear enrichment equipment and technology in exchange for the *Rodong*, and that this exchange was managed by A. Q. Khan, whose laboratory developed the Ghauri from North Korean designs.<sup>19</sup> The missile cooperation between North Korea and Pakistan, long denied by both sides, became public when Pakistan tested a Rodong in April 1998. The U.S. State Department subsequently made a determination that this transfer violated the MTCR and imposed sanctions on Khan's research laboratory and North Korea's *Ch'anggwang* Trading Company. Even then, proof of continuing cooperation showed up when Indian customs officials in 1999 using intelligence information, seized the North Korean ship *Ku Wol San* at the port of Kandla on the west coast of India, revealing that it contained missile components and manuals for Scud-type ballistic missiles. While Pakistan has consistently denied exchanging nuclear enrichment technologies for the missiles, the evidence<sup>20</sup> seems to point to such assistance by A. Q. Khan's private nuclear enterprise. Former President Pervez Musharraf in his autobiography wrote that Khan transferred "nearly two dozen P-I and P-II centrifuges to North Korea" and "nearly eighteen tons materials, including centrifuges, components and drawings."<sup>21</sup> Given the extensive period of time when these

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<sup>19</sup>–For a review of the evidence on this enrichment/missile exchange and A. Q. Khan's involvement, see *Gaurav Kampani, "Second Tier Proliferation: The Case of Pakistan and North Korea," The Nonproliferation Review* (Fall/ Winter 2002).

<sup>20</sup>– *Ibid.*, p. 112.

<sup>21</sup>–Pervez Musharraf, *In the Line of Fire* (New York : Free Press, 2006), p. 294.

exchanges took place and the involvement of the shipment of parts, it is likely that the military and the government were complicit. Even in the unlikely case that Khan acted on his own, Pakistan's failed to safeguard its nuclear technologies. This represents a laxness that stands in the way of providing an exception to Pakistan on the supply of nuclear technology and fuel. Pakistan, however, argues that most of Khan's proliferation activities took place before it set up a system of command and control within the military that controls Pakistan's nuclear facilities, and no reported proliferation has occurred since this system went into effect after 2000. In addition, Pakistan established a Nuclear Regulatory Authority in January 2001, growing out of its accession to the Nuclear Safety Convention that sets safety rules and carries out regular inspections to insure their enforcement.<sup>22</sup> Nonetheless, considerable skepticism continues.

## 2. Non-Proliferation Issues

Now that India and Pakistan are openly declared nuclear weapons powers with delivery capabilities, the U.S. and the international community refocused their attention to getting the two countries to adhere to international non-proliferation objectives and to improve the security of their nuclear stockpiles. The presence of a robust terrorist presence in Pakistan has exacerbated the international concern for the safety of its nuclear assets. In contrast, the 2008 civil nuclear deal

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<sup>22</sup>– See Salik, *The Genesis of South Asian Nuclear Deterrence*, pp. 278–291.

worked out by President George W. Bush with Prime Minister Manmohan Singh in 2008, and subsequently ratified internationally by the IAEA and the NSG, seems to underscore the trust of the international community in India's commitment to protect its nuclear materials and prevent their proliferation.<sup>23</sup> A similar trust does not yet exist for Pakistan because of the recent evidence of significant proliferation activities led by A. Q. Khan, perhaps with some government collusion. Pakistan argues that it has put in place measures, including the removal of Khan from any involvement with the country's nuclear programs, to prevent any further proliferation.

A major challenge for both countries is that, as non-signatories to the NPT, they are not members of the international nonproliferation regimes established in the wake of the NPT, such as the IAEA, the Non-Proliferation Treaty Exporters Committee, the NSG and the Wassenaar Arrangement which seek to monitor and regulate the trade in nuclear fuel and technology. Still another challenge is the general weakening of the international non-proliferation regimes over the past decade. And a third challenge is the rise of terrorism, especially acute in Pakistan, though Pakistan's army, which has absolute control over its nuclear weapons, has taken several important steps to secure its

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<sup>23</sup>- The Indian side in that treaty agreed (1) to submit its nonmilitary nuclear facilities to IAEA sections-or 14 of its 22 reactors at that time, (2) to sign an Additional Protocol with the IAEA to allow for more detailed inspections, (3) to commit to halting further nuclear testing on a voluntary basis, (4) to work to strengthen the security of its nuclear facilities (5) to pledge to negotiate an FMCT, and (6) to insure that all equipment for nuclear reactors and imported fuel would be for peaceful uses only.





nuclear assets.<sup>24</sup>

India is now recognized as a *de facto* nuclear weapons state, but it would like *de jure* status to get the full rights to nuclear trade under the NPT and to correct what Indians consider was an injustice to India. A simple amendment to Article IX(3) of the NPT would need to be changed to give India the right of entry. The article now reads that “For the purposes of this Treaty, a nuclear- weapon State is one which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January 1967.” India would be eligible if the date is changed from ‘1 January 1967’ to ‘1 January 1975.’ Still another way to draw in India and Pakistan (as well as Israel) into concrete nonproliferation discussions would be carry out such talks under mandate of Article 1540(April 2004), which for the first time established binding obligations on all UN members under Chapter VII of the UN Charter to take and enforce effective measures against the proliferation of WMD. India (and Pakistan) consider the NPT as it is discriminatory, and the 1995 international review making it a perpetual treaty with little prospect for review of its key provisions, was probably one of the incentives for India to carry out the tests in 1998.<sup>25</sup> The NPT, while paying lip service to disarmament, does not address horizontal proliferation within nuclear states and does very little to advance the cause of nuclear power in such crucial sectors

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<sup>24</sup>- For a report on international efforts at securing vulnerable nuclear materials, see Kenneth N. Luongo, “Securing Vulnerable Nuclear Materials: Meeting the Global Challenge,” *Policy Analysis Brief* (The Stanley Foundation, November 2009).

<sup>25</sup>- T. P. Sreenivasan, “Bringing India’s Dream to Fruition,” *Washington Quarterly*, Vol. 33, No. 2 (April 2010), pp. 25–26.



as power generation, medicine and water.

Soon after India and Pakistan conducted their nuclear tests in 1998, both had the opportunity to address two significant non-proliferation issues: a commitment to a comprehensive test ban and a fissile material cut-off effort. A test ban had been subject of a Conference on Disarmament at Geneva in 1995 – 1996, which both attended. At that Conference, India cast a negative vote because the Conference did not consider its proposal of a time limited program for nuclear disarmament, and because of entry in force provisions that required India's ratification. Pakistan voted for a CTBT at the Conference, but refused to ratify it because India did not do so. In any case, the CTBT ceased to be a viable proposition when the U.S. Senate in 1999 rejected the treaty. However, all the nuclear weapons states, including Pakistan and India, since 1996 have declared a voluntary moratorium on testing. Indians, however, are not convinced that China has in fact abided by a moratorium. On the larger issue of nuclear disarmament, India has been publicly critical of the of inability/unwillingness of the nuclear weapons states to implement the benchmarks of progress toward nuclear disarmament envisaged in the NPT. It is the only state that has argued that total abolition is possible, and has done so even after its 1998 tests.<sup>26</sup>

On a Fissile Material Cut-off Treaty(FMCT) that would ban the production of fissile material for nuclear weapons, the two countries

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<sup>26</sup>- For a review of India's disarmament record, see Salik, *The Genesis of South Asian Nuclear Deterrence*, pp. 169 – 179.

have divergent views. India is supportive of a proposed cut-off treaty, including only a ban on future production, as it was proposed at the 1996 CD, and Pakistan is not because of its view that India possesses a larger stockpile of fissile material and it therefore wants a verifiable treaty that addresses past, present and future production of fissile material. That proposed treaty would ban only production of new fissile material for weapons purposes, would not involve inspections and would not address pre-existing fissile materials. Of the declared nuclear weapons states, India and Pakistan are the only countries to continue to produce fissile fuel. Only recently has there been an effort to de-link the FMCT from other issues like nuclear disarmament and negative security assurances. Like a CTBT, a FMCT has not come into effect, even though the 1995–1996 Conference on Disarmament proposed that such a treaty come into effect by 2005.<sup>27</sup> India and Pakistan oppose making advance commitments to stop production of fissile fuel. India's stand against advance commitments is partly based on its doubts whether a Chinese moratorium is actually in place.

The Proliferation Security Initiative(PSI), introduced by President George W. Bush in 2003 as a cooperative mechanism permitting interdiction of illicit transfers of nuclear and other WMD between nations, should be an initiative with Indian membership. While the issue of transport of illicit nuclear material is of concern to India and the PSI presents an opportunity to expand India's role in promoting

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<sup>27</sup>– See report of proposal in Kingston Reif and Madeleine Foley, “Fact Sheet on the Fissile Material Cutoff Treaty,” (15 July, 2009), a reprint.



collective security in the Indian Ocean with the U.S. and other powers,<sup>28</sup> India's participation is in doubt because of a little known international agreement, the Convention on the Suppression of Unlawful Acts against Maritime Navigation adopted in 1988, which prohibits any kind of nuclear trade with countries not parties to the NPT and that do not have comprehensive nuclear safeguards, such as India. The U.S. and India will have to find a way to get around this challenge.<sup>29</sup>

Terrorist threats to the nuclear facilities of India and Pakistan are a real danger. Both countries have terrorist groups with a record of striking at security facilities. The A. Q. Khan episode in Pakistan demonstrates the potential for stealing nuclear secrets. The 9·11 terrorist attack and subsequent comments of Osama bin Laden have raised new concerns about preventing terrorists from stealing or attacking nuclear material. The 1987 Convention on the Physical Protection of Nuclear Material (with 45 signatories currently)<sup>30</sup> is the only international instrument on physical protection of nuclear materials. India and Pakistan participated in the 4–8 July, 2005 conference to amend the Convention to make it more effective, with subsequent workshops to identify “best practices” in security nuclear material. The vast expansion

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<sup>28</sup>– For a discussion of India's views on PSI, see A Vinod Kumar, “India's Participation in the Proliferation Security Initiative: Issues in Perspective,” *Strategic Analysis*, Vol. 33, No. 5 (September 2009).

<sup>29</sup>– For discussion, see C. Raja Mohan, “India and the Non-proliferation Institutions: Addressing the “Expectations ‘Gap’,” A Paper Presented at the Third Meeting of the Working on an Expanded Non-Proliferation System, Washington D.C. (19 June, 2010).

<sup>30</sup>– International Atomic Energy Agency, “Convention on the Physical Protection of Nuclear Material,” <[www.iaea.org/Publications/Documents/Conventions/cppnm\\_status.pdf](http://www.iaea.org/Publications/Documents/Conventions/cppnm_status.pdf)> (Accessed on 2010.11.17).

of nuclear facilities around the world (now some 450 plants)<sup>31</sup> over past few decades, and the prospective expansion of such facilities in South Asia, gives greater urgency to the protection of nuclear material. A challenge is that neither the NPT nor the Convention on Physical Protect of Nuclear Material requires states to provide protection within their own territories or to enforce a set of “best practices” at home, such as better accounting and tracking, the creation of a proliferation-resistant fuel cycle that is not discriminatory, etc. One possible fix organizationally would be to give greater authority for the physical protections requirements of UNSC Resolution 1540 to the IAEA, which already has inspectors that go from country to country to check on compliance with its rules.

There is also a private initiative, launched at Vienna in 2008 by a private group led by former U.S. Senator Sam Nunn, to promote the best security practices and eliminate weak links in the global security chain, and by extension, keep terrorists from getting a nuclear weapon. The new organization, known as the World Institute for Nuclear Security(WINS) intends to provide a forum where nuclear security professionals can meet and share information on best ways to keep dangerous materials out of unfriendly hands.<sup>32</sup> This venture is a complement to the World Association of Nuclear Operators(WANO) formed in 1989 by nuclear plant operators to prevent another accident

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<sup>31</sup>- European Nuclear Society, “Nuclear Power Plants World Wide,” available at <<http://www.euronuclear.org/info/encyclopedia/n/nuclear-power-plant-world-wide.htm>> (Accessed on 2010.11.17).

<sup>32</sup>- “WINS Fact Sheet,” World Institute for Nuclear Security, available at <<http://www.wins.org/fileitem.aspx?id=163>> (Accessed on 2010.11.16).

like that at Chernobyl by improving the safety of nuclear plants worldwide. Every organization in the world operating a nuclear electricity generating plant is a member of WANO and its major goal is to perform peer reviews that form basis of advice on best practices to ensure nuclear safety.<sup>33</sup>

### 3. Strategic Implications of Nuclear Weapons in South Asia

The strategic nuclear doctrines of India and Pakistan are based on the notion of a credible minimum deterrent. The development of nuclear weapons by China, which had invaded India in 1962 as an exercise in coercive diplomacy (regarding disputed boundaries which have still not been resolved) was a significant factor in India's decision to develop nuclear weapons and thus prevent future efforts at coercion.<sup>34</sup> Analysts on both sides argue<sup>35</sup> possession has proved an effective deterrence against full scale war between the two countries, though the Kargil conflict in Kashmir during the summer of 1999 and the long military standoff in 2001–2002 following a terrorist attack on the Indian Parliament throw some doubt on this proposition. Proponents of deterrence argue that even in these two

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33- "What is WANO?" World Association of Nuclear Operators(WANO), available at <[http://www.wano.org.uk/WANO\\_Documents/What\\_is\\_WANO.asp](http://www.wano.org.uk/WANO_Documents/What_is_WANO.asp)> (Accessed on 2010.11.16).

34- Sreenivasan, "India's Dream," p. 29.

35- See Salik, *The Genesis of South Asian Nuclear Deterrence*, Chapter. 7.



cases, India and Pakistan pulled back from the brink of conflict. On the Kargil incident, for example, Indian forces did not cross the Line of Control or the international boundary and Pakistan continued to maintain the fiction that its paramilitary troops were indigenous “freedom fighters.”

The Kargil Conflict, however, illustrates the “stability-instability” paradox that nuclear weapons pose in South Asia. On the “stability” side of the argument is that nuclear weapons kept the conflict limited. On the “instability” side is that possession of a nuclear capability may have emboldened Pakistan to engage in low intensity warfare without risking a full Indian countering response.<sup>36</sup>

Since Kargil, the two sides have set up command and control mechanisms, have followed through on nuclear related confidence building measures, and have toned down their rhetoric. Yet, the danger of conflict continues with the continuing threat of Pakistan-based terrorist attacks on India similar to the November 2008 terrorist attack on Mumbai. It is doubtful if India would remain as restrained the next time such an attack occurred. Both sides seem to believe that nuclear weapons do not eliminate the possibility of limited conflicts (such as the use of Pakistani paramilitary forces at Kargil), just that it reduces the risk of those conflicts morphing into full-scale war (i.e., the “stability” half of the “stability-instability” paradox). But nonetheless there is considerable concern in both countries (and elsewhere) that

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<sup>36</sup>– For a discussion of this paradox, see Martin J. Wojtyasiak, “Preventing Catastrophe: U.S. Policy Options for Management of Nuclear Weapons in South Asia,” *Maxwell Paper*, No. 25 (Air War College, 2001), p. 19.



a limited war could in fact slide into a nuclear exchange.<sup>37</sup>

Pakistan for its part has made the maintenance of a manageable ratio of forces with India a core part of its defense strategy, with one of the justifications being that this parity (or near parity) maintains a rather high threshold on the use of nuclear weapons. Pakistani strategists argue that India's continuing military buildup risks lowering this threshold.<sup>38</sup> India however justifies a strengthening of its military forces to meet multiple threats, most prominently from China. Pakistan tries to keep up conventionally, but India's huge and growing economic advantage may put constraints on just how much Pakistan can spend on its military, and a growing gap between the two countries would lower its nuclear threshold during a limited war. The growing size of India's military also provides a justification to Pakistan to maintain a major part of its military forces on the border with India, rather than transfer them to the west to fight terrorists there who engage in cross-border attacks on U.S. and NATO forces in Afghanistan.

Following the May 1998 nuclear tests, the two countries held talks in October at Lahore to work out a strategic restraint regime in the context of newly announced possession of nuclear weapons, and they signed a memorandum of understanding that would form the

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<sup>37</sup>– Pervez Hoodbhoy, "India & Pakistan: Case for Common Defence," *The Hindu* (27 November, 2009), available at <<http://www.thehindu.com/opinion/lead/article56002.ece>> (Accessed on 2010.11.17). Also, Siddharth Varadarajan, "The Piper's Price: India and the U.S. after Kargil," *The Times of India* (17 July, 1999), available at <[www.bu.edu/globalbeat/southasia/varadarajan0799.html](http://www.bu.edu/globalbeat/southasia/varadarajan0799.html)> (Accessed on 2010.11.17).

<sup>38</sup>– Salik, *The Genesis of South Asian Nuclear Deterrence*, pp. 247–248.



basis of negotiations. While the Kargil incidents the next year put the Lahore MOU on the backburner and continuing tensions have stood in the way of reviving the ideas, the five specific proposals are still valid:<sup>39</sup>

- ① Bilateral consultations to develop confidence building measures in both nuclear and conventional areas
- ② Advance notification on ballistic missile flights
- ③ National measure to reduce risk of accidental or unauthorized use of nuclear weapons.
- ④ Continue nuclear testing moratorium, unless extraordinary events arise that threat national sovereignty
- ⑤ Bilateral consultations on security, disarmament and non-proliferation.

These steps are still a good basis to resume the negotiations that collapsed due to Kargil. Such resumption might require quiet, “behind the door” diplomacy by the U.S. alone with promising technical assistance to embrace the verifiability of confidence building measures.

The two sides have on their own established a hotline between the respective Director Generals of Military Operations and existing CBMs regarding informing the other side annually on nuclear sites (as part of an agreement not to attack each other’s nuclear facilities) are in place. However, lack of trust has resulted in a spotty record on

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<sup>39</sup>– For details, See Salik, *The Genesis of South Asian Nuclear Deterrence*, pp. 250 – 251.

these CBMs and an inability to work out significant new ones. Nonetheless, there is a continuing need for the two countries to place restraints on their nuclear and missile development to meet their declared doctrines of “minimum credible deterrence” as well as work out risk reduction and crisis management measures. Perhaps the greatest single impediment to a renewed consideration of joint action is the continued Pakistan-based terrorist violence directed against India and against the Indian presence in Afghanistan. The Government of Pakistan needs to crack down forcefully on these groups, who themselves represent a threat to Pakistan. India, the stronger power, needs to do what it can to reduce Pakistani suspicions of Indian efforts to weaken it, perhaps by proposing that the two sides move ahead on the ideas raised in the 1999 Lahore Memorandum of Understanding. These two steps would probably have to happen simultaneously (and perceived to be taking place in good faith) to sustain a rapprochement process.



#### **4. The Impact of India and Pakistan’s Nuclear Programs on the Balance of Power in Asia**

The future security situation in Asia will depend on the relative strengths of China, Japan, India, and, to a certain extent, Korea. It will also depend on continued American willingness to engage on security issues in East and South Asia. These Asian powers are all economic powerhouses and two of them have nuclear weapons. The

nuclear factor is an element in the balance of power in Asia. China has emerged as the most powerful both militarily and has surpassed Japan as the world's second largest economy. Much depends on how India, Japan and Korea interact with each other and the other major power in Asia, the United States, to manage the rise of China. Historically, the U.S. has been linked closely with the security of Japan and Korea, and the U.S. remains the major power in Asia, though China is emerging as a challenger. While Indian relations with China have improved considerably since the end of the Cold War, India has had a history of poor relations with China since the border war in 1962 and the Chinese provide military assistance to Pakistan, and provided it technical help on its nuclear program in the 1980s. The India-China border issue remains unresolved and China continues to provide nuclear assistance to Pakistan, though now restricted to civilian uses of nuclear energy. China in 2010 announced that it would sell two nuclear powered electrical generating plants to Pakistan and without getting NSG approval required of countries that have not signed the NPT. China claims that the deal for these plants was made before it (and other countries) joined the NSG in 1994 and that it is therefore legal. The U.S. and India disagree. The Chinese also have provided Pakistan with nuclear capable missile systems in the early 1990s. North Korea has become still another major source of missile technology to Pakistan, and in return it received enrichment technology and enrichment hardware. Chinese support for North Korea also is a source of tension in East Asia as it provides North

Korea the confidence to pursue its nuclear brinkmanship.

Managing the emergence of China was the major driving force behind the U.S.-India civilian nuclear agreement in that it was aimed specifically at strengthening India as an actor on the Asian stage. While the agreement, which came into effect in 2008 as a purely civilian one, an Indian nuclear weapons capacity enhances the country's role as a balancing power in Asia and removed a fear that China might use nuclear blackmail in a future crisis. While there is concern in the U.S. that Indian and Pakistani possession of nuclear weapons could be a destabilizing factor, given the deep suspicions between the two and the ongoing bilateral disputes, this concern is balanced by strategic advantages of a nuclear armed India. India for its part was alarmed that the new Obama administration might assign less strategic importance to India as it sought to improve the U.S. the relationship with China, and might even work out a strategic accord with China that involves a Chinese management role in South Asia. Subsequent American expressions of support for Japan, Korea and the Southeast states in the face of a more assertive China have calmed Indian fears somewhat regarding U.S. goals in Asia. In his visit to India in November 2010, President Obama further calmed Indian apprehensions on the importance of India to the U.S. by proposing India as a permanent member of the UNSC, recommending India as a member in international nonproliferation regimes, and lifting sanctions on key space and defense production organizations. Underscoring the strategic importance of India to the U.S., moreover, is the sale of among the most sophisticated military weapons in the U.S. arsenal and continued



joint military maneuvers between the two.<sup>40</sup>

South Korea has developed a robust relationship with India, partly driven by growth in trade and investment, but also by strategic considerations. India plays an increasingly important role in protecting the vital Indian Ocean sea lanes that transport much of its oil and gas from the Persian Gulf region (as well as most of the Japanese oil and gas). This is reflected in Comprehensive Economic Partnership Agreement(CEPA) with South Korea and the start of joint naval maneuvers. South Asia (India/Pakistan) and Northeast Asia (the two Koreas and increasingly Japan/China) are among the major trouble spots in the world today and potential conflicts exist in both places that could have a larger regional impact. The common China factor is something that India and South Korea have to contend with, as it is the most significant common link emboldening Pakistan and North Korea. Viewed from this perspective, India's Pakistan policy has implications for South Korea and South Korea's North Korea policy has implications for India.

There is no overarching organizational architecture to address the several security tensions in Asia. If the states of Asia do not work out some institutional arrangement to address security issues (with necessary U.S. involvement to reduce fears of everyone else to an emerging China), there is likely to be an aligning of forces, with India almost certainly moving closer to South Korea and Japan, and

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<sup>40</sup>– “Factbox: Obama Highlights \$10 Billion of Deals in India,” *Reuters* (6 November, 2010), available at <<http://www.reuters.com/article/idUSTRE6A514920101106>> (Accessed on 2010.11.17).



China very likely moving closer to Pakistan. One major near term advantage of a larger regional security arrangement with American involvement is that it reduces the chances of South Korea and Japan moving to develop nuclear weapons of their own, which both could do at quick notice if they felt threatened by China and/or North Korea. The other advantage is to draw China into a more accommodative relationship with the rest of Asia. The U.S. itself is strengthening its strategic ties to India, Japan, Korea and Indonesia in part to caution China that further assertiveness towards its neighbors also threatens U.S. interests and would drive all these countries even closer together. Neither the U.S. nor the other Asian powers seek to contain China, but to strengthen Asia's great democracies to maintain a stable balance of power in Asia and thus enhance the chances of a peaceful rise of China.<sup>41</sup>

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<sup>41</sup> For a discussion of how a strengthened India fits into this balance of power, see Richard L. Armitage, R. Nicolas Burns and Richard Fontaine, *Natural Allies: A Blueprint for the Future of U.S.-India Relations* (Washington D.C.: Center for a New American Security, 2010).

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# VII. Nuclear Weapons and Non-State Actors: Issues for Concern

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Traditionally, concerns about proliferation have focused on the nuclear ambitions of states. The Non-Proliferation Treaty(NPT), for example, is aimed at limiting the horizontal spread of nuclear weapons between states and also at discouraging vertical proliferation - that is, convincing states that already possess nuclear weapons to limit their arsenals and eventually agree to disarm. Increasingly, however, attention has turned to non-state actors, most specifically terrorist groups. For example, the 2010 U.S. National Security Strategy explains that the greatest threat facing the United States is “... the danger posed by the pursuit of nuclear weapons by violent extremists and their proliferation to additional states.”<sup>1</sup>

Concern that non-state actors will seek nuclear weapons has led to a focus on security for nuclear weapons, as well as the materials and expertise necessary to make them. To date, more resources have been devoted to securing weapons-usable materials, largely due to the wider variety of places where they can be found, the relatively less stringent security of those materials compared to nuclear weapons, and the fact that weapons expertise is not useful in the absence of such materials. Most recently, in 2010, U.S. President Barack Obama convened a Nuclear Security Summit in Washington D.C. with the purpose of creating international momentum toward the goal of securing all vulnerable nuclear material within four years.

This chapter assesses the ability of non-state actors to acquire nuclear weapons. It begins by looking at their motivations and the

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<sup>1</sup> U.S. Government, *National Security Strategy* (May 2010), p. 4.

extent to which these translate into proliferation concerns that are similar to, or distinct from, traditional state-focused nonproliferation efforts. Next is a discussion of the locations and quantities of nuclear weapons, weapons-usable materials, and expertise that are available, and the relative vulnerabilities of each to theft or mis-direction. The final section makes the case that by focusing on states, traditional nonproliferation efforts have utilized tools and mechanisms that are in some ways less well-suited for detecting proliferation by non-state actors. Therefore, the future nonproliferation agenda should include efforts aimed at increasing our certainty that meaningful instances of proliferation by non-state actors are discovered.

## 1. Proliferation and the Motives of Non-State Actors

States and non-state actors probably want nuclear weapons for different reasons. Historically, states have sought not nuclear weapons, but a nuclear weapons program. This is because the ability to master weapons development, production, and deployment is important for states that seek the robust nuclear arsenal necessary for deterring enemies, but also for states that pursue nuclear weapons in order to be seen as modern and technologically advanced.<sup>2</sup> Non-state actors, on the other

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<sup>2</sup>- For the classic discussion of why states seek nuclear weapons, see Scott D. Sagan, "Why do States Build Nuclear Weapons?: Three Models in Search of a Bomb," *International Security*, Vol. 21, No. 3 (Winter 1996–1997), pp. 54–86. For the presumed requirements of deterrence, see Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate Renewed* (New York: W.W. Norton, 2003), pp. 17–29.



hand, are presumed to want a nuclear weapon because it gives them a more powerful ability to punish states with which they disagree, compel those states to make certain policy changes, or to seek vengeance.<sup>3</sup> Therefore, such actors are less interested in the ability to build and maintain an arsenal, and more concerned with quickly developing one or a few usable weapons.

Most states eventually develop more sophisticated nuclear warheads that can be precisely targeted and are smaller in size, so they can be delivered with bombers and medium- or long-range missiles. Some discriminate between weapons aimed at population centers, and those intended to destroy their opponent's nuclear weapons or infrastructure. Terrorists, on the other hand, are interested in killing or terrorizing people. Both can be done with a cruder and less sophisticated nuclear weapon.

Most nuclear weapons typically contain either highly enriched uranium(HEU), plutonium, or both.<sup>4</sup> These materials do not occur naturally and are very difficult to make. In nature, uranium contains 0.7% uranium-235, but tends to be mostly U-238, an isotope that cannot support the chain reaction needed for a nuclear explosion. The International Atomic Energy Agency(IAEA) treats HEU that has been

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<sup>3</sup>- For a discussion of the motivations of terrorists, see Charles D. Ferguson and William C. Potter, *The Four Faces of Nuclear Terrorism* (Monterey, CA: Center for Nonproliferation Studies, Monterey Institute of International Studies, 2004), pp. 14–45.

<sup>4</sup>- Many states have gone on to develop thermonuclear weapons but such weapons require a considerable leap in technological sophistication that would beyond non-state actors.

enriched to 20% as “direct use material,” that is, material that can be used to make a feasible nuclear weapon. In practice the nuclear weapons states have used HEU that is 90% U-235 because this allows them to make small warheads that can be delivered using missiles and bombers.

According to the IAEA, it takes approximately 8kg of plutonium and 25kg of HEU to make the simple, first generation implosion- type weapon of interest to states.<sup>5</sup> However, terrorists are more likely to be able to build a simpler gun-type design, like the one used at Hiroshima, which contained 60kg of HEU. As a result, international attention has focused mostly on securing vulnerable HEU around the world because building a weapon from plutonium would require greater expertise, and such a weapon may be less reliable without extensive research, development and testing, and provides little extra benefit to terrorists.

Another concern is that terrorists might seek to use a radiological device; that is, a conventional explosive that is used to disperse radioactive material over an area. Such “dirty bombs” are not nuclear weapons because they do not undergo a chain reaction. If terrorists seek to build a radiological device, then they can make use of nuclear materials that are widely available, for example, in industrial and medical uses.<sup>6</sup> Although dirty bombs can cause panic and fear, and

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<sup>5</sup>- International Atomic Energy Agency, *International Atomic Energy Agency Safeguards Glossary, 2001 edition*, International Nuclear Verification Series, No. 3 (2002), p. 19.

<sup>6</sup>- For various scenarios involving radiological devices, and the resulting consequences, see testimony of Henry Kelly, President, Federation of American Scientists, to the Senate

the dispersed radioactive material can result in long-term health concerns and environmental contamination, the casualties that result are primarily due to the conventional explosion. Because dirty bombs do not come close to equaling the destructive power of nuclear weapons, the rest of this chapter focuses on terrorist access to nuclear weapons, weapons-usable material, and the expertise with which to use it.

## 2. Stealing a Bomb

Obviously the quickest path to nuclear possession is to steal a nuclear weapon. The nine states that have developed nuclear weapons<sup>7</sup> are estimated to collectively have available for use about 5,400 strategic nuclear weapons and 2,550 tactical ones.<sup>8</sup> Most of these are in the United States and Russia, which together also have over 7,000 additional warheads in storage. These weapons would take between a few days and a few weeks to be readied for use. The nuclear weapons that are operationally available are believed to be stored at 111 sites, most of them in the nuclear weapons states.<sup>9</sup> The United States, however, also stores warheads in six other

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Committee on Foreign Relations (6 March, 2002). Available on-line at <<http://www.fas.org/ssp/docs/030602-kellytestimony.htm>>.

7- These states are the United States, Russia, United Kingdom, France, China, Israel, India, Pakistan and North Korea.

8- Federation of American Scientists, "Status of World Nuclear Forces," updated 26 May, 2010. <[www.fas.org/programs/ssp/nukes/nuclearweapons/nukestatus.html](http://www.fas.org/programs/ssp/nukes/nuclearweapons/nukestatus.html)>.

9- International Panel on Fissile Materials, *Global Fissile Material Report 2009* (Princeton, N. J.: Program on Science and Global Security, Princeton University, 2009), p. 11.





locations in Europe.<sup>10</sup>

It is generally assumed, however, that the theft of a strategic nuclear weapon is unlikely. Such weapons are highly guarded and their movements are closely tracked, although problems have occurred.<sup>11</sup> Strategic nuclear weapons are also very heavy; they can weigh several hundred kilograms each and would be difficult to steal. Periodically, concerns surface about the theft of tactical as opposed to strategic nuclear weapons. Because tactical nuclear weapons are intended for use on the battlefield, they are smaller, more mobile, and may be stored in a wider variety of locations and subject to less stringent command and control arrangements. Many of the concerns about the theft of tactical nuclear weapons date from the 1990s when Russia was either unwilling or unable to provide an inventory of these weapons. These concerns were reinforced by periodic and unsubstantiated claims of a missing “suitcase bomb.”<sup>12</sup>

Most concern, however, has focused on Russian nuclear warheads destined for dismantlement, but which need to be moved or are placed

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<sup>10</sup>– For the specific locations see. International Panel on Fissile Materials, *Global Fissile Material Report 2009*, pp. 132–138.

<sup>11</sup>– For example, in 2007 a U.S. Air Force bomber moving cruise missiles between military bases was inadvertently loaded with some nuclear-armed missiles. The bomber flew its mission, unloaded the missiles, and they sat unattended for some 10 hours before the warheads were discovered. See Josh White, “In Error, B-52 Flew Over U.S. with Nuclear-Armed Missiles,” *The Washington Post* (6 September, 2007).

<sup>12</sup>– It is unlikely that the USSR ever constructed a bomb that would fit into a suitcase and much of the concern over this issue has been attributed to the political ambitions of Russian General Alexander Lebed. See David Smigielski, “A Review of the Suitcase Nuclear Bomb Controversy,” *Policy Update* (Russian-American Nuclear Security Advisory Council, September 2003).



temporarily in storage as they wait to be destroyed. Russia has an estimated 3,000 warheads that are awaiting dismantlement, which will need to be moved from storage sites to dismantlement facilities.<sup>13</sup> Since the early 1990s, as part of its Cooperative Threat Reduction(CTR) program, the United States has helped Russia increase the security of weapons, and weapons materials, that are in transit to storage or dismantlement facilities by providing secure railcars, containers, and protection materials (such as Kevlar blankets to shield the weapons from small arms fire). Despite this, the movement of warheads and materials remains a concern because the routes frequently involve long distances, often also transport commercial goods and passengers, and involve the temporary storage of warheads, often in significantly less secure buildings, as they wait to be transferred to different routes or between trains and trucks.

Another focus has been the estimated 48 places where warheads are currently believed to be stored in Russia.<sup>14</sup> In total, there are an estimated 110–130 places where warheads could be stored if necessary.<sup>15</sup> Although the U.S. and Russia have cooperated to provide security improvements at many of these sites, as of 2008, upgrades had not been completed at approximately one-quarter of these facilities.<sup>16</sup>

Most of the weapon-focused security upgrades in Russia have been

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<sup>13</sup>– Federation of American Scientists, “Status of World Nuclear Forces,” <[www.fas.org/programs/ssp/nukes/nuclearweapons/nukestatus.html](http://www.fas.org/programs/ssp/nukes/nuclearweapons/nukestatus.html)>

<sup>14</sup>– International Panel on Fissile Materials, *Global Fissile Material Report 2009*, p. 11.

<sup>15</sup>– Matthew Bunn, *Securing the Bomb 2008* (Cambridge, MA: The Harvard Project on Managing the Atom, November 2008), p. 94.

<sup>16</sup>– *Ibid.*

aimed at physical security - that is, improving the fences around facilities, and training and equipping guards to patrol them. Another key element has been developing a means of identifying each weapon individually - for example, with a unique bar code - and installing portal monitors and other equipment to track its movement.

Since 2001, however, Pakistan has eclipsed Russia as the focus on concern about warhead theft. Here security worries have also included theft by insiders or unauthorized launch.

Pakistan is believed to have 70–90 nuclear weapons that are stored at a possible eight sites.<sup>17</sup> Although this arrangement is intended to give Pakistan time to assemble and ready its weapons for use in the event of war with neighboring India, in practice the dispersal of these weapons has raised U.S. concerns that it makes the weapons vulnerable to unauthorized access. Pakistan has instituted new and more robust command and control arrangements for its nuclear forces, including electronic “keys,” called permissive action links, that allow the weapon to be launched only by those with the appropriate code.<sup>18</sup> There is also a personnel reliability program designed to weed out those with fundamentalist sympathies or who might otherwise seek to take control of the weapons for their own purposes. Critics, however, contend that there is no way to judge independently whether Pakistan’s security systems work because there is no system of public oversight

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<sup>17</sup>– International Panel on Fissile Materials, *Global Fissile Material Report 2009*, p. 9; p. 11.

<sup>18</sup>– For details, see Kenneth N. Loungo and Naeem Salik, “Building Confidence in Pakistan’s Nuclear Security,” *Arms Control Today* (December 2007).

and accountability.<sup>19</sup> While admitting that the United States has limited knowledge about weapon and warhead security in Pakistan, the U.S. Chairman of the Joint Chiefs of Staff, Admiral Mike Mullen, has argued that he is “comfortable” that security in Pakistan is sufficient to prevent terrorists from gaining access to nuclear weapons.<sup>20</sup>

### 3. Weapons Materials

Although the theft of a weapon is cause for concern, much more emphasis has been placed on the security of HEU and plutonium. Non-state actors are not likely to be able to produce these materials themselves. HEU requires a uranium enrichment facility, a large and complex undertaking which, in the past, has proven difficult even for states. Plutonium requires building a nuclear reactor and re-processing the spent fuel, both of which are complex and hazardous tasks that are clearly out of reach for non-state actors. Therefore, the theft of these materials is considered the only practical alternative. As John Kerry explained succinctly in the 2004 U.S. presidential campaign: “Remember, no material, no bomb, no nuclear terrorism.”<sup>21</sup>

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<sup>19</sup>– See Pervez Hoodbhoy, “Letters to the Editor: ‘Trust Us’ Is Not Enough in Pakistan,” *Arms Control Today* (March 2008).

<sup>20</sup>– “Adm. Mullen: Pakistan Nuclear Nukes Secure But ...,” *CBS World News* (4 May, 2009).

<sup>21</sup>– Jodi Wilgoren, “Kerry Promises Speedier Efforts to Secure Nuclear Arms,” *The New York Times* (2 June, 2004).



### *Highly Enriched Uranium(HEU)*

Of the nine nuclear weapons states, all except for Israel, India, and North Korea have produced HEU for their nuclear weapons. Pakistan is the only country still doing so while the rest are considered to have existing stockpiles that are sufficient for their future weapons needs. India currently also produces HEU, but it is believed this is for use in reactors for nuclear submarines, although this material could be diverted to its weapons program in the future if it were to undergo additional enrichment.<sup>22</sup>

According to the International Panel on Fissile Materials, there are an estimated 1,610 metric tons of HEU worldwide, most of which is in the nuclear weapons states.<sup>23</sup> Collectively, the nuclear weapons states have an estimated inventory of over 900 metric tons of HEU, either in or available for use in nuclear weapons.<sup>24</sup> The bulk of this material is in Russia (an estimated 590 metric tons)<sup>25</sup> and the United States (an estimated 250 metric tons). HEU is also used for fuel in naval reactors by Russia, the United States, and the United Kingdom, in addition to India. Russia, the United States and the United Kingdom are estimated to have collective stockpiles totaling approximately 380 metric tons for this purpose.<sup>26</sup> Additionally, Russia and the United

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<sup>22</sup>– The International Panel on Fissile Materials estimates that India is producing 200 – 300 kilograms of HEU per year, although this is enriched only to 45%. International Panel on Fissile Materials, *Global Fissile Material Report 2009*, p. 14.

<sup>23</sup>– *Ibid.*, p. 13.

<sup>24</sup>– *Ibid.*

<sup>25</sup>– *Ibid.*

<sup>26</sup>– *Ibid.*



States have approximately 245 metric tons of HEU that is declared to be in excess of their military needs and is waiting to be down-blended for use as reactor fuel.<sup>27</sup> Part of this process involves the 1993 HEU Purchase Agreement in which the United States agreed over a twenty year period to pay Russia some \$12 billion for 500 metric tons of HEU from dismantled Soviet nuclear warheads. Russia down-blends this material which, in turn, is then used to fuel nuclear power plants in the United States.<sup>28</sup>

Besides HEU for military uses, an additional estimated 70 metric tons is associated with fuel for nuclear reactors that are used for research purposes.<sup>29</sup> Of the approximately 135 HEU-fueled research reactors worldwide, the vast majority are in Russia and the United States.<sup>30</sup> The rest are in non-nuclear weapons states and are therefore subject to IAEA safeguards. Since the late 1970s, there has been a global effort to reconfigure these reactors to use low enriched uranium, which is not useful for weapons purposes.<sup>31</sup> Because many of these research reactors are located at civilian facilities - including, for example, universities - they have been a source of particular concern. For example, the research reactor used by the Massachusetts Institute

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<sup>27</sup>- International Panel on Fissile Materials, *Global Fissile Material Report 2009*, p. 13.

<sup>28</sup>- For details, see Matthew Bunn, "Reducing Excess Stockpiles: U.S.-Russian HEU Purchase Agreement," *Nuclear Threat Initiative* (5 March, 2003). <[http://www.nti.org/e\\_research/cnwm/reducing/heudeal.asp?print=true](http://www.nti.org/e_research/cnwm/reducing/heudeal.asp?print=true)>.

<sup>29</sup>- International Panel on Fissile Materials, *Global Fissile Material Report 2009*, p. 15.

<sup>30</sup>- Union of Concerned Scientists, "Preventing Nuclear Terrorism Fact Sheet," (April 2004).

<sup>31</sup>- This is the Reduced Enrichment for Research and Test Reactor(RERTR) program begun by the U.S. Department of Energy in 1978.

of Technology(MIT) is located in the heart of Cambridge, and, in the past, has been criticized for placing only limited restrictions on access.<sup>32</sup> Although such reactors typically do not contain enough material to make a nuclear weapon, and sometimes the material available needs additional processing before it can be used in weapons, the concern is that the minimal security measures makes these facilities an attractive target for non-state actors.<sup>33</sup> For example, in 2007 gunmen attacked the Pelindaba nuclear reactor and research center in South Africa, which may have held bomb grade uranium. This facility raised particular concerns because it is considered to be well-guarded.<sup>34</sup>

### *Plutonium*

Plutonium is created in nuclear fuel during irradiation in a nuclear reactor. It has to be chemically separated from the highly radioactive spent nuclear fuel (known as reprocessing) before it can be used for weapons purposes. Today, separated plutonium can be found in the nine nuclear weapons states plus Japan. There are an estimated 500 metric tons of plutonium stockpiled in these states.<sup>35</sup> Of this amount, about one-third is in weapons programs and an additional 92 tons has

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<sup>32</sup>- For details see "ABC Investigation Finds Gaping Lapses in Security at Nuclear Reactors," *ABC News* (13 October, 2005).

<sup>33</sup>- William J. Broad, "Research Reactors a Safety Challenge," *The New York Times* (12 April, 2010).

<sup>34</sup>- Michael Wines, "Break-In at Nuclear Site Baffles South Africa," *The New York Times* (15 November, 2007).

<sup>35</sup>- International Panel on Fissile Materials, *Global Fissile Material Report 2009*, p. 16.

been declared excess of weapons needs by the United States and Russia and is awaiting to be turned into reactor fuel.<sup>36</sup> The remaining plutonium, almost 250 tons - about half the global total - is in civilian nuclear power programs. This plutonium is intended for use as fuel for advanced reactors.

Although plutonium is more difficult to use in a nuclear weapon and is thus usually associated with state nuclear programs, non-state actors could use it to produce a bomb with a small yield. In 1997, the U.S. Department of Energy released a finding stating that reactor-grade plutonium could be used to build a bomb “no more sophisticated” than a first generation nuclear weapons but with a yield in the range of a few kilotons.<sup>37</sup>

### *Problems Securing Materials*

Efforts to secure fissile materials around the global have revealed a host of problems and vulnerabilities. Some of these are physical. For example, there has been persistent concern that storage sites lack adequate guns, guards and gates. But other problems stem from a lack of cooperation and coordination between the bureaucracies that are responsible for security within one state. Yet another set of problems is political and stems from the different motivations states have for pursuing fissile material security.

The recognition that access to nuclear materials is key to nuclear

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<sup>36</sup>- International Panel on Fissile Materials, *Global Fissile Material Report 2009*, p. 16.

<sup>37</sup>- *Ibid.*, p. 130.





weapons has propelled states to seek political solutions. Thus there has been a long standing effort to agree to an international treaty to ban the production of HEU and plutonium for weapons. The idea for a Fissile Material Cut-Off Treaty(FMCT) was first introduced in 1957 at the United Nations General Assembly. It proved impossible to reach agreement, however, because of the Cold War and U.S. and Russian concerns over the relative size of their nuclear arsenals. In 1993, the UN General Assembly agreed again to begin talks to consider an FMCT. Since then, however, that has been very little progress. The United States, the United Kingdom, Russia, France, China, and North Korea have all stopped the production of fissile materials for weapons. The FMCT seeks to formalize the status quo in these countries and to end continuing production in Israel, India, and Pakistan. These three, predictably, seek to build their fissile material stocks before agreeing to a cut-off.

Even if an FMCT were agreed to, it would not necessarily end production of HEU for naval fuel. It is possible for naval reactors to operate on low enriched uranium, as is done in France and China. The United States, United Kingdom, Russia, and India, however, have shown no interest in moving to this fuel for their naval reactors.

An FMCT would also not necessarily end the reprocessing of spent nuclear fuel in civilian nuclear power programs. China, France, Russia, and the United Kingdom have reprocessing plants as part of their civilian nuclear programs. Japan also has a reprocessing plant but because it is a non-nuclear weapons state under the NPT the plant



is subject to IAEA safeguards. An additional concern is South Korea, which has shown interest in developing its own reprocessing capacity. Independent analysts have argued that South Korea's plan is of questionable economic value and, further, that it would create new proliferation concerns because a fully operational reprocessing capacity would generate enough excess plutonium to make about 100 nuclear weapons each year.<sup>38</sup>

Finally, even if an FMCT were reached, it would not reduce current stockpiles of HEU and separated plutonium, which would continue to be at risk. Besides the lack of political will to end the production of fissile materials, there are other proliferation vulnerabilities having to do with the security of storage sites for these fissile materials that remain important. To date, it is the security of fissile material storage that has been the focus of nonproliferation concerns.

The United States, which has been the most open about security problems, has found it very difficult and expensive to secure its fissile materials. After the 9·11 terrorist attacks, the United States increased security measures at most sites and as of 2006 was spending over \$1 billion per year on physical security at its nuclear facilities.<sup>39</sup> Despite this, problems have persisted. The three agencies responsible for nuclear security have inconsistent requirements and lack coordination between their efforts.<sup>40</sup> Further, in 2008, the U.S. Department of

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<sup>38</sup>– See, for example, Frank Von Hippel, “South Korean Reprocessing: An Unnecessary Threat to the Nonproliferation Regime,” *Arms Control Today* (March 2010).

<sup>39</sup>– International Panel on Fissile Materials, *Global Fissile Material Report 2007* (Princeton, N. J.: Program on Science and Global Security, Princeton University, 2007), p. 43.

Energy, which is responsible for security at the nuclear weapons laboratories, reduced the demands of the threat that its facilities are supposed to be able to defend against.<sup>41</sup> Moreover, there are numerous examples of security failures. For example, in a 2008 test of the security system at Livermore National Laboratory in Livermore, California, attackers were able to steal fissile material and assemble an improvised nuclear explosive at the site before they were stopped.<sup>42</sup> Further, U.S. non-proliferation policy has tended to downplay such concerns and instead place more focus on stopping terrorists from smuggling weapons materials or a weapon into the country.<sup>43</sup>

Even though the United States has been unable to convincingly secure its own materials, since the early 1990s it has focused on fissile material security in the former Soviet Union and especially Russia. Storage sites here were considered particularly vulnerable because of the collapse of the Soviet Union which left such facilities in countries that would soon be independent but had few or no security protocols of their own. For example, in many places containers of fissile material were “locked” with wax seals that could easily be removed and replaced without detection. Economically, Russia, which inherited the vast majority of the material, did not have the financial

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<sup>40</sup>– Project on Government Oversight, “U.S. Nuclear Weapons Complex: How the Country Can Profit and Become More Secure by Getting Rid of Its Surplus Weapons-Grade Uranium,” (14 September, 2010), p. 8.

<sup>41</sup>– *Ibid.*, p. 8–9.

<sup>42</sup>– *Ibid.*, p. 8, Footnote. 26.

<sup>43</sup>– For a summary of U.S. nonproliferation policy, see Jonathan Medalia, “Nuclear Terrorism: A Brief Review of Threats and Responses,” *CRS Report for Congress* (22 September, 2004).

resources to maintain perimeter security around these facilities and, in many cases, pay for salaries or equipment for guards.<sup>44</sup>

Under the Material Protection, Control, and Accounting(MPC&A) program, the United States funded accounting and tracking systems for Russian fissile material as well as building and perimeter security upgrades. According to U.S. estimates, there were some 215–245 buildings in the former Soviet Union that stored fissile material.<sup>45</sup> As of October 2009, upgrades at 210 storage sites had been completed.<sup>46</sup> The United States and Russia also built a state-of-the-art storage facility in the Russian city of Mayak that could hold some 25,000 containers of fissile material from nuclear weapons.

Progress on these security measures was, however, much slower and more problematic than expected and the U.S.-Russian experience offers lessons for other such non-proliferation efforts.<sup>47</sup> First, it is important to be realistic about timelines. For a variety of different reasons, progress on fissile material security was slow, despite the consistent belief that such efforts were both necessary and urgent. For

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<sup>44</sup> For a good summary of the main problems and challenges see Matthew Bunn, *The Next Wave: Urgently Needed New Steps to Control Warheads and Fissile Material* (Washington D.C.: Carnegie Endowment for International Peace; Cambridge, MA: The Harvard Project on Managing the Atom, April 2000).

<sup>45</sup> Matthew Bunn, *Securing the Bomb 2007* (Cambridge, MA: The Harvard Project on Managing the Atom, September 2007), pp. 64–66.

<sup>46</sup> Matthew Bunn, *Securing the Bomb 2010* (Cambridge, MA: The Harvard Project on Managing the Atom, April 2010), p. 33.

<sup>47</sup> For a summary of key lessons from the Cooperative Threat Reduction program overall, see Sharon K. Weiner, “The Evolution of Cooperative Threat Reduction: Progress, Problems, and Issues for the Future,” *The Nonproliferation Review*, Vol. 16, No. 2 (July 2009), pp. 211–235.



example, most Russian fissile material storage sites was supposed to have had security upgrades after about ten years, but work will end up taking closer to twenty before it is completed. The Mayak facility also suffered from considerable delays.

Second, these delays, plus disagreements and genuine misunderstandings, frequently contributed to cost overruns. Mayak, for example, was originally supposed to cost the United States \$275 million but ended up at around \$421 million.<sup>48</sup>

Third, cooperation on material security often raised concerns about revealing the details of a state's nuclear weapons. Numerous disagreements and delays resulted when Russia refused to grant the United States access to facilities where upgrades were planned or had already taken place. The United States, in turn, felt it was entitled to such access to verify that money had been spent as previously agreed. For similar accountability reasons, the United States wanted assurances that the material stored at Mayak was indeed from nuclear weapons. Russia refused out of concern that allowing the U.S. to sample these materials would have revealed details about Russian warhead design.

Fourth, at times cooperation on specific security upgrades got caught up in larger political disagreements. For example, Russia slowed cooperation because it disagreed with U.S. policy and military actions towards Bosnia in the mid-1990s. The United States frequently

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<sup>48</sup>- Nuclear Threat Initiative, "Securing Nuclear Materials and Warheads, Mayak Fissile Material Storage Facility," (24 October, 2010), <[http://www.nti.org/e\\_research/cnwm/securing /mayak.asp](http://www.nti.org/e_research/cnwm/securing/mayak.asp)>.

tried to use nuclear security spending to pressure Russia in a variety of policy issues including Russian technical cooperation with Iran, the sale of military equipment to India, and even domestic human rights laws. In other words, the vulnerability of Russian sites to theft was often a function of broader issues about politics, understanding, communication, and respect.

In addition to Russia and the former Soviet Union, U.S. efforts have focused on Pakistan. Here material security efforts have suffered because of a lack of trust between that country and the United States. The United States worries about the seizure of material by Al Qaeda, other extremists groups, or the Pakistan military. Pakistan, which shares these concerns, also has fears that the United States might, in a crisis, seek to take its weapons or key materials. As a result, Pakistan has denied outsiders access to its nuclear facilities and even U.S.-Pakistani security efforts tend to be kept secret.

Additional problems securing fissile materials arise from concerns about sustainability and a state's "security culture." Sometimes states do not assign the same degree of importance to nuclear security matters because of differing priorities or differences of opinion about the threat or when and how it will be realized. The ability of a state to sustain security upgrades after external funding has ceased is referred to sustainability. For example, at some fissile material storage sites in Russia, budgets have been insufficient to sustain U.S.-funded upgrades. Facilities cannot afford replacement parts or, in places, the electricity needed for alarms to function. Another concern is that states do not take security seriously. For example, the "security culture"



raises concerns when guards have not had the training to operate necessary equipment or do not take new security protocols seriously.<sup>49</sup> Therefore, preventing proliferation requires not just security upgrades, but the sustained commitment to make sure a state is able to use and operate them properly.

#### 4. Expertise

Having fissile material is not enough to make a nuclear weapon. A non-state actor will need some expertise to identify how much fissile material, of what kind, and in what form is appropriate for a weapon. Special expertise is also necessary to understand how to process this material and prepare it for use in a nuclear explosive. Finally, to make a weapon also involves decisions about how to assemble the explosive such that it will detonate when intended and have the desired effect.

There is some evidence that non-state actors have reached out to weapons experts. It is known that Al Qaeda met with retired Pakistani nuclear experts in Afghanistan before 2001 and the group may also have approached Russian weapons scientists.<sup>50</sup> The Japanese cult “Aum Shinrikyo” is thought to have tried to hire nuclear scientists, especially from the former Soviet Union.<sup>51</sup>

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<sup>49</sup>– Bunn, *Securing the Bomb 2010*, pp. 36–42.

<sup>50</sup>– David Albright and Holly Higgins, “A Bomb for the Ummah,” *Bulletin of the Atomic Scientists*, Vol. 59, No. 2 (March/April 2003).

<sup>51</sup>– John V. Parachini, David E. Mosher, John Baker, Keith Craine, Michael Chase



The most obvious source of expertise is from scientists who are from nuclear weapons programs. There are only nine such states with active weapons programs today and all can be expected to carefully monitor the activities of their experts. These experts, in turn, can be assumed to see sharing nuclear expertise as unpatriotic and probably treason. Ukraine, Belarus, and Kazakhstan inherited nuclear weapons from the Soviet Union but agreed to give them up under the 1992 Lisbon Protocol. South Africa ended its weapons program and Libya and Iraq each, at one time, had active weapons efforts. These countries thus raise the potential of nuclear experts who no longer have lucrative incomes or strong connections to state programs. There have also been concerns that retired weapons workers may sell their knowledge as a way to supplement their pensions.<sup>52</sup>

The largest source of expertise that is a concern is the former Soviet Union. It built the largest nuclear weapons complex of any state and its collapse led to a period of ten years during which there were concerns about very low salaries, decaying institutions, and the need to re-train and re-employ nuclear scientists, engineers and technicians or they might be tempted to make a living by selling their skills. Although estimates varied, the U.S. government tended to cite 60,000 as the number of experts with skills that raised proliferation

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and Michael Daugherty, *Diversion of Nuclear, Biological and Chemical Weapons Expertise from the Former Soviet Union: Understanding an Evolving Problem* (Santa Monica, CA: RAND, 2005), pp. 25–26.

<sup>52</sup>– Oleg Bukharin, *Russia's Nuclear Complex: Surviving the End of the Cold War* (Princeton, N. J.: Program on Science and Global Security, Woodrow Wilson School of Public and International Affairs, Princeton University, May 2004), p. 21.



concerns.<sup>53</sup> Russia, which inherited the bulk of these experts, was committed to reducing the overall size of its nuclear weapons complex but had problems implementing successful conversion efforts.

As part of CTR, the United States and other countries funded a host of programs to retrain and re-employ these nuclear weapons experts. In general, these efforts proved very successful at engaging weapons experts in temporary research contracts but much less successful at finding them permanent jobs outside of the weapons complex.<sup>54</sup> Some of these programs have now expanded to work with Iraqi and Libyan scientists. There is also a proposal to implement similar cooperation with North Korea.<sup>55</sup>

It has now been twenty years since the collapse of the Soviet Union and the feared knowledge proliferation has yet to materialize. There have been very few documented cases of former Soviet nuclear weapons experts sharing their skills with other states or non-state actors. Although the United States has raised issues about Russian experts aiding in the construction of Iran's Bushehr nuclear reactor, Russia does not agree that this constitutes proliferation. There have been far more confirmed cases of technicians and guards at fissile

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<sup>53</sup>– Senate Committee on Governmental Affairs, “Global Proliferation of Weapons of Mass Destruction, Part II,” 104<sup>th</sup> Congress 2<sup>nd</sup> session (13, 20, and 22 March, 1996), p. 53.

<sup>54</sup>– For a closer look at two of these programs and the difficulties they encountered, see Sharon K. Weiner, “Organizational Interest, Nuclear Weapons Scientists, and Nonproliferation,” *Political Science Quarterly*, Vol. 124, No. 4 (Winter 2009 – 2010), pp. 655 – 679.

<sup>55</sup>– Jungmin Kang, “Redirecting North Korea's Nuclear Workers,” *Bulletin of the Atomic Scientists*, Vol. 65, No. 1 (January/February 2009), pp. 48 – 55.

material storage facilities attempting to sell stolen materials or offering outsiders access.<sup>56</sup>

## 5. Detecting Proliferation

A key element of the success or failure of any nonproliferation scheme is a system for detecting violators. State enforcers of the nonproliferation regime need some degree of certainty that they are detecting significant violations and with enough advance warning to respond. As with motivations for proliferation, it is also the case that our ability to detect nonproliferation by state versus non-state actors is different.

In general, the global nonproliferation regime has tried to detect state cases of proliferation by focusing on the process of acquiring the materials needed for the production of weapons-usable materials. In particular, the NPT requires state signatories to monitor trade in equipment and materials that can be redirected to weapons activities. The production of fuel for nuclear power plants is monitored by the IAEA to make sure states are not engaged in producing weapons-usable material. Non-state actors, because they are interested in a bomb but not a bomb program, are unlikely to try to acquire centrifuge or reprocessing technology. They do not own nuclear power plants.

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<sup>56</sup>— A summary of such incidents can be found in Bunn, *Securing the Bomb 2010*, pp. 4–5; pp. 31–34. and William C. Potter and Elena Sokova, “Illicit Nuclear Trafficking in the NIS: What’s New? What’s True?” *The Nonproliferation Review*, Vol. 9, No. 2 (Summer 2002), pp. 112–120.



The United States is leading an effort to begin creating an international regime to deal with the problem of proliferation by non-state actors. Negotiations are underway at the United Nations to develop a common definition of terrorism and for member states to adopt laws allowing for the prosecution, extradition, and punishment of terrorists. In 2005, the Convention on the Physical Protection of Nuclear Material was amended to make states legally responsible for protecting their own nuclear facilities and material and to help facilitate quicker cooperation between states when material is stolen or found missing. Under UN Security Council Resolution 1540, member states are responsible for criminalizing proliferation including making it illegal to aid non-state actors in such pursuits.

In contrast to states, non-state actors are more likely to approach traditional criminal and smuggling networks in their attempts to secure nuclear material. Such networks operate on the basis of money exchanged for services. In other words, they will transfer people, drugs, or nuclear materials for a price. Detection of proliferation by state actors focuses on export controls or the sale of centrifuge technology. But proliferation by non-state actors is more likely to be discovered by focusing on transfers of money, the corruption of border and customs officials or local police forces, and monitoring traditional smuggling networks.

To date, the United States has concentrated on getting other countries to improve border security and on scanning containers for HEU as they pass through key transit points and ports on their way to the United States. There are two problems with this detection system.



First, there are simply too many shipping containers carrying too many goods. It is impossible to monitor all goods in and out of a country and attempts to make any monitoring and detecting system more robust create problems because they delay commerce and, as a result, can result in increased prices for goods. A second problem is that the radiation portal monitors used to detect the presence of HEU often produce false alarms. This is because a variety of materials - cat litter, bananas, and brazil nuts are examples<sup>57</sup> - emit harmless radiation that may look like HEU. The opposite problem also exists: some equipment cannot detect HEU reliably, especially when terrorists attempt to conceal it in lead or steel.<sup>58</sup> According to a 2008 study by the U.S. Government Accountability Office, technology is currently limited in its ability to detect HEU and other important nuclear materials, there is a lack of coordination and strategic planning among U.S. agencies whose mission is to prevent smuggling into the United States, and it has proven difficult to effectively implement and then sustain such efforts.<sup>59</sup>

Finally, even when proliferation is discovered, there are problems associated with reporting those cases. The main repository for such information is the Illicit Trafficking Database, maintained by the IAEA.

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<sup>57</sup>- Thomas B. Cochran and Matthew G. McKinzie, "Detecting Nuclear Smuggling," *Scientific American*, Vol. 298, No. 4 (April 2008).

<sup>58</sup>- Cochran and McKinzie, "Detecting Nuclear Smuggling," provides an example of one set of tests of the reliability of these portal monitors conducted by *ABC News*.

<sup>59</sup>- U.S. Government Accountability Office, "Nuclear Detection: Preliminary Observations on the Domestic Nuclear Detection Office's Efforts to Develop a Global Nuclear Detection Architecture," GAO-08-999T (16 July, 2008).

This database, however, is dependent on IAEA member states and only reports incidents of the unauthorized transfer of nuclear materials that those state agree to make public. It has no power to investigate suspicions or stories or even to reconcile conflicting information that is submitted by a state. Because such events are embarrassing to states, or may raise questions about their security measures, there is an inherent incentive to underreport such problems or the amount of fissile material that is involved. As a result of inadequate measures, experts estimate that we may only know a small fraction of the illicit nuclear smuggling that takes place.<sup>60</sup>

## 6. Preventing Proliferation by Non–State Actors

As long as nuclear weapons and fissile materials exist, there is a basis for continuing concern about proliferation by non-state actors. For states, efforts to secure nuclear weapons and materials impinge on fundamental issues of national security and therefore there is a natural reluctance for states to be open. The ability of non-state actors to acquire access to scientists and engineers with the expertise to identify and use fissile materials to make a weapon is likely to also continue to be seen as a problem. The nuclear weapons states seem committed to active weapons programs, plus they also have a cohort of retired weapons experts. These realities are complicated by the increasing globalization of the international economy, which makes it

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<sup>60</sup>–“Tracking Nuclear Materials Worldwide,” *USA Today* (1 June, 2002).

harder to detect the successful acquisition of nuclear material by non-state groups.

It would seem, therefore, that for the foreseeable future there will be a sound basis for concern about proliferation by non-state actors. Physical security measures, as explained above, are not adequate to deal with this problem. In addition, it will require states to muster the political will to reduce the size of arsenals, limit or end the production of fissile material, and agree to prioritize cooperative non-proliferation efforts.



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# VIII. New Nuclear Renaissance: Challenges for Nuclear Non-Proliferation?

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## 1. Introduction

The ‘peaceful use of nuclear energy’ constitutes one of the three pillars of the Non-Proliferation Treaty(NPT), along with disarmament and non-proliferation. As stipulated in Article IV of the NPT, all the Parties to the Treaty are guaranteed “the inalienable right” to develop research, production and use of nuclear energy for peaceful purposes.<sup>1</sup> At the same time they have the responsibility to “accept safeguards, as set forth in an agreement to be negotiated and concluded” with the International Atomic Energy Agency (IAEA) for the purpose of preventing diversion of nuclear fissile materials for military purposes.<sup>2</sup>

The ‘peaceful use of nuclear energy’ includes nuclear energy generation of electricity. According to the IAEA, there are currently 441 nuclear power plants in operation in 31 countries.<sup>3</sup> Sixty-one nuclear power plants are now in the process of being built across the globe, and an additional 489 plants are scheduled to be ordered by 2030 or are under review.<sup>4</sup> That is, nuclear energy as an alternative to fossil fuel-based energy is now experiencing a second renaissance, since the first nuclear renaissance effected in response to the two oil

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\* Some parts of this chapter are adapted from Jae Jeok Park, “Arrival of Nuclear Renaissance: Issues and Prospect,” *IFANS FOCUS*, No. 2010-08 (The Institute of Foreign Affairs and National Security: Seoul, 2010).

<sup>1</sup>- United Nations, “The Treaty on the Non-Proliferation of the Nuclear Weapons (NPT),” at <<http://www.un.org/en/conf/npt/2010/npttext.shtml>>.

<sup>2</sup>- *Ibid.*

<sup>3</sup>- IAEA, “Latest News Related to PRIS and the Status of Nuclear Power Plants,” at <<http://www.iaea.org/programmes/a2/>>.

<sup>4</sup>- World Nuclear Association, “World Nuclear Power Reactors & Uranium Requirements,” at <<http://world-nuclear.org/info/reactors.html>>.

shocks in the 1970s faded away as a result of safety concerns caused by nuclear accidents such as the ones at Three Mile Island in 1979 and Chernobyl in 1986. As an example, on 16 February, 2010, U.S. President Barack Obama announced a loan guarantee of \$8 billion to begin building nuclear power plants in the U.S. for the first time in 30 years. However, special attention must be paid to the fact that despite the current situation where over 80% of the world's nuclear power generation is concentrated in the OECD countries, the new renaissance of nuclear power generation will be led by the developing countries.<sup>5</sup> About 50 developing countries that currently do not have nuclear power plants have announced to the IAEA that they intend to build them in the future.<sup>6</sup>

The renaissance of nuclear power generation which is expected to be led by developing countries is seen as both an opportunity and a challenge for the international community.<sup>7</sup> It is an opportunity in the sense that, as mentioned earlier, nuclear energy has been developed as an effective alternative to fossil fuel out of the international community's concern over the depletion of fossil fuels and the anti-environmental consequences of fossil fuel-based energy development.

On the other hand, with an increase in the number of (potential)

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5- Mary Nikitin, Anthony Andrews and Mark Halt, "Managing the Nuclear Fuel Cycle: Policy Implications of Expanding Global Access to Nuclear Power," *CRS Report for Congress*, RL34234 (1 July, 2009), pp. 7–8.

6- Jose Goldemberg, "Nuclear Energy in Developing Countries," *Daedalus*, Vol. 138, No. 4 (Fall 2009), p. 72.

7- Christopher Chyba and J. Crouch, "Understanding the U.S. Nuclear Weapons Policy Debate," *The Washington Quarterly*, Vol. 32, No. 3 (July 2009), p. 33.



nuclear reactor states, nuclear weapons states(NWS) are faced with an increasing need to control those states' energy programs within the NPT regime. This was born out of a concern that (potential) nuclear reactor states' nuclear energy programs could produce nuclear materials that would be used in developing weapons or diverted into the hands of nuclear terror groups for various purposes. A case in point is the nuclear fuel cycle. Nuclear generation of electricity involves the following nuclear fuel cycle: uranium mining → uranium enrichment → fuel fabrication → power generation → burn-up → reprocessing.<sup>8</sup> During this process, certain kinds of technology and equipment used for uranium enrichment and reprocessing could be diverted to producing nuclear weapons. In fact, India successfully produced nuclear weapons using plutonium extracted from reprocessing nuclear fuel, and Pakistan was also able to produce nuclear weapons based on highly enriched uranium (HEU).<sup>9</sup> Therefore, the advent of a new nuclear renaissance would pose a great challenge for the international community unless the nuclear fuel cycle of (potential) nuclear reactor states is managed within the NPT regime.

It is in this context that this chapter examines institutionalized arrangements for managing (potential) nuclear reactor states' nuclear fuel cycles. It first points out the limitations of the current arrangements designed to control non-nuclear weapons states' (NNWS') (potential)

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<sup>8</sup>- Nikitin, *et al.*, "Managing the Nuclear Fuel Cycle," pp. 10–18.

<sup>9</sup>- Joel Ullom, "Enriched Uranium Versus Plutonium: Proliferant Preferences in the Choice of Fissile Material," James Martin Center for Nonproliferation Studies, at <cns.miis.edu/npr/pdfs/ullom21.pdf>, pp. 5–8.



nuclear fuel cycles. It then introduces initiatives designed to insure the stable supply of nuclear fuel and the safe and secure management of spent fuel, claiming that the implementation of such insurance-oriented arrangements is essential to overcoming the challenges posed by the advent of a new nuclear renaissance.

## 2. NPT Regime to NNWS's Nuclear Energy Program

Robert Keohane categorizes the international regime into two types: control-oriented and insurance-oriented. The former is to “maintain some degree of control over each other’s behavior, thus decreasing harmful externalities arising from independent action as well as reducing uncertainty stemming from uncoordinated activity” while the latter is to insure against “unlikely but costly contingencies.”<sup>10</sup> Though the former is more common, the latter emerges to co-exist with or replace the former in a situation where “actors cannot exercise control over their environment at reasonable cost.”<sup>11</sup>

With respect to the peaceful use of nuclear energy, the NPT regime has been functioning mainly as a control-oriented regime. The NPT requires NNWS to observe a safeguards program monitored by the IAEA in order to access peaceful nuclear technologies.<sup>12</sup> It is a

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<sup>10</sup>–Robert Keohane, “The Demand for International Regimes,” *International Organization*, Vol. 36, No. 2 (1982), pp. 351–352.

<sup>11</sup>–*Ibid.*, p. 352.

<sup>12</sup>–According to paragraph four of Article III of the NPT, safeguards agreements must be in force “not later than eighteen months after the initiation of negotiation” between the Agency and the NNWS.



prerequisite to the transfer of nuclear technologies under the NPT. The IAEA is not the secretariat of the NPT but an independent institution which was created in 1957. Nevertheless, while providing assistance on the peaceful usage of nuclear energy, it monitors NPT member states' nuclear energy programs through the safeguard system based on surveillance measures and on-site inspections, to insure that the assistance is not used for any military purpose.<sup>13</sup> Through these mechanisms, the IAEA oversees whether NNWS diverts peaceful nuclear technologies “from peaceful uses to military weapons or other nuclear explosive devices.”<sup>14</sup>

However, while the NPT assigns the role of providing a verification mechanism to the IAEA, it does not stipulate any embedded enforcement mechanism for ensuring the safeguards.<sup>15</sup> Article VI of the NPT reads: “each of the parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race.”<sup>16</sup> In other words, compliance with the safeguards agreements is dependent on the good will of member states, and sanctions for non-compliance are very limited. Rather, Article XII of the IAEA Statute stipulates that its Board of Governors may report non-compliance to the Security Council and the General Assembly of

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<sup>13</sup>- IAEA, “Statute of the International Atomic Energy Agency,” at <[http://www.iaea.org/About/statute\\_text.html](http://www.iaea.org/About/statute_text.html)>.

<sup>14</sup>- United Nations, “The Treaty on the Non-Proliferation the Nuclear Weapons (NPT).”

<sup>15</sup>- Chan-Gyu Kim, “*Haeg Hwagsangeumji Lejim-e Gwanhan Yeongu (Study on the Nuclear Nonproliferation Regime)*,” (Ph. D. dissertation, Dongguk University, 2001), pp. 56 – 100.

<sup>16</sup>- United Nations, “The Treaty on the Non-Proliferation the Nuclear Weapons (NPT).”

the United Nations.<sup>17</sup> It is on the basis of this legal grounding that the UN Security Council (UNSC) can be considered to be the only institution mandated to compel a non-compliant NPT member state to fulfill its obligation to move toward renewed compliance.

To support the working of the NPT regime (comprised of the Non-proliferation Treaty, the IAEA and the UNSC<sup>18</sup>), in controlling NNWS's peaceful usage of nuclear power, several other control- oriented arrangements have been set up. For example, the Non-proliferation Treaty Exporters Committee (more commonly known as the Zangger Committee) was formed in 1971, and the Nuclear Suppliers Group (NSG) was formed in 1975, in order to prevent the spread of sensitive nuclear materials and technology to states not in compliance with safeguards agreements.

The NPT regime has been mostly successful in promoting the peaceful use of nuclear energy and in discouraging NNWS from developing nuclear weapons. Notable examples include the fact that Argentina, Brazil, and South Africa, all of which conducted secret nuclear weapons programs in the 1970s and 1980s, have pledged to cancel their programs and have opened their nuclear installations to international inspection.<sup>19</sup>

However, the NPT regime has had inherent limitations in discouraging NNWS from diverting nuclear energy programs to nuclear weapons programs in several cases. The primary limitation lies in the fact that

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<sup>17</sup>- IAEA, "Statute of the International Atomic Energy Agency."

<sup>18</sup>- Chan-Gyu Kim, "*Haeg Hwagsangeumji Lejim-e Gwanhan Yeongu.*"

<sup>19</sup>- Jose Goldemberg, "Nuclear Energy in Developing Countries," p. 75.



it is difficult to tell the purpose of a country's nuclear program due to the overlap typical among nuclear power programs, nuclear research programs and nuclear weapons programs. A country whose nuclear activities need to be verified may deny the necessity of verification, arguing that its nuclear programs are being conducted for peaceful purposes. For example, North Korea has often refused inspections of some of its suspected nuclear facilities by the IAEA, insisting that those facilities were only non-nuclear military sites. Iran has been rejecting inspections, insisting that its uranium enrichment sites are for medical purposes not subject to IAEA inspections, and that IAEA inspection would violate Iran's sovereignty. Iran's bottom line is the belief that whatever safeguards agreements are signed, the customary law of territorial sovereignty is viable and takes precedence. Against such a backdrop, the IAEA is neither authorized nor equipped to impose any coercive measures to enforce inspections. That is, as mentioned above, Article III of the NPT does not provide the Agency with any positive mechanism for enforcing safeguards agreements.

Also, the veto provision of the five permanent members (China, France, Russia, the U.S., the U.K.) prevents the UNSC from taking any meaningful action against the interests of any of the major powers. For example, the threat of a Chinese veto has thwarted various attempts to impose military sanctions against North Korea's and Iran's nuclear activities. The economic sanctions imposed by the UNSC have not been effective in curbing suspected nuclear weapons programs. As has been the case with North Korea in relation to its plutonium facilities, Iran continues to develop its uranium enrichment program

despite economic sanctions imposed by the international community.

Moreover, Article X of the NPT states that “[e]ach party shall in exercising its national sovereignty have the right to withdraw from the Treaty if it decides that extraordinary events, related to the subject matter of the Treaty, have jeopardized the supreme interests of its country.”<sup>20</sup> The existence of this article highlights the fact that the NPT operation depends on the good will of member states. Taking advantage of this provision, North Korea joined the NPT in 1985, but withdrew from it in 2003 and conducted nuclear tests in 2006 and 2009.

Considering such limitations, the following section predicts that the NPT regime would face more serious challenges upon the advent of a new nuclear renaissance. That is because, as explained below, with the increase of (potential) nuclear reactor states, more states have been [and would be] interested in uranium enrichment and plutonium reprocessing.

### 3. New Nuclear Renaissance and Challenges to the NPT Regime

Currently about 90% of the world’s reactors are using enriched uranium fuel, with the U.S., Russia, France, the U.K. and the Netherlands being the main suppliers, whereas Japan, China and Pakistan are operating rather small-scale enrichment facilities.<sup>21</sup> This

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<sup>20</sup>– United Nations, “The Treaty on the Non-Proliferation the Nuclear Weapons (NPT).”

<sup>21</sup>– Nikitin, *et al.*, “Managing the Nuclear Fuel Cycle,” p. 13.



implies that the majority of the 31 countries which currently operate commercial nuclear reactors rely on foreign countries' uranium enrichment facilities.<sup>22</sup> In fact, it is indeed more economical for most countries to import low-enriched uranium (LEU) than it is to construct and manage highly expensive uranium enrichment facilities of their own.<sup>23</sup> However, some of them are (would be) aiming at obtaining uranium enrichment facilities and related technology in order to prepare for the possibility that applying non-economic logic affecting the market, such as military and political, could generate substantial instability in the world market for enriched uranium.<sup>24</sup> To note, many (potential) nuclear reactors are concentrated in politically and militarily volatile Asia and the Middle East, so that such efforts are connected with their desire to achieve greater energy security.<sup>25</sup>

The increased concern over an unstable supply of nuclear fuel would also bring about NNWS's increased interest in plutonium reprocessing. Currently, both official and unofficial nuclear weapons states have military reprocessing plants, and Russia, the U.K., France, Japan, and India are operating commercial or laboratory reprocessing plants.<sup>26</sup> Unlike them, the majority of countries store the spent nuclear fuel in at-reactor spent fuel storage pools temporarily or in an

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<sup>22</sup> Nikitin, *et al.*, "Managing the Nuclear Fuel Cycle," p. 13.

<sup>23</sup> *Ibid.*

<sup>24</sup> *Ibid.*, p. 18.

<sup>25</sup> Seven Miller and Scott Sagan, "Nuclear Power without Nuclear proliferation?" *Daedalus*, Vol. 138, No. 4 (Fall 2009), p. 9.

<sup>26</sup> Data Compiled from IAEA, Power Reactor Information System, at <<http://www.iaea.org/programmes/a2/>>.

interim storage facility.<sup>27</sup> The countries which store the spent nuclear fuel can be categorized into three groups.<sup>28</sup> The first consists of countries, such as the U.S. and Canada, which prefer the option of permanent disposal of the spent nuclear fuel instead of reprocessing it. The second includes countries which haven't reached a decision on whether to reprocess the spent nuclear fuel or permanently to dispose of it. The last group is currently facing restrictions on reprocessing fuel on account of individual nuclear agreements signed with other countries, especially the U.S.

With the advent of the nuclear renaissance and consequent concern over an unstable supply of nuclear fuel, more states, especially those belonging to the second and third groups, would be interested in reprocessing. This is mainly due to the fact that reprocessing of spent nuclear fuel will lead to contributing to the extraction of uranium and plutonium, which then can be used, once again, in generating electricity. However, although the IAEA is positioned to carry out supervision and control of reprocessing facilities of NNWS under the safeguards agreement or the Additional Protocol signed by its member states, the threat of nuclear proliferation will always remain as long as countries developing nuclear energy operate reprocessing facilities. If countries

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<sup>27</sup>- The majority of reprocessing countries do not reprocess all of the spent nuclear fuel, and they store non-reprocessed spent nuclear fuel or high-level radioactive waste after reprocessing.

<sup>28</sup>- Hotaeg Yun, "*Haeoe Juyogukui Sayonghuhaegyeonlyo Gwanlijeongchaeg Hyeonhwang* (The Current Spent Fuel Management Policies of Major States)," *Wonjalyeong Saneob* (The Nuclear Industry) (November/December 2009), pp. 48–57.



are not able to develop and commercialize the proliferation-resistant recycling technologies with economic feasibility, concerns toward nuclear proliferation are likely to be intensified as a result of those countries' greater attention to reprocessing.

Another challenge in relation to spent nuclear fuel comes from the fact that the capacity of each NNWS's temporary or interim storage facilities would reach their saturation point sooner or later.<sup>29</sup> As an example, in the case of South Korea, the storage capacity of nuclear power plants in Kori, Yonggwang, Ulchin, and Wolsong are expected to reach the saturation point by 2018.<sup>30</sup>

As nuclear power generation continues to develop, countries using nuclear-generated electricity would eventually require deep geological repositories in order to permanently dispose of the spent nuclear fuel. However, only a few countries, such as Finland and Sweden, have selected repository sites, whereas a majority of countries are still struggling to secure potential repository sites as they face opposition from local populations near the sites being considered.<sup>31</sup> Also, considering geographical characteristics and costs of building repository sites, not all countries are capable of building such sites. This leads to the expectation that (potential) nuclear reactor states will be interested in building reprocessing (or recycling) facilities which

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<sup>29</sup>- Charles McCombie and Neil Chapman, "A Nuclear Renaissance without Disposal?" *Radwaste Solutions* (July/August 2009), pp. 19–21.

<sup>30</sup>- Miles Pomper, Ferenc dalnoki-Veress, Stephanie Lieggi and Lawrence Scheinman, "Nuclear Power and Spent Fuel in East Asia: Balancing Energy, Politics and Nonproliferation," *Policy Forum* 10-042 (4 August, 2010).

<sup>31</sup>- Charles McCombie and Neil Chapman, "A Nuclear Renaissance without Disposal?"



would eventually reduce the volume of the spent nuclear fuel as well as its radioactive toxicity.

Under such circumstances, a country's uranium enrichment program and/or reprocessing would increase an adjacent state's interest in setting up such facilities for itself. To reiterate, many (potential) nuclear reactor states are now concentrated in politically and militarily volatile Asia and the Middle East. If a (potential) rival state builds (or plans to build) enrichment or reprocessing facilities of its own, a country may attempt to do the same to prepare against the possibility that its rival state would divert its nuclear energy program into a nuclear weapons program.

This situation can be characterized as a Prisoner's Dilemma game, as <Table VIII-1> illustrates. Let's suppose two rival states (countries A and B) in a politically and militarily volatile region have to decide on whether they should build facilities for uranium enrichment and/or reprocessing or refrain from building them. Both countries find operating their own nuclear fuel cycle to be more expensive than relying on foreign facilities. Nonetheless, each country desires to have its own facilities in order to prepare against the possibility of a political or military disruption of the nuclear fuel cycle, on the condition that the other refrains from pursuing its own. That is because, if both countries build them, it would serve as a catalyst for an intensified military competition out of suspicion of each other's nuclear program. Thus, both countries prefer [Refrain, Refrain] to [Build, Build]. Each considers the situation where it refrains from building the facilities while the other builds them as the worst outcome, as its (building)

rival may then develop nuclear weapons.

The equilibrium outcome for this game is both countries' building uranium enrichment and/or reprocessing facilities. (<Table VIII-1>, upper left cell). This outcome is Pareto deficient because, if they cooperate, they can reach a better outcome: both refraining from building them (<Table VIII-1>, lower right cell). To resolve this "dilemma of common interest," states need a regime through which they can collaborate on their actions.<sup>32</sup> For such a regime to function effectively, it is necessary for it to have effective mechanisms to prevent 'cheating', for each state has an incentive to Build when its rival state's strategy is to Refrain. To illustrate, once Country A and B reached an outcome of [Refrain, Refrain], each country has an incentive to move to Build because 4 is higher than 3.



Table VIII-1

		Country B	
		Build	Refrain
Country A	Build	2, 2	4, 1
	Refrain	1, 4	3, 3

\* The left number in each cell represents country A's preference and the right one country B's preference.

\* The numbers are ordinal, with 4 referring to the best preference and with 1, the worst one.

<sup>32</sup>– For the "dilemma of common interest," refer to Arthur Stein, "Coordination and Collaboration: Regimes in an Anarchic World," *International Organization*, Vol. 36, No. 2 (1982), pp. 304–308.

However, as examined in the previous section, the NPT regime does not have effective mechanisms to monitor, prevent, and/or punish ‘cheating’. The IAEA is not designed to impose any coercive measures to enforce inspections, and the UNSC is constrained by the veto provision of the five permanent members. As the number of states that (plan to) have enrichment and reprocessing facilities increases, the less likely it becomes that the current NPT regime effectively controls NNWS’ nuclear energy programs. If this is the case, then the very existence of the NPT regime can be jeopardized upon the advent of a new nuclear renaissance.

#### 4. Arrangements to Insure NNWS’ Peaceful Nuclear Energy Program

In light of the concern that enriched uranium and extracted plutonium could be easily diverted to producing nuclear weapons, NWS have remained sensitive toward the NNWS’ building of uranium enrichment and reprocessing facilities. Various discussions have taken place with a view to preventing those NNWS which are now operating nuclear power plants or planning to operate them in the future from maintaining or developing such facilities. These discussions go beyond requiring NNWS to observe a safeguards program monitored by the IAEA. Rather than attempting to control peaceful use of nuclear energy, they seek to insure the stable supply of enriched uranium and the safe and secure management of spent fuel.<sup>33</sup> By the NWS pursuing this

strategy, the prisoner’s dilemma situation described above could be changed into a “Stag Hunt” situation.<sup>34</sup>

Again, let’s suppose two rival states (countries A and B) in a politically and militarily volatile region have to decide on whether they should build facilities for uranium enrichment and/or reprocessing or refrain from building them. Unlike the situation represented in <Table VIII-1>, it is assumed here that each country is guaranteed a stable supply of enriched uranium and the safe and secure disposal of spent fuel. Thus, each country prefers [Refrain, Refrain] to its building the facilities while its rival refrains from building them. That is because both countries find operating their own nuclear fuel cycle more expensive than relying on foreign facilities. This situation can be characterized as a “Stag Hunt Game,” as <Table VIII-2> illustrates.



Table VIII-2

		Country B	
		Build	Refrain
Country A	Build	2, 2	3, 1
	Refrain	1, 3	4, 4

33- Debra Decker and Erwann Michel-Kerjan, “A New Energy Paradigm: Ensuring Nuclear Fuel Supply and Nonproliferation through International Collaboration with Insurance and Financial Markets,” *ISP Discussion Paper 2007-02* (Harvard University, March 2007), pp. 8–9.

34- For “Stag Hunt Game,” refer to Kenneth Oye, “Explaining Cooperation under Anarchy,” *World Politics*, Vol. 38, No. 1 (1985), pp. 8–9.

There are two pure strategy equilibria in this scenario: [Refrain, Refrain] and [Build, Build]. In such a case, a given regime may help both countries' expectations converge to [Refrain, Refrain] by providing important information to each. Arthur Stein claims that “[t]he proffered information would provide each actor with assurance about the others’ preferences, as would be necessary for expectations to converge on the one of the two equilibria that all prefer.”<sup>35</sup> The existing NPT regime can assume such a role of information provider.

To note, such regimes do not necessarily need to be equipped with effective verification and/or enforcement mechanisms, because once states reach the better of the two equilibria, they have no incentive to ‘cheat’. To illustrate this point using <Table VIII-2>, once each knows that the other’s strategy is Refrain, it has no incentive to adopt the strategy of Build, because 4 is higher than 3. It is in this context that the existing NPT regime can serve to encourage states to reach [Refrain, Refrain] and then to manage NNWS’s peaceful use of nuclear energy, even though it does not have effective verification and enforcement mechanisms. Therefore, to manage NNWS’ (potential) nuclear energy programs within the NPT framework in the era of a new nuclear renaissance, it is essential for states to be insured regarding the stable supply of enriched uranium and the safe and secure disposal of spent fuel. Various discussions have taken place in this regard.

First, there have been efforts toward creating an international

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<sup>35</sup>– Arthur Stein, “Coordination and Collaboration,” p. 303.



nuclear fuel bank or related voluntary multilateral mechanisms for assurance of nuclear fuel supply as well as the provision of related services. The U.S., the IAEA, Russia, the “Six-Country Concept” (proposed by France, Germany, the Netherlands, Russia, the U.K., and the U.S.), and the ‘Nuclear Threat Initiative(NTI)’ have suggested a number of plans through which nuclear reactor states can have access to a stable supply of LEU when political and military logic have brought instability to the enriched uranium market.<sup>36</sup> As a primary example, the NTI proposed to build a multilateral fuel bank under IAEA auspices, which would oversee the stable supply of LEU, and, in this regard, agreed to contribute \$50 million to the IAEA under the condition that other countries come up with an additional \$100 million. The target has already been reached as a result of the decisions of a number of states (that include the European Union, Kuwait, Norway, the United Arab Emirates, and the U.S.) to make contributions.<sup>37</sup> Kazakhstan informed the IAEA that it would consider hosting the facility in that country if a fuel bank were established. In June 2009, the IAEA Board of Governors reviewed the proposal by the NTI as well as Germany’s proposal to build a multilateral enrichment plant. In November of the same year, it approved the Russian proposal to establish a reserve of LEU that would be available to states facing supply disruptions unrelated to technical or commercial reasons. Indeed, the IAEA and Russia signed an agreement in March 2010 to

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<sup>36</sup>– Nikitin, *et al.*, “Managing the Nuclear Fuel Cycle,” pp. 33–34.

<sup>37</sup>– Miles Pomper, “IAEA Fuel Bank Advances,” *Arms Control Today*, Vol. 39, No. 3 (April 2009), p. 47.

develop a reserve of LEU in Angarsk, Russia.

Secondly, various research projects have been conducted with an aim to develop a new reprocessing method that lacks the capacity to separate out plutonium. For example, the U.S.-Korea joint research on “pyroprocessing” is one of the efforts toward developing a new reprocessing method that better accommodates any concerns rising from reprocessing. Yet, such efforts have been limited to the research stage.

Instead, various suggestions for dealing with spent nuclear fuel have been made as preparatory measures. The most well-known among others is the ‘Global Nuclear Energy Partnership’ proposed by the U.S. This is aimed at, among others, inducing countries using nuclear-generated electricity to voluntarily give up their ambitions to build reprocessing facilities by having nuclear fuel supplier countries take back the spent nuclear fuel from their client countries and undertake the job of reprocessing the spent fuel themselves.<sup>38</sup> However, considering the relative difficulty of distinguishing supplier states from the recipients as well as the expected opposition from inside the supplier countries, the possibility of realizing this suggestion appears to be rather low.<sup>39</sup>

The more realistic alternative would be for a number of countries to form a partnership and jointly to build a deep geological repository for designated areas. Yet, it is also not easy for any country to overcome domestic opposition and to build a deep geological

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<sup>38</sup>–Nikitin, *et al.*, “Managing the Nuclear Fuel Cycle,” pp. 28–32.

<sup>39</sup>– *Ibid.*

repository on its own soil for serving the interests of the region as a whole. Despite such challenges, however, there is ongoing research in that direction, and in particular, Europe is now engaged in discussions on establishing an institution which would oversee the building of a European deep geological repository on pace with efforts of member countries.<sup>40</sup>

## 5. Conclusion

This chapter has so far argued that the advent of a new nuclear renaissance would pose serious challenges to nuclear nonproliferation unless (potential) nuclear reactor states are insured for the stable supply of LEU and the safe and secure management of spent fuel. Various efforts have been initiated to induce NNWS to voluntarily give up building uranium enrichment and/or reprocessing facilities, i.e., the attempts to create nuclear fuel banks for the front end of the nuclear fuel cycle and research on proliferation-resistant technologies for reprocessing and on deep geological repositories for the back end of the nuclear fuel cycle.

Such efforts are facing opposition from members of the Non-Aligned movement out of concern that the “peaceful use of nuclear energy” might be restricted. For example, the 8<sup>th</sup> NPT Review Conference that took place in New York (3–28 May, 2010), revealed tension between

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<sup>40</sup>– The detailed layout of Europe’s initiative is represented in the ‘Strategic Action Plan for Implementing European Regional Repositories (SAPIERR).’ See Charles McCombie and Neil Chapman, “A Nuclear Renaissance without Disposal?” p. 25.





countries which regard securing uranium enrichment and/or reprocessing facilities as their inalienable right based on the peaceful use of nuclear energy and those others which take into account the threat of nuclear proliferation in approaching the issues. Nevertheless, both sides share the concern that, with an increase in the number of (potential) nuclear reactor states, the NPT regime would confront serious challenges. Such concerns have led them to come to a compromise with each other on this issue. Paragraph 58 of the final document of the 8<sup>th</sup> NPT conference reads:

“The Conference underlines the importance of continuing to discuss in a non-discriminatory and transparent manner under the auspices of IAEA or regional forums, the development of multilateral approaches to the nuclear fuel cycle, including the possibilities to create mechanisms for assurance of nuclear fuel supply, as well as possible schemes dealing with the back-end of the fuel cycle, without affecting rights under the Treaty and without prejudice to national fuel cycle policies, while tackling the technical, legal and economic complexities surrounding these issues, including in this regard the requirement of IAEA full scope safeguards.”<sup>41</sup>

To find a way to respond in a mutually satisfactory way to the concerns of the two sides would be a decisive factor on whether the advent of a new nuclear renaissance would prosper without nuclear proliferation.

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<sup>41</sup>– For the text of the Final Document of the 2010 NPT Review Conference, see <[http://www.un.org/ga/searchview\\_doc.asp?symbol=NPT/CONF](http://www.un.org/ga/searchview_doc.asp?symbol=NPT/CONF)>.

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# IX. China's Way to Go Nuclear

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Nuclear technology has always had two distinct uses: it has been used to design and produce nuclear bombs and it has been used to produce nuclear power as well as facilitate medical and agricultural activities. China has taken advantage of both uses of nuclear technology: first in the military and then in the civilian sector. In this paper, I will provide an overview of the development of China's nuclear capability and the evolution of its nuclear policy, followed by an exploration of China's nuclear disarmament policy that discusses the challenges and opportunities for China in this area. At the end of this paper, I will give a brief summary of China's civilian use of nuclear technology and the efforts the country has made in recent years to use nuclear power in a safer and more secure way.



## 1. To Build the Nuclear Capability

### *To Build the Bomb*

China's decision-makers showed interest in nuclear technology as early as the 1930s. At that time, the first generation of Communist Party leaders was facing war with Japan and struggles with the Guomindang. Nevertheless, they were very much aware of the newly created weapon system, especially when the United States used two atomic bombs against Japan at the end of World War II. In August 1946, Chairman Mao Zedong had a famous dialogue with U.S. journalist Anna Louise Strong where he expressed his belief that imperialists and reactionaries are all paper tigers. He also said that the

atomic bomb was a paper tiger that had been used by the United States to blackmail others. The atomic bomb looked very powerful, but Mao believed that it was not. This argument has been taken as the first view of the Chinese Communist leaders with respect to nuclear technology.

Despite this view, the Chinese government decided to add a nuclear project to its national development program. In the spring of 1956, the Central Government drafted the “1956–1967 Science and Technology Development Plan” in which the acquisition of atomic energy, rockets and jet planes were put at the top of the agenda. In October of the same year, China and the Soviet Union signed the “Agreement on the Production of New Weapons, Military Equipment and the Establishment of China’s Atomic Industry.” According to this agreement, the Soviet Union would supply China with atomic and missile technology assistance.

Not long afterwards, however, relations between China and the Soviet Union began to deteriorate, and in June 1959 the Soviet Union withdrew from the agreement. All cooperation on the project stopped in October of the same year and in August of 1960 around 200 Soviet experts and engineers returned to their countries along with all their materials. Meanwhile, China had entered a period of economic difficulty.

Though there were differing views among China’s decision-makers at that time over whether to develop atomic bombs, the nuclear project continued. The Central Government named the project “596”, an allusion to the point when the Soviet Union withdrew all its nuclear support from China. In the summer of 1960, China’s top

leaders held a meeting and decided to increase their technology; it was at this point that the leaders made the final decision to perform a nuclear test in 1964.

The Central Government held a military industrial meeting in July 1961 where several arrangements were made for the nuclear test. In order to have a good overview of the nuclear project, a special committee was set up in November 1962. Premier Zhou En'lai was nominated as the head of the committee, which was composed of 15 members including seven vice premiers and other top military leaders. Over the course of two years, the committee held at least nine meetings to coordinate the atomic project and discuss hundreds of tough issues. On 16 October, 1964, China successfully performed its first nuclear test in Luobupo in Xinjiang Province. With this test, China became the world's fifth nuclear weapons state.

### *To Build the Second Artillery Force*

While working to develop an atomic bomb, China also began building a second artillery force. In December 1957, the Central Government established a special unit to train the strategic missile commanding and engineering officers. The members of this unit were mainly drawn from the PLA artillery force and the 5th research institute of the Ministry of Defense. The following June, the Central Military Committee decided to establish a commanding headquarters created mainly from the Public Security Force and strategic missile force at that time. According to Premier Zhou En'lai's suggestion, the





newly founded force was named the Second Artillery Force.

The Second Artillery Force was established in 1968 with the development of strategic missiles. It was gradually equipped with short-range, middle-range and long-range land-based missiles along with a series of logistical and supporting units. Throughout the 1970s, China quickly developed its strategic forces. In January 1970 China tested its first two-stage mid-range missile, and in 1971 it tested an intercontinental missile. After a series of tests, China launched this intercontinental missile from the Jiuquan launching site; the missile splashed down into the Pacific Ocean in May 1980. By this time, the Second Artillery Force was equipped with a range of missile systems that could launch any kind of warhead.

China started its sea-based strategic force in the late 1960s. On 12 October, 1982, the PLA Navy finished its first submarine-based ballistic missile test. Then in the mid-1980s, the PLA Navy acquired a nuclear-powered submarine. On two separate occasions in September 1988, China tested its sea-based ballistic missiles from a nuclear-powered submarine. Today, the sea-based sub-marine and land-based ballistic missiles have become the most important parts of China's nuclear arsenal.

### *To Find Reasons for the Nuclear Bomb*

As argued by scholars at home and abroad, there are several reasons to explain why China developed nuclear weapons immediately after the Communist Party established the People's Republic. Among them, two are mentioned most often:

(1) Response to the Threat of Nuclear Blackmail by The United States, First, and The Soviet Union, Second.

As a newly formed republic, China felt that its survival and security were paramount. During the 1950s, the largest nuclear threat came from the United States due to the Korean War, the Indochina War and the treaty signed between the United States and Chinese Taiwan. All of these situations deeply influenced the decision-making of the first generation of PRC leaders concerning the security and survival of the new government. Several times, U.S. leaders publicly announced that nuclear bombs could be included in a military attack against China. For example, on 30 November, 1950, U.S. President Truman told correspondents that the United States had been considering the use of nuclear bombs. Then during a TV speech on 18 March, 1955, President Eisenhower told the American public that nuclear weapons were not only strategic weapons, but also tactical weapons for the purpose of peace.

After Sino-Soviet relations began deteriorating in the 1950s, China had to face another nuclear power—the Soviet Union. According to an Indian scholar, China faced nuclear threats several times, both from the United States and the Soviet Union, during the Korean War, over the Taiwan issue and China’s nuclear project, and during the Sino-Soviet border conflict which lasted from the 1950s to the 1970s.<sup>1</sup> The drive to go nuclear during the 1950s and 1960s, therefore, can

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<sup>1</sup> Jasjit Singh, “Why Nuclear Weapons?” in Jasjit Singh (ed.), *Nuclear India* (New Delhi: Institute for Defence Studies and Analysis, 1998), pp. 12–13.



be understood as an effort to counter the threat of nuclear blackmail from these two superpowers. As Devin T. Hagerty points out, “China’s 1964 nuclear test and subsequent weaponization were rooted in Beijing’s concern over the United States and later the Soviet Union as threatening adversaries.”<sup>2</sup>

## (2) Opposing Monopolies and War with Nuclear Weapons.

For the first generation of Chinese leaders, the atomic bomb was a form of political leverage rather than a military weapon. They surely were quite familiar with the destructive power of nuclear weapons. So breaking up the Western imperialist monopoly on nuclear technology - for example, by the United States and the Soviet Union - was considered one of the most important tasks for the leaders. Traditional Chinese military thought, which sought to avoid war through thorough preparation, as well as the military theories of Marxism and Leninism, which argued for the use of force against imperialism, also deeply influenced the attitudes of the first generation of leaders towards nuclear weapons.

Immediately after the first nuclear test in October 1964, Beijing stated that its development of nuclear weapons did not mean China would necessarily use them, since the Chinese did not believe nuclear weapons could solve anything by themselves. On the contrary, this development was mainly a means to break up the Western imperialist

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<sup>2</sup>- Devin T. Hagerty, *The Consequences of Nuclear Proliferation: Lessons from South Asia* (Cambridge, MA: MIT Press, 1998), p. 72.

monopoly of nuclear technology.

Beijing's logic was the following: if the U.S. government and its allies monopolized the use of nuclear weapons, the danger of nuclear war would be much greater. Thus, since the United States had nuclear weapons, China should have them as well. Only in this way, the Chinese leaders believed, could the elimination of nuclear weapons be possible. After a new test in June 1966, the Chinese government repeated in an announcement its belief that the purpose of China's nuclear weapons development was to oppose the monopoly of nuclear weapon technology by the Western imperialist countries. After China's first successful hydrogen bomb test on 17 June, 1967, an announcement made it clear that Beijing believed it had succeeded in breaking up the nuclear monopoly by the United States and the Soviet Union even further. Beijing believed this was a heavy strike against the nuclear blackmail policy of the Western imperialist countries.

From October 1964 to June 1987, China performed 33 nuclear tests. However, among the five nuclear weapons states at that time, China had tested the least number of nuclear weapons. According to the philosophy of avoiding war through nuclear capability, only a small number of nuclear warheads and missiles are necessary as it is not the number but the quality of the nuclear weapons that matters. If we carefully study the statements of the previous three generations of China's leaders, we will find that they repeated the same message regarding the development of nuclear weapons: China should have its own nuclear weapons as leverage against the monopoly held by the United States and the Soviet Union and the threat of blackmail these



states could potentially use. Consequently, for years China has been taking the most economical road in its development of nuclear weapons.

## 2. To Build the Nuclear Policy and Strategy

The release of the *China's National Defense in 2006 White Paper* in December of that year marked the first time that China announced its overall nuclear strategy specifically in terms of self defense. Scholars and correspondents tend to conclude that such an announcement is part of the country's endeavors to make the workings of its national military more transparent, something Beijing has been attempting to do for years.

The basic framework of China's nuclear policy was laid out by the first leaders of the PRC. In 1970, Mao Zedong said, "It is possible that only the big powers could wage a global war with nuclear weapons, but they are not going to war because of the atomic bombs they have." As for China, he said, "Our country will make a few atomic bombs in the future, which does not mean that we are going to use them ... what we are going to do is to take it as a defensive weapon ... Atomic bombs cannot be dropped causally. Even when we have acquired atomic bombs we should not drop them causally, otherwise, any casual use will violate the law."<sup>3</sup>

China's decision-makers have continued to carry out this policy. During a meeting with the PLA Second Artillery Force leaders in

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<sup>3</sup>- *Selected Work of Mao Zedong on Diplomatic Affairs*, p. 541; p. 453.



May 1978, Deng Xiaoping pointed out that China's possession of nuclear weapons was necessary to show China's capabilities: "You have and I have; if you want to destroy us then you will be retaliated against a little bit."<sup>4</sup> President Jiang Zemin explained China's nuclear policy further during a meeting with the Second Artillery leaders. He told them that the purpose of developing strategic nuclear weapons was not offensive but defensive. He argued that such a capability provided China with a strong deterrent against other nuclear-weapons states, thus proving the defensive value of the weapons. Moreover, he wrote: "Enhance the construction of the strategic missile force to safeguard the motherland and maintain world peace."<sup>5</sup> This strategic nuclear thought, which was made clear through the declarations and remarks of China's leaders, reflects and reinforces the core elements of China's nuclear policy, which is that: ① nuclear weapons must be used as a last resort for China; ② it is the quality not the quantity of the nuclear weapons that is important.

China believed then, as it does now, that it should have such weapons as a basic means of defense for the country. It was due to these understandings and principles that China developed its nuclear force. China's central objective is to maintain the minimum number of nuclear weapons to ensure effective self-defense. That is to say, China's intent is that its nuclear force will survive a first nuclear strike from any country and will then be able to retaliate in kind.

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4- "Interviews by *Xinhua* News Agency Correspondent with the Second Artillery Leaders," *Xinhua*, <[www.xinhuanet.com/mil/2006-06/27/content\\_4753519.htm](http://www.xinhuanet.com/mil/2006-06/27/content_4753519.htm)>.

5- *Ibid.*

However, it seems unlikely that China will change its non-first-use policy for the following reasons:

**① It is a state policy that reflects Chinese philosophy and culture on warfare.**

Just as Sun Tzu wrote in his work *Art of War*, war is considered very seriously by the state. It is a matter of life and death, a road either to safety or to ruin. Hence, it is too important of an issue to be neglected or de-structured from the non-first-use policy. To have a good understanding of China's nuclear policy, one must also be aware of China's culture and history.

**② In the foreseeable future, there is only a slim possibility of a large-scale conventional war against China.**

According to government and scholarly assessments, China currently enjoys its most favorable relations with the world's big powers and its neighboring countries since the establishment of the PRC. The war alert status is at the lowest level it has been at for years and this is not expected to change.

**③ The PLA, which has been modernizing over the last 30 years, has the capability to defend the mainland from any invasion and prevent the separation of Taiwan, its chief security issue.**

Since the early 1990s, the strategic guideline for national defense has shifted to focus on the potential for any crisis happening across the Taiwan Strait, which will absolutely not require a nuclear bomb.

**④ Tactically speaking, changing its nuclear policy would completely change the structure and deployment posture of China’s nuclear force, which would cost billions of Chinese Yuan.**

Over the past 30 years, the Chinese have been putting all their efforts into developing the economy and improving society; it seems unlikely then that the government would want to pay for the large change in economic priorities that dropping the non-first-use policy would entail.

Today, the Chinese government still insists on its “Five No’s” principle with respect to nuclear weapons development, further demonstrating its commitment to minimal capacity. According to this principle, China will have: ① no competition with other nuclear powers; ② no dependence on other nuclear powers; ③ no proliferation of nuclear weapons; ④ no deployment of nuclear weapons abroad; and ⑤ no nuclear alliance with any other countries.

As mentioned above, in 2006 the government announced clearly that its nuclear strategy was one of self-defense:

China’s nuclear strategy is subject to the state’s nuclear policy and military strategy. Its fundamental goal is to deter other countries from using or threatening to use nuclear weapons against China. China upholds the principles of counterattack in self-defense and limited development of nuclear weapons. It aims to build a lean and effective nuclear force capable of meeting national security needs. It endeavors to ensure the security and reliability of its nuclear weapons and maintain a credible nuclear deterrent force. China’s nuclear force is under the direct command of the Central Military Commission (CMC). China exercises great restraint





in developing its nuclear force. It has never entered into and will never enter into a nuclear arms race with any other country.<sup>6</sup>

### 3. To Control the Nuclear Capability

The resumption of disarmament talks between the United States and Russia has raised questions about how China will respond. Scholars and officials all over the world have repeatedly asked the question, “If other nuclear powers begin the process of in-depth nuclear disarmament, will China follow suit?” Recent reports by the U.S. government and speeches by high-ranking U.S. officials have even suggested that the United States should put more effort into persuading China to join the U.S.-Russia nuclear disarmament negotiations as they did during the Cold War era.

The irony is that China is not in a position to “follow” any state in this trend, as it has been at the forefront of the disarmament issue for several decades. While Obama’s ideas on a nuclear-free world are not original, he wrapped them in new packaging before presenting them to the international community, which lent them greater attention. This instance of Obama “going against the wind” was beneficial to the international security situation, the recent adjustment of relations among great powers and each country’s efforts to mitigate the threats they face from nuclear terrorism.

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<sup>6</sup>– Information Office of the State Council of the People’s Republic of China, *China’s National Defense in 2006* (Beijing: December 2006).

## *Beijing's Roadmap to Nuclear Disarmament*

Nuclear disarmament is a phrase used to describe the reduction, limitation and destruction of nuclear weapons and their delivery systems through bilateral or multilateral negotiations and treaties. China's nuclear disarmament policy is an important part of its nuclear policy. Just as with other countries, nuclear disarmament has pros and cons: on one side, it is a guideline for the modernization and reduction of a nuclear weapon stockpile. So to some extent, nuclear disarmament falls into the category of domestic issues. On the other side, it is an effort made by a government which concerns the international process of nuclear arms control and disarmament. In this paper, the discussion will be mainly focused on this latter side.

As previously stated, from the founding of the PRC in 1949 through the 1960s, the country's nuclear policy was primarily influenced by the policies of the Soviet Union, China's socialist ideology and, of course, the country's perception of war and peace as understood through Marxism and Leninism. Under this logic, only the accumulation of nuclear weapons could dissuade other countries from attacking. Yet, when the relationship between the two communist countries began to fall apart, China adjusted its positions on both its nuclear and nuclear disarmament policies in order to face the changed international situation. On 16 October, 1964, after having successfully completed its first nuclear test, China reiterated its stance regarding the complete prohibition and thorough destruction of all nuclear weapons. China declared that it would never use nuclear weapons offensively at any



time or under any circumstances. It then called for an international conference to discuss the complete prohibition and eventual elimination of nuclear weapons.

In order to accomplish nuclear disarmament, China proposed that the first step should be to create agreements banning the use of nuclear weapons. This basic principle of “complete prohibition” followed by “thorough destruction” of nuclear weapons has continued to serve as the foundation of China’s nuclear policy.

In the reform and opening era, China has increasingly participated in international nuclear disarmament and anti-proliferation processes. In March of 1993, China entered into the Nuclear Non-Proliferation Treaty(NPT), and in September of 1996, China signed on to the Comprehensive Nuclear Test Ban Treaty(CTBT). In May of 2004, China was also admitted as a member of the Nuclear Suppliers Group, which seeks to curb proliferation through guidelines for nuclear-related exports. Meanwhile, the Chinese government endorsed a substantial body of laws and regulations to control its indigenous nuclear industry.

After 50 years, China’s nuclear disarmament policy has proven to be thorough, fair and morally just. With regard to thoroughness, China requests nuclear weapons states to legislate at an international level the complete prohibition of nuclear weapons, with a “no first use” pledge as a necessary condition for progress. The policy is fair because Beijing has insisted that relying only on great powers and bilateral agreements to resolve the nuclear disarmament issue is unacceptable, since this often leads to acts of intimidation towards weaker countries. Instead, China advocates the equal and universal

participation of all concerned countries in the negotiations on nuclear disarmament. Rational armaments and disarmaments should be reached through dialogue and cooperation among all nations rather than through power politics and double standards. Finally, China's policy is morally just because it has been put into practice for many decades: In the face of significant pressure, China has maintained a "no first use" policy of nuclear weapons commitment and the promise not to attack non-nuclear weapon states with nuclear weapons. Moreover, China itself has stated its willingness to start its own disarmament as soon as the United States and Russia have fairly reduced their nuclear armaments to a lower level.



### *A New Direction for China's Nuclear Disarmament Policy*

At the UN Security Council summit meeting last September, China's President Hu Jintao gave a clear-cut response to questions about China's position on disarmament: "When conditions are ripe, the other nuclear-armed countries should enter into a course of multilateral disarmament talks. In order to bring about complete and thorough nuclear disarmament, the international community should, at a suitable point in time, formulate a feasible long-term plan with separate stages, including the establishment of a 'Treaty on the Complete Prohibition of Nuclear Weapons'." Of course, "other countries" includes China.

While President Hu's statement leaves no doubt as to China's commitment to a nuclear free world, there are still a number of questions relevant to the country's nuclear disarmament policy in the

foreseeable future. In order to establish a reputation as a responsible power that upholds international security and regional stability, China could make a serious and comprehensive assessment of its current nuclear disarmament policy.

Recently, as the United States and Russia move towards large reductions in their nuclear weapons caches, there has been a profound change in the international security environment. Now, even medium-sized nuclear-armed countries are considering reductions. In this context, China's nuclear disarmament policy will be adjusted in its form rather than its content, as we all have seen, through the addition of a new security concept to its nuclear disarmament policy. However, in the foreseeable future, China could not completely abandon its long-held "complete prohibition" and "thorough destruction" policy.

China's position on disarmament will be determined by its strategic considerations such as its ability to deter foreign attacks and the necessity of closely guarding the exact extent of its military capabilities. China's current nuclear modernization is first and foremost for guaranteeing the safety, survival and reliability of its nuclear weapons. This modernization also guarantees that China's deterrent force is not weakened in the face of external threats such as the construction of the U.S. missile defense program. Furthermore, the policy of hiding capabilities and biding time has long been a guiding principle in China's nuclear disarmament policy. China will not compete for credit with the United States in a new campaign for global disarmament. On the contrary, China will quietly wait and see, and then it will respond at the appropriate time. This is precisely the reason why both Chinese

officials and scholars reacted with what some may call indifference to the proposition of a nuclear-free world. China is more concerned with actions than with words.

China has actively participated in international arms control and disarmament, signed nearly all treaties and conventions on arms control and disarmament and entered into all anti-proliferation mechanisms. Compared with its policy during the pre-reform and open-up period, China's current nuclear disarmament policy places more importance on moral considerations. Upholding moral considerations in the debate over nuclear disarmament is not only important as a declaration of China's position, but also as a key component of constructing strategic stability with other countries, especially with the United States. Currently, most U.S. attention with regard to nuclear disarmament is focused on Russia. But as the two countries make bilateral progress, the United States will certainly pay more attention to China's nuclear disarmament policy. The United States and China both have moral requirements in this perspective. That is to say, nuclear disarmament measures taken by any country will be regarded as important steps toward abolishing the nuclear threat, which should be done by any responsible state for world peace and regional stability. The moral requirement is also a foundation for the two countries' cooperation in dealing with nuclear threats today.

Disputes still exist within China, however, as to how the country should approach America's nuclear disarmament policy. For example, with regard to the issue of when the CTBT should take effect, some scholars feel that China should do so before the United States in order



to take the moral high ground. However, some worry that once China ratifies the treaty, it would face a “Catch-22” situation. Thus, they feel that only after the United States ratifies the treaty should China begin considering this issue. This debate has not been concluded yet and will certainly continue.

At present, there seems to be little need for China to rethink its approach to nuclear disarmament. China’s nuclear disarmament policy was formulated after careful consideration by the first generation of China’s Communist Party leadership and has proven to be strategically sound. This type of policy does not rely on changes in any one area, but instead states that China should continue nuclear disarmament from a macroscopic level. It guarantees the development of China’s nuclear forces and states that nuclear policy and nuclear disarmament policy will not undergo any large twists and turns. This is not only the most economical nuclear disarmament policy, but also the most effective. Even though we face all kinds of changes today, China’s nuclear disarmament policy will not undergo any fundamental alteration in the foreseeable future. Changes will only come in the form of packaging and not in basic meaning. The reason for this is not that China is complacent and conservative, or that it does not strive for new thinking; instead, it is because the nuclear disarmament policy formulated by China’s first generation of leaders remains irreplaceable.

## 4. To Secure the Nuclear Capability

The fast development of the economy, the thirst for energy and the high pressure on environmental protection has already made the world rethink the use of nuclear energy. In 2007, a “Medium and Long Term Development Plan for Nuclear Power(2005 – 2020)” was issued by the Chinese government which changed the guidelines for the use of nuclear technology from proper development into active development, the main ideas in this document can be divided into several aspects: ① to vigorously promote nuclear power development; ② to develop nuclear technology of 1000MW class advanced PWR; ③ the total installed nuclear power capacity in operation will reach 40GW(giga/bw) by 2020 and another 18GW installed capacity under construction will continue after 2020. The nuclear power proportion over the total installed power capacity will increase from less than 2% at present to 4%. Such an ambitious enlargement of nuclear energy will widely expand the construction and security of safety management. Nuclear safety and security have also become a real challenge for the government and industry.

### *The Use and Construction of Nuclear Power*

After years of development, China now has 11 nuclear power units in operation with a total capacity of 9,000MW. There are also more than 20 units under construction, including four AP1000 units. According to China’s nuclear development plan, by the year 2012, the total





number of nuclear power units in operation and under construction in China will exceed 50, including AP1000, EPR and HTGR units. In 2020, the estimated number of units will exceed 100. Nuclear power plants in China have had good records of safety operations and their primary operational parameters are superior to the world average. In addition, their discharge volume of radioactive waste is far below the national standard limits.

### *The Secure Measures Taken by the Government*

For a long time, the Chinese Government has been emphasizing the security of nuclear material and nuclear facilities. According to “The Regulations for the Supervision and Management of Civilian Nuclear Facilities” and “Regulations for Safety and Protection of Radioactive Isotope and Radial Facility” issued by the State Council, the National Nuclear Safety Administration(NNSA) is responsible for the supervision of nuclear facilities and radioactive sources, including the supervision of security. NNSA not only reviews the ability of each facility to prevent radioactive harm on the people and environment, but also reviews the design of each facility’s physical protection system. If the physical protection system fails to pass the review, the facility will not be constructed.

To ensure the safe and lawful use of nuclear materials, as well as to prevent theft, sabotage, loss, unlawful diversion and unlawful use, the State Council released “Regulations on Nuclear Materials Control” in 1987. These regulations established the legal base for nuclear

security. Based on these regulations, “Code for the Implementation of Regulations on Nuclear Materials Control” was issued in 1991.

China has adopted a licensing system for owning, using, producing, storing, transporting and disposing of nuclear materials. Any licensee should establish a strict security and guarding system for their nuclear material adopt reliable security protection measures and take strict precautions against accidents, theft or sabotage.

## 5. China’s Way to Go Nuclear

In conclusion, China’s way to go nuclear first started from the military’s decision to make atomic bombs in order to defend against the threat of nuclear blackmail and nuclear war. The normalization of relations with the United States and the Soviet Union in the 1980s fundamentally changed the threats posed by these countries. At this time, the Chinese government began to attach great importance to the peaceful use of nuclear energy.

In terms of civilian use of nuclear technology, the construction of the Qinshan nuclear power plant was a milestone for China. However, for at least 20 years the development of this capability has deliberately been kept at a slow speed. The increased use of nuclear energy since 2007 also presented new challenges for the government: how China will deal with such a fast expansion is an issue that not only concerns the use of nuclear technology but also the management of these facilities.



On the military use of nuclear technology, as China's white paper on defense pointed out, China has been following the principle of building a lean and effective force and going with the tide of the development of military science and technology. The Second Artillery Force strives to raise the information level of its weaponry and equipment, ensure its safety and reliability, and enhance its capabilities in protection, rapid reaction, penetration, damage and precision strikes. After several decades of development, China has created a weaponry and equipment system with both nuclear and conventional missiles, both solid-fueled and liquid-fueled missiles, different launching ranges and different types of warheads.

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# X. ROK–U.S. Strategic Cooperation

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# 1. Introduction

With the collapse of the socialist bloc, the global Cold War structure dissolved and North Korea faced the challenge of a changed global environment. Within the Korean peninsula, North Korea responded to the South Korean offer of dialogue. Prime minister-level inter-Korean talks were held and in February 1992 the Inter-Korean Basic Agreement came into force.

On the international level, North Korea looked to the U.S. for a way out of the crisis. Since the 1990s their central foreign policy goal has been to ensure regime security and stability through improved political and economic relations with the U.S. In the early 1990s North Korea secured an official dialogue channel with the U.S. by pursuing a nuclear program, and they proceeded to develop their U.S. relations in coordination with U.S. engagement and extended policy.

Kim Jong Il, who formally took over after the death of Kim Il Sung, promoted a policy of building “a great and prosperous nation” as North Korea’s development strategy. The starting point for constructing a great and prosperous nation is restoring the economy from its state of systemic depression. However in order to achieve this goal they need to improve relations with the U.S. They are aware that improved U.S. relations are necessary in order to remove the political and military threat posed by the U.S. and also improve conditions for acquiring external aid. This is why in previous bilateral and multilateral negotiations and contacts North Korea has persistently pressed for “abolishing the hostile policy” of the U.S. toward North



Korea and signing a U.S.-DPRK peace treaty. North Korea believes that improved U.S. relations will lead to improved relations with Japan and the West and will also affect inter-Korean relations, and the removal of UN sanctions will allow them to restore their economy.

The main measures North Korea has chosen to take in order to achieve these policy goals include the development of WMDs such as nuclear weapons and mid- to long-range missiles, and the threat of proliferation. North Korea's WMD development plans pose a major challenge and obstacle to U.S. nonproliferation and counter-proliferation strategies.

On the other hand, since the collapse of the Cold War system the U.S. has emerged as the sole superpower in the new world order. With its tremendous national power, the U.S. has set non-proliferation and counter-proliferation of WMDs as its core national security goals in shaping the post-Cold War world order. After the socialist bloc collapsed, its intervention policy toward the remaining socialist countries focused first on preventing the spread of WMDs. Thus North Korea, with its nuclear development program, emerged as a "small but uncomfortable" challenge to the non-proliferation system.

With the signing of the Geneva Agreement(the Agreed Framework) on 21 October, 1994, the U.S. Clinton administration was temporarily satisfied that it had moved the nuclear issue into a resolution stage, but North Korea continued to present a challenge. North Korea used its missile programs as a negotiating card while continuing to develop nuclear weapons, and in October 2002 its uranium enrichment program brought on the 2<sup>nd</sup> North Korean nuclear crisis. To resolve

the nuclear issue the Six-Party Talks were started, bringing together South Korea, the U.S., China, Japan, Russia, and North Korea. However, the 9·19 Joint Declaration achieved in 2005 appears to be facing the same fate as the Geneva Agreement. Proclaiming itself a nuclear power after performing two nuclear tests, North Korea is using the Six-Party Talks them-selves as a negotiating tool while working to enlarge its nuclear arsenal.

Nearly 20 years that have passed since the early 1990s, yet the North Korean nuclear issue remains unresolved. The complete elimination of the North Korean nuclear program in the name of a nuclear-free Korean peninsula is a major challenge not only to peace and stability on the peninsula, but also to the peace and mutual prosperity of the East Asian region. It is also an obstacle to the stable systematization of the international non-proliferation regime.

With these issues in mind, this paper approaches the North Korean nuclear issue from the positions of South Korea and the U.S. After first reviewing and analyzing the past development of the nuclear issue, this paper will examine the South Korean and U.S. positions, and finally it will offer a future course for ROK-U.S. strategic cooperation.

## 2. Circumstances Surrounding the Development of the North Korean Nuclear Issue

Since the early 1990s the North Korean nuclear issue has posed a serious challenge to peace and stability on the Korean peninsula and





in Northeast Asia as well as the global nonproliferation regime, and it has become a key obstacle to advancing inter-Korean relations. Breaking the Geneva Agreement, North Korea secretly continued to pursue nuclear weapons through uranium enrichment. This violated the terms of the Geneva Agreement as well as the Joint Declaration of the Denuclearization of the Korean Peninsula, in effect since February 1992. It also posed a serious challenge to the Nuclear Nonproliferation Treaty(NPT).

Ultimately the Geneva Agreement fell apart, and the 2<sup>nd</sup> nuclear crisis erupted in October 2002 over suspicions of a uranium enrichment program. In seeking a resolution to this crisis, the initial Three-Party Talks between the U.S., North Korea, and China were expanded to the Six-Party Talks,<sup>1</sup> which began in August 2003 and involved both Koreas, the U.S., Japan, China, and Russia. By June 2004 the Six-Party Talks had met three times but had failed to lead to substantive negotiations, and on 10 February, 2005 North Korea officially announced that it was leaving the talks and that it had developed nuclear weapons. Via a Foreign Ministry spokesperson's remarks(31 March, 2005), they began to demand that the Six-Party Talks be replaced by arms reduction talks.<sup>2</sup>

On 26 July, 2005 the 4<sup>th</sup> Six-Party Talks were held with China acting as a mediator, and the 2<sup>nd</sup> stage of these talks (13–19 September) produced the “9·19 Joint Declaration.” However, the day

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<sup>1</sup>- Jeffrey Bader, “Obama Goes to Asia: Understanding the President’s Trip,” (6 November, 2009), <[www.brookings.edu](http://www.brookings.edu)>.

<sup>2</sup>- *Yonhap News* (7 November, 2009), <[www.yonhapnews.co.kr](http://www.yonhapnews.co.kr)>.



after this declaration was announced, North Korea announced via a Foreign Ministry spokesperson that until it was supplied with a light water reactor it could not give up its nuclear programs, indicating that it had no intention of abandoning nuclear weapons from the start. Subsequently, they confirmed the principles for executing the 9·19 Joint Statement at the 5<sup>th</sup> Six-Party Talks (9–11 November, 2005), but then walked out of the following round of talks without even agreeing on a schedule.

On 5 July, 2006 North Korea drew the attention of the international community by test-firing seven missiles of the short, medium and long range varieties, but this had the adverse effect of encouraging hard-line attitudes toward the regime. Humanitarian aid from South Korea in the form of rice and fertilizer shipments ceased, and the U.S. and Japan submitted a UN Security Council (UNSC) resolution which both China and Russia ultimately approved. The Security Council unanimously approved Resolution 1695, which expressed concern about North Korean missile launches and demanded that it refrain from additional actions, and urged North Korea to immediately return to the Six-Party Talks and comply with the 9·19 Joint Declaration.

As world opinion of North Korea declined, on 3 October, 2006 North Korea's Foreign Ministry announced that it was planning to conduct a nuclear test, which it did on 9 October. The UNSC responded by unanimously approving Resolution 1718(15 October, 2006), but its impact was minimal due to weak compliance by China, U.S.-DPRK bilateral talks, and the reconvening of the Six-Party Talks.

Subsequently China dispatched its envoy Tang Jiaxuan to North Korea and the U.S. for mediation diplomacy, the American and North Korean representatives to the Six-Party Talks met in Beijing (28–29 November, 2006), and the U.S. side submitted a preliminary action proposal to the North Koreans. Following the 2<sup>nd</sup> stage of the 5th round of Six-Party Talks in Beijing(18–22 December, 2006), the American and North Korean representatives to the Six-Party Talks met in Berlin(16–18 January 2007), and then on 8 February, the 3<sup>rd</sup> stage of the 5th round of Six-Party Talks was held, resulting in the “2·13 Agreement.” This agreement laid out a series of “Initial Actions for the Implementation of the 9·19 Joint Statement” as a comprehensive approach to resolving the nuclear issue and breaking up the Cold War structure on the Korean Peninsula.

The 2<sup>nd</sup> stage of the 6th round of Six-Party Talks, held in Beijing(17–30 September, 2007), produced the “Second Stage Actions for the Implementation of the 9·19 Joint Statement (The 10·3 Agreement).” But as the Bush administration neared its end, North Korea used delaying tactics to put off the issue of inspections in return for having its name removed from the U.S. list of state sponsors of terror. After the Democratic Obama administration took power North Korea assumed a wait-and-see posture while holding out hopes for a new U.S. policy of tough and direct dialogue, but instead they ended up encountering a policy of aggressive diplomacy by the U.S.

In these circumstances, North Korea increased its offensive moves against the U.S., launching a long-range rocket on 5 April, 2009, and then performing a second nuclear test on 25 May in response to the



UNSC Chairman’s Statement. This second nuclear test prompted a strong reaction from the international community. After the UNSC passed Resolution 1874, international sanctions and pressure have been applied under U.S. leadership. Pressure has been particularly strong from the Obama administration, which is pushing its vision for “Nuclear-Free World.” They have shown a clear policy of alternating dialogue and pressure, upholding the option of direct U.S.-DPRK talks while showing a firm response to North Korea’s violations of international agreements and norms. The U.S. appointed a mediator in charge of North Korean sanctions and has worked to strengthen international cooperation in enforcing North Korean sanctions, while directly implementing its own unilateral sanctions and taking strong actions to pressure North Korea such as targeting financial institutions like the *Chosun Gwangseon* Bank and pursuing ships bound for Myanmar.

Meanwhile the members of the Six-Party Talks have been cooperating on diplomatic policies to persuade North Korea to return to the talks. Chinese Deputy Foreign Minister Wu Dawei traveled to Russia, the U.S., Japan, and South Korea(2–14 July, 2009) for consultations among the Six-Party representatives, and U.S. Assistant Secretary of State for East Asian and Pacific Affairs Kurt Campbell visited Japan and South Korea(16–23 July). South Korea dispatched its Six-Party Talks representative and its director of peace negotiations to neighboring countries for policy consultations. North Korea embarked on a diplomacy offensive of its own. While reaffirming on 14 April, 2009 that they would not participate in the Six-Party Talks, they took

the opportunity during visits by former U.S. President Clinton(4–5 August, 2009) and U.S. Governor Bill Richardson(19 August, 2009) to express their willingness to hold bilateral talks with the U.S. Also, during Chinese Deputy Foreign Minister Wu Dawei’s visit(17–21 August, 2009) to discuss restarting the Six-Party Talks, while repeating their existing position they also stressed the need for U.S.-DPRK bilateral talks.

However the U.S. maintained its clearly expressed position of seeking to resolve the nuclear issue through close cooperation with South Korea and the other Six-Party members within the multi-lateral framework of the Six-Party Talks. Through various levels of bilateral talks, including ROK-U.S. summits, foreign ministers’ summits, and meetings of Six-Party representatives, they have developed a coordinated policy of ① holding continuous dialogue with the objective of North Korean denuclearization while continuing to enforce sanctions based on the UNSC resolutions; ② welcoming dialogue with North Korea, but insisting that U.S.-DPRK talks must occur within a multi-lateral framework; ③ working closely with the other Six-Party nations aside from North Korea in order to find the best solution to achieve denuclearization to bring North Korea back to the Six-Party Talks and achieve a nuclear-free Korean peninsula.

North Korea particularly took advantage of Chinese Prime Minister Wen Jiabao’s visit to Pyongyang(4–6 October, 2009) to express their desire to improve relations not only with the U.S. but with South Korea and Japan as well. The Chinese side communicated North Korea’s wish for better relations to the South Korean government while

explaining the results of Wen's North Korean visit. Furthermore, during his meeting with Wen Jiabao, Kim Jong Il expressed his conditional willingness to reconvene the Six-Party Talks. Kim is said to have remarked, "If the results of the DPRK-U.S. talks show a willingness to continue multilateral talks," then "multi-lateral talks may include Six-Party Talks."

North Korea made persistent efforts to engage with the U.S., sending a delegation led by Foreign Ministry Director of North American Affairs Ri Gun to meet with U.S. Six-Party delegate Sung Kim at the civilian-level Northeast Asia Cooperation Dialogue (NEACD) held in San Diego California in October 2009. The Ri Gun delegation pursued civilian level contacts by attending a seminar in New York hosted by the U.S. Council on Foreign Relations and the Korea Society.

As this series of diplomatic initiatives unfolded, the Obama administration decided to send Special Envoy on North Korea Policy Stephen Bosworth to North Korea at their request, and on 5 November at a U.S. Chamber of Commerce event Bosworth announced in response to a reporter's question that he would be visiting North Korea within 2009. In a 6 November speech at the Brookings Institution, NSC Senior Director for Asian Affairs Jeffrey Bader said that the U.S. was prepared to meet directly with North Korea within the Six-Party Talks. However, Deputy Secretary of State James Steinberg emphasized that negotiations would only be possible through renewed Six-Party Talks, explaining that the purpose of the U.S.-DPRK bilateral talks would not be to negotiate but to send a message about denuclearization.

As efforts to restart the Six-Party Talks faltered, North Korea



proposed through its Foreign Ministry that the members of the armistice agreement should hold peace talks.<sup>3</sup> North Korea announced its position of “peace talks first, then denuclearization,” arguing that a peace treaty would erase the animosity in U.S.-DPRK relations and accelerate the denuclearization effort, and set the lifting of U.S. sanctions as a precondition for restarting the Six-Party Talks. North Korea appeared flexible, speaking of the possibility of separate peace treaty negotiations or peace talks within the confines of the Six-Party Talks, but the essence of their proposal was to hold talks with the U.S. on a peace treaty. In this way they tried to change the fundamental character of the Six-Party Talks, originally dedicated to resolving the nuclear issue, and began using the talks themselves as a negotiating point. Furthermore, they sought to shift blame for the stalemate over the Six-Party Talks to the U.S. and South Korea and change direction to move toward a peace treaty. After this statement North Korea became even more firmly attached to its position of “establish a peace regime first, then denuclearization.”

The U.S. position remained firm. Emphasizing that North Korea must return to the Six-Party Talks, they maintained sanctions according to UNSC Resolution 1874. In his 2010 State of the Union Address Obama said that because of their pursuit of nuclear weapons, “North Korea now faces increased isolation and stronger sanctions.”<sup>4</sup> Obama also repeatedly emphasized that sanctions would continue until

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<sup>3</sup>- North Korea Foreign Ministry Spokesman’s remarks at KCNA Press Conference (11 January, 2010).

<sup>4</sup>- Barack Obama, State of the Union Address (28 January, 2010).



North Korea returned to the Six-Party Talks and fulfilled its denuclearization obligations, and that it would not be rewarded for simply returning to negotiations.<sup>5</sup> He spoke of improved inter-Korean relations as another important element.<sup>6</sup> While emphasizing that North Korea should return to the Six-Party Talks, he also spoke of the need to improve inter-Korean relations.

In early February 2010, China sent the director of the CCP's International Department, Wang Jiarui, to North Korea to pass on a message from President Hu Jintao. China's Xinhua News Agency reported that Kim Jong Il expressed his wish for "denuclearization of the Korean peninsula" and said that in order to restart the Six-Party Talks it was vital that the participating countries show sincerity.

However North Korea's behavior was inconsistent; indeed it exacerbated the situation by attacking and sinking a South Korean naval vessel on 26 March. The U.S. stressed that an investigation of the causes of the sinking must take top priority<sup>7</sup> and that, while North Korea must return to the Six-Party Talks, they must first take positive steps toward denuclearization before substantive dialogue could occur.<sup>8</sup> The results of the international investigation announced on 20 May

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5- James Steinberg, An address at Woodrow Wilson Center (30 January, 2010); *Joongang Daily* (2 February, 2010).

6- Kurt M. Campbell, Press Availability at the Ministry of Foreign Affairs and Trade, Seoul (3 February, 2010).

7- Speech by Special Envoy Sung Kim at the "4<sup>th</sup> Seoul-Washington Forum," Dinner (4 May, 2010).

8- On 7 May, U.S. State Department Press Secretary Philip Crowley emphasized "There are things that North Korea has to do, not say. And they have to meet their international obligations, cease provocative actions."



showed that the cause of the Cheonan sinking was a torpedo attack by North Korea, and the U.S. strongly condemned the sinking, declaring it an act of aggression, a challenge to global peace and security, and a violation of the armistice agreement. The U.S. also strongly supported South Korea's move to bring the incident before the UNSC. On 9 July, after the UNSC adopted a Chairman's Statement, the U.S. warned North Korea against additional provocations and demanded that it observe the terms of the armistice, while urging it to follow up on the promises it made in the 9·19 Joint Statement.<sup>9</sup>

Through Kim Jong Il's two visits to China in May and August 2010, the North Koreans spoke of the denuclearization of the peninsula and a return to the Six-Party Talks. However the U.S. response was very cold. In response to Kim Jong Il's remarks on denuclearization, Assistant Secretary of State Philip Crowley said that they would continue to assess North Korea's behavior and emphasized that North Korea must take concrete steps to follow the terms of its prior agreements. While stating that it would continue its engagement policy toward North Korea, the U.S. also emphasized a strategy of applying pressure. Thus it maintained the position that North Korea must show a commitment to its denuclearization promises with actions as well as words. Obama took the opportunity of the ROK-U.S. summit held during the G20 summit on 11 November, 2010 to reiterate the U.S. position. Stating that "The United States is prepared to provide economic assistance to North Korea and help it

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<sup>9</sup>- White House Statement (9 July, 2010).

integrate into the international community, provided that North Korea meets its obligations,” Obama emphasized that North Korea must cease its belligerence and choose “an irreversible path towards denuclearization.”<sup>10</sup>

### 3. The U.S. and South Korean Positions on the North Korean Nuclear Issue

#### *South Korea's Position*

One of the 4 strategy points of “Global Korea,” the Lee Myung-Bak government’s vision for diplomacy and security, is “win-win policies and public management of inter-Korean relations .”<sup>11</sup> The first task here focuses on resolving the nuclear issue by establishing a peaceful, nuclear-free system on the Korean peninsula. The nuclear issue is a very tricky problem, but as a key threat to peace on the peninsula and an obstacle to progress in inter-Korean relations it must be approached head-on. It is also a threat to order in Northeast Asian and the global non-proliferation regime, and thus demands international cooperation.

This position argues that increases in inter-Korean cooperation and exchange did not succeed in easing military tensions and establishing trust, and without progress in these areas it will be difficult to develop

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<sup>10</sup>- *Newsis* (11 November, 2010).

<sup>11</sup>- The Blue House, “A Mature Global Nation: The Lee Myung-Bak Administration’s Vision and Strategy for Foreign and Security Affairs,” (March 2009).



a sincere inter-Korean relationship. In particular, the essence of the nuclear problem is that the North Korean leadership has not changed their basic understanding, and by giving up nuclear weapons and permitting transparent inspections the North Korean authorities can have a tremendous opportunity to help their country and improve their people's quality of life.

Thus South Korea is taking an active role in working to resolve the nuclear issue, directly participating in UNSC sanctions in response to the 2<sup>nd</sup> North Korean nuclear test, and boosting diplomatic efforts to bring North Korea back to the Six-Party Talks. More concretely, they see thorough implementation of UNSC Resolution 1874 as an important factor in bringing North Korea back to the table and thus emphasize its faithful execution. They also pushed for "Five-Party Talks" among the Six-Party members (except North Korea) for closer cooperation and consultation on ways of approaching North Korea, and held meetings of foreign ministers, Six-Party delegates, and high level policy makers from Six-Party member states such as the U.S., China and Japan. Further, they promoted close ROK-U.S. policy coordination through summits, meetings of foreign ministers, and meetings of Six-Party delegates. But most the important factor in this process is how South Korea approaches the North Korean nuclear issue. If the South Korean position is unclear it will be unable to draw international cooperation.

The North Korean nuclear issue is considered the most direct threat to South Korean security and a major obstacle to inter-Korean relations, and South Korea believes they must take a leading role in



dealing with it. Therefore they need a policy vision that approaches the fundamental roots of the nuclear issue. In the Lee Myung-Bak government's view, the nuclear issue has repeatedly vacillated between progress and setbacks, moving through phases of crisis situation → negotiations → settlement → failure to execute terms of settlement. Thus the resolution continues to be delayed and a genuine solution is never achieved.<sup>12</sup>

Two lessons can be taken from the progress of the nuclear issue thus far. First, the pattern of failing to properly honor agreements on the nuclear issue, implementing tepid sanctions in response to North Korea's violations, and rewarding North Korea for returning to its original state after such violations, is unlikely to induce North Korea to give up its nuclear programs. Second, this pattern is also unlikely to motivate North Korea to change its behavior.

Previous efforts to resolve the nuclear issue took a partial, incremental approach dealing with only part of North Korea's nuclear programs, and failed to address the fundamental nature of the problem. Without breaking this pattern it will be difficult to overcome the current limitations in resolving North Korea's nuclear development plans and its strategic nuclear card.

The previous Geneva Agreement was discarded after massive expenditures had been made for heavy fuel oil and construction of the

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<sup>12</sup>- For an analysis of the process leading to the Grand Bargain proposal, see the manuscript "The Lee Myung-Bak Government's North Korea Policy and Outlook for Inter-Korean Relations," in *Proceeding with the Grand Bargain Proposal*, KINU Academic Conference Series 09-02 (Seoul: Korea Institute for National Unification, December 2009), pp. 52–55.

light water reactors. After the 2<sup>nd</sup> nuclear crisis, the parties reached agreement on the principle of denuclearization via the 9·19 Joint Declaration, but this ultimately lost its effectiveness after North Korea proceeded to perform a 2<sup>nd</sup> nuclear test and follow-up agreements were not carried out. The 2·13 Agreement which offered a phased approach of shut-down and sealing → disabling → dismantling was effectively ruined - North Korea restored its nuclear facilities although it received 750,000 tons of heavy fuel oil and the U.S. removed North Korea from the list of State Sponsors of Terrorism.

At the ROK-U.S. summit in June 2009, President Lee Myung-Bak argued the need to discard the past approaches of applying weak sanctions in response to North Korea's violation of its agreements and rewarding North Korea for strategically alternating its positions without changing its fundamental attitude, and instead proposed a new strategic method of using a "Comprehensive Package" to address the fundamental roots of the nuclear issue. Subsequently during Secretary Campbell's visit to South Korea(17–18 July, 2009), both sides expressed the need for ROK-U.S. agreement on a "Comprehensive Package."<sup>13</sup> The U.S. side reaffirmed its position that it would no longer reward North Korea for the nuclear problem and related concerns and that it would consult closely with its alliance partners South Korea and Japan regarding any U.S.-DPRK bilateral dialogue.

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<sup>13</sup>- Ministry of Foreign Affairs and Trade, *Foreign and Security Affairs Policy Brief*, (July 2009).



While policy cooperation among Seoul, Washington, and Tokyo proceeded, President Lee pronounced “A New Peace Initiative on the Korean Peninsula.”<sup>14</sup> in the president’s 8·15 Commemorative Address on 15 August, 2009. This initiative is based upon his belief that in order to achieve sincere peace and reconciliation between the two Koreas, it was necessary not only to resolve the nuclear issue but also to take steps to reduce arms and build trust. This initiative, which included the basic elements of the “Denuclearization-Development-3000” initiative, called for a comprehensive approach through cooperation programs in 5 major fields(economics, education, finances, infrastructure, and living conditions) in response to the North’s decision to abandon its nuclear programs.

This was explained as a way of making progress on the nuclear issue by going beyond mere aid provision and promoting comprehensive cooperation plans that would enable the North to achieve its own economic development. This position also rejected the partial, step-by-step approach and maintained that dialogue on the nuclear issue can occur at any time without conditions, and the level of dialogue can be made flexible according to the issue at hand.

This was a departure from the approach of proceeding incrementally from small, easy steps onward, instead pursuing the core tasks of denuclearization and conventional weapons reduction simultaneously, revealing a desire for a “fundamental solution.” As this policy became more concrete, North Korea showed a strategic shift from its former

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<sup>14</sup>- *Yonhap News* (15 August, 2009), <[www.yonhapnews.co.kr](http://www.yonhapnews.co.kr)>.

hard-line policy toward the South, making conciliatory moves while seeking bilateral talks with the U.S. and holding high-level meetings with China. Meanwhile there were direct efforts among the U.S., China, and North Korea to restart the Six-Party Talks.

When President Lee visited the U.S. in September 2009, he spoke of the “Grand Bargain” proposal a “fundamental solution” to the nuclear issue in a speech at a discussion organized by the U.S. Council on Foreign Relations, The Asia Society and The Korea Society(21 September, 2009) and again in a speech at the UN (23 September, 2009). The basic ideas are: ① to break out of the previous pattern of repeated compromises and stalemates, of progress and reversals, a comprehensive approach is needed which solves the fundamental source of the nuclear issue; ② to rid North Korea of nuclear weapons through the Six-Party Process while at the same time providing genuine security guarantees and international aid; ③ to prepare a concrete action plan among the five involved parties based on a clear agreement on the endpoint of the North Korean denuclearization process.

The strategic significance of this proposal is, first of all, to proceed with negotiations in a way that forces North Korea to irreversibly follow through on its promises; to move immediately to the execution phase once agreements are reached; and to proceed with denuclearization and economic aid side-by-side. This approach seeks a fundamental solution to the nuclear issue. Through this process they will also seek to develop inter-Korean relations into a stable and “normal” relationship.

Second, by clarifying once again the principle of North Korea’s denuclearization, South Korea is clearly showing its desire to overcome

the cumulative fatigue effects of drawing out the nuclear issue and its dedication to the denuclearization policy. All Six-Party member states maintain the goal of denuclearization, but in reality each country has focused on its own interests and thus the solutions have been limited. Therefore they are trying to strengthen the commitment to denuclearization.

Third, as a direct player in resolving the nuclear issue, by actively proposing a solution South Korea is suggesting an alternative means of negotiation, which means in the future they will take on more of a leadership role in the negotiation process. By taking on this direct role, South Korea hopes to put an end to the North's U.S.-centered strategic logic, its continued use of the nuclear card, management of the North Korean nuclear issue under the U.S. global nonproliferation regime, and China's growing influence on the peninsula through its policy of maintaining the status quo.

Fourth, this initiative aims not to approach the nuclear issue by itself, but to take a comprehensive approach to all aspects of "the North Korea problem." As the 3<sup>rd</sup> generation succession to Kim Jong-Eun is underway, considering the North Korean leadership's concerns about internal conditions and regime maintenance, they are hoping to overcome the limitations of the existing negotiation options. While the "Grand Bargain" offers North Korea security, there are great expectations that it will also be effective in bringing about change.

South Korea has continued to adhere to this policy even after the North Korean attack on the *Cheonan*. That is, while participating in UNSC sanctions and implementing its own independent measures against





the North,<sup>15</sup> South Korea will provide North Korea of any “window of opportunity” if it shows sincerity to resolve the nuclear issue.

### *The U.S. Position*

In the post-Cold War era the primary goal of U.S. North Korea policy has remained consistent through alternating Republican and Democratic administrations. This goal is preventing the spread of WMDs and long-range missiles.

In the 1990s the U.S. pursued the Geneva Agreement and the Clinton administration’s North Korea policy initiatives based on the Perry Report. Maintaining the framework of the Geneva Agreement, they offered economic incentives while holding bilateral meetings with the short term goal of delaying North Korea’s missile test launches, the mid-term goal of shutting down its nuclear and missile programs and normalizing U.S.-DPRK relations, and the long-term goal of bringing an end to the Cold War in East Asia. The U.S. dealt with the North Korean nuclear issue from a crisis management standpoint, taking a step-by-step approach focused on the issues of nuclear programs, missiles, and the return of U.S. soldiers’ remains.

However, the Clinton administration’s approach was unable to stop North Korea from developing nuclear weapons. The Bush administration approached the nuclear issue with a fundamental lack of trust toward

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<sup>15</sup>– Actually, the “package deal” approach is something the North Korean side proposed many times in negotiations with the U.S. and South Korea even before South Korea made its “Grand Bargain” proposal.



North Korea, and the North Korean side responded aggressively by pursuing nuclear weapons through uranium enrichment alongside their plutonium-based program. Ultimately North Korea signed the 9·19 Joint Declaration in 2005, but with their first nuclear test in October 2006 they pursued a nuclear strategy that effectively negated this agreement.

The Obama administration, which took office in January 2009, adopted a policy of “aggressive engagement,” remaining stern but extending an unclenched fist to North Korea. Accordingly, they sought direct dialogue with both Iran and North Korea on nuclear issues.<sup>16</sup> They particularly stressed the North Korean nuclear issue as a responsibility of all countries and a decisive test of the viability of the global nonproliferation regime, and offered two choices. North Korea could abandon its nuclear programs and follow the path of political and economic integration, or else the U.S. would further isolate North Korea and take various steps to force it to observe global non-proliferation norms.<sup>17</sup> The Obama administration established a position of managing and resolving the nuclear issue on the basis of a strong ROK-U.S. alliance.<sup>18</sup>

In short, the U.S. offered North Korea a chance for dialogue, saying that if the North Koreans respond in a logical way then both

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<sup>16</sup>– Charles A Kupchan, “Enemies Into Friends,” *Foreign Affairs*, Vol. 89, No. 2 (March/April 2010), p. 120.

<sup>17</sup>– *Ibid.*, pp. 23 – 24.

<sup>18</sup>– The Office of President-Elect, “The Obama-Biden Plan,” <[http://change.gov/agenda/foreign\\_policy\\_agenda/](http://change.gov/agenda/foreign_policy_agenda/)>; The White House, *National Security Strategy* (May 2010).

sides can get what they need, but this does not mean the U.S. will bow to North Korean pressure. They planned to pursue an engagement policy through diplomacy and development, while using both dialogue and pressure from a principled position.

The Obama administration consistently maintained this position throughout the process of UNSC sanctions following the second North Korean nuclear test in May 2009, U.S. dialogue with North Korea in the latter half of 2009, and even after the *Cheonan* sinking in March 2010. The U.S. has demonstrated a clear stance of seeking to grasp North Korea's sincerity toward denuclearization through bilateral dialogue, while responding firmly to their military provocations. The Obama administration describes this policy as "strategic patience," and Secretary of State Clinton that the U.S.-DPRK dialogue carried out by Special Envoy Stephen Bosworth on his visit North Korea (8 – 10 December, 2009) was part of this policy, as a preliminary meeting to reaffirm the U.S. commitment to denuclearization and to explore whether or not North Korea is prepared to move in that direction.<sup>19</sup>

To summarize the Obama administration's basic position in response to North Korea's offensive, they approach the nuclear issue from the viewpoint of preventing proliferation of WMDs and maintain the goal of complete, verifiable, irreversible dismantlement (CVID), emphasizing that the North must thoroughly follow-through on

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<sup>19</sup>- "Clinton Calls 'Exploratory' Meeting with North Korea 'Quite Positive'," *Voice of America* (10 December, 2009).



agreements. The Obama administration argues that since the policy of refusing to take diplomatic action in response to North Korea's bad behavior did not help to resolve the nuclear problem and only perpetuated a vicious cycle, that policy must change.<sup>20</sup>

As part of the effort to realize President Obama's vision of "Nuclear-Free World," the U.S. is working to strengthen the NPT regime. The Nuclear Posture Review Report released on 6 April, 2010 called for a stronger Negative Security Assurance(NSA) policy, explaining that the existing NSA would need to be revised in order to back up the "Nuclear-Free World" vision. However the Obama administration, which emphasizes working with international society through its norms and organizations within the framework of multilateral consultation, identifies countries like North Korea and Iran which violate their agreements as "outliers" and excludes them from the strengthened NSA.<sup>21</sup> Moreover, high-level policy-makers including Secretary Clinton, Deputy Secretary of State James Steinberg, and Secretary Campbell have repeatedly affirmed the clear goals of "nuclear nonproliferation" and "nuclear disarmament."

As it nears the end of 2010, the Obama administration, having been defeated in the U.S. mid-term elections, is pursuing its North Korea policy through close ROK-U.S. cooperation, while demanding that North Korea demonstrate a willingness to change its behavior, and applying

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<sup>20</sup>- Victor D. Cha, "What Do They Really Want?: Obama's North Korea Conundrum," *The Washington Quarterly*, Vol. 32, No. 4 (October 2009), p. 121.

<sup>21</sup>- U.S. Department of Defense, *Nuclear Posture Review Report* (April 2010), pp. 9–10; pp. 15–16.

stronger sanctions and diplomatic pressure. Also, the U.S. is demanding that North Korea show “sincerity” about improving inter-Korean relations.

#### 4. North Korea’s “Nuclear Weapons Possession” Strategy<sup>22</sup>

Although the international community has been dealing with the North Korean nuclear issue for 20 years now, North Korea has still managed to develop nuclear weapons. The global implications of North Korea having nuclear weapons differ significantly from its previous status of simply having nuclear materials.

The fact of North Korea’s possession of nuclear weapons impacts international society in three different dimensions.<sup>23</sup> First, it is a challenge to the current NPT-based world order centered on the U.S. and other nuclear powers, sufficient to disrupt the NPT system. If North Korea’s nuclear weapons development cannot be controlled, then Japan, Taiwan, Australia, Indonesia, Iran, Syria, Turkey and others with the capacity to develop nuclear weapons may begin to rethink their nuclear policies.<sup>24</sup> In South Korea as well, arguments for

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<sup>22</sup>– This section is a revised supplement to the author’s paper, “The Significance of Nukes and Missiles (WMDs) in North Korea’s Foreign Policy and Their Limitations,” *Peace and Security*, Vol. 3 (2006), pp. 22–25.

<sup>23</sup>– Min Cho, “*Haekgukga Bukhan, Hangukui Seontaek* (Nuclear North Korea: The Choice for South Korea),” *Pyeonghwa Nonpyeong*, No. 11 (17 October, 2006).

<sup>24</sup>– In his autobiography *Decision Points*, published in November 2010, President Bush wrote that in order to convince Chinese President Zhang Zemin to pressure North Korean on the nuclear issue, he warned him that “We won’t be able to Stop Japan from Developing its own Nukes.” *Chosun Ilbo* (11 November, 2010).



developing nuclear weapons have begun to surface.

Second, North Korea's possession of nuclear weapons can bring about a structural change to the international security order in Northeast Asia. This may lead to a reprise of the confrontation between naval and land-based powers that played out around the Korean peninsula during the Cold War. Of course, the likelihood of a new Cold War erupting is low, due to the deeply inter-dependent relations between the U.S. and China. However, since China appeared to "take North Korea's side" following the *Cheonan* incident, China's security threat to the U.S. is not a problem that can be ignored amidst the changing dynamics of the Northeast Asian region. While all sides participated in the international sanctions process in response to North Korea's nuclear test, a wide gap in positions emerged with China and Russia on one side and the U.S. and Japan on the other. This was not a simple policy disagreement; it was a difference in strategic calculations regarding North Korea's nuclear status.

Third, in terms of inter-Korean relations, after the North Korean nuclear tests South Korea's policy toward the North could hardly continue as before. Because of these tests the inter-Korean strategic structure which had excluded U.S. strategic support was altered. This change was demonstrated by the postponement until December 2015 of the planned transfer of wartime operational control to South Korea, and by President Obama's pledge at the October 2010 ROK-U.S. Security Consultative Meeting to provide "extended deterrence" to South Korea.<sup>25</sup>

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<sup>25</sup>- Refer to "The Guidelines for ROK-U.S. Defense Cooperation," (8 October, 2010) and the Joint Statement from the 42<sup>nd</sup> ROK-U.S. Security Consultative Meeting(SCM) (9 October, 2010), <<http://www.mnd.go.kr>>.

With North Korea's announcement of a successful nuclear test, and international confirmation that the test had occurred, North Korea unofficially became a nuclear weapons state. With their new nuclear power the North Korean leadership began to display increased confidence in various areas.

First, Kim Jong Il gained confidence in the strength of his own individual grip on power and regime security, as the possession of nuclear weapons allowed him to justify and rationalize the talk of a "strong and prosperous country" and *Songun*(Military-First) politics. *Songun* is Kim's most important tool for guaranteeing the permanence of his regime.

Second, with the possession of nuclear weapons, the North Korean leadership believes they have secured a safety valve in terms of military and security strategy. Of course, a small number of nuclear warheads cannot be said to ensure a complete safety valve against the mighty nuclear powers that surround it. However they may assess that having nuclear weapons allows them to pursue their own security strategy, tactics, and diplomacy against not only the U.S. but also Russia and China.

Third, for totalitarian one-man dictator Kim Jong Il, nuclear weapons give him the means and the excuse to strengthen his basis of internal rule and exercise absolute control over aspects the system which have grown lax due to the severe economic difficulty. Self-congratulatory events celebrating the "success" of the nuclear test were held in Pyongyang and throughout the country for precisely this purpose. Also, with this new confidence Kim Jong Il used the 3<sup>rd</sup> Party Delegates' Conference to speed

the process of passing power on to his 3<sup>rd</sup> son Kim Jong-Eun, who is no older than 27.

Fourth, since declaring itself a nuclear power in February 2005, North Korea has argued that the Six-Party Talks should be replaced by arms reduction talks, and now that it has nuclear capability it can continuously press for arms reduction talks with the U.S. If North Korea for some reason chooses to return to the Six-Party Talks, its attitude toward the South Korean side will likely be to ignore it almost completely. Toward the U.S. it will grow bolder in its demands for security assurances and large-scale economic aid as well as the withdrawal of U.S. troops and the breakup of the ROK-U.S. alliance.

Finally, nuclear weapons enable North Korea to essentially use South Korea as a hostage in its foreign and inter-Korean policies. The political debate that erupted in the South over the “Sunshine Policy” in the wake of the nuclear test is one representative example. Since before the nuclear test, North Korea had argued that its “nuclear deterrent” would “protect peace and stability” not only for itself but for South Korea as well. While this argument is clearly sophistic, it cannot be simply explained as propaganda directed at the South. The reality in South Korean society is that when North Korea claims UNSC sanctions constitute “an act of war,” this affects not only politics but policy discussion as well. By continuously provoking conflict in the ROK-U.S. alliance and within South Korean society and also increasing anti-U.S. sentiment, North Korea may gain more confidence in its ability to create favorable conditions for itself on the peninsula.

However not everything has gone according to North Korea’s plan





since it came to possess nuclear weapons. Under its nonproliferation policy, the U.S. is placing more emphasis than ever on ensuring that North Korea's nuclear weapons, materials, equipment and technology do not fall into the hands of terrorists or the states which support them. There is some question as to how much even China, North Korea's most "dependable" remaining supporter, is willing to allow North Korea to develop its nuclear stockpile. The same applies for Russia. If the North Korean leadership believes that even China cannot be relied upon to support the regime, and if that assessment was part of their reason for developing nuclear weapons, then in the future China will need to be much more cautious in its judgments and strategies regarding North Korea.

The North Korean leadership sees its relations with the U.S. as key to regime survival. The U.S. sees the UNSC's diplomatic and economic sanctions as insufficient and thus it has continued to strengthen its Proliferation Security Initiative(PSI) on WMDs, and in April 2010 it initiated the Nuclear Security Summit. The U.S. also increased its own unilateral sanctions against North Korea and applied pressure through military exercises based on a stronger ROK-U.S. alliance.

Regardless of the debate about their effectiveness, diplomatic and economic sanctions by the West under U.S. leadership will likely continue for some time. In the process North Korea's economic difficulties will worsen, and due to its weak base for economic recovery and growth, as the supply of external resources becomes limited over time this could deal a serious blow to its economy. Of course, the primary victims of these worsening economic conditions

will be the majority of the North Korean people who are excluded from the public distribution, which may lead to a dramatic increase in defection. Today, unlike in the 1990s, access to outside information has increased and can no longer be controlled to the degree that it was during the Cold War. This situation may cause more North Korean people to begin to see internal rather than external causes for their deepening international isolation, thus accelerating the erosion of regime durability.

Also unlike in the 1990s, now if economic conditions worsen, there is more possibility of collective displays of dissatisfaction. The reason the famine of the 1990s, which claimed an estimated 2–3 million victims, did not result in organized resistance to the regime was because the people had been passively dependent upon the public distribution system for so long that they lacked the experience of adapting to new situations. Now that they no longer rely on the state or the Party for their survival, many North Koreans have learned to fend for themselves, and so instead of meeting difficulties with increased regime loyalty, they are likely to look for outlets for their frustration with reality. As the regime proceeds with its 3<sup>rd</sup> generation feudalistic power succession, the North Korean leadership is approaching a serious challenge.

## 5. The Direction of ROK–U.S. Strategic Cooperation

Looking back at the past process of ROK-U.S. policy coordination in dealing with the nuclear issue, it is fair to say that the two



countries share common goals, but their approaches are influenced heavily by their respective security and strategic priorities. In other words, despite their common goal of completely dismantling the North Korean nuclear program, there is a significant disparity in their approaches based on their national goals and policy priorities.

South Korean policies prioritize first the Korean peninsula, then Northeast Asia, and then the world. The U.S. sees its priorities in the reverse order. For South Korea, its North Korea policy is inseparable from the issues of improving inter-Korean relations and unifying the peninsula. For the U.S., the primary objectives are maintaining the U.S.-led world order and stability in Northeast Asia. In the long run, after unification South Korea will prioritize building a single united nation, while the U.S. will be more concerned with questions of what to do with the alliance under a unified Korea and the issues of denuclearization and the future of U.S. troops based in the South.

This kind of disparity in the two countries' national security strategies is only natural. Although its national power is relatively declining, the U.S. still plays a leading role in shaping the global political order as well as the economic and security orders. On the other hand South Korea faces a nuclear-armed North Korea and must work with other regional powers including the emerging G2 power China, the economically advanced nation of Japan, the security power of Russia, and its ally the U.S. This strategic position represents a structural challenge for South Korea, the host of the G20 summit and the 13th-ranked economy in the world. Therefore in the process of resolving the nuclear issue and ultimately achieving the national goal

of unification, South Korea must strengthen and advance its refined relationship with the U.S.

More than anything, both South Korea and the U.S. have an interest in peace and stability on the peninsula, stability and economic interdependence in Northeast Asia, and the pursuit of free democratic values. Thus they share the goal of transforming North Korea into a responsible member of international society that will not challenge these interests. South Korea and the U.S. must execute a joint strategy toward the nuclear issue on the basis of this fundamental common interest. South Korea's "Grand Bargain" initiative and the comprehensive approach espoused by the U.S. are both variations of a "Package Deal" approach, and their details show considerable overlap. Thus both sides need to adhere to the position of inducing North Korea to make an irreversible commitment to denuclearization and directly encourage regional countries to join in negotiations. If North Korea returns to the Six-Party Talks and negotiations progress, they must dedicate more diplomatic efforts to building international solidarity to ensure that North Korea does not repeat its past negotiating behavior.

If multilateral negotiations produce an agreement, it must immediately proceed to the execution phase and promote a fundamental solution to the nuclear problem with denuclearization and economic aid proceeding in tandem, thus developing into stable and "normalized" inter-Korean relations. Inter-Korean relations must not advance and retreat according to North Korea's whims and tactical displays of "good faith" but rather through a fundamental solution to the single



greatest obstacle to better relations - the nuclear issue. In this way we must seek to change the basic pattern of inter-Korean relations. This process will contribute to the U.S. strategy of systematizing a stable nuclear nonproliferation regime.

Second, the nuclear issue must not be approached simply by itself but rather with a comprehensive awareness of all aspects of the North Korean problem. For the U.S. North Korea is undeniably a priority from the standpoint of the global nuclear nonproliferation policy. However from a technological and functional standpoint the U.S. did not previously consider it as a concrete objective among its security policy priorities. To achieve its own strategic objectives the U.S. must project more elements of Korean peninsula and Northeast Asian affairs in devising its detailed strategy solutions.

In dealing with issues of stability on the peninsula and improving inter-Korean relations, South Korea must take more of a leadership role and the U.S. must take more of an assisting role, under a framework of close ROK-U.S. cooperation. In this sense, the recent U.S. emphasis on the importance of first improving inter-Korean relations in the process of returning to the Six-Party Talks is seen as a positive sign. If this position becomes entrenched, North Korea will be forced to consider South Korea alongside the U.S. in its priority policy of U.S. relations.

Third, both the U.S. and South Korea must proceed with a principled but flexible strategy toward improving both U.S.-DPRK relations and inter-Korean relations. The U.S. must utilize the concerns between both sides and spur on efforts to induce North Korea to



become a responsible member of international society. While sticking to the policy of continued economic sanctions in response to North Korea's violations of principles, they must develop a comprehensive, detailed approach covering all the issues including gradually easing sanctions according to the level of North Korea's response on the nuclear issue, additional recoveries of U.S. soldiers' remains, economic and energy aid and cooperation, improved political relations, negotiating a peace treaty and other measures to address North Korean security concerns, etc., all within the framework of improved relations. By proceeding with this comprehensive approach they can boost the effectiveness of proactive engagement with North Korea. Throughout this process both countries must have strong communication on their comprehensive approach strategy. Upon this strategic baseline, they must exchange detailed plans and carry out concrete steps according to a prioritization that takes into consideration of their various strategic interests and developing situations.

Fourth, the processes of resolving the nuclear issue and advancing unification are not simply a game played against North Korea through ROK-U.S. cooperation alone. In addition cooperation must be expanded with neighboring China, Japan, and Russia in order to resolve the nuclear problem, establish a peace regime on the peninsula, encourage opening and reform in North Korea, improve inter-Korean relations, and prepare a base for unification. South Korea is working to promote expanded cooperative relations among these four neighboring countries, upon the foundation of strong ROK-U.S. ties, in order to spur on greater peace and prosperity on the peninsula

and throughout Northeast Asia. They are also advancing a policy of building bilateral and multilateral cooperative structures with China, Japan, and Russia along the lines of South Korea's "New Asia Vision Diplomacy."

U.S. global strategy contributes to backing up these South Korean policies. Actually South Korea is endeavoring to move beyond Asian regional issues and directly contribute solutions to global topics such as WMDs, climate change, terrorism, development aid for nations suffering from high poverty or natural disasters, peace-keeping actions, etc. South Korea has advanced from a recipient to a giver of foreign aid, and it should be encouraged to act as a partner in building a stable and peaceful order on the peninsula, in Northeast Asia, and throughout the world.

## 6. Conclusion

South Korea and the U.S. have shared interests in peace and stability on the Korean Peninsula, stability and economic interdependence in Northeast Asia, and the pursuit of free democratic values. They also share the goal of transforming North Korea into a responsible member of international society that will not challenge their interests. Based on these fundamental interests South Korea and the U.S. must advance a more thoughtful policy toward North Korean issues.

From a practical viewpoint, if the aim is a welfare state that

promotes democracy, market economic principles, and respect for human dignity, then stronger relations with the U.S. is not just an important choice for both sides but an issue of mutual benefit, as the U.S. is an ally in continuous national development and a supporter of the ongoing tasks for the stable development of inter-Korean relations, including relieving security concerns and promoting peace, inter-Korean exchanges, and “normalization” of the North Korean system. Developing ROK-U.S. relations into a “21<sup>st</sup> century strategic alliance” means that the U.S. and South Korea will share the role of mature supporters of the future global political, economic, and security order. ROK-U.S. strategic cooperation means the two sides must become partners not just in traditional security co- operation but also in all areas of the bilateral relationship and improving the peace and welfare of the global community.

There is a difference between the capabilities of South Korea and the U.S. and their capacity to extend to international society. However the strategic alliance can be seen as a comprehensive cooperative relationship in which both sides can be open to each other and sufficiently understand the other side’s interests. In order to achieve a mutual vision of the alliance, coordinate a direction for that vision, and build detailed plans, the process must start from a solid framework of mutual trust.





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