

The Limitations of Extant Theories of Nuclear
Proliferation to Explain the Case of the Democratic
People's Republic of Korea

by

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Abstract

Theories of nuclear weapons proliferation cannot fully account for the nuances of certain cases because proliferation is a complex process involving numerous variables, the importance of which can potentially shift across time. This seems especially true when applied to the case of the Democratic People's Republic of Korea (DPRK) where motivations have shifted in relevance numerous times in its proliferation history. In order to investigate this, this thesis reviews extant theories of nuclear proliferation and their ability to explain the case of the DPRK by critically examining its historical nuclear progress and nuclear weapons ambitions across time. The result is that indeed, proliferation theories are ill-equipped to completely account for the DPRK's nuclear choices. The DPRK has ostensibly been motivated by numerous variables at different times, each having varying degrees of influence, inexplicable for mono-causal and often western and ethno-centric accounts of its proliferation motivations.

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Chapter 1:

Why States Choose to Acquire Nuclear Weapons: In Search of a Multi-Causal Approach

No single motivating factor can explain all cases of nuclear weapons proliferation. Mono-causal explanations are in some cases oversimplified or ethnocentric and in all cases limit an understanding of the unique incentives that each state might have for pursuing nuclear weapons. While this might seem like common sense, to a large extent explanations of nuclear choices fail to appreciate the nuances of proliferation decisions. Instead they make state motivations fit with a particular approach to the study of international relations, trying to fit a square peg into a round hole. Not only do motivations vary between states, but since these incentives can morph across time, motivations can change within the state as well. Thus, the reason the United States originally pursued nuclear weapons may be completely different from the reasons Iran or the Democratic People's Republic of Korea (commonly known as North Korea, hereafter DPRK) have recently sought them. Similarly, the reasons the DPRK began thinking about nuclear weapons might be completely different than why it continues to pursue them.

There is no shortage of motivations offered for why states proliferate. These motivations can generally be placed into three broad categories: security; domestic; and prestige, identity and norms related motivations. This framework is striking in its resemblance to Kenneth Waltz's levels of analysis; his seminal contribution to international relations (IR) theory. In *Man the State and War*, Waltz outlined three levels of analysis in which theories of international relations could be placed: Image I (individual), Image II (domestic politics), and Image III (systemic – international anarchy).¹ This is not to suggest that the theories discussed below all fit neatly within this

¹ Kenneth N. Waltz, *Man the State and War: A Theoretical Analysis* (New York: Columbia University Press, 2001)

model yet, much like the study of IR, proliferation theories tend to be individual, state or systemic level fixated.²

Although these institutionalized approaches might have continued relevance in the study of IR and even general nuclear proliferation theorizing, they are problematic for considerations of individual cases of nuclear proliferation. Level or category specific theories may be valid for explaining why certain states proliferate, but motivations derived from one unit of analysis do not explain all state nuclear decisions. Occasionally states have numerous incentives for pursuing such weapons and in some cases these broad categories of motivations do not seem to be able to spell out why certain states choose to go nuclear. There also appear to be motivations for going nuclear which simply do not fit into the standard proliferation theory categories of security, domestic level variables and prestige, identity and norms. It is quite possible that one of the reasons for this is that IR theories in general and nuclear proliferation theories in particular are inherently western centric, and ignore some of the idiosyncrasies of certain cases of proliferation. It might also be the case that any attempt to theorize a complex and evolving process potentially involving actors and phenomena from all levels is unlikely to be satisfactorily generalized to individual cases.

For the sake of definitional clarity, motivations are loosely defined here as anything that has or continues to inspire a state to seek nuclear weapons. Within this analysis the terms motivations, motives, incentives and drivers are used interchangeably depending on context and the source from which they are drawn. While it is clear that groups like terrorist organizations and other non-state actors have expressed interest in

² For reasons described below proliferation theories at the level of the individual receive much less attention than others.

acquiring nuclear weapons, nuclear proliferation refers here to the horizontal acquisition by a state of any type of nuclear weapon, fissile material or nuclear weapons related technology.³

The chapter proceeds by first, providing a brief background to the study of horizontal nuclear proliferation. This is followed by an outline of the main arguments related to the motivations for states to pursue nuclear weapons, including security, domestic, and prestige, identity or norms related variables. It will also be demonstrated that some states appear to make an effort to acquire nuclear weapons for a combination of reasons, not simply as a *raison d'être* or because a maniacal dictator feels like it, and that these reasons can shift over time. As such, this chapter challenges the theoretical literature on proliferation and suggests that it cannot properly adapt to certain cases. The chapter finishes by critically examining the theories for ballistic missile proliferation, since they are a typical vehicle of choice for delivering nuclear weapons.

The second chapter reviews the historical trajectory of the DPRK's nuclear infrastructure, both for civilian nuclear energy and military applications, as well as its ballistic missile program. The aim of the second chapter is to make clear the technical path by which the DPRK became a nuclear weapons state. The DPRK's nuclear infrastructure development is used to gauge the DPRK's nuclear motivations and decisions in Chapter Three in which the range of motivations thus far posited as driving the DPRK's nuclear weapons pursuit are reviewed. The fourth and final chapter concludes the thesis by considering the necessary and sufficient conditions for the DPRK's nuclear weapons quest. It highlights the most important drivers for the program

³ This definition of proliferation essentially mirrors that of the NPT. Horizontal proliferation refers to new nuclear weapons states versus vertical proliferation which is the further acquisition of nuclear weapons.

across time, especially the ways in which particular drivers have shifted in importance, and suggests that security has not always been the primary motivation for the DPRK. In so doing, it builds on Scott Sagan's seminal multi-causal approach to the study of nuclear proliferation and takes into account numerous causal variables for the case of DPRK nuclear proliferation.

Why States Choose to Acquire Nuclear Weapons

In an ideal world, theories would be able to explain all instances of a phenomenon. Scott Sagan suggests that within the study of motivations for proliferation, the best theory is the one that can explain the most cases.⁴ Until relatively recently there has been a manifest shortage of literature dedicated to state motivations for acquiring nuclear weapons, which some scholars have attributed to the longstanding and widespread assumption that states pursue nuclear weapons primarily for one reason - security. The subsequent emergence of accounts focussed on incentives other than security perhaps reflects the importance, and contributes to a better understanding, of the issue by assisting the development of multi-causal theories of horizontal proliferation.

One of the reasons analyses that go beyond crude security driven motives have blossomed might be explained by the failure to explain why to date so few states have proliferated. In 1962, President John F. Kennedy predicted that by the 1970s the world would see 15 to 25 nuclear powers.⁵ Yet a decade into the 21st century the world contains less than ten nuclear weapon states. This is not to suggest that states have not tried. Indeed, recent history is replete with cases of states apparently interested in acquiring

⁴ Scott Sagan, "Why do States Build Nuclear Weapons?: Three Models in Search of a Bomb," *International Security*, Vol. 21, no. 3 (Winter, 1996-1997): 85

⁵ Tanya Ogilvie-White, "Is There a Theory of Nuclear Proliferation?: An analysis of the Contemporary Debate," *The Nonproliferation Review*, (Fall, 1996): 44

such capabilities. But the conspicuous gap between potential and actual nuclear proliferation inspires one to ask: what actually drives a state to attempt to possess nuclear weapons?

Recent data shows that the number of potential nuclear weapons proliferators is hovering around forty-six states while the number of actual proliferators remains below ten.⁶ Among other things, this data suggests that just because states can, does not necessarily mean that they will go nuclear. In other words, states have a nuclear weapons choice. There are factors which both encourage and dissuade them from making this choice. More importantly for this analysis, just because a state is not capable of proliferating, does not mean that it will not try to put itself into a position where it is able to acquire nuclear weapons.

Security Related Motivations

It has already been noted that analyses have traditionally been dominated by the idea that the primary motivation, and in some arguments the only motivation for proliferation is security. Although security is frequently offered in this context by an eclectic collection of scholars from all schools of thought, it is endorsed most enthusiastically in classical realist and neo-realist approaches to the study of IR. While “few experts claim that any one motive is robust enough to explain all cases,”⁷ realist interpretations overwhelmingly place security as a primary driver and all other factors, if they are recognized at all, as secondary.

⁶ From Jacques E. Hymans, *The Psychology of Nuclear Proliferation: Identity, Emotions and Foreign Policy* (New York: Cambridge University Press, 2006), 4

⁷ Joseph Cirincione, *Bomb Scare: The History and Future of Nuclear Weapons* (New York: Columbia University Press, 2007), 48

There is diversity within this field in terms of the reasons for, and implications of security as a primary driver. Kenneth Waltz claims that in an anarchic international system, states will feel compelled to acquire a suitable deterrent to match the nuclear capabilities of a rival state.⁸ In a self-help system, a state does what it must in order to ensure its own security. Acquiring nuclear weapons should be seen as self-help behaviour by a state seeking to preserve itself – to survive.⁹ For Waltz, such weapons are an avenue to state security without going to war; the “ultimate security guarantor.”¹⁰

Waltz once identified seven fundamental reasons for states to go nuclear. It is striking that each reason inevitably returns to security. For example, “great powers always counter the weapons of other great powers, usually by imitating those who have introduced new weapons,” and “deeper motives than desire for prestige lie behind the decision” to build nuclear weapons. These deeper motives include responding to an adversary’s conventional military strength, obtaining “increased security and independence at an affordable price,” ensuring security when it cannot rely on an ally’s security guarantee, or, as a means to “enhance its international standing.”¹¹ Waltz’s understanding is that “the acquisition of nuclear weapons should be seen as the rational response of states attempting to protect their interests.”¹²

Other writers also see security concerns as the primary motivation for proliferation. Richard Betts, for example, envisions state security concerns depending on the role of the state in the international system as functioning as drivers for nuclear

⁸ See Kenneth N. Waltz, *Theory of International Politics* (New York: McGraw-Hill, Inc., 1979)

⁹ Kenneth N. Waltz, “More May Be Better,” in *The Spread of Nuclear Weapons: A Debate Renewed* (New York: W.W. Norton & Company, Inc., 2003), 4-5

¹⁰ Cirincione, 51

¹¹ Kenneth N. Waltz, “The Spread of Nuclear Weapons: More May Be Better,” *Adelphi Papers* 171 (London: The International Institute for Security Studies, 1981), 7-8

¹² Ogilvie-White (1996): 44-45

weapon acquisition. While Betts sees status and security as the two primary motives for proliferation, he does make a distinction between actual and perceived security threats as triggers.¹³ Regardless, Betts still envisions these as structural imperatives of the international system. Whether it is a paranoid, pygmy or pariah state, Betts notes that a state will likely have some form of security imperative to proliferate. For example, pygmy states like Taiwan are “threatened by much larger neighbors,” in this case China, and may feel compelled to acquire nuclear weapons to not only “tear off an arm” but for “tactical applications against forces concentrated for land breakthroughs or amphibious landings.”¹⁴ In other words, not only status quo states have incentives to acquire nuclear weapons. Even revisionist states have motives to proliferate and in some cases might have stronger incentives to do so, refusing to give in to Thucydides’ claim that “the strong do what they have the power to do and the weak accept what they have to accept.”¹⁵

Another potential motivation is the perceived military utility of nuclear weapons. Thomas Schelling once observed: “there is a difference between nuclear weapons and bayonets ... [which] is not in the number of people they can eventually kill but in the speed with which it can be done.”¹⁶ Doubts about their practical utility aside, nuclear weapons are the “principal currency of power in the modern world.”¹⁷ From this perspective, regional powers may feel empowered to engage in regional exploits, attempting to “extort economic or territorial concessions from their neighbors in the belief

¹³ Richard K. Betts, “Paranoids, Pygmies, Pariahs & Nonproliferation,” *Foreign Policy*, No. 26 (Spring, 1977): 164

¹⁴ Paranoids are nations which feel just that – paranoid – about the intentions of another nation. Pygmies are defined as “nations threatened by much larger neighbours,” and pariahs “combine the disadvantages of pygmies and paranoids along with more visceral and unremitting opposition by their regional enemies and growing isolation from the rest of the world.” Betts, 165-166

¹⁵ Thucydides, *The Peloponnesian War* (United Kingdom: Penguin Books, 1985), 402

¹⁶ Thomas C. Schelling, *Arms and Influence* (New Haven: Yale University Press, 1966), 20

¹⁷ Robert W. Malcolmson, *Nuclear Fallacies: How We have been Misguided since Hiroshima* (Kingston: McGill-Queen’s University Press, 1985), 67

that their nuclear weapons would serve to deter any intervention by major powers,”¹⁸ whether conventional or nuclear. Israel, “whose right to exist is still not recognized by a number of its neighbors,”¹⁹ has used the ambiguity of its nuclear weapons program to undermine any attempts by its regional foes to take serious military action on its territory.

Some states pursue nuclear weapons because they believe them to be an economical alternative to “redressing a gross conventional inferiority.”²⁰ Benjamin Frankel suggests that a state’s assessment of its security situation will determine whether or not it feels the need to proliferate. This entails doing a cost-benefit analysis of proliferating including whether it might overcome conventional inferiority with a security guarantee instead of going nuclear. The calculation can be complex since security alliances might entail political costs,²¹ and nuclear weapons programs are relatively expensive. That said, simply because a state can afford a program or determines that it might be cheaper than a more robust conventional force does not mean that it will pursue one. However, if a state feels compelled because of security concerns, cost will not be much of an issue.²² A case in point is the DPRK where in spite of devastating shocks to its economy throughout the 1990s and continuing economic stagnation,²³ it has been undeterred in its pursuit of a viable nuclear weapon.²⁴

¹⁸ Dagobert L. Brito & Michael D. Intriligator, “The Economic and Political Incentives to Acquire Nuclear Weapons,” in *The Proliferation Puzzle: Why Nuclear Weapons Spread and What Results*, ed. Zachary S. Davis & Benjamin Frankel (London: Frank Cass & Company Ltd., 1993), 302

¹⁹ Cirincione, 52-53

²⁰ Betts, 162

²¹ Benjamin Frankel, “The Brooding Shadow: Systemic Incentives and Nuclear Weapons Proliferation,” in *The Proliferation Puzzle: Why Nuclear Weapons Spread and What Results*, ed. Zachary S. Davis & Benjamin Frankel (London: Frank Cass & Company Ltd., 1993), 45

²² Cirincione, 77-78

²³ For information on the DPRK’s economic data see Moo Jin-yang, “North Korea’s South Korea Policy in the 21st Century: A Policy of National Cooperation.” *Korea and World Affairs*, Vol. 32, No. 1 (April, 2008): 60

²⁴ As later chapters will illustrate, some suggest that rather than economic hardship deterring the DPRK from going nuclear, it has partially inspired it.

States may also feel inclined to possess nuclear weapons because they sense that the security guarantees offered by stronger states are weak, disappearing, or nonexistent. To be sure, security guarantees can be critical in discouraging a state from pursuing nuclear weapons. Yet, when states feel a guarantee is weak, they may “take their security destiny into their own hands either through the acquisition of nuclear weapons outright or by launching nuclear programs that enable them to attract the attention and re-extract security guarantees from an ally or quasi-ally.”²⁵ South Korea (also known as the Republic of Korea, hereafter ROK), for example, eventually abandoned its nuclear weapons program following renewed security guarantees from the US.²⁶ Although it would have been relatively easy for the ROK to build nuclear weapons, the program was likely initiated with the primary goal of ensuring continued US protection, not because the ROK genuinely desired to be a nuclear power.²⁷ In other words, a nuclear weapons program is sometimes employed as a “bargaining chip to extract [...] security guarantees from other states or allies.”²⁸ If such tactics fail but the state succeeds in producing its own deterrent, it may be able to discard the unreliable security guarantee and enhance its security in any case.

From this brief analysis of some of the arguments concerning the security related motives for acquiring nuclear weapons it is clear that there are a range of perspectives. There is no denying that “conventional or nuclear insecurity is an obvious motive for nuclear weapons possession.”²⁹ From the realist perspective, the history of nuclear

²⁵ Christopher W. Hughes, “North Korea’s Nuclear Weapons: Implications for the Nuclear Ambitions of Japan, South Korea and Taiwan,” *Asia Policy*, No.3 (January, 2007): 80

²⁶ Dong-Joon Jo & Erik Gartzke, “Determinants of Nuclear Weapons Proliferation,” *Journal of Conflict Resolution*, Vol. 51, No.1 (February, 2007): 170

²⁷ Frankel, 48-50

²⁸ Hughes, 81-82

²⁹ Jo & Gartzke, 169

weapons development has been a chain reaction. After the first weapon emerged, states have had different security motives for building such weapons.³⁰ Numerous realist accounts stressed that following the end of the Cold War and the collapse of bipolarity, states would increasingly depend on their own indigenous nuclear weapons because of weakened or obsolete security guarantees.³¹ For various reasons, including shifts in alliances and security guarantees, in addition to reasons which are developed below, generally speaking this has not occurred. Despite this, the realist models are clear, parsimonious and fit current understanding of major developments in history functioning as drivers of change.³² Such models assume “high degrees of rationality, not because it is accurate, but because it is helpful. It provides a relatively simple way of predictions, by linking perceived interests with expected behaviour.”³³

At the same time, since “there are many cases that cannot be explained by security imperatives alone,”³⁴ no analysis should limit itself to security as the only motivation for the acquisition of nuclear weapons. Security focussed interpretations too often assume a particular threat, or lack thereof, to explain decisions to acquire nuclear weapons.³⁵ Such approaches thus have the potential to be deterministic. Moreover, they cannot account for the timing of many decisions to acquire nuclear weapons since approaches operating only at a systemic level of analysis ignore factors which may operate below the level of the state;³⁶ in other words, by treating the state as a monolithic actor, sometimes security driven analyses fail to account for nuances in the motivations states have for proliferation.

³⁰ Sagan (1996-1997), 56-59

³¹ Ogilvie-White (1996), 47

³² Sagan (1996-1997), 63

³³ Scott Sagan, “More Will Be Worse,” in *The Spread of Nuclear Weapons: A Debate Renewed* (New York: W.W. Norton & Company, Inc., 2003), 50

³⁴ Cirincione, 58

³⁵ Sagan (1996-1997), 63

³⁶ Lavoy, 434

Waltz himself has recognized the limitations of neo-realist approaches, especially following the end of the Cold War bipolar system, and has suggested that “nuclear proliferation dynamics are far too complex for general theories of international relations to explain.”³⁷ Ogilvie-White concludes that this is because neo-realism explains state behaviour vis-à-vis constraints imposed by the international system, and therefore cannot “explain unit level outcomes, such as the decision to acquire nuclear weapons.”³⁸

Western centrism has also hindered understanding since policymakers, analysts and the media tend to downplay the threat their own countries pose to others, consequently skewing analyses and perceptions, placing security as a motivation where it might have played little to no role in the decision to proliferate. Therefore, it makes sense to limit generalizations, take into account alternative sources of motivations, and, consider incorporating them into multi-causal approaches for why states proliferate.

Domestic Level Variables

One of the criticisms of security driven models is that although it is true that proliferators have all faced one or more of the cited security concerns (perhaps with the exception of South Africa), there are plenty of states also facing one or more security concerns which have not proliferated. As such, there must be more to a states’ decision to seek nuclear weapons than simply security related motivations. It is generally assumed that states pursuing nuclear weapons have made the decision to do so many years prior;³⁹ a decision which does not happen overnight. While this may seem commonsensical, it has implications for the security motivations arguments.

³⁷ Kenneth N. Waltz, “A Reply,” *Security Studies* Vol. 4, Issue 4 (December, 1995): 803

³⁸ Ogilvie-White (1996), 46

³⁹ Robert K. Einhorn, “Identifying Nuclear Aspirants and their Pathways to the Bomb,” *The Nonproliferation Review*, Vol. 13, No. 3 (November, 2006): 492

If security threats are immediate, which they usually are, it follows that a state would respond in an immediate manner. However, if its nuclear weapons program has not already begun, then it can be difficult to link the decision to build nuclear weapons to the immediate security concern. A state might seek nuclear weapons with the long-term plan of utilizing them to relieve security concerns while in the meantime deal with the threat in another matter. From this perspective, domestic level variables may be more useful to facilitate an understanding of why certain states chose to go nuclear. As an example, whereas security approaches tend to emphasize India's nuclearization as a reflexive response to the threat posed from China's nuclear test in 1964, the substantial lapse between China's test and India's apparent choice to pursue a program has been attributed to intense domestic struggles over the genuine need for a nuclear weapon.⁴⁰ Similarly, the fact that South Africa appears to have lacked a pressing security threat suggests that other factors were involved in its decision to acquire nuclear weapons.⁴¹ If domestic processes and other state phenomena have a bearing on the decision to go nuclear, then each case of proliferation may be inherently unique and are not guaranteed in any case.

In contrast to security explanations, analyses focussing on domestic level variables are not associated with one particular approach to international relations, and tend to highlight the importance of a range of potential incentives arising out of domestic politics (including regime type), technology, economic factors and every other struggle over ideas, policy and other state domestic matters. One particular influential body of literature has focussed on how these elements interact and influence the domestic political

⁴⁰ Sagan (1996-1997), 65-66

⁴¹ Ogilvie-White (1996), 45

process as a source of nuclear weapons motivations. From this perspective it is acknowledged that security threats exist in the international system. However, these threats are not assumed to be the only motivation for acquiring nuclear weapons but are “merely windows of opportunity through which parochial interests can jump.”⁴² This view sees states having “multiple goals, and that these goals link foreign and domestic policies inextricably.”⁴³ Goals are determined by struggles between competing individuals and organizations which “are not simply tools in the hands of higher-level authorities but are groups of self-interested and competitive subunits and actors,” pushing to have their interests represented in the domestic agenda.⁴⁴

One version of this model, “nuclear mythmaking,” emphasizes campaigns by elites from various sectors of society portraying threats as more serious (or diluted) than they really are. These elites evaluate the feasibility of having nuclear weapons and attempt to link them to broader societal “cultural norms and political priorities.” Depending on the strength of their claims, and their ability to incorporate them into the political agenda, mythmakers will be successful in managing to have their state proliferate. This view does not disregard security concerns, but incorporates them into the analysis, suggesting “nuclear myths and the existence of genuine security threats are closely correlated.”⁴⁵ To be sure, in most cases, in order to be successful, “there must be a clear rationale behind their arguments.”⁴⁶ The three basic elements of the model include:

⁴² Sagan (1996-1997), 65

⁴³ Ogilvie-White (1996), 49

⁴⁴ Sagan (2003), 52

⁴⁵ Lavoy, 435

⁴⁶ Cirincione, 65

the composition, scope and logical consistency of various nuclear myths about nuclear weapons...second is the identity, background, and skills of successive nuclear mythmakers, or carriers of these beliefs...the third element is the process of nuclear mythmaking – of legitimizing, popularizing, and institutionalizing strategic arguments about nuclear arms acquisition in a state’s national security policy and institutions.⁴⁷

This view sees “bureaucratic actors, with certain vested interests that may or may not be consistent with the broader national interest,” ultimately making and influencing the decisions regarding nuclear weapons. At this level, individual and group interests determine what motivates the decision to acquire nuclear weapons where “what is needed to push a state over the top is a strong coalition of influential pronuclear actors.”⁴⁸

Interested parties tend to be important actors in the military, influential politicians, and the “state’s nuclear establishment” – scientists and officials in laboratories and reactor facilities.⁴⁹ Domestic incentives for a nuclear weapons program can include industrial and economic goals. Whereas some actors might be wary of the resources a program can demand, or the potential economic sanctions from the international community, others might recognize the long term political, military and even economic benefits a program can attract. Military actors might have motivation to push for a nuclear weapons capability if it would bring more funding and prestige to their branch of the military; however, they might also hesitate if nuclear programs were to drain resources required for other preferred initiatives. Finally, the scientific community can be motivated to favour such weapons if they can harvest prestige and funding for scientific research.⁵⁰ An example of where this sort of bottom-up lobbying seems to have influenced a nuclear choice is Argentina. From a security perspective it would have made

⁴⁷ Lavoy, 436

⁴⁸ Cirincione, 63-66

⁴⁹ Sagan (1996-1997), 63-64

⁵⁰ Greenwood, Friesen & Taylor, 56

sense for Argentina to acquire nuclear weapons following the Falklands conflict because of its defeat by a nuclear power - the United Kingdom. However, a liberalized regime came to power in Argentina, primarily funded by institutions favouring unimpeded access to global markets, therefore hindering efforts by other actors with campaigns for nuclear weapons centred on security concerns.⁵¹

This of course highlights the economic incentives states may have for proliferating. There is no question that getting to the level of nuclear weapon status requires a sustained commitment of energy and resources. Not only do the costs of a program include research and development and maintenance, but can also be environmental.⁵² Yet, a state may feel compelled to go nuclear because it believes that external powers will feel equally compelled to support it both economically and politically in order to avoid instability in the new nuclear powered regime.⁵³ For example, following its nuclear test, foreign assistance to India increased by nearly \$200 million “in less than a month,”⁵⁴ not to mention the extent of economic and other foreign assistance the DPRK has extracted as a result of its nuclear weapons program. Although economic rationalization cannot explain all cases of horizontal nuclear proliferation, it is said to have both inspired and deterred some state decisions to proliferate.

It has also been suggested that regime type can impact decisions to acquire nuclear weapons. A democratic government might be inclined to pursue nuclear weapons in order to “pander to nationalist populations in an effort to boost their popularity and

⁵¹ Sagan (1996-1997), 70-71

⁵² Cirincione, 81

⁵³ Brito & Intriligator, 302-303

⁵⁴ Greenwood, Friesen & Taylor, 51

retain power.”⁵⁵ Or, a nuclear program might be used to distract constituents from another domestic political issue.⁵⁶ Conversely, in authoritarian states public opinion might be less consequential, and because of unrestricted terms in office, leaders are potentially free to implement long-term strategic decisions, such as those related to nuclear weapons acquisition, distinctly influencing a state’s ultimate nuclear choice.⁵⁷

In contrast, Glen Chafetz manages to link nuclear weapons decisions to a state’s position in the international system. Chafetz suggests that states on the periphery are more likely to be fearful and ambitious, and therefore more likely to seek nuclear weapons because they “have either little or no experience with liberal democracy and thus have not yet established among themselves the norms of peaceful cooperation which govern relations among the states of the core.”⁵⁸ This approach fails to explain the case of South Africa, which at the time was a periphery state because of its apartheid policies. Pretoria’s white leaders, Ogilvie-White concludes, were motivated much more by domestic political considerations in their nuclear choice such as the potential threat if the “democratic government possessed a ‘black bomb,’” than fear of, or lack of familiarity with, core states.⁵⁹ Chafetz’s approach is also overtly ethnocentric because it places the values of the core states in the international system on a pedestal and insists that states on the periphery do not share values of their own, not to mention disregarding the nuclear policies of some of the core states which have contributed to the core and periphery

⁵⁵ Sonali Singh & Christopher R. Sway, “The Correlates of Nuclear Proliferation: A Quantitative Test,” *Journal of Conflict Resolution*, Vol. 48, No. 6 (December, 2004): 864

⁵⁶ Jo & Gartzke, 170

⁵⁷ Karsten Frey, “Nuclear Weapons as Symbols: The Role of Norms in Nuclear Policy Making,” *Institute Barcelona D’estudis Internacionals*, IBEI Working Papers (2006/3): 14

⁵⁸ Glen Chafetz, “The End of the Cold War and the Future of Nuclear Proliferation: An Alternative to the Neorealist Perspective,” in *The Proliferation Puzzle: Why Nuclear Weapons Spread and What Results*, ed. Zachary S. Davis & Benjamin Frankel (London: Frank Cass & Company Ltd., 1993), 139

⁵⁹ Ogilvie-White (1996), 49

dynamic in the first place. Further disproving his case is the instance of France which illustrates that core states sometimes refuse to bow to international pressure and the norms of peace and democracy, and seek to acquire nuclear weapons in any case.⁶⁰

Although domestic level explanations shift “away from the rational actor assumption,” with an excessive focus on “structural explanations of behavior”⁶¹ they can still lose sight of the influence of individuals in the decision making process. Both domestic and security focussed theories portray the issue as one of constraints on the decision to proliferate – the former in terms of the beliefs of individuals and national organizations, the latter in terms of international competition and security considerations. Bureaucratic and other domestic level approaches have difficulties explaining the sometimes “seemingly irrational decisions made at the pinnacle of the government hierarchy by leaders and national elites who are relatively free from organizational constraints.”⁶² Thus, while approaches focussed on domestic level processes have been able to remedy some of the shortcomings of the realist and rationalist approaches, they still struggle to account completely for all cases of proliferation, giving further impetus to the search for a more robust approach which allows for the consideration of other variables.

While many writers have placed technology in a category of its own since it is a ubiquitous phenomenon disassociated with any particular theory of international relations or level of analysis, many of the arguments related to technology as a driver for nuclear weapons acquisition are inseparable from other domestic level variables such as decision making processes and the economic incentives of the nuclear establishment. The

⁶⁰ The case of France is discussed further in the prestige, identity and norms section.

⁶¹ Ogilvie-White (1996), 49-51

⁶² Lavoy, 435

technological determinant perspective rests on the assumption that “a country’s latent capacity to acquire nuclear weapons is determined by economic prosperity, literacy levels and scientific development; as it becomes easier and cheaper for a state to acquire nuclear weapons, it becomes more and more likely that it will do so.”⁶³

The notion that access to technology, whether indigenous or part of an international network, will inspire a state to pursue nuclear weapons,⁶⁴ assumes that “the awesome power of nuclear technology and arms is too much for most leaders to resist.”⁶⁵ Other arguments are slightly more nuanced. Stephen M. Meyer speculates that the choice to proliferate occurs when technology combines with other strong motivational factors to lead a state to believe that acquiring nuclear weapons would be a constructive means to accomplish state objectives.⁶⁶ In other words, both latent capabilities and other motivations, defence related or otherwise, are preconditions for proliferation; in this view technology is not an actual motivation for nuclear weapons acquisition but a tool. As even Cirincione admits, technology might further drive proliferation once a state has already acquired nuclear weapons,⁶⁷ or, conceivably once a state has given thought to acquiring the weapons because of other driving factors.

Arguments focussed on domestic level variables must be treated with caution because they sometimes have a tendency to confuse motivations with the means to proliferate. Analyses related to technological incentives are no exception. Single minded approaches focussing on the technological aspects of nuclear proliferation can be misleading, highlighting the “necessary rather than sufficient conditions for

⁶³ Singh & Way, 862

⁶⁴ See for example Hughes, 82

⁶⁵ Cirincione, 70-71

⁶⁶ See Stephen M. Meyer, *The Dynamics of Nuclear Proliferation* (Chicago: The University of Chicago Press, 1984)

⁶⁷ Cirincione, 71

proliferation,” and distorting the “significant distinction between capability and the exercise of capability.”⁶⁸ If it were the case that technological capacity determined proliferation, there would be many more nuclear states today, including Canada, Australia and Sweden, to mention just a few.⁶⁹ In this sense, “proliferation does not have a life of its own; it is a political problem as much as a technical one.”⁷⁰ Indeed the historical record demonstrates it. The US did not build nuclear weapons because of technological feasibility, although curiosity may have partly driven the project, but for use in its war against Japan, not to mention to build more powerful weapons before the Soviet Union could.⁷¹ This is not to say that technology does not impact the process, but simply that it can “expand or restrict options and alter conceptions.”⁷² In short, technology is a social construct. It is manipulated by human actors and not the other way around.

Prestige, Identity and Norms

Prestige, identity and norms are frequently cited as secondary proliferation determinants. Despite the fact that these variables tend to be interconnected to previously mentioned motives like security and domestic politics, sometimes prestige, identity and norms can resemble primary drivers for horizontal proliferation. The interconnectivity between these variables suggests that motivations for proliferation can change based on the interchange between factors external to the state as well as its own unique character and background. The implications of this are nicely summarized by Caroline Ziemke:

A state’s conduct always follows from a whole complex of motives, preferences, beliefs, prejudices, and ways of thinking that have deep roots in history. As a result, the rationality that informs the strategic conduct of a

⁶⁸ Betts, 163

⁶⁹ Cirincione, 73-74

⁷⁰ Betts, 163

⁷¹ Cirincione, 73

⁷² Ogilvie-White (1996), 54

real, live, flesh-and-blood state with a past is unlikely to conform precisely to what a hypothetical scientific and mathematical model would predict.⁷³

While theories fixed on culture and beliefs can often border on essentialism, they also offer a means to overcome the mono-causal and ethnocentric elements that plague some of the abovementioned approaches. Arguments claiming that a state pursues nuclear weapons because the leader is mentally deranged or overtly nationalistic are naturally groundless and do not facilitate an understanding of genuine incentives.

Sometimes, states might feel that nuclear weapons offer an advantage politically, or economically, which can have an indirect bearing on its international standing and overall security. A good example of this is the notion that some states pursue nuclear weapons for the prestige or status that they offer. For example, states in decline, especially those which once aspired to regional or global greatness, may choose to pursue nuclear weapons as a means to forestall the decline.⁷⁴ Perhaps the “primary political motive for gaining nuclear weapons is their ability to enhance national power.” In the absence of measures to punish new nuclear weapons states, gaining nuclear status may have tangible benefits. In the long run a state “could expect to increase over time its influence on regional security arrangements, in UN Security Council and General Assembly deliberations,” and possibly other regional and global forums.⁷⁵

Much like technology, prestige can be seen as a social construct. For this reason, it sometimes appears in security focussed analyses, but also as a domestically or “other” derived variable. Rather than being a tangible commodity, it “arises from the interaction

⁷³ Caroline F. Ziemke, “The National Myth and Strategic Personality of Iran: A Counterproliferation Perspective,” in *The Coming Crisis: Nuclear Proliferation, U.S. Interests, and World Order*, ed. Victor A. Utgoff (London: MIT Press, 2000), 88

⁷⁴ Kurt M. Campbell, Robert J. Einhorn & Mitchell Reiss, *The Nuclear Tipping Point: Why States Reconsider their Nuclear Choices* (USA: Brookings Institution Press, 2004), 27

⁷⁵ Ted Greenwood, Harold A. Friesen & Theodore B. Taylor, *Nuclear Proliferation: Motivations, Capabilities, and Strategies for Control* (New York: McGraw-Hill Book Co., 1977), 49

of beliefs spread over the whole group...and is largely social and reflexive in nature.”⁷⁶

The international order in nuclear terms was established in 1968 with the NPT, which gave a special influence in the international system to the five nuclear weapons states.

Those states unsatisfied with their position in the nuclear order might seek nuclear weapons to alter the order.⁷⁷ As Brito and Intriligator suggest:

There are only a few ways in which states can gain the attention of the world: one is economic importance, including ownership of oil resources; another is geo-strategic significance; while a third is the possession of nuclear weapons. Some nations might conclude that, in the absence of others, the only way to be taken seriously is through the acquisition of nuclear weapons.⁷⁸

States might see nuclear weapons as a symbol of modernity and legitimacy in the international system;⁷⁹ symbols which “convey vital messages to others, messages that bespeak a special sort of domination and subordination,”⁸⁰ and, have the potential to make states feel “more powerful, relevant and respected.”⁸¹ In short, nuclear prestige can ensure a state avoids the “position of either victim or supplicant.”⁸²

Instead of concerning themselves with a particular level of analysis (individual, domestic or international system), constructivists argue that nuclear weapons themselves (materially) are not as important as how they are interpreted (their social context). For example, because “amity or enmity is a function of shared understandings,” the nuclear

⁷⁶ Barry O’Neill, “Nuclear Weapons and National Prestige,” *Cowles Foundation Discussion Paper*, No. 1560 (February, 2006):2

⁷⁷ Frey, 4. One of the main hurdles is the clause in the NPT which grants nuclear weapon status only to those states having procured and tested a nuclear device prior to 1 January, 1967. The NPT Treaty is available here: <http://www.un.org/en/conf/npt/2005/npttreaty.html>. Although the NPT is not as robust as some would hope, it is debatable whether a new nuclear power would enjoy eventual global success considering the recent penchant of current nuclear powers to punish potential proliferators both economically and militarily.

⁷⁸ Brito & Intriligator, 303

⁷⁹ Sagan (1996-1997), 74

⁸⁰ Malcolmson, 67

⁸¹ Cirincione, 59

⁸² Betts, 165

weapons of Britain, although much more numerous, are much less threatening to the US than say, the limited arsenal of the DPRK.⁸³ Similarly, prestige is a subjective concept and is viewed differently depending on the perspective of the state. In contrast to the idea that nuclear weapons offer a tangible military advantage is the idea that they have been detached from all possible military utility, and instead have been given a symbolic meaning.

France in the 1950s is a typical case supporting the prestige driven argument. Following the devastation of the Second World War and crises in Algeria and other colonies, De Gaulle's emphasis on acquiring the bomb was unambiguous; he famously remarked that "No country without an atom bomb could properly consider itself independent." To be sure, "for de Gaulle, the atomic bomb was a dramatic symbol of French independence and was thus needed for France to continue to be seen, by itself and others, as a great power."⁸⁴ Another example is Iraq which was widely believed, at least by Western pundits, to have pursued nuclear weapons as a means to deter US and regional aggression. On the contrary, according to comments by Saddam Hussein, to some extent he pursued nuclear weapons as a means to earn prestige within the Arab world.⁸⁵ This highlights the western centrism of accounts so frequent in the media and academic and professional reports which are encoded to attribute motivations for going nuclear to supposedly unfounded security apprehension or the whims of maniacal dictators. On the other hand, where one state may be driven by the desire for prestige to

⁸³ Alexander Wendt, "Constructing International Politics," *International Security*, 20:1 (Summer, 1995): 73

⁸⁴ Sagan (1996-1997), 76-79

⁸⁵ O'Neill, 3-4

possess nuclear weapons, another state may be driven by the prestige it feels it will benefit by renouncing nuclear weapons.⁸⁶

Closely linked to prestige are arguments which view states as seeking nuclear weapons as necessary extensions of their national identities. One example is Jacques Hymans' national identity conception (NIC), which he sees as playing a significant role in a leader's decision to acquire nuclear weapons. An NIC is based on an "individual's understanding of the nation's identity – his or her sense of what the nation naturally stands for and how high it naturally stands, in comparison to others in the international arena."⁸⁷ It is composed of several elements, including the nation's relative levels of fear and pride, both shaped and mitigated by its historically ingrained national identity. He identifies four ideal-typical NICs, derived from a nation's assessment of its status in the international system coupled with its proclivity for solidarity within that system (*us versus* them or *us and* them mindset).⁸⁸

For Hymans, nations which are more likely to see the world as an "us against them" dichotomy place a premium on the symbolic value nuclear weapons offer. It is important to note that it is not actual security threats which inspire such nations towards proliferation but danger perceptions vis-à-vis the overall national experience in the international system. Nuclear weapons can conceivably satisfy a desire for prestige while not actually eliminating material or perceived threats. For this reason, fear and pride can be stronger drivers than other factors such as material security threats because the possession of the weapons can satisfy prestige while only potentially neutralizing an

⁸⁶ Frey, 4

⁸⁷ Hymans (2006), 18

⁸⁸ Hymans (2006), 25

opposition's nuclear or conventional threat.⁸⁹ Hymans likens the willingness to seek nuclear weapons as a means to decrease fear, while not decreasing the actual danger, to an ostrich sticking its head in the sand. As such, nations do not necessarily make their nuclear choices in a framework of rationality, and are instead deeply driven by national identity and emotion.⁹⁰

Ziemke also provides a framework from which to develop an understanding of motivations for acquisition. In her view nations are also the product of their historical experiences. These experiences mould a state's perception of itself, how it sees the external world, and how it translates these perceptions into strategic decisions. Nations tend to follow the paths and aspects of their history which provide the most guidance about "who they are and what they aspire to be." These aspects exist in a nation's "national myth" which is comprised of "the remembered history of how the nation came to be and what heroes, demons, traumas, golden ages, and symbols of national identity are most important in defining the boundaries between 'us' and 'the others.'"⁹¹

The model is appealing because it recognizes the interaction between the unique traits of a state and other variables such as systemic incentives and domestic level variables. Ziemke suggests that Iran pursues nuclear weapons because it has extreme confidence in the superiority of its culture. Its decline from the peak of Iranian power during the time of the Persian Empire is largely attributed to foreign influence. The inability of Iran to renew its pre-eminence in the Persian Gulf region continues to be blamed on outside powers, particularly the US. From this point of view Iran seeks to acquire nuclear weapons as a means to achieve the prestige and respect that it believes it

⁸⁹ Frey, 10-12

⁹⁰ Hymans (2006), 32

⁹¹ Ziemke, 88

deserves. Ziemke sees Iran as hoping to possess nuclear weapons to inspire fear and deter other powers from interfering with the Iranian quest for regional hegemony, and not necessarily for a first use strike against perceived enemies like Israel or the US.

Lastly, norms centred models see decisions to acquire nuclear weapons resulting from “deeper norms and shared beliefs about what actions are legitimate and appropriate in international relations.”⁹² These models are rooted in the notion that “beliefs and actions are linked, and that foreign policy decision making” cannot be understood without understanding these beliefs.⁹³ It is challenging to understand the ways in which culture, norms and perceptions of norms impact a state’s decisions. The NPT might itself be a norms producer but is almost certainly viewed through a different lens depending on whether a leader sits in Washington, Paris, Tehran or Pyongyang. Yet whatever perceptions exist, over time there is a potential for norms and ideas about the nature of the international system and the role of a particular state in that system to become embedded to the point of institutionalization.

International norms might serve as a powerful incentive *against* pursuing nuclear weapons, despite the aforementioned cases of France and South Africa. As a variant of Chafetz’s argument, the English School of thought in the study of IR makes a distinction between pluralist and solidarist international society, envisioned as the environment in which states function – a sort of “constrained anarchy.” International society and competitive state practices such as “arms racing and trade wars” are seen as being mitigated by international rules and norms. The movement from a pluralist international society to a solidarist international society hinges on a gradual and evolving environment

⁹² Sagan (1996-1997), 73

⁹³ Ogilvie-White (1996), 53

of increased norms and institutions promoting peaceful coexistence. While there are states which see a benefit in moving toward an amplified norms based international society, and thus promote its rise, others do not.

Ogilvie-White suggests that the non-proliferation regime is one of the overarching structures of international society constricting state behaviour. A solidarist international society would demand that states relinquish some of their sovereignty to such international institutions in exchange for the perceived benefits of IAEA inspections and safety from the spread of nuclear weapons in the immediate future, and a long term improvement in global justice, security and trade, among other things. It follows that states choosing nuclear weapons over the non-proliferation regime see little value in a solidarist international society. While they may feign interest at times, ultimately they are unmoved by the promise of a collective good, either because they are uninterested in giving up sovereignty, or place more value on nuclear weapons for their perceived ability to accomplish other goals for the state. The DPRK and Iran are placed into this category.⁹⁴

Individual and group beliefs can change very slowly. History fundamentally impacts state motivations or disinclinations for desiring nuclear weapons. It is not a coincidence that previously belligerent states like Germany and Japan do not possess nuclear weapons. In the absence of Japan's horrible experience with the bomb and international discomfort with Germany's acquisition, these two states might otherwise be nuclear powers. After all, both have demonstrated the technological capacity to develop them; have the economic base; have seemingly legitimate security concerns; and, have

⁹⁴ Tanya Ogilvie-White, "The Defiant States: The Nuclear Diplomacy of North Korea and Iran," *The Nonproliferation Review*, Vol. 17, Issue 1 (March, 2010): 118-123

expressed apprehension about weakened security guarantees. Thus, although norms and beliefs can motivate a state's nuclear weapons calculus, they are not static variables. What has motivated a particular state to proliferate at one point in time will not necessarily motivate it in another.

Delivery Systems

This section is brief on account of the similarities between the motivations for acquiring nuclear weapons and the delivery systems required to make nuclear weapons viable military and political tools. If a state has been motivated to acquire nuclear weapons, it follows that if it hopes to use them either militarily or politically it must also either already possess or develop a means to deliver them. In order to be effective in achieving its goals, the contemporary international security environment dictates that a state cannot rely on crude delivery mechanisms like transporting bombs in a shipping container or rolling them along rail lines. Instead, states are overwhelmingly turning to ballistic missiles to make their nuclear arsenals operational.

On a fundamental level then, states are motivated to develop delivery systems like ballistic missiles to generate the other half of the nuclear weapons equation. On the other hand, a state might be satisfied with merely pursuing uranium enrichment as a means to extract security or economic guarantees from other states, in which case it is unlikely to consider acquiring missiles, but this would suggest that the state is uninterested in genuinely acquiring a viable nuclear option. In any case, many of the underlying motives for ballistic missile proliferation resemble the motives for acquiring nuclear weapons. Prestige, military utility and adversarial vulnerability are a few examples. Some states might pursue ballistic missiles because the missiles have a reputation of being powerful and successful in battle, in which case both prestige and military utility motives can be

satisfied. The ability to deliver nuclear weapons at long ranges also appears to be a strong motivating factor.⁹⁵ That the DPRK's *Taepodong-2* ballistic missile is designed for distances of 4500 km, theoretically capable of striking the west coast of the continental US, is not a coincidence.

In addition, not only are regional and international conflicts an important motive for missile acquisition, "they also make the use of such weapons feasible."⁹⁶ After all, ballistic missiles can have other utility than simply nuclear weapons delivery. If a regional foe happens to possess a robust air force, states are also more likely to seek to acquire ballistic missiles as a means to bypass the associated costs of waging conventional air battle. But the price of weapons are not only viewed through a military value lens. On the contrary, domestic level variables can influence missile choices as much as they do nuclear weapons decisions. For instance, Karp points out that in "serving the economic needs of industry and organized labour," weapons can generate "self-centered imperatives of national armament."⁹⁷ Producing missiles can be just as, if not more economically demanding than producing nuclear weapons. The same interaction of security threats and domestic dynamics that drive nuclear weapons acquisition can inspire states to consider the economic costs of ballistic missile acquisition. Since this demands a "significant supporting industrial base," many states import missiles as an alternative.⁹⁸

Conclusion

Since the emergence of the first nuclear weapons more than sixty years ago, states have been driven by numerous incentives to acquire the weapons as well as the means to

⁹⁵ Dennis Gormley, "Dealing With the Threat of Cruise Missiles," *Adelphi Papers* 339 (June, 2001): 44-45

⁹⁶ Aaron Karp, *Ballistic Missile Proliferation: The Politics and Technics* (Oxford: Oxford University Press, 1996), 15-16

⁹⁷ Karp, 13

⁹⁸ John M. Deutch, "The New Nuclear Threat," *Foreign Affairs*, Vol. 74, No.1 (Fall, 1992): 124

deliver them. For the most part, the sources of these incentives can be grouped into three broad categories: security, domestic level, and, prestige, identity and norms variables. There are a myriad of analyses explaining why states choose to proliferate nuclear weapons along the lines of these three categories but on their own these theories are insufficient. Whereas realist approaches tend to concentrate on security as the primary or only motivation for horizontal nuclear weapons proliferation, other approaches tend to ignore systemic incentives or the historical and cultural realities of particular states and their decision makers. As a result, such explanations are able to explain some cases of proliferation some of the time. While analyses focussed on prestige, identity and norms also have a tendency to neglect or ignore important motivations for state acquisition of nuclear weapons, they are at least organized to allow for multi-causal explanations.

The reality is that not only do states have different incentives for acquiring nuclear weapons but these incentives can change over time. The ethnocentricity and mono-causal structure of many approaches encumber attempts to understand why particular states seek to acquire nuclear weapons because they limit analyses to strict variables which may or may not be appropriate for all instances of proliferation. Therefore, it makes sense that attempts to explain the sources of nuclear proliferation be based on an inclusive understanding of proliferation which considers all of the potential motivations a state might have for seeking nuclear weapons. It goes without saying that analyses should also not rule out the potential for the emergence of previously unidentified motives or combination thereof. Any attempt to put the DPRK case into perspective, and understand how or whether it is compatible with common theories of nuclear proliferation, must begin with an examination of the origins and evolution of its nuclear program.

Chapter 2:

The DPRK's Nuclear Weapon and Ballistic Missile Programs

The DPRK's nuclear weapon and ballistic missile programs are a consequence of a range of historically complex and evolving variables and are not the product of a linear and isolated decision to 'go nuclear' or, 'join the nuclear club.' Nuclear research and development by other states in the DPRK actually predates the division of the Korean peninsula, but began in earnest by the DPRK in conjunction with the then Soviet Union soon after the conclusion of the Korean War. Frequently overlooked is that the scientific and technical progress of the DPRK's nuclear weapons program has sometimes gone hand in hand with relatively peaceful aims, such as to assuage the country's energy needs. Despite the relative opacity of the DPRK's nuclear and missile programs, several features are clear. At some point, its civilian nuclear energy program was transformed to encompass military applications. Also, the DPRK benefitted from foreign assistance during most phases of its nuclear pursuit. Finally, the regime has made significant progress towards achieving an extensive, viable and therefore credible nuclear weapons and ballistic missile capability. What is unclear and subject to dispute are aspects directly related to those points on which there *is* certainty: at which point the DPRK chose to pursue a nuclear weapons program; the exact nature and extent of its plutonium production; the number and types of nuclear weapons produced, if any; and the DPRK's ability to mate these weapons to its growing ballistic missile arsenal. These, among many other questions, remain unanswered.

The purpose of this chapter is not to determine what the DPRK intends to do with a nuclear weapon or ballistic missile capability, but what those capabilities are and how they came to be. Establishing a trajectory of capabilities facilitates a better understanding of motivations. The chapter proceeds by outlining the origins of the DPRK's nuclear program especially in terms of pivotal bilateral agreements with the Soviet Union and

China. It continues by critically analyzing the DPRK's accumulation of indigenous technical expertise for the further development of its nuclear program. It then identifies the point at which the program ostensibly evolved into one having military utility entailing the expansion of nuclear facilities, and efforts to secure weapons grade plutonium production. It also evaluates the current status of the DPRK's nuclear weapons program including an examination of its alleged highly enriched uranium (HEU) program, its known nuclear weapons production capabilities, and the wax and wane of these capabilities as negotiated agreements with the international community and other circumstances has dictated.⁹⁹ Finally, the chapter concludes by scrutinizing the DPRK's ballistic missile program including its origins, foreign assistance and indigenous delivery capacity, and offers a breakdown of the various missiles the DPRK has and continues to build on.

Origins of the Nuclear Program

“Korea's involvement with nuclear weapons goes back to the dawn of the nuclear age.”¹⁰⁰

The DPRK's experience with nuclear fuel cycle activities, such as uranium mining and milling, dates back to the 1940s “as part of Japan's secret nuclear weapons program.”¹⁰¹ By some accounts Japan relocated its nascent program to the northern part of its then Korean colony to avoid US bombing campaigns.¹⁰² If the program had survived beyond the Second World War Japan would have benefitted from particularly ideal conditions in the northern portion of the Korean peninsula for the development of a

⁹⁹ These agreements are only briefly outlined in this chapter and are explained in greater detail in Chapters Three and Four.

¹⁰⁰ Don Oberdorfer, *The Two Koreas: A Contemporary History* (USA: Basic Books, 2001), 251

¹⁰¹ David Albright & Kevin O'Neill, “Technical Supplement: Overview of North Korea's Nuclear Fuel Cycle in the Early 1990s” in *Solving the North Korean Nuclear Puzzle*, ed. David Albright and Kevin O'Neill (USA: ISIS Press, 2000), 139

¹⁰² Oberdorfer, 251

robust nuclear fuel cycle. In particular, the DPRK possesses large deposits of uranium-238.¹⁰³ Ironically, the US success in nuclear weapons development forced Japan to eventually leave Korea, enabling a Soviet backed DPRK leadership ultimately to take advantage of these ideal conditions.

Even before the DPRK became a state on 9 September, 1948, Soviet scientists were conducting geological surveys of its mines in 1947.¹⁰⁴ At the time, the Soviet Union sought to improve its communist ally's technical, scientific, industrial and military potential, as well as promote "socialist economic integration in the Far East."¹⁰⁵ Beginning in late 1949 until the Korean War erupted in 1950, the DPRK "exported concentrates of monazite, tantalum, niobium and uranic ore to the Soviet Union" as a means to pay partially for the arms provided to Pyongyang in the lead up to the war. During the war as Chinese *volunteers* held the "battle line along the 38th parallel," China also conducted research and collected radioactive matter.¹⁰⁶ The DPRK's allies thus set the tone for nuclear R & D on the northern portion of the peninsula.

Soon after the armistice in 1953, the DPRK moved to establish "what was ostensibly a civilian nuclear power program."¹⁰⁷ In June, 1955, DPRK scientists participated in the *East European Scientific Conference on the Peaceful use of Nuclear Energy* and the following year signed two key agreements with the Soviet Union

¹⁰³ DPRK natural reserves estimated at "millions of tons" which can be converted to power nuclear reactors. See Michael J. Mazarr, *North Korea and the Bomb: A Case Study in Nonproliferation* (New York: St. Martin's Press, 1995), 42 and Bruce Cumings, *North Korea: Another Country* (New York: The New Press, 2004), 58-59

¹⁰⁴ Alexandre Y. Mansourov, "The Origins, Evolution, and Current Politics of the North Korean Nuclear Program," *The Nonproliferation Review* (Spring-Summer, 1995): 25

¹⁰⁵ Sergei Radchenko & Balazs Szalontai, "North Korea's Efforts to Acquire Nuclear Technology and Nuclear Weapons: Evidence from Russian and Hungarian Archives," *Working paper #53, Cold War International History Project* (August, 2006): 2-3 and Georgiy Kaurov, "A Technical History of Soviet-North Korean Nuclear Relations," in *The North Korean Nuclear Program: Security, Strategy and New Perspectives from Russia*, ed. James Clay Moltz & Alexandre Mansourov (New York: Routledge, 2000), 15

¹⁰⁶ Mansourov (1995), 25

¹⁰⁷ Mazarr, 24-25

supporting DPRK research in the nuclear energy field. In 1959, similar agreements were struck with China, along with the so called Series 9559 contracts with the Soviet Union, outlining cooperation in areas such as “geological studies, the construction of a nuclear research center and the training of Korean nuclear technical specialists.”¹⁰⁸ In the meantime the DPRK also moved to establish departments of nuclear physics at Kim Ch’aek Industrial College and Kim Il-Sung National University, where the majority of nuclear technicians and scholars received education within the DPRK.¹⁰⁹ The DPRK practice of importing professors to teach nuclear related subjects in these facilities demonstrates the DPRK’s then lack of trained experts.¹¹⁰ In this context a partnership with its allies made a great deal of sense. Around this time DPRK scientists were also sent to Chinese nuclear training facilities as well as the Soviet Dubna Nuclear Research Institute,¹¹¹ laying the groundwork for the growth of the DPRK nuclear research program.

The Soviet-DPRK partnership intensified in 1964 with uranium mining expeditions and in 1965 with the Soviet provision of a two megawatt thermal (MWt)¹¹² research reactor¹¹³ (originally called a “furniture factory”¹¹⁴ and subsequently the IRT-

¹⁰⁸ Il-Young Kim & Lakhvinder Singh, “The North Korean Nuclear Program and External Connections,” *The Korean Journal of Defense Analysis*, Vol. XVI, No. 1 (Spring, 2004): 79

¹⁰⁹ Mansourov (1995), 26

¹¹⁰ Andrei Lankov, “Kim Il-sung University,” *The Korea Times Online* (ROK Daily in English), November 3, 2008, http://www.koreatimes.co.kr/www/news/opinon/2009/09/166_33770.html

¹¹¹ Mazarr, 25

¹¹² There are two basic ways to represent the power output of a nuclear reactor – megawatt thermal (MWt) and megawatt electrical (MWe). This appears to be a source of confusion with no consistent use of one power output representation and some authors neglecting to specify whether their figures refer to thermal or electrical power at all. Regarding this particular reactor, for example, I found at least 4 different power output figures: 2MWt; 2-4MW; 4MW; and, 2MWe. Establishing the correct power production is important insofar as it can assist in calculations of weapons grade plutonium production, which is discussed further below. Hereafter, for the sake of uniformity I will attempt to make use of only one output representation, MWe, unless a dependable conversion is unavailable, in which case I will stick to the original author’s representation. It is interesting to note that the DPRK consistently refers to its reactor production capabilities in MWe, perhaps as an attempt to emphasize the civilian electrical energy rather than military applications of its nuclear facilities.

¹¹³ Mansourov, 26

¹¹⁴ Kaurov, 16

2000), which reportedly became operational in 1967,¹¹⁵ along with a 0.1 MWt nuclear research laboratory labelled a “critical facility,” both of which became the “core of the North’s nuclear program for two decades.”¹¹⁶ Despite repeated claims about the bellicosity of DPRK nuclear aspirations, the origins of its nuclear program appear peaceful, and emerged out of a set of circumstances driven by external forces over which it had little, if any, control.

Accumulation of Indigenous Nuclear Capabilities

The shift in the DPRK program to a more indigenous practice does not necessarily mark a transition to its pursuit of nuclear capabilities for military applications. The DPRK’s quest for indigenous technical expertise was driven by two mutually dependent factors: its overwhelming energy concerns,¹¹⁷ and Soviet and Sino hesitance to provide further assistance with its nuclear program. The DPRK’s pursuit of a peaceful nuclear energy program was acceptable in the eyes of its allies, but military applications were another matter because of the state of DPRK security affairs and the corresponding security implications for the Soviet Union and China. While foreign assistance did not end during this period, it came at the expense of a great deal of negotiation and strain on these relationships.

The record shows that the DPRK approached numerous allies for nuclear related assistance. Amidst tension with the Soviet Union, DPRK delegations visited several East European countries in the mid-1960s, where nuclear programs were taking root based on

¹¹⁵ Mansourov, 26

¹¹⁶ Mazarr, 25

¹¹⁷ These energy requirements are detailed in Chapter Three.

assistance from the Soviet Union.¹¹⁸ Despite having operated the Soviet supplied reactor for more than a year, DPRK officials remained secretive about its operations and had not invited the Soviets to observe.¹¹⁹ Thus, when approached for a larger reactor for the production of nuclear energy Soviet officials showed an unwillingness to comply. The DPRK repeated its requests to the Soviet Union in vain in 1967; the same time that Soviet assisted nuclear projects in the aforementioned East European states were flourishing.¹²⁰ The DPRK interpreted Soviet rejections as selective Soviet assistance, fuelling the DPRK's sense of frustration and feelings of betrayal.¹²¹

Although the Soviet Union had played a large role in initiating the nuclear program, it was the DPRK that actively sought further nuclear expansion. The DPRK signed in 1973 an agreement with Poland on technical and scientific cooperation in the face of sustained Soviet rejections. The Soviet Union continued to profit off its oil exports to the DPRK during this period,¹²² further straining Soviet-DPRK relations. In the meantime, the DPRK made do with its existing nuclear infrastructure and inched towards an indigenous nuclear energy capability.

Soon after the Soviet Union rejected the DPRK's request for another reactor in 1976, the two sides agreed to the DPRK's purchase of more reactors, continued training at the Dubna Institute, and eventually supplied a graphite reactor.¹²³ At the same time, the DPRK had been working hard at establishing a full-scale nuclear research and development facility at Yongbyon in North Pyongan Province, approximately 90 km

¹¹⁸ Countries where nuclear programs were developing included East Germany, Czechoslovakia, Bulgaria and Hungary; the DPRK specifically visited East Germany and Hungary.

¹¹⁹ Szalontai & Radchenko, 42

¹²⁰ Ibid, 5-6

¹²¹ The feelings of betrayal were a result of numerous factors including the Sino-Soviet split and the Soviet actions during the Cuban missile crisis, further detailed in Chapters Three and Four.

¹²² Szalontai & Radchenko, 8-9

¹²³ Mazarr, 29

northeast of Pyongyang. As the first wave of trained nuclear specialists returned to the DPRK, they took up positions at the Yongbyon facilities and began working with the aforementioned Soviet supplied research reactor, expanding its capacity to 5MWt¹²⁴ and then 8MWt on the DPRK's own initiative and resources. Despite not having yet joined the NPT, the DPRK became a member of the International Atomic Energy Agency (IAEA) in September, 1974. By the late 1970s, despite appearing dormant and showing "little additional activity" after commissioning its initial reactor,¹²⁵ the DPRK commissioned a uranium mine at Yongbyon, and between the late 1970s to early 1980s Yongbyon was expanded to include a "mill for concentrating the uranium ore" into what is referred to as yellowcake, as well as a plant for the purification of this material, a storage compound, and a "nuclear fuel rod fabrication plant." During this time the DPRK also became proficient at mining and purifying graphite, which could be used for the reactor.¹²⁶

Soon after acceding to the IAEA, the DPRK began construction on what would become a 5MWe (30MWt) reactor. Although some uncertainty remains regarding when the DPRK actually began work on its first indigenous reactor, work is assumed to have begun around 1979,¹²⁷ with construction underway on the reactor's core and nuclear control building by 1982, and a cylindrical smokestack visible and other buildings constructed by 1984.¹²⁸ The reactor became operational by 1986.¹²⁹ The reactor was modelled after the British 'Caldor Hall' of the 1950s, which gave England its first nuclear

¹²⁴ Kim & Singh, 80

¹²⁵ Joel S. Wit, Daniel B. Poneman & Robert L. Gallucci, *Going Critical: The First North Korean Nuclear Crisis* (Washington: Brookings Institution Press, 2004), 1

¹²⁶ Mansourov, 26

¹²⁷ Cumings (2004), 58

¹²⁸ Mazarr, 40

¹²⁹ Marion V. Creekmore, Jr., *A Moment of Crisis: Jimmy Carter, the Power of a Peacemaker, and North Korea's Nuclear Ambitions* (New York: Public Affairs, 2006), 4. See also Mansourov, 26

bombs.¹³⁰ The designs for this particular sort of reactor were “largely unclassified and the reactors themselves straightforward to build.”¹³¹

The reactor was a “gas-graphite, air-cooled reactor using natural uranium as fuel” and has been considered a logical choice for a state with “limited industrial capabilities.”¹³² It does not require heavy water or enriched uranium, both of which the DPRK did not possess, and therefore would have had to import. In spite of evidence that the DPRK’s nuclear weapons aspiration may have emerged as early as the 1950s,¹³³ it is still reasonable to assume that it sought in part at this time to substitute nuclear energy for its dependence on coal, hydro power and imported petroleum. The DPRK could have built a reactor to reprocess nuclear fuel and take advantage of the DPRK’s “substantial deposits of uranium,”¹³⁴ and graphite, both of which are “mined in abundance” across the country.¹³⁵ Thus following the initial development in the 1950s and 1960s, the DPRK’s nuclear facilities were expanding in the late 1970s and early 1980s. This expansion was achieved in part through direct foreign assistance coupled with indigenous knowledge and infrastructure rooted in previous nuclear partnerships with other states.

Establishing a Nuclear Weapons Program

Natalya Bazhanova insists that “no available North Korean document pinpoints Pyongyang’s decision to embark upon a military nuclear program or even argues in

¹³⁰ Cumings (2004), 59

¹³¹ David Albright, “How Much Plutonium did North Korea Produce?” in *Solving the North Korean Nuclear Puzzle*, ed. David Albright and Kevin O’Neill (USA: ISIS Press, 2000), 113

¹³² Mazarr, 39

¹³³ The available evidence is outlined below.

¹³⁴ Cumings (2004), 57

¹³⁵ Tai Sung An, “The Rise and Decline of North Korea’s Nuclear Weapons Program,” *Korea and World Affairs*, Vol. 16 (Winter, 1992): 677

favour of such a policy.”¹³⁶ Some authors have suggested that between the 1960s and 1980s, the DPRK’s nuclear activities appear to have fallen “within the parameters of its bilateral agreements with the Soviet Union,” such that claims of the DPRK developing a nuclear weapons program during this period are unfounded.¹³⁷ However, a review of official statements in conjunction with infrastructure enhancement suggests that the intent to develop an indigenous nuclear capability that might be used for military applications may have been present much earlier than previously assumed. At the very least, if the DPRK did not see an indigenous weapons capability as a realistic goal in the 1960s, it certainly believed acquiring nuclear weapons from its allies was.

According to defector Kim Chong Min, a former high level official from the DPRK Ministry of Public Security, the DPRK first thought seriously about a nuclear weapons program in the first half of the 1960s.¹³⁸ In 1992, “Russian authorities” claimed that the DPRK had been “seeking nuclear weapons since 1963.”¹³⁹ Documents recently made available from the former Soviet bloc suggest that these statements might have some weight. In August, 1962, DPRK official Pak Song-chol asked the Soviet ambassador to the DPRK about the chances of imposing non-proliferation on countries which did not possess nuclear weapons yet might succeed in developing them. Although many have taken this to mean Pak was referring to China, the authors effectively make the case that he was referring also to the DPRK.¹⁴⁰ Subsequent developments suggest that the DPRK was in fact clearly interested in nuclear weapons by the 1960s. According

¹³⁶ Natalya Bazhanova, “North Korea’s Decision to Develop an Independent Nuclear Program,” in *The North Korean Nuclear Program: Security, Strategy and New Perspectives from Russia*, ed. James Clay Moltz & Alexandre Mansourov (New York: Routledge, 2000), 128

¹³⁷ Bazhanova, 127. See also Kim & Singh, 75-76

¹³⁸ Mazarr, 24

¹³⁹ Sung An, 671-672

¹⁴⁰ Szalontai & Radchenko, 27

to Glyn Ford, in the wake of China's successful nuclear test in 1964, DPRK leader Kim Il-sung "asked Mao for the bomb,"¹⁴¹ the first of at least two direct requests to Mao Tse-tung to supply either a bomb or nuclear secrets, which were subsequently rejected.¹⁴² In 1975 Kim Il-sung reportedly asked Zhou Enlai's help in establishing a DPRK nuclear weapons program, which resulted in increased training for DPRK nuclear scientists.¹⁴³

Perhaps out of desperation with the lack of support for, and foreign assistance with its nuclear program, and repeated rejections for the weapons themselves, by the late 1970s Kim Il-sung appears to have made the decision to pursue seriously an indigenous nuclear weapons program. Alexandre Mansourov explains that during this period Kim Il-sung

is believed to have authorized the DPRK Academy of Sciences, the Korean People's Army (KPA) and the Ministry of Public Security to begin the implementation of the North Korean nuclear program design, including rapid expansion of the nuclear-related facilities and development of the infrastructure for a nuclear weapon program in Yongbyon...[where] the DPRK constructed a complex of underground nuclear facilities in the Pakch'on area [...] Apparently, it was there and then that the DPRK nuclear scientists began to work on an indigenous nuclear fuel enrichment technology, a design for a nuclear device, and potential nuclear weapon delivery systems.¹⁴⁴

By 1979, comments made to Hungarian officials by high ranking DPRK officials led them to believe firmly that the DPRK was already well on its way to producing nuclear weapons.¹⁴⁵ If the nuclear weapons program truly originated with these measures, the significant gap between the emergence of the apparent desire to obtain nuclear weapons in the early 1960s and the decision to achieve this goal indigenously was probably

¹⁴¹ Glyn Ford, *North Korea on the Brink: Struggle for Survival* (London: Pluto Press, 2008), 149

¹⁴² Joel S. Wit, Daniel B. Poneman & Robert L. Gallucci, *Going Critical: The First North Korean Nuclear Crisis* (Washington: Brookings Institution Press, 2004), 2-3

¹⁴³ Mazarr, 28-29

¹⁴⁴ Mansourov, 26. See also Oberdorfer, 253

¹⁴⁵ *Report, Embassy of Hungary in North Korea to the Hungarian Foreign Ministry* (23 February 1979) in Szalontai & Radchenko, 66-67

characterized by uncertainty over the best way to obtain the weapons.¹⁴⁶ Nevertheless, numerous comments made by DPRK officials during this period were no more than rhetoric. For example, in 1976 the DPRK claimed to already possess nuclear tipped tactical weapons, soon after hinting that they might approach China for the same weapons. Also, on 25 January, 1977, the DPRK “publicly hinted that they might equip themselves with nuclear weapons.”¹⁴⁷

A brief analysis of the DPRK’s scientific and industrial base can facilitate a better understanding of early nuclear decisions. The purported ‘Godfather’ of the DPRK nuclear weapons program has been Kim Il-sung’s personal advisor, Sung-ki Lee.¹⁴⁸ Lee was a chemist educated in Japan, and worked in the south before crossing over to the north shortly after the Korean War. In 1967 Lee became the first director of the Nuclear Research Institute at Yongbyon. Lee and most of the “core members of his team” had significant experience in the training and research centres in Moscow University and the Dubna Institute.¹⁴⁹ Since many of the centres of education and training the DPRK nuclear scientists attended included nuclear weapons research, there is little doubt that they were exposed to some of this research and had brought some of the expertise along with them to their new workplace at Yongbyon. Thus, even if the DPRK’s nuclear program began as a peaceful nuclear energy pursuit the potential for it to expand beyond nuclear energy applications to encompass nuclear weapons existed early on.

In the late 1970s and early 1980s, inspired by the US nuclear threat and the Park Chung-hee regime’s emerging nuclear program in the south, the DPRK built as many as

¹⁴⁶ The possibility that the desire was not constant throughout this period is considered in Chapters Three and Four.

¹⁴⁷ Szalontai & Radchenko, 10-13

¹⁴⁸ Oberdorfer, 253

¹⁴⁹ Sung An, 674-675

15,000 security related facilities underground and in mountain redoubts.¹⁵⁰ These subterranean and aboveground nuclear facilities confirm that the DPRK may have been seeking a “dual nuclear capability, not merely an exclusive one.”¹⁵¹ However, despite nearly constant surveillance on DPRK nuclear facilities by US spy satellites and intelligence gathering by numerous agencies beginning as early as the 1950s, suspicions about DPRK nuclear intentions seemingly did not materialize until sometime in the 1980s. Yet, recent disclosures by the DPRK that in 1975 it had successfully separated small amounts of plutonium, the lifeblood of certain nuclear weapons, reveals otherwise. In fact, it is quite plausible that by the 1970s the DPRK had already focussed its efforts on separating plutonium.¹⁵²

Beginning in the 1980s, DPRK requests to its allies were surprisingly diluted and more realistic, possibly suggesting in part a more genuine interest in acquiring the weapons,¹⁵³ and to some degree an attempt to satisfy its commitments to the IAEA, buttressed through a safeguards agreement in 1977 placing the DPRK’s Yongbyon research laboratory under inspections. By 1984 with the hopes of gaining more leverage in the DPRK’s program, Moscow appeared more than willing to assist the DPRK, largely attributed to improved relations, a realization of the increasingly desperate economic

¹⁵⁰ Cumings (2004), 55-56

¹⁵¹ Szalontai & Radchenko, 11

¹⁵² David Albright and Kevin O’Neill (USA: ISIS Press, 2000), 15-18. See also Evgeniy P. Bazhanov, “Military-Strategic Aspects of the North Korean Nuclear Program,” in *The North Korean Nuclear Program: Security, Strategy and New Perspectives from Russia*, ed. James Clay Moltz & Alexandre Mansourov (New York: Routledge, 2000), 102

¹⁵³ Szalontai & Radchenko, 19-20. Although this may appear paradoxical, the idea is that the regime was attempting to reduce the attention on its nuclear weapons interests by toning its requests down especially since the DPRK was increasingly realizing the futility of these requests.

situation in the DPRK, and, perhaps most importantly, because the DPRK had become closer than ever to being capable of maintaining its own nuclear facilities.¹⁵⁴

Renewed Soviet assistance coupled with significant pressure resulted in the DPRK becoming a member of the NPT in 1985.¹⁵⁵ As a member of the NPT itself, the Soviet Union was prevented from supplying the DPRK with any materials that could be used in the production of nuclear weapons, thus offering the DPRK four 440MW reactors in exchange for joining the NPT.¹⁵⁶ This was made possible by the fact that the reactors were to be of the light water reactor (LWR) variety, so named in order to make a distinction between heavy water (deuterium oxide) reactors. Light water reactors are less proliferation prone, and “rely on ordinary water to moderate the nuclear reaction that produces energy.” They are also “much more complex” than those reactors previously installed at Yongbyon and the technology was largely “beyond North Korea’s technological capability and would have to be imported from abroad.”¹⁵⁷

Soon after the DPRK’s indigenous reactor went operational in 1986, a debate emerged over its real purpose. Some observers saw it for electricity production and others as a covert attempt to produce nuclear weapons. Suspicions were based on the fact that its indigenous reactor required reprocessing which can be a dangerous and difficult process and allows for the possibility of using nuclear waste to produce nuclear weapons.¹⁵⁸ Moreover, satellite imagery showed numerous other sites and buildings

¹⁵⁴ Szalontai & Radchenko, 20. This last point ties in to Soviet-Sino competition for influence over the DPRK, a competition that is well documented elsewhere. The competition is briefly mentioned here insofar as it pertains to developments in the DPRK’s nuclear weapons development.

¹⁵⁵ Jacques E. C. Hymans, “Assessing North Korean Nuclear Intentions: A New Approach,” *Journal of East Asian Studies* 8 (2008), 271

¹⁵⁶ Mazarr, 29;41. The LWRs were never delivered.

¹⁵⁷ Oberdorfer, 289

¹⁵⁸ David Albright, “How Much Plutonium did North Korea Produce?” in *Solving the North Korean Nuclear Puzzle*, ed. David Albright and Kevin O’Neill (USA: ISIS Press, 2000), 113

which pointed to a possible nuclear weapons program. This included US, Soviet and ROK intelligence reports beginning in the early 1980s which “detected numerous test explosions” which were assumed to be meant to “develop a triggering device for an atomic bomb.”¹⁵⁹

In 1989 more explosive sites were discovered; often interpreted as a sure sign of a nuclear weapons program. Also in 1989, CIA reports indicated evidence of a plutonium reprocessing plant at Yongbyon. With the DPRK’s abundance of natural uranium it was believed that this signalled intent to build nuclear weapons since it could be used to produce weapons-grade material from the reactor waste. At the time, IAEA director-general Hans Blix “pronounced it undoubtedly a reprocessing facility” capable of reprocessing “200 tons of spent plutonium per year.”¹⁶⁰ In sum, discoveries in the mid to late 1980s indicated that the DPRK might be making a dash to produce nuclear weapons.

Pyongyang’s Nuclear Weapons Program – Initial Features and Concerns

Despite the fact that a lot is known about the program in general, the overwhelming number of uncertainties related to specific aspects of the DPRK’s nuclear weapons making potential makes the provision of estimates on its plutonium stock and nuclear weapons at best imprecise; the upshot is approaches to the issue mired in uncertainties, such that any estimate on the number of viable DPRK nuclear weapons is problematic. Moreover, precise figures are by and large unnecessary for the analysis of DPRK motivations. A general discussion of DPRK nuclear reprocessing capabilities facilitates a better understanding of regime motivations by laying the groundwork for some of the historical conditions driving the regime’s decision to go *and* stay nuclear.

¹⁵⁹ Larry A. Niksch, “North Korea’s Weapons of Mass Destruction,” in *North Korea: The Politics of Regime Survival*, ed. Young Whan Kihl & Hong Nack Kim (New York: M.E. Sharpe, 2006), 100

¹⁶⁰ Mazarr, 44-45

By the early 1990s, the DPRK had “industrial-scale plants for virtually all of the components of the nuclear fuel cycle,” including infrastructure for mining, milling, refining, conversion, fabrication, irradiation, reprocessing, reconversion and waste management.¹⁶¹ In addition to the indigenous 30MWt reactor, the DPRK began construction on second and third reactors, located at Yongbyon and Taechon, beginning in the mid-1980s through the early 1990s, estimated at 50MWt and 200MWt capacity, respectively. Although these later reactors remain unfinished, several features are noteworthy. They are much larger than normal research reactors, are not connected to an energy grid, and, are of an ideal type to produce plutonium, a “favourite material of bomb builders.”¹⁶² These characteristics represent strong evidence that the DPRK was expanding and upgrading its facilities in such a way that it was seeking to produce nuclear weapons on a large scale, and not simply for civilian energy consumption.

There are, however, several problems with citing the abovementioned evidence to support the conclusion that the DPRK was unambiguously seeking to produce weapons of mass destruction. Both Russian and Chinese officials claim that it is conceivable that by the late 1980s the DPRK had hit a dead end with its program, based on the training given to DPRK scientists.¹⁶³ Also, that the 50MWt and 200MWt reactors are not connected to electrical grids is irrelevant given the fact that they are incomplete. This type of argument echoes the case made against the DPRK when its first indigenous reactor was revealed,

¹⁶¹ David Albright, “How Much Plutonium Did North Korea Produce?” in *Solving the North Korean Nuclear Puzzle*, ed. David Albright and Kevin O’Neill (USA: ISIS Press, 2000), 140

¹⁶² Mazarr, 36

¹⁶³ *Ibid*, 46. This would not be the first time either; from the beginning of the program the DPRK has suffered from technological, financial and scientific expertise deficiencies, severely impeding progress.

when it was suggested that the 30MWt reactor was too small to be used for domestic electricity consumption.¹⁶⁴

Although Pyongyang ostensibly sought weapons based on its construction of reactors which are more “proliferation prone” than others, it is important to take into consideration a number of endogenous and exogenous dynamics. For example, the DPRK has a long history of attempting to modernize its nuclear infrastructure including seeking the more proliferation resistant LWRs from both the former Soviet Union and the US.¹⁶⁵ What is more, the DPRK has consistently maintained that it was forced to pursue an indigenous reactor (which creates plutonium as a by-product) because it was the only type it could produce without foreign assistance.¹⁶⁶ This merely suggests that Pyongyang’s infrastructural projects could have been at least in part dedicated to nuclear energy, if not for the regime’s prior rhetoric and requests for the bombs themselves.

One of the most controversial aspects of the nuclear weapons program has been alleged plutonium reprocessing activities; an essential step in the nuclear cycle to engineer nuclear weapons. There is no doubt that the DPRK has already reprocessed plutonium, despite Kim Il-sung’s once adamant declaration that the DPRK had “no nuclear reprocessing facilities.”¹⁶⁷ It had declared such facilities to the IAEA in May, 1992, admitted separating 90 grams two years prior¹⁶⁸ and, even presented a vial of

¹⁶⁴ The 30MWt (5MWe) reactor is believed to be able to power approximately “five large American office buildings” at full capacity; however, there have been problems with running the reactor from the beginning and thus it has never operated at its full power potential. See Oberdorfer 289-290 and Albright (2000), 114

¹⁶⁵ Oberdorfer, 290. The DPRK’s interest in LWRs in exchange for its nuclear program formed part of the negotiations in the 1994 Agreed Framework, discussed below.

¹⁶⁶ Albright (2000), 113

¹⁶⁷ Oberdorfer, 264

¹⁶⁸ Wit, Poneman & Gallucci, 13. A figure of 98 grams was also reported – see *Vantage Point*, 17, No.1 (Seoul, 1994), 19. Both figures of 90 and 98 grams are insignificant in terms of constructing a bomb since it takes on average 10 kilograms of separated plutonium to produce a first nuclear weapon and 8 to 9 kg for subsequent weapons. See Leon V. Sigal, *Disarming Strangers: Nuclear Diplomacy with North Korea*

plutonium in powdered form to Hans Blix later in the year.¹⁶⁹ What has been and continues to remain a significant unknown is exactly *how much* plutonium the DPRK has reprocessed, which could facilitate a reasonable estimate of the DPRK's bomb making potential. IAEA smear samples from 1992 suggested that there were substantial discrepancies in the DPRK's declaration. In particular, tests concluded that the DPRK had made efforts to separate plutonium on at least three separate occasions in 1989, 1990 and 1991.¹⁷⁰ US spy satellites revealed in 1992 that the DPRK was attempting to camouflage its reprocessing plant's waste storage tank by landscaping the area and covering it with "trees, a parking lot and a road."¹⁷¹ If successful, the DPRK could effectively limit the IAEA's knowledge of the scope of its reprocessing activities. However, IAEA inspections of the reprocessing facility¹⁷² in May and June 1992 revealed that the facility was "less than half complete, even after at least three years of work,"¹⁷³ suggesting that even if the DPRK had separated plutonium in the past, it was not conclusively accomplishing wholesale separation.

When nuclear reactors are used for making weapons, the core is removed and irradiated; when used for producing electricity the rods are removed every few years.¹⁷⁴ The function of the reprocessing plant is to "separate weapons grade plutonium-239 from spent nuclear fuel rods for insertion into the structure of atomic bombs or warheads."¹⁷⁵

(Princeton: Princeton University Press, 1998), 95. However, it is important since it demonstrates the DPRK's technical aptitude in this area.

¹⁶⁹ Oberdorfer, 269. At the time Blix was the Director General of the IAEA.

¹⁷⁰ Albright (2000), 83-97

¹⁷¹ Nayan Chanda, "North Korea: Bomb and Bombast," *Far Eastern Economic Review* (February 10, 1994):16

¹⁷² The DPRK refers to this facility as a radiochemical laboratory.

¹⁷³ Mazarr, 46

¹⁷⁴ Cumings (2004), 59-60

¹⁷⁵ Larry A. Niksch, "North Korea's Nuclear Weapons Development and Diplomacy," *Congressional Research Service Report for Congress* (January 21, 2008): 9

In order to calculate how much plutonium the DPRK made available for possible separation in the first place, it is imperative to know how many times and for how long it has removed the core from the reactor at Yongbyon. There are major discrepancies on this front, which has encumbered precise accounts of the DPRK's past and present nuclear weapons making potential. If the DPRK's statement on the shutdown of the reactor at Yongbyon is accepted as true (60 days in order to replace a few damaged fuel rods), the DPRK's theoretical bomb making potential "was considerably smaller" than had been suggested by US intelligence estimates (110 days, approximately 4000 fuel rods, enough for one or two Hiroshima strength bombs).¹⁷⁶ Generally, such estimates are unreliable because they are based on incomplete verification through satellite monitoring of the cooling tower, which can be interrupted by cloud cover.¹⁷⁷ Moreover, the reactor was again shut down in May, 1994, in order to withdraw approximately 8000 fuel rods,¹⁷⁸ which further complicated estimates at the time.

Perhaps the most frequently cited substantiation of the DPRK nuclear weapons program in the early 1990s, even more so than the declaration of a reprocessing facility and efforts to modernize the nuclear infrastructure, was the DPRK's near withdrawal from the NPT. It appears that the DPRK underestimated the abilities of the IAEA to unearth inconsistencies in the DPRK's declaration on its nuclear program. As pressure mounted, the DPRK gave the required three months notice to withdraw from the NPT on

¹⁷⁶ Oberdorfer, 307

¹⁷⁷ Albright (2000), 115. This *intelligence* has been cited repeatedly to argue that the DPRK possesses at a minimum, one nuclear bomb. In 1993 the CIA determined that the DPRK possessed one or two nuclear bombs by asking experts to raise their hands if they believed it possessed the weapons. See Cumings (2004), 48

¹⁷⁸ Cumings (2004), 71

12 March, 1993, only to suspend this decision on 11 June, 1993.¹⁷⁹ The resulting international concern and so called DPRK-US crisis¹⁸⁰ eventually led to Pyongyang's April, 1994 notification to the IAEA that it would again defuel the reactor at Yongbyon. By June of the same year, as spent fuel rods were removed "without international observation or approval," the IAEA concluded it was impossible to gauge accurately the status of the DPRK's weapons grade plutonium levels.¹⁸¹

Although there have been numerous bilateral and multilateral negotiations over the DPRK's nuclear activities, four agreements have stood out as the most significant insofar as their potential to alter the direction of the program.¹⁸² The 1992 Joint Declaration by the two Koreas is conspicuously brief and contains only general statements on the mutual desire to keep the peninsula nuclear weapons free.¹⁸³ However, it did set the tone for discussions and was a harbinger of future DPRK negotiating behaviour as it inspired ROK and US consideration of the DPRK's security and financial predicaments, and illustrated the extent to which the DPRK had developed its infrastructure.

The DPRK-US Agreed Framework was signed in October, 1994. Whether or not the DPRK had accumulated enough weapons grade plutonium to construct a bomb by this point is still unknown. Nevertheless, the events inspiring the agreement bolstered the

¹⁷⁹ The DPRK gave the US-ROK Team Spirit exercises and IAEA special inspections as its justification, suggesting that these two factors represented a serious threat to its national interests.

¹⁸⁰ The resulting alarm, condemnation and corresponding political showdown (along with numerous instances in later years), is frequently awarded the *crisis* nomenclature in the press and academic literature; however, it is not the purpose of this chapter to investigate the political struggle resulting from the program but merely outline the elements of the nuclear weapons program necessary to establish an overall appreciation of the DPRK's motivations.

¹⁸¹ Oberdorfer, 309-310

¹⁸² The agreements are the 1992 Joint Declaration of North and South Korea on the Denuclearization of the Korean Peninsula, 1994 Agreed Framework, 2005 Joint Statement of the Fourth Round of the Six Party Talks, and the 2007 Agreement on North Korea's Nuclear Disarmament. Each agreement is dealt with below as they relate to developments in the program.

¹⁸³ The agreement is available here: http://nti.org/e_research/official_docs/inventory/pdfs/koreanuc.pdf

suspicious of many that the DPRK was “hell bent on the production of nuclear weapons.”¹⁸⁴ Signed shortly after the death of Kim Il-sung, the agreement largely froze the DPRK nuclear program.

The DPRK reaffirmed its membership in the NPT ... [and] on November 1, 1994, the DPRK Administrative Council made the decision to halt the construction of its planned 50MWt and 200MWt reactors, to cancel the pending reprocessing of spent nuclear fuel, and to seal the radiochemical laboratory. The IAEA was allowed to conduct comprehensive inspections and confirm the nuclear freeze.¹⁸⁵

In exchange for the “energy foregone due to the freeze of the DPRK’s graphite moderated reactors and related facilities,” the DPRK was promised two LWRs, financed and supplied by an international consortium, as well as significant energy assistance for heating and electricity production until the LWR became operational.¹⁸⁶

Little is known about DPRK nuclear weapons happenings from 1994 to the early 2000s, primarily because it is believed there was minimal activity or, any activity went largely unnoticed. The apparent willingness to suspend its program has major implications for its motivations.¹⁸⁷ Whatever the case may be, with a broad understanding of the origins, maturation and significant developments of the DPRK’s nuclear energy and weapons program, the remaining task is to attempt to piece together the current status of the program beginning with important developments as they again emerged in 2002.

¹⁸⁴ Oberdorfer, 280

¹⁸⁵ Mansourov, 33

¹⁸⁶ The assistance was supposed to amount to 500,000 tons of heavy fuel oil annually. See the *Agreed Framework between the United States of America and the Democratic People’s Republic of Korea*, October 21, 1994, <http://www.kedo.org/pdfs/AgreedFramework.pdf>

¹⁸⁷ This is examined in detail in Chapters Three and Four.

Pyongyang's Nuclear Weapons Program – What is known to Date

Jacques Hymans concludes that following the collapse of the Agreed Framework in 2002, the DPRK made a “headlong drive” toward manufacturing a nuclear weapon.¹⁸⁸ Hymans’ language indicates that he suspects the DPRK did not already possess a single bomb. Nonetheless, estimates that it had already acquired one have been ubiquitous since the 1990s. To be sure, the DPRK has historically been a challenging intelligence target. However, despite the relative difficulty with which analysts attempt to decode the DPRK’s nuclear activities, a great deal is known about the overall program.

In December of 2002, the DPRK kicked out IAEA inspectors, broke seals on equipment and buildings, reopened the main reactor at Yongbyon, loaded new fuel rods, and again announced its withdrawal from the NPT, accomplishing in one month “what took them more than a year to do in 1993-94.”¹⁸⁹ To say the least, the DPRK amply demonstrated the ability to restart its facilities despite previous agreements and concessions. The diplomatic back and forth going on since the early 1990s and carrying on up to the present day, which has been credited for the partial deceleration of the DPRK’s program, has resulted in countless alterations to its nuclear infrastructure. Yet, whatever degree to which the nuclear facilities have been disabled from recent negotiations, the DPRK has maintained a consistent capability to “produce nuclear fuel and reprocess it into weapons-grade plutonium.”¹⁹⁰

¹⁸⁸ Hymans (2008), 279. The collapse is detailed in Chapter Three.

¹⁸⁹ Cumings (2004), 90

¹⁹⁰ Niksch (2006), 99

Pyongyang's nuclear focal point has been Yongbyon.¹⁹¹ Due to frequent flooding of the Kuryong River, facilities in the vicinity have often been severely damaged. The experimental 5MWe reactor has also been plagued by technical problems and in the past was often not even in operation.¹⁹² As a result of the February 2007 six-party discussions Joint Statement, which was meant to pick up where the short-lived 2005 agreement could not deliver, the reactor was partially destroyed and disabled by late 2007.¹⁹³ At the time, the objective was to make disablement so extensive so as to require one year to revive the Yongbyon facilities.¹⁹⁴ Yet, in April of 2009, the DPRK's state run news agency announced:

The DPRK will take a measure to restore to their original state the nuclear facilities which had been disabled according to the agreement of the six-party talks and bring their operation back on a normal track and fully reprocess the spent fuel rods churned out from the pilot atomic power plant.¹⁹⁵

As of May, 2009, however, the facilities were still undergoing the second phase of disablement and as of September 2009, there was no evidence that the DPRK had done any reconstruction at the Yongbyon site.¹⁹⁶ The 50MWt and 200MWt reactors have not seen construction since 2002¹⁹⁷ and were confirmed shutdown by 18 July, 2007,¹⁹⁸ with no activity reported since.

¹⁹¹ See http://www.nti.org/e_research/profiles/NK/Missile/1445.html for an overview of the facilities at Yongbyon.

¹⁹² Hymans (2008), 277

¹⁹³ The agreement can be found here:

http://www.ncnk.org/resources/publications/Feb_13_2007_Agreement.doc/file_view. The 2005 agreement had clearly failed by 2006 with the DPRK's first nuclear test.

¹⁹⁴ Niksch (2008), 3-4

¹⁹⁵ "DPRK Foreign Ministry Vehemently Refutes UNSC's 'Presidential Statement'," *Korean Central News Agency* (Online DPRK Daily in Korean and English), April 14, 2009, <http://www.kcna.co.jp/index-e.htm>

¹⁹⁶ "Country Assessments: Korean Peninsula," *Institute for Science and International Security Press*, <http://www.isis-online.org/publications/dprk/index.html>

¹⁹⁷ Larry A. Niksch, "Nuclear Weapons R & D Organizations in Nine Nations," *Congressional Research Service Report for Congress* (March 16, 2009): 7

¹⁹⁸ *Arms Control Reporter: A Chronicle of Treaties, Negotiations, Proposals, Weapons, and Policy*, Vol. 26, 2007 (Institute for Defense & Disarmament Studies), 344

The reprocessing facility at Yongbyon contains at least two “lines’ for dissolving fuel, extracting plutonium and converting it into pure form. There are reports that a second reprocessing plant is under construction.¹⁹⁹ DPRK officials have stated that the reprocessing facility has an “annual throughput [of] 110 tons of spent fuel, about twice the fuel load of the 5MWe reactor.”²⁰⁰ As of July 2007 the reprocessing plant was not operational,²⁰¹ but as outlined earlier, the DPRK has clearly made it known that it intends to restart this facility. Furthermore, in addition to other relevant nuclear facilities, there are unconfirmed claims that the DPRK has built underground reprocessing facilities.

Estimating the DPRK’s weapons-ready plutonium stock has perhaps been the most challenging undertaking in scrutinizing the program. Most of the DPRK’s plutonium has been produced indigenously since 2002.²⁰² After an eight year freeze, in 2002 Pyongyang restarted its reactor in order to reprocess spent fuel rods.²⁰³ In the summer of 2003 the DPRK claimed to have reprocessed 8000 rods but there was no international consensus on whether the rods had been encased or the plant up and running by then,²⁰⁴ which meant that analysts could not be certain that the move had resulted in the production of plutonium. One way to approach the issue is to consider DPRK claims vis-à-vis the claims and estimates of other states and analysts.

In 2003, the DPRK “began to claim it had produced weapons-grade plutonium.” By this time there was no real doubt that the DPRK had this capability. In fact, both 1993 US intelligence and 2004 Senate Foreign Relations findings concluded that it had

¹⁹⁹ Albright (2000), 122-123

²⁰⁰ Nikitin, 6

²⁰¹ Niksch (2008), 9

²⁰² Arms Control Reporter (2007), 344. However, there are unsubstantiated reports that unknown quantities of plutonium may have been smuggled into the DPRK from Russia. See Niksch (2006), 104

²⁰³ Ford, 148

²⁰⁴ Cumings (2004), 90

succeeded in converting “plutonium from liquid to metal,” for which the only purpose is to “produce nuclear weapons.”²⁰⁵ In 2004, Siegfried Hecker was shown a small quantity of what was claimed by DPRK officials to be “alloyed scrap from a plutonium casting operation.”²⁰⁶ However, while he believes the density resembled plutonium alloyed with aluminum or gallium, indicating a high level of DPRK sophistication, Hecker was only able to inspect visually the material. The CIA estimates that if both the 50MWt and 200MWt reactors were to become operational, together with the reprocessing facilities the DPRK could produce 275kg of plutonium per annum,²⁰⁷ enough for “thirty bombs a year.”²⁰⁸ Since the 30MWt reactor is estimated to be capable of producing 7kg per annum²⁰⁹ (if working properly), the DPRK could have a potential capacity of approximately 282kg per annum. There are several problems with this estimate, however.

To begin, not only has the only operational reactor been gradually deteriorating and operating at less than optimal capacity, it has also been subject to dismantlement over the last couple of years. Together with the incomplete status of the other two reactors, and no other known reactors, this leaves the current production of fuel rods for future reprocessing at a standstill and estimates of plutonium production when it was operational uncertain. This is further complicated by the fact that the DPRK possesses fresh fuel rods, which could be used in the event that the reactor became operational again. Although the disablement is more than 80 percent complete, some experts believe it could

²⁰⁵ Cumings (2004), 100

²⁰⁶ Nikitin, 4. Hecker is the former Director of the Los Alamos National Security Laboratory.

²⁰⁷ Ibid, 6-7

²⁰⁸ Creekmore, Jr., 4

²⁰⁹ Arms Control Reporter (2007), 343

be operational again in six months.²¹⁰ There is also the problem of the ‘plutonium amounts to bombs fallacy.’ Too often estimated levels of plutonium or so called ‘evidence’ like the Hecker experience are used to estimate bomb making capacity, without concrete evidence on plutonium production scope or other variables such as the technical capacity to produce warheads and mate them to missiles.

Another hindrance is the overall dependence on US intelligence and other unsubstantiated reports, which have added to the chaos in the literature on estimates of the DPRK’s weapons grade plutonium levels. The bulk of estimates are derived from the shutdowns of the 30MWt reactor in 1989, 1990 and 1991 for 71, 30 and 50 days, respectively.²¹¹ In 1989, the CIA estimated that the DPRK had extracted 10-16kg of plutonium following the first shutdown of the reactor.²¹² Based on later data, these initial figures appear to have been dramatically inflated. For the same period, leading expert David Albright has come up with a more modest figure of 6.3 to 8.5kg of separated plutonium.²¹³ Unfortunately, the passing of time has not resulted in more accurate calculations. In November of 2007 the DPRK declared to the US that it possessed approximately 30kg of plutonium in sharp contrast to US estimates of 50kg; the difference being roughly the equivalent of four atomic bombs.²¹⁴ One DPRK official has even admitted to a visiting US scholar that it had *weaponized* its roughly 30 kg of

²¹⁰ Nikitin, 14-15

²¹¹ Arms Control Reporter (2007), 344

²¹² *Vantage Point*, 19

²¹³ Selig S. Harrison, *Korean Endgame: A Strategy for Reunification and U.S. Disengagement* (Princeton: Princeton University Press, 2002), 263

²¹⁴ Niksch (2008), 4. The US estimate of 50kg still prevailed in May, 2009.

separated plutonium.²¹⁵ Another estimate puts the level at 43 to 61kg of plutonium with approximately 20 to 53kg of it separated.²¹⁶

Whatever the case may be, the DPRK Foreign Ministry recently announced that the reprocessing of spent fuel rods commenced again on 14 April, 2009²¹⁷ and that this process ended successfully in November of 2009.²¹⁸ If these are genuine claims, the DPRK plutonium stock almost certainly continues to rise. Albright has suggested that the “minimum estimate of the amount of separated plutonium is North Korea’s declaration,” but thinks that the “true value is higher.”²¹⁹ However, even the DPRK declaration should not be taken as a reliable benchmark since the regime has demonstrated the repeated use of deception when it comes to its nuclear weapons program. Although these techniques will be linked to motivations in Chapter Four, it suffices to note that plutonium levels declared by the DPRK could also be inflated as a kind of scare tactic; the upshot of which would be both imprecise minimum and maximum estimates.

According to a Soviet KGB report to the Soviet Central Committee, the DPRK had acquired its first nuclear device by 1990.²²⁰ Albright recommends that this report be approached with caution, adding that most Russian intelligence reports conclude the DPRK is yet to develop a nuclear device, let alone a nuclear bomb capable of being mated to a delivery system. One defector alleges that the DPRK has a nuclear weapon

²¹⁵ Nikitin, 5

²¹⁶ Arms Control Reporter (2007), 344

²¹⁷ “Foreign Ministry Spokesman on Reprocessing of Spent Fuel Rods,” *Korean Central News Agency*, April 25, 2009, <http://www.kcna.co.jp/index-e.htm>

²¹⁸ “DPRK Completes Reprocessing of Spent Fuel Rods,” *Korean Central News Agency*, November 3, 2009, <http://www.kcna.co.jp/index-e.htm>

²¹⁹ Albright (2000), 125. Russian reports have since altered this conclusion.

²²⁰ Niksch (2008), 13

which is comprised of 4kg of plutonium.²²¹ Albright also goes on to warn rightly against CIA and defector accounts since they have been unable to present any “solid, direct evidence to support their conclusions.”²²² In spite of this uncertainty, there appears to be a high level of confidence that the DPRK possesses at a minimum, enough separated plutonium to produce a nuclear bomb.

The general consensus amongst Russian, ROK and US intelligence agencies from the mid 1990s to early 2000s was that the DPRK possessed at a minimum, a “Nagasaki-class fat bomb” and “perhaps one or two simple fission-type nuclear weapons.”²²³ Nonetheless, US officials have never “explained why these estimates have been raised from the probability range to the certainty range.”²²⁴ Former US Secretary of Defense, William J. Perry, provides a typical US rationale in which estimates are based on progressively weaker evidence:

It is certain that they have the fuel to make eight to ten nuclear bombs. It is highly probable that this fuel has been reprocessed to make plutonium. It is likely that the resulting plutonium has already been used to make some or all of the bombs.²²⁵

Consider the similarities with former US ambassador and special envoy for negotiations with the DPRK, Charles (Jack) Pritchard. Pritchard suggested in 2007 that “Pyongyang

²²¹ Daniel A. Pinkston, “The North Korean Ballistic Missile Program,” *Strategic Studies Institute* (February, 2008), 54

²²² Albright (2000), 112

²²³ Nicksch (2006), 103. The Nagasaki bomb had a yield of approximately 20 kilotons equivalent of TNT. See Richard L. Garwin & Frank N. Von Hippel, “A Technical Analysis: Deconstructing North Korea’s October 9 Nuclear Test,” *Arms Control Today*, November 2006,

http://www.armscontrol.org/act/2006_11/tech

²²⁴ Nicksch (2006), 101

²²⁵ William J. Perry, “Proliferation on the Peninsula: Five North Korean Crises,” *The Annals of the American Academy of Political and Social Science* 607 (September, 2006): 84

may then possess approximately ten nuclear weapons; if it has not actually manufactured that number it certainly has enough plutonium to do so.”²²⁶

The DPRK itself has provided ambiguous information on whether it possesses a viable nuclear bomb. In April of 2003, DPRK officials revealed to the US that they possessed a couple of bombs and might be willing to sell them on the world market.²²⁷ Between April, 2003 and February, 2005 the DPRK made numerous public declarations that it possessed a nuclear device,²²⁸ including 10 February, 2005, when it declared that it had become a nuclear weapons state.²²⁹ Shortly thereafter, DPRK vice Foreign Minister Kim Kye-kwan admitted that not only did his country possess nuclear *bombs*, but that it was also pursuing more.²³⁰ These claims have been less manifest since 2006 but at the same time have not disappeared. Making matters worse, the DPRK refused to provide information on the numbers of bombs it possesses, if any, to the US as part of their 2007 agreement.²³¹ Thus, while the DPRK has claimed to have produced different numbers of nuclear weapons, none of the claims have been verified.²³²

The absence of accurate information on the DPRK’s bomb stock along with a lack of information on other important steps in the development of a viable nuclear weapon, has resulted in a great deal of analyses that potentially erroneously estimate DPRK capabilities. This is illustrated in analyses that have fallen victim to the *plutonium*

²²⁶ Charles L. Pritchard, *Failed Diplomacy: The Tragic Story of How North Korea got the Bomb* (Washington, D.C.: Brookings Institution Press, 2007), 133

²²⁷ Clinton officials would later reveal that they were told a similar story in 1993. See Cumings (2004), 93-94

²²⁸ Paul Kerr, “News Analysis: Examining North Korea’s Nuclear Claims,” *Arms Control Association* (March, 2005), http://www.armscontrol.org/act/2005_03/NA_NorthKorea

²²⁹ Ford, 155

²³⁰ “North Korea Admits Building More Nuclear Bombs,” *ABC News Online*, June 8, 2005, <http://abcnews.go.com/WNT/story?id=831078&page=1> (emphasis added).

²³¹ Niksch (2008), 4

²³² Save for the nuclear tests which they have conducted, which doesn’t necessarily verify the claims but indicates the existence of some sort of device. The tests are discussed below.

amounts to bombs fallacy. Hymans draws attention to the fallacy, and notes the tendency to resort to a “worst-case scenario” in which estimates

of the DPRK’s contemporary nuclear weapons capacity generally follow the typical assessment shorthand that boils the capacity problem down to estimating the size of a state’s plutonium stockpile [...] Yet, although the acquisition of fissile material is surely important for nuclear weapons capacity, it is just the beginning of the problem. After all, what we colloquially refer to as nuclear “bombs” are actually complex weapons systems involving an incredibly diverse array of advanced technologies.²³³

To put it simply, although the DPRK is a “declared nuclear state, saying it does not make it so.”²³⁴ What is more, the DPRK itself has been vague on its capacity to mate a nuclear device to a delivery system such as a ballistic missile. On this topic, Kim Kye-kwan simply states, “Our scientists have the knowledge, comparable to other scientists around the world.”²³⁵

One telltale sign of not only the existence of a nuclear weapons program but particularly the development of a viable nuclear device is a nuclear detonation. Prior to the DPRK’s first nuclear detonation, its program had again been frozen, if only for four months, by a deal similar in content to the 1994 Agreed Framework in which the DPRK would be given energy assistance and negative security assurances in exchange for denuclearization.²³⁶ Yet, only nine months after the agreement, the DPRK conducted its test. In the absence of a completely successful nuclear test, the possibility that the DPRK’s nuclear device is a paper tiger, so to speak, cannot be ruled out. To date, the DPRK has conducted two nuclear tests.

²³³ Hymans (2008), 272

²³⁴ Jacques E. C. Hymans, “North Korea’s Nuclear Neurosis,” *Bulletin of the Atomic Scientists*, Vol. 63, No. 3 (May/June 2007), 48

²³⁵ *ABC News Online* (June 8, 2005)

²³⁶ The agreement can be found here: <http://www.fmprc.gov.cn/eng/topics/dslbj/t212707.htm>

On 9 October, 2006, the DPRK conducted a partially successful test in the mountains near Kimchaek city, North Hamgyong province.²³⁷ By most accounts, despite the fact that the DPRK forewarned China that it was preparing to carry out a 4 kiloton test, the test yield was less than 1 kiloton,²³⁸ and therefore was a “fizzle rather than a bang.” Although the CIA was quick to announce the test a failure,²³⁹ other possibilities remain. The DPRK’s initial prediction of a 4 kiloton yield suggests that they were not seeking to test for a Nagasaki-class design.²⁴⁰ It could have been intentional in order to develop a “sophisticated device for a Nodong medium range missile,” or, in order to “limit the amount of plutonium used.”²⁴¹ The *Korean Central News Agency* was quick to announce that the nuclear test was “successfully conducted [...] with indigenous wisdom and technology 100 percent.”²⁴²

The DPRK conducted a second test on 25 May, 2009. This test is estimated to have been larger “but still modest.”²⁴³ The yield of the second test is still unclear but estimates range from 4 to 20 kilotons, with “most analysts predicting a yield of 5 kilotons or less.”²⁴⁴ For the DPRK, the second test “marked a historic event which demonstrated the dignity and might of Songun Korea to the world once again.”²⁴⁵ However, neither test has demonstrated total nuclear device success. At the same time, it is important to note that at the very least, the tests confirm a certain degree of progress in the technical faculty

²³⁷ Ford, 156

²³⁸ *Arms Control Today* (2006)

²³⁹ Kim Min-sok, “The North Korean Nuclear Test has not been Confirmed,” Joong Ang Ilbo Online (ROK Daily in Korean), March 28, 2007, http://article.joins.com/article/article.asp?Total_ID=2675828

²⁴⁰ *Arms Control Today* (2006)

²⁴¹ Nikitin, 10

²⁴² “DPRK Successfully Conducts Underground Nuclear Test,” *Korean Central News Agency*, October 10, 2006, <http://www.kcna.co.jp/index-e.htm>

²⁴³ Nikitin, 1

²⁴⁴ *Ibid*, 10

²⁴⁵ “More Meetings Held to Hail Successful Nuclear Test,” *Korean Central News Agency*, May 30, 2009, <http://www.kcna.co.jp/index-e.htm>. *Songun* is the DPRK’s ‘military first’ policy, further outlined in Chapters Three and Four.

to develop a nuclear device. Larger devices and mating capabilities linger on the horizon. Additionally, the timing of the tests has significance for Pyongyang's motivations.

Although it cannot be said with certainty that the DPRK possesses even one viable nuclear weapon, by April 2009 brief references to the DPRK's newfound ability to mate a nuclear warhead to short and medium range missiles were obscured in numerous intelligence reports, with the IAEA admitting for the first time that the DPRK had succeeded in becoming a nuclear weapons state.²⁴⁶ If indeed the DPRK possesses this capability, it has the power to strike strategically important and populous targets in East Asia, drastically altering the strategic atmosphere. However, the corollary of privileged information and incomplete evidence is truly enigmatic plutonium weapons capabilities.

Finally, while there may be uncertainty about the DPRK's plutonium program, its highly enriched uranium (HEU) program redefines the meaning of obscurity. So much so that, until recently it could not even be called a program in its own right. The HEU method is a much more technologically complex process than the plutonium route to nuclear weapons production. The IAEA

defines uranium enriched to more than 20 percent uranium 235 as "highly enriched uranium" and considers it to be a weapons-usable material. Increased enrichment allows for smaller amounts of material to be used for a weapon, with "weapon-grade" uranium typically concentrated to more than 90 percent uranium 235.²⁴⁷

Possible locations for the HEU program have included Chonma Mountain,²⁴⁸ and the Academy of Sciences in Pyongyang, as well as underground sites at Taechon and

²⁴⁶ Richard Lloyd Parry, "North Korea is fully fledged nuclear power, experts agree," *Times Online*, April 24, 2009, <http://www.timesonline.co.uk/tol/news/world/asia/article6155956.ece>

²⁴⁷ Alexander Glaser & Zia Mian, "Fissile Material Stocks and Production, 2008," *Bulletin of the Atomic Scientists* (January/February 2009): 35

²⁴⁸ Niksch (2008), 10

Pakchon in North Pyongan Province.²⁴⁹ The DPRK's HEU program purportedly began in 1996 or even earlier.²⁵⁰

Claims concerning the DPRK's HEU activities rest on four wobbly pillars. Evidence of the DPRK importing "aluminum centrifuge tubes and other technology relevant to [...] enrich uranium," reportedly surfaced in 1998,²⁵¹ and again in 2002, with the US claiming to have intercepted several shipments destined for the DPRK.²⁵² However, the US refuses to release its intelligence on the DPRK's nuclear technology purchases.²⁵³ A related indication, according to the US, was the trace amounts of enriched uranium found on such tubes during IAEA inspections. The problem is that the tubes were used when the DPRK purchased them from Russia in 2002, and therefore it cannot be ruled out that the tubes were pre-contaminated.²⁵⁴ The third is a conversation between US official James Kelly and DPRK First Deputy Foreign Minister Kang Sok-ju, in which Kang reportedly told Kelly his country had an HEU program. Foreign Minister Pak Nam-sun later elucidated that the DPRK would establish its right to pursue such a program if it so chose.²⁵⁵ The final piece of so called proof is the alleged relationship that the DPRK has had with the infamous Pakistani nuclear scientist, Abdul Qadeer (A.Q.) Khan. There does in fact appear to be a connection between the DPRK and Khan although the nature of the relationship remains unclear. He apparently visited the DPRK on numerous occasions and provided both technology and materials such as "first

²⁴⁹ Arms Control Reporter (2007), 342-343. See http://www.nti.org/e_research/profiles/NK/201.html for a map of suspected DPRK HEU facilities.

²⁵⁰ Nicksch (2008), 10

²⁵¹ Cumings (2004), 95

²⁵² Ford, 156

²⁵³ Nicksch (2006), 106

²⁵⁴ Arms Control Reporter (2007), 342

²⁵⁵ Selig S. Harrison, "Did North Korea Cheat?" *Foreign Affairs*, Vol. 84, No. 1 (2005), 101

generation high speed centrifuges [and] warhead designs” for an HEU program.²⁵⁶ Yet, US claims rest mostly on confessions from Khan, whom the US still has “not had direct access to.”²⁵⁷

There are a variety of reasons why the DPRK might or might not pursue an HEU nuclear weapons program, not the least of which is the DPRK’s lack of technical expertise in the area, notwithstanding whatever assistance it received from Pakistan.

Selig Harrison notes the technical difficulties associated with an HEU program:

1,300 high performance centrifuges would have to operate full time for three years to make the 60 kilograms of fissile material needed for a basic (“gun-type”) nuclear weapon. Accomplishing that would require an enormous sustained input of electricity, without fluctuation or interruption. Moreover, the operation of a multi-stage “cascade” requires a high-powered motor with a speed twice that of a MiG-21 jet engine. North Korea cannot produce engines even for its Russian-supplied MiGs, and it has only limited, highly unreliable electricity capabilities.²⁵⁸

On the other hand, there is the DPRK’s abundance of natural uranium and the frequent roadblocks it has hit with its plutonium program. What is more, HEU facilities are much easier to camouflage than plutonium ones,²⁵⁹ which bodes well with the large quantity of underground complexes in the DPRK.

Pyongyang’s reluctance to give up Yongbyon has fuelled suspicions that it eventually did so in order to concentrate on an HEU program.²⁶⁰ The DPRK admitted importing aluminum tubes to enrich uranium for civilian energy purposes, while repeatedly denying an HEU program,²⁶¹ until April, 2009, when it suggested that it

²⁵⁶ Ford, 155-156

²⁵⁷ Nicksch (2006), 106

²⁵⁸ Harrison (2005), 105

²⁵⁹ Nikitin, 8

²⁶⁰ Nicksch (2008), 7

²⁶¹ Ibid, 4-5

intended to pursue one.²⁶² In other words, the overwhelming lack of dependable information on a DPRK HEU program, coupled with the tremendous technical and financial strains, present a strong case that the DPRK may very well decide against an HEU program.²⁶³ Again, the timing and nuances of an HEU program, including its effects on other actors such as the US, has important implications in considerations of Pyongyang's motivations.

Ballistic Missile Program

Although the development of nuclear devices alone is a matter of concern, a comprehensive understanding of the DPRK's nuclear weapons motivations must be anchored in an evaluation of its nuclear weapon delivery system(s). Without a viable delivery system, a nuclear device on its own is a much less potent military tool. The DPRK's pursuit of a workable delivery system has at times escalated concerns about its nuclear weapons program and altered regional and global military strategic calculations. Joseph Bermudez Jr. contends that there is "little doubt that the DPRK perceives the ballistic missile to be the delivery system of choice for nuclear weapons."²⁶⁴ Its ballistic missile program has evolved in a fashion not unlike its nuclear weapons program. It originated with bilateral defence agreements between the DPRK and both China and the Soviet Union, and these partnerships developed to a point where, for a variety of reasons, both China and the Soviet Union were no longer able or unwilling to provide the DPRK with the requisite technology or materials for its program. Subsequently, the DPRK built on the existing infrastructure and sought further foreign partnerships, especially from the

²⁶² Choe Sang-hun, "North Korea Issues Threat on Uranium," *The New York Times*, April 29, 2009, <http://www.nytimes.com/2009/04/30/world/asia/30korea.html>

²⁶³ Perhaps one of the most significant consequences of the HEU program is that the DPRK officially withdrew from the NPT on 10 April 2003, after being confronted over the program by the US.

²⁶⁴ Joseph S. Bermudez Jr., "A History of Ballistic Missile Development in the DPRK," Occasional Paper #2, *Center for Nonproliferation Studies* (1999a), 1

developing world, to produce an indigenous capacity, and, it continues to enhance its ballistic missile capabilities through these partnerships, to the point where its program is recognized as the “largest ballistic missile force in the Third World,”²⁶⁵ posing a “direct threat to Northeast Asia.”²⁶⁶

While some put forth the 1970s as the starting point for the DPRK’s ballistic missile program,²⁶⁷ the program appears to be rooted in the 1960s when the DPRK signed several bilateral defence agreements in the areas of military training and cooperation with the Soviet Union.²⁶⁸ Daniel Pinkston suggests that by 1965 Kim Il-sung most likely made the decision to pursue an “indigenous missile production capability after the Soviets rebuffed his request for ballistic missiles.”²⁶⁹ Although they would not provide ballistic missiles, the Soviets did provide in the 1960s free rockets over ground (FROGs), surface to air missiles (SAMs), of which the V-75 Dvina SAM would become the DPRK’s first missile system deployed by 1963 near Pyongyang,²⁷⁰ and, coastal defence anti-ship missiles (COAMs). Perhaps more important than the military strategic value of the weapons deliveries, DPRK engineers were exposed to basic rocket technologies.²⁷¹

In 1965, Kim Il-sung established the Hamhung Military Academy which had as a primary focus the training of DPRK “personnel in rocket and missile development.”²⁷²

Following a delay in assistance, the DPRK would again benefit in the late 1960s from

²⁶⁵ Bermudez (1999a), 1

²⁶⁶ Pinkston, 1

²⁶⁷ One example is Jung-hoon Lee & Il Hyun Cho, “The North Korean Missiles: A Military Threat or a Survival Kit?” *Korean Journal of Defense Analysis*, Vol. XII, No. 1 (Summer 2000): 135. It is true that the DPRK sought Chinese assistance at this time but this activity was not the beginning of its ballistic missile program. Another author has argued that the program began when the DPRK sought a partnership with China following China’s success with the development of the CSS-4 in the 1960s and 1970s. See Bazhanov, 102

²⁶⁸ Bermudez (1999a), 2

²⁶⁹ Pinkston, 14

²⁷⁰ Bermudez (1999a), 2

²⁷¹ Pinkston, 14

²⁷² Ibid, 14

Soviet furnished coastal defence missiles (*S-2 Sopka*), anti-ship missiles (*P-20*), and an artillery rocket called the *3R10 Luna-2*. Soviet weapons training during this time became the “foundation upon which the DPRK subsequently developed an indigenous missile production capability.” As a result of deteriorating DPRK-Soviet relations, the DPRK turned to China in the early 1970s, including a 1971 agreement calling for the “acquisition, development and production of modern weapons systems.” This included training, missile and technology transfers and resulted in the DPRK acquisition of a wide variety of Chinese produced missiles.²⁷³

The 1970s were important years in the DPRK’s missile program. During this period the program received increased attention to the point where it “became a national priority equal to that of the nuclear program.”²⁷⁴ More importantly, perhaps as a consequence of the augmented status, the DPRK made significant advancements in its rocket and missile arsenal. By the late 1970s it reverse engineered Syrian *SS-21*’s in order to replace some of its Soviet supplied FROGs.²⁷⁵ In 1975 the DPRK initiated a “multifaceted ballistic missile program.”²⁷⁶ At this point, the DPRK developed its first missile “totally manufactured with indigenous components” believed to be a “reverse engineered version of the Soviet *PUR-61 Shmel* [...] anti-tank guided missile.”²⁷⁷ Sometime in the late 1970s the DPRK imported “a number of” Soviet made *Scud-B* missiles.²⁷⁸ In light of Soviet and Chinese refusals to provide more advanced missiles,

²⁷³ Bermudez (1999a), 3-4

²⁷⁴ Ibid, 1

²⁷⁵ Pinkston, 36

²⁷⁶ Bermudez (1999a), 4

²⁷⁷ Ibid, 8

²⁷⁸ Bazhanov, 102

notwithstanding the odd acquisition from other sources, the DPRK was leaving itself “only one real choice: to produce ballistic missiles indigenously.”²⁷⁹

The DPRK has thus demonstrated a pattern of seeking technology abroad for emulation in order to procure an indigenous capability. A good example of this is the Soviet-made Scuds imported by the DPRK. From the Soviet *Scud-B*, the DPRK produced the *Scud Mod-A*, with a range of 280-300km²⁸⁰ and capable of carrying a 1000kg warhead. However, this missile was never deployed by the KPA. Instead, it chose to improve on the design and produced the *Hwasong-5* (known to the west as the *Scud Mod-B*), with a range of 320-340km and payload capacity of 1000kg, financed in part by Iran in exchange for “large-scale supplies of the finished product.”²⁸¹ The seemingly nominal improvement of 40 to 60 km was likely motivated by the fact that it would allow for a more far-reaching targeting of the ROK which of course, includes US bases. The missile was flight tested in 1984 and war tested in the Iran-Iraq War.²⁸² Although the DPRK deployed the missile by 1987, it again improved on the design with the *Scud Mod-C* (*Hwasong-6*), expanding the range to more than 400km,²⁸³ and payload capacity to 770kg.²⁸⁴ In short, the acquisition of the Scud missile “set the pattern for North Korea’s accomplishments, especially the development of missiles with extended ranges.”²⁸⁵

Beginning in the late 1980s, the DPRK’s ballistic missile program went into hyper-production mode with further work on the *Hwasong-6*, and extensive work on the

²⁷⁹ Bermudez (1999a), 9

²⁸⁰ Refer to Bermudez (2000) for a complete list of names, ranges and payload capacities for the DPRK missile inventory.

²⁸¹ Bazhanov, 102

²⁸² Pinkston, 16

²⁸³ Bazhanov, 102-103

²⁸⁴ Pinkston, 17

²⁸⁵ Niksch (2006), 107

Nodong, *Paektusan-1* and *Paektusan-2* (known to the west as the *Taepodong-1* and *Taepdong-2*), and the *Musudan*.²⁸⁶ Despite the absence of a “single successful flight test,” small scale production on the *Nodong* began in 1991. During this time, it is believed the DPRK received extensive foreign assistance, especially from Russian experts. The *Nodong* has an estimated range of 1000 to 1300 km and was first deployed in 1995.²⁸⁷ A *Nodong* test in 1993 was a significant catalyst for the perception that the DPRK was, “working on nuclear warhead development,”²⁸⁸ since it was believed the missile was “intended to carry a first-generation nuclear warhead.”²⁸⁹

The *Nodong* and *Hwasong-6* are considered the “basic building blocks” of the DPRK’s *Paektusan* program, as a “logical evolution of the experience gained and technology employed” in the research and development of the two missile predecessors.²⁹⁰ The *Paektusan-1* and *Paektusan-2* have been designed to travel further and carry larger payloads than their predecessors, potentially giving them an ICBM classification; the only missiles in the DPRK inventory of this kind. The first prototypes of the *Paektusan-1* are believed to have been produced in 1996 or 1997 and all versions of the *Paektusan* are believed to be “HE [high explosive], cluster, chemical and nuclear” warhead capable.²⁹¹ Satellite imagery revealed that one version of the *Paektusan-2* appeared to have a Chinese *Dongfeng-3* (CSS-2) as a first stage and a *Nodong* variant as a second stage. Despite this, Chinese assistance “appears to have been more general in

²⁸⁶ Pinkston, 16-17

²⁸⁷ Pinkston, 18-20

²⁸⁸ Nicksch (2006), 102

²⁸⁹ Joseph S. Bermudez, Jr., “The Rise and Rise of North Korea’s ICBM’s,” *Jane’s International Defence Review*, Vol. 32, No. 7 (1999b): 57

²⁹⁰ *Ibid*, 60

²⁹¹ *Ibid*, 60

nature and not for the design or development of any particular ballistic missile.”²⁹² Other reports suggest that some versions of the *Paektusan-2* make use of a clustering of three *Nodong* engines. The visible manifestation of foreign and indigenously influenced and manufactured missiles typifies the DPRK’s development in this field, and is a testament to its drive for a viable weapon.

Sometime between 1992 and 1998 the DPRK acquired the designs and possibly components for a decommissioned Soviet R-27 missile,²⁹³ which became the basis for two new DPRK missile deployments: a medium range ballistic missile (MRBM) with a range of 2500 to 4000km and a submarine or ship mounted missile with a range of approximately 2500 km. Bermudez Jr. suggests that the R-27 or *Musudan* as the DPRK road version is commonly labelled, was a good development choice since the system was “well within the [DPRK’s] level of skill and industrialization.” Another acquisition in 1993 enhanced the DPRK’s chances at developing a submarine or ship mounted system when the Korean People’s Navy (KPN) reportedly obtained decommissioned Foxtrot and Golf-II class Soviet submarines. Although the acquisition was said to be for scrap metal, the submarines still had their “launch tubes and stabilization systems,” allowing the KPN to develop the ship mounted ballistic missile system.²⁹⁴ The *Musudan* program is relatively nascent and not much is known about it, not the least of which is whether the DPRK possesses re-entry vehicles for either version of the missile, despite the fact that the original Russian versions had both single and three re-entry vehicles.²⁹⁵

²⁹² Pinkston, 24-25

²⁹³ The R-27 was a submarine launched missile.

²⁹⁴ Joseph S. Bermudez Jr., “North Korea Deploys New Missiles,” *Jane’s Defence Weekly* (August 4, 2004): np

²⁹⁵ Steven A. Hildreth, “North Korean Ballistic Missile Threat to the United States,” *Congressional Research Service Report for Congress* (January 3, 2007): 5

Accompanying the long nuclear silence on the Korean peninsula was a parallel silence in missile testing, which was shattered in August 1998. At this time the DPRK tested multiple missiles, including the *Paektusan-1* and *Nodong*. The *Nodong* tested successfully. However, the *Paektusan-1* achieved only partial success since it flew just 1646 km, despite its estimated range of 2000-2500 km.²⁹⁶ The *Paektusan* launch was used to attempt to put the DPRK's first satellite, the *Kwangmyongsong-1*, into orbit; Kim Il-sung's expressed desire since 1993. As the most likely candidate, the *Paektusan-1* was in all probability conceived from the start as a space launch vehicle (SLV) version.²⁹⁷ Although the launch failed to put the satellite into orbit, the KCNA stated that Pyongyang had successfully launched its first satellite using multistage rocket technology,²⁹⁸ and Kim Jong-Il reportedly declared to Madeleine Albright that the satellite launch was to be its last.²⁹⁹

The *Nodong* program appears to have been a major turning point in the DPRK quest for an indigenous ballistic missile capability. Following 1993 tests of the *Nodong*, it was apparent that serious shortcomings existed, specifically in terms of accuracy, speed and trajectory. The DPRK attempted to overcome these deficiencies by "crossing several technology thresholds in the area of solid-fuel, missile staging, re-entry, and guidance systems."³⁰⁰ The result was the aforementioned *Paektusan* program, which was only indirectly influenced by the Chinese missile program. However, much like its nuclear program, the DPRK may have the skill and capacity to develop an indigenous

²⁹⁶ Bazhanov, 104

²⁹⁷ Bermudez (1999b), 60

²⁹⁸ "Successful Launch of First Satellite in DPRK," *Korean Central News Agency*, September 4, 1998, <http://www.kcna.co.jp/index-e.htm>

²⁹⁹ Alex Wagner, "Albright Visits North Korea; Progress Made on Missile Front," *Arms Control Today*, November 2000, www.armscontrol.org/act/2000_11/albrighttalks.asp

³⁰⁰ Bazhanov, 103

technological and scientific base capable of cultivating a viable missile program, but it continues to lean on outside assistance for requisite materials. For example, while it can produce components such as “oxidizer, rocket petroleum (RP-1), cables, integrated circuits, and special steels,” it still relies heavily on foreign imports of “advanced electronics components and other sophisticated hardware for guidance systems.”³⁰¹ Nonetheless, the DPRK has at times demonstrated a surprising level of competence in terms of the rapid development and deployment of some of its missiles. This competence has been exemplified in its frequent missile tests.

While the true extent of foreign influence on DPRK missile designs remains a mystery, two conclusions are possible. First, as Paul Bracken notes, the “development pattern of Asian missiles is hard to understand because they are looked at through Western eyes.” This is because “Asian countries like the DPRK show a willingness to forgo the elaborate safety, testing and scientific controls that would be standard practice in the United States.”³⁰² Consequently, by not taking this difference into account, Western analysts are at risk of over crediting other parties in cases where it is uncalled for, or at the very least has been minimal. Second, much like its nuclear weapons program, the DPRK is clearly dedicated to developing a robust ballistic missile arsenal to compliment its nuclear device capabilities, with or without foreign assistance. US intelligence agencies estimate that the DPRK is nearly at the point where it is self-sufficient in the production and development of ballistic missiles.³⁰³

³⁰¹ Pinkston, 22

³⁰² Paul Bracken, *Fire in the East: The Rise of Asian Military Power and the Second Nuclear Age* (New York: Harper Collins, 1999), 54

³⁰³ Pinkston, 20

The DPRK did not test missiles (at least on its own soil) from 1998 to 2005. On 5 July, 2006, the DPRK test fired seven ballistic missiles. The most prominent feature of the tests in media and government responses was the failed *Paektusan-2* launch. The significant gap between the failed *Paektusan-1* launch in 1998, and 2006 failure of the apparently modified and upgraded version of the ICBM,³⁰⁴ was a relief for many who feared DPRK capabilities of striking the continental United States. This fear and subsequent relief seems to have blinded many to the achievements that came out of the 2006 tests. For one, the DPRK demonstrated efficiency in its command and control capabilities, putting to rest some of the claims regarding its capacity to operate a functional missile system. Moreover, it established that Pyongyang had enhanced its *Scud* and *Nodong* accuracy (both of which the DPRK possess “several hundred” of),³⁰⁵ and its ability to “coordinate multiple launchings of missiles at diverse targets,”³⁰⁶ not to mention gaining “valuable experience in the process of preparing and launching mobile ballistic missiles.”³⁰⁷

Experience in mobile launches may very well prove to be an important asset for the DPRK if its *Musudan* missile becomes operational. It is generally agreed that the DPRK does not yet possess the technological expertise to develop an indigenous SLBM version of the R-27. Yet, the SLBM could potentially be most threatening to regional stability since it would have greater survivability, range and accuracy³⁰⁸ and therefore this avenue cannot be ruled out as a potential DPRK course. However, at this time, in light of evidence of DPRK technological imports, it seems reasonable to conclude that it will

³⁰⁴ The failure has been attributed to flawed propulsion or guidance systems, as it only flew 40-42 seconds.

See Pinkston, 30

³⁰⁵ Nikitin, 11

³⁰⁶ Niksch (2008), 11

³⁰⁷ Pinkston, 32

³⁰⁸ Bermudez (2004)

continue to focus on the land based version of the R-27. Surprisingly, the *Musudan* was not flight tested during the July 2006 tests, which one author finds “incredible” considering the DPRK had already deployed twenty of them by that same year.³⁰⁹

The *Paektusan* models have been known to be both two and three stage missiles. One three stage version of the *Paektusan-1* apparently used a *Nodong* as a first, *Scud* variant as a second, and a solid fuelled *KN-02* as a third. By the end of 1999 the DPRK had reportedly manufactured up to ten *Paektusan 1* and *2* prototypes. Although the focus appears to have shifted to the *Paektusan-2* and other variants,³¹⁰ it remains to be successfully flight tested to its estimated potential (4000 to 8000km carrying a 1000-1500 kg warhead). Moreover, although it is “believed to be fairly inaccurate,”³¹¹ it is nuclear warhead capable.³¹² Another test of a space launch vehicle (SLV) version of the *Paektusan-2* in April 2009 resulted in failure, though it flew longer than previous launches. It is widely believed that the SLV version (or *Unha-2* as the April version is called) is to a large degree derived from the same technology as the ballistic missile version. The April test was intended to launch the DPRK satellite *Kwangmyongsong-2* into orbit and thus required a third stage. However, much like the 2006 *Paektusan* test, the missile had stage separation difficulties and the second stage crashed to the earth along with the third stage.³¹³ Thus, while most versions of the *Paektusan* are frequently classified as ICBMs, it remains to be seen whether the DPRK has been able to achieve missile ranges that justify this (ICBM range begins at 5500 km). In other words, it might

³⁰⁹ Pinkston, 33-34

³¹⁰ The *Paektusan-X* or *Taepodong-X* is frequently mentioned in the literature as the latest in DPRK missile technology.

³¹¹ Hildreth, 2-3

³¹² Nikitin, 11

³¹³ Dean Knox, “North Korean Satellite Falls Short of Expectations,” *James Martin Center for Nonproliferation Studies* (April 8, 2009), np, http://www.cns.miis.edu/stories/090408_dprk_satellite.htm

be more appropriate to say that the DPRK is working within the realm of intermediate range capabilities.

While it seems that the DPRK continues to struggle to develop an operative ICBM, it continues to refine its short and medium range models. Since the *Hwasong*, *Nodong* and *KN-02* would be used in a regional conflict, the DPRK's successes with them have had important strategic implications. The *KN-02* is the DPRK's version of the Russian SS-21 and is a solid fuelled missile which allows for rapid launching and easier storage. It was first tested in April 2005, but failed, and then in May 2005, with success. It has a range of 120 km which puts Seoul and US forces at Pyongyang in range, and has a circular error probable (CEP) of 100 to 200 meters, making it much "more accurate than the Hwasong-5/6."³¹⁴ As it stands, with the exception of the *KN-02*, the DPRK's other missiles are relatively inaccurate and would be ill suited for carrying conventional warheads.³¹⁵ It stands to reason that once the DPRK is able to mate nuclear warheads to any or all of its missiles, if it has not already done so, the *Hwasong*, *Nodong*, *KN-02*, *Paektusan* and all of their variants will be strategically consequential, notwithstanding the potential for conventional, chemical or biological warhead usage.

In the meantime, the DPRK has actively sought a functional infrastructure to complement its growing ballistic missile arsenal. Beginning in the 1980s the DPRK constructed missile silos at various locations.³¹⁶ In the late 1990s a missile division was established in the KPA.³¹⁷ It has also evidently made a great deal of progress in developing transport and support vehicles as well as mobile launchers. It has imported

³¹⁴ Pinkston, 37

³¹⁵ Ibid, 48

³¹⁶ Bermudez (1999b), 60. See http://www.nti.org/e_research/profiles/NK/205.html for a map illustrating these locations.

³¹⁷ Pinkston, 48

Russian MA2-543 trucks, and modified Fiat and Nissan heavy duty trucks to become mobile *Scud* launchers.³¹⁸ The DPRK has also made substantial progress in constructing transporter erector launchers (TELs), with a system for the land based *Musudan* having been completed in 2003.³¹⁹

Conclusion

The DPRK's experience with nuclear energy and weapons is extensive. In the span of less than four decades it was evidently able to develop the primary infrastructural requirements for a dual use nuclear program from seemingly peaceful mutual scientific pacts with its principal allies, China and the Soviet Union. More importantly, in the roughly two decades following, it has demonstrated its capacity to capitalize rapidly on its knowledge to make strides in the nuclear weapons field with notable achievements such as producing weapons grade plutonium, nuclear detonations, as well as parallel developments in its ballistic missile program.

A large measure of the DPRK's infrastructure and military applications of its nuclear weapons program can be verified through regime accounts, IAEA inspections, declarations on its program and intelligence gathered by numerous agencies. In contrast, the DPRK's reasons for seeking nuclear weapons are much more difficult to verify and thus subject to even more debate than its technical achievements. Chapter Three puts the historical development of the DPRK's nuclear weapons program into perspective by considering some of the dominant theories on why it chose and continues to proliferate. The chapter utilizes the proliferation theories identified in Chapter One as a framework for understanding the case of the DPRK.

³¹⁸ Bazhanov, 104-105

³¹⁹ Bermudez (2004), np

Chapter 3

A Cross Temporal Analysis of DPRK Nuclear Drivers

There are a plethora of reasons offered to explain the motivations driving nuclear proliferation, but few explanations are able to capture fully the nuances of the DPRK case. The first chapter reviewed these explanatory theories which were compartmentalized into security, domestic, and norms, identity and prestige categories. Many of these theories focus on single causes of nuclear proliferation, or at the very least put undue emphasis on a single motivating factor. Although the DPRK's nuclear and missile programs have deep historical roots and are mired in opacity, they have been driven by a variety of factors which have shifted cross-temporally in terms of their influence on nuclear weapons decisions. As such, certain drivers have been more prominent than others in inspiring the initial programs, as well as the subsequent path the programs have taken. The upshot of this is that no single factor can be viewed as having entirely motivated the DPRK's nuclear weapons pursuit.

Another shortcoming of the dominant proliferation theories is that they are entrenched in some of the more influential approaches to the study of international relations. Consequently, the application of such theories to the DPRK case has been problematic. In the words of Ole Holsti, "International relations theories act as pairs of colored sunglasses, allowing the wearer to see only the salient events relevant to the theory."³²⁰ While it is true that certain approaches have correctly identified some of the drivers for the DPRK's nuclear pursuits, they have glossed over other considerations unrelated to their level of analysis. Few have tackled and even fewer have contributed to a better understanding of domestic drivers such as say, DPRK energy concerns and the preservation of regime stability. Although previous explanations have highlighted a

³²⁰ O.R. Holsti, "Theories of International Relations", in *Explaining the History of American Foreign Relations*, ed. Michael J. Hogan and Thomas G. Paterson (Cambridge: Cambridge University Press, 2004)

variety of drivers at various points in the DPRK's nuclear weapons pursuit, it will become clear here that few, if any, theories of nuclear proliferation have been capable of constructing a coherent cross-temporal and multi-causal explanation that sufficiently captures the complexities of the DPRK case.

In order to grasp the arguments related to the DPRK's motivations for nuclear weapons acquisition, it is imperative to establish definitional clarity. The reader will recall the definition of motivation from Chapter One being loosely termed as anything that has or continues to inspire the DPRK to seek nuclear weapons. Also, nuclear weapons here denote a viable nuclear weapons capability which includes an operable delivery system, unless otherwise specified. While this definition is overly simplistic, it is important to make the distinction between a viable nuclear weapon on the one hand and a secure second strike capability on the other, the latter being a hallmark of the so called first nuclear age. The ambiguity of the DPRK program demands that the latter not be ignored as a possible goal of the program. However, at this point in the debate most seem convinced that the DPRK has set the former as a minimum target.³²¹ An understanding of potential motivations is facilitated by an appreciation of the link between motives to go nuclear and the perceived means in which the DPRK intends to utilize such weapons.

It is important to recognize the interconnected nature of many of the arguments both *within* each category as well as *between* categories. For instance, whereas on their own the DPRK's existential security concerns are routinely cited as a driver, these threats are sometimes said to be compounded in the post-Cold War security environment because

³²¹ In light of the lack of verification of DPRK nuclear weapon capabilities it is impossible to determine exactly what capability the regime is pursuing. Whether the program is actually intended to produce a viable nuclear weapon or is being staged to convince the international community that this is indeed the regime's ambition is partly the purpose of this analysis.

of the DPRK's loss, or weakening of Soviet and Sino security guarantees. Likewise, the same existential security fears are sometimes linked to domestic considerations such as the DPRK state ideologies of *Juche* and *Songun*,³²² within which the acquisition of nuclear weapons is embedded and promoted as a means to resist foreign invasion and exploitation, which is allegedly employed to stifle domestic dissent and ensure regime cohesion and its ultimate survival. The importance of the interconnectedness of motivations is further explored in Chapter Four but it suffices here to note that a review of the drivers highlights the limitations of approaches endorsing fixed motivations in the DPRK case of proliferation.

Security Related Motivations

Security is frequently offered as the only real factor in considerations of DPRK motivations to seek nuclear weapons which, intentionally or not, sweeps all other potential motivations under the rug by relegating them to secondary drivers. For the most part, security related motivations fall under three general headings: for defensive, deterrence and offensive purposes or, in other words, as a shield, umbrella, or sword.³²³ Depending on the analyst and the context, the perceptions of DPRK motivations are rooted in not only fundamental triggers in the historical security environment that the DPRK has encountered, but also the ways in which the regime is believed to intend to use the weapons. The DPRK is seen at different points in history either as pursuing nuclear weapons as a means to attract assistance from its allies in the form of extended deterrence, as an independent capability to deter conventional or nuclear attacks by other

³²² These terms are explained below in the section on prestige, identity and norms.

³²³ This terminology is becoming commonplace in the literature. Victor D. Cha and Andrew Scobell are two well known scholars on the DPRK who make use of the terms.

states, as a military tool for pre-emptively attacking one or more of its enemies, or, numerous combinations of these.

The primary security catalysts which have been identified as driving the DPRK's nuclear weapons pursuit include: US conventional and nuclear threats to the DPRK coupled with varying degrees of US politico-military aggression; the ROK's conventional military capabilities as well as past attempts at establishing an indigenous nuclear capability, together with threats to absorb the DPRK, forcefully reunify the peninsula, and other forms of politico-military aggression; the perceived threat of the trilateral alliance between the US, ROK and Japan, which includes a certain degree of the aforementioned US and ROK derived stimuli; and a lack of, weakened, unreliable, or the loss of security guarantees from its allies in the form of a nuclear umbrella as a means to deal with the perceived threat from the DPRK's enemies.

The particular circumstances involving the partition of the Korean Peninsula following the end of the Second World War and the ensuing Cold War divisions in the region radically altered the East Asian security environment. The pivotal role of the US in bringing about this division and its subsequent entry in the Korean War³²⁴ would have long term consequences on DPRK security, or the perceived lack thereof. To some degree or another, when viewed through a security lens the DPRK has been genuinely concerned and therefore motivated to seek nuclear weapons to counter the conventional and nuclear threat posed by the US that began during this period and continues to the present.

Many analysts have concluded that Kim Il-sung attributed the defeat of the “invincible” Japanese empire to the “superiority of Western science and military

³²⁴ The US participation was actually a US led UN mission.

technology”³²⁵ after he witnessed the US bring Japan to its knees with “only two atomic bombs.” Despite this awe-inspiring effect, Kim was mistakenly convinced that the US would neither intervene militarily, nor use an atomic bomb in the Korean conflict. After the DPRK was nearly wiped off the map during the Korean War, Kim “might have thought that nuclear weapons would be the only and the best measure to ensure the security of the regime.”³²⁶ Kim’s attempts to obtain a Soviet supplied nuclear reactor after the war is cited as evidence of his interest in weapons at this time. Several years after the US intervention, documents made it clear that both Presidents Truman and Eisenhower had seriously considered making use of the bomb in order to prevent a North Korean advance as well as to smash the military stalemate.³²⁷

Security based analyses place varying degrees of emphasis on the level of continuity of this US nuclear threat and, if it is assumed that it has not been continuous, have chosen to highlight particular components of the threat. Whatever the case, the goal has been to identify the DPRK’s primary external security related motives and show a relationship with the level of progress and ambition in the DPRK’s nuclear weapon and missile efforts. Cumings suggests that the DPRK has had a “solid justification for going nuclear” since it has been the “target of periodic nuclear threats and extended deterrence from the United States for decades.” By 1958 (at the latest), the US transported nuclear weapons to the southern portion of the peninsula in spite of violating the armistice in the

³²⁵ Han S. Park, *North Korea: The Politics of Unconventional Wisdom* (Boulder: Lynne Rienner, 2002), 137-138

³²⁶ Uk Heo, “North Korea’s Nuclear Test: Cause, Implications and Prospects,” *Praeger Security International* (2006): 1

³²⁷ Alexandre Y. Mansourov, “The Origins, Evolution, and Current Politics of the North Korean Nuclear Program,” *The Nonproliferation Review* (Spring-Summer 1995): 28

process, which prohibited the introduction of qualitatively advanced weapons.³²⁸ Kim and Singh go as far as arguing that the introduction of “highly sophisticated nuclear weapons” by the US corresponds with the origins of the suspected DPRK quest for nuclear weapons.³²⁹ Cumings goes on to note that by the 1960s, “US’ Korean defense strategy was pinned on routine plans to use nuclear weapons very early in any new war”; weapons which had become incrementally more lethal since their first introduction, the same year (1958) that Chinese troops left the peninsula³³⁰ and the DPRK reduced ground troops.³³¹

Most security based analyses have put forward the *accumulation* of palpable threats at various times, both conventional and nuclear, as the decisive driver for Kim’s determination to go nuclear. This view holds that Kim’s inability to gain direct assistance with his own nuclear weapons program, as well as nuclear weapons themselves from his two principal allies, the Soviet Union and China, meant that he had to be satisfied with extended deterrence guarantees until he was able to muster the resources required for the DPRK’s indigenous program. The upshot of these perceived DPRK vulnerabilities was

³²⁸ The phrase “at the latest” is used because there are unconfirmed reports that the US actually deployed nuclear weapons sometime in 1957. The abrogation of the armistice and introduction of nuclear weapons was considered necessary in order to overcome fiscal constraints which necessitated a reduction of US troop deployments in the ROK as well as reduced support for ROK forces themselves. The US justified its decision based on the assumption that the DPRK was being given advanced weaponry by its allies, though not necessarily nuclear weapons. See Jae-Bong Lee, “U.S. Deployment of Nuclear Weapons in 1950s South Korea & North Korea’s Nuclear Development: Toward the Denuclearization of the Korean Peninsula,” *The Asia-Pacific Journal*, Vol. 8 (March, 2009): *np*, http://www.japanfocus.org/articles/print_article/3053

³²⁹ Il-Young Kim & Lakhvinder Singh, “The North Korean Nuclear Program and External Connections,” *The Korean Journal of Defense Analysis*, Vol. XVI, No. 1 (Spring 2004): 79

³³⁰ Bruce Cumings (2004), 52-53

³³¹ Peter Hayes, *Pacific Powderkeg: American Nuclear Dilemmas in Korea* (Massachusetts: Lexington Books, 1991), 124

DPRK-Soviet and DPRK-Sino mutual security treaties signed within two months of General Park Chung Hee's 1961 coup in the ROK.³³²

US policy was apparently not limited to using nuclear weapons in the case of a renewed Korean conflict. On the contrary, in 1967 when the DPRK seized the *USS Pueblo* spy ship, the initial US reaction was to consider using nuclear weapons in response.³³³ Peter Hayes suggests that by the 1960s the DPRK was sufficiently alarmed by the US nuclear threat that it began to structure its forces and means of production, such as important factories, so as to mitigate the effects of potential nuclear attack.³³⁴ Nevertheless, the US threat persisted. US strategy in the mid-1970s called for "quick, deep strikes into enemy territory, again with the likely use of nuclear weapons, especially against underground facilities."³³⁵ Moreover, during this period the US further bolstered its tactical nuclear weapons force in the ROK as part of its extended deterrence guarantee.³³⁶ While many of the missile and canon mounted weapons were aimed at Moscow and Beijing, Pyongyang did not escape targeting.

Hayes concludes that the initialization in 1977 of joint US-ROK military exercises codenamed *Team Spirit*, which were designed to train the militaries for the use of nuclear

³³² Michael J. Mazarr, *North Korea and the Bomb: A Case Study in Nonproliferation* (New York: St. Martin's Press, 1995), 23. Article 1 of the *Treaty of Friendship, Cooperation and Mutual Assistance between the Union of Soviet Socialist Republics and the Democratic People's Republic of Korea* provided "Should either of the Contracting Parties suffer armed attack by any State or coalition of States and thus find itself in a state of war, the other Contracting Party shall immediately extend military and other assistance with all the means at its disposal." Article 2 of the *Treaty of Friendship, Cooperation and Mutual Assistance between the People's Republic of China and the Democratic People's Republic of Korea* provides that "In the event of one of the Contracting Parties being subjected to the armed attack by any state or several states jointly and thus being involved in a state of war, the other Contracting party shall immediately render military assistance by all means at its disposal."

³³³ Cumings (2004), 53

³³⁴ Hayes, 125

³³⁵ Use in the event of a new war in Korea was said to be "within one hour of the outbreak of war." See Cumings (2004), 54

³³⁶ Mansourov (1995), 29. This extended deterrence offered to the ROK in exchange for giving up its nuclear ambitions is discussed further in the section on ROK derived motivations for the DPRK program.

weapons, also had a far-reaching effect on the DPRK's collective security consciousness.³³⁷ The DPRK is said to view "Team Spirit not only as an affront to Korean sovereignty³³⁸ but also as nuclear sabre-rattling, since the exercises are based on ... [an] explicit nuclear component."³³⁹ In the context of an increasingly ubiquitous US ability to strike deeper and quicker rendering the DPRK's conventional deterrent ever more ineffective, in conjunction with the absence of a credible security guarantee (outlined below), the DPRK has often felt that the US "tries to isolate and strangle the North by surrounding it with military equipment and troops."³⁴⁰

US nuclear weapons remained on the Korean Peninsula until 1991 when they were removed as part of George H.W. Bush's decision to remove all land based tactical nuclear weapons in the wake of the collapse of the Soviet Union. While this may have had a positive impact in alleviating DPRK security fears, a much deeper security crisis was emerging. Pyongyang feared the US might simply continue to move east in an attempt to rid the globe of the remaining vestiges of the Cold War, namely the DPRK.³⁴¹ It is worth remembering that although nuclear weapons had been removed from the peninsula (at least as far as the DPRK was assured), the US would have no problem conjuring weapons from its vast arsenal if required, of which the DPRK was unquestionably acutely aware. In addition to this unbroken nuclear threat, the DPRK's conventional arms disparities vis-à-vis its major enemies exacerbated DPRK insecurity.

³³⁷ Hayes, 134-135

³³⁸ One reason for this might be an incident in 1994 when a US helicopter entered DPRK airspace carrying onboard a nuclear weapon.

³³⁹ Selig Harrison, "Statement Prepared for a Hearing of the Subcommittee on Asian and Pacific Affairs, Committee on Foreign Affairs, U.S. House of Representatives," (November 3, 1993), 45

³⁴⁰ Young-Tai Jeung, *Internal and External Perceptions of the North Korean Army* (Seoul: Korea Institute for National Unification, 2008), 24

³⁴¹ Natalya Bazhanova, "North Korea's Decision to Develop an Independent Nuclear Program," in *The North Korean Nuclear Program: Security, Strategy and New Perspectives from Russia*, ed. James Clay Moltz & Alexandre Mansourov (New York: Routledge, 2000), 134

In this sense, the DPRK desire for nuclear weapons is seen as a means to overcome this conventional military weakness on the one hand and meet the nuclear threat on the other – a tool that is capable of deterring “an adversary as powerful as the United States [...] a weapon easily hidden and not vulnerable to attack.”³⁴²

It is also frequently claimed that Pyongyang’s nuclear weapons choices have been profoundly driven by the perception that the US would intervene in a future inter-Korean conflict and fundamentally alter any DPRK designs on forceful reunification. Kim Il-sung once stated: “If war breaks out, the US and Japan will also be involved. In order to prevent their involvement, we have to be able to produce rockets which fly as far as Japan.”³⁴³ He intended to “counterbalance the U.S. nuclear threat” by

aiming his potential nuclear warheads at the place where it could hurt U.S. strategic interests in the Asian-Pacific region the most – at a long-time Korean arch-enemy, Japan. Indeed, in October 1994 one DPRK diplomat in Moscow ... [stated] that the KPA needed only as many nuclear warheads as there were main Japanese islands (i.e. four).³⁴⁴

In other words, this view sees the most important objective of the quest for nuclear weapons as a means to “deter nuclear attack from the United States by developing a local balance of nuclear terror on the Korean Peninsula”³⁴⁵ and the Northeast Asian region. The DPRK’s intent was thus not to use nuclear weapons in a suicidal first-use attack but was anchored in achieving an independent strategic deterrent to prevent US first use and involvement in any plans Pyongyang had for invading the south.³⁴⁶ Related arguments

³⁴² Kong-dan Oh & Ralph C. Hassig, “North Korea’s Nuclear Politics,” *Current History* (September, 2004): 275

³⁴³ Joseph S. Bermudez Jr., “A History of Ballistic Missile Development in the DPRK,” Occasional Paper #2, *Center for Nonproliferation Studies* (1999a), 2-3

³⁴⁴ Mansourov (1995), 30

³⁴⁵ Tai Sung An, “The Rise and Decline of North Korea’s Nuclear Weapons Program,” *Korea and World Affairs*, Vol. 16 (Winter, 1992): 675

³⁴⁶ Pyongyang’s reunification by force machinations have apparently varied but the fundamental point is that nuclear weapons have at least been considered as part of a “denial strategy” to prevent US involvement.

point to the recently available records of Hungarian officials which reveal that the DPRK felt that by the 1970s if reunification were to occur it would be on nuclear terms, suggesting a strong motive for the DPRK to seek nuclear weapons.³⁴⁷

The zenith of the US conventional and nuclear threat happened to occur at a time when the DPRK was ostensibly nearing its goal of developing its own nuclear weapons (that is, the late 1980s and early 1990s). Although there remains a dearth of reliable information on the technical details of the program, the predominant perception was that the DPRK was *intent* on acquiring nuclear capabilities and was working rapidly to achieve this goal. The resultant pressure exerted by the US and the international community served to contribute to the DPRK's fears that the US was not only interested in defending its regional allies, the ROK and Japan, but also determined to attack preemptively the DPRK. The resumption of *Team Spirit* exercises in 1993 following their cancellation by the Bush administration the previous year, as well as US pressure on the IAEA to conduct "special" and intrusive inspections to "ferret out" previously unknown nuclear sites have also been cited as primary DPRK motivations.³⁴⁸ To be sure, US actions of the early 1990s did not occur in a vacuum and led the DPRK to voice its "perennial fear that the United States simply wanted to obliterate its existence as a state."³⁴⁹

See Victor D. Cha, "North Korea's Weapons of Mass Destruction: Badges, Shields or Swords?," *Political Science Quarterly*, Vol. 117, No. 2 (2002): 224-225

³⁴⁷ Sergei Radchenko & Balazs Szalontai, "North Korea's Efforts to Acquire Nuclear Technology and Nuclear Weapons: Evidence from Russian and Hungarian Archives," *Working paper #53, Cold War International History Project* (August, 2006), 55

³⁴⁸ Motivations only insofar as an increased incentive to develop a bomb and not in the sense that these pressures initiated the DPRK nuclear weapons program. Not only have analysts cited these reasons but the regime itself has cited them as well.

³⁴⁹ Cumings (2004), 65-67

Until the US stepped up pressure as a tactic to deal with the DPRK's nuclear program, it is believed that DPRK decision makers had decided to suspend, but not terminate, the program until the US nuclear and defence posture in East Asia (the level and type of support it would pledge to the ROK) as well as the role Japan would play were deciphered.³⁵⁰ However, the 1994 US-DPRK Agreed Framework which included a negative security guarantee from the US that it would not attack the DPRK as long as it continued to work toward denuclearization, managed to contain the DPRK's nuclear efforts.³⁵¹ The period between 1994 and the early years of the George W. Bush administration were relatively quiet in terms of DPRK nuclear activity. Despite continued inflammatory rhetoric to the contrary, the US conventional and nuclear strategy in the region in general and for Korea in particular remained relatively unchanged.³⁵²

Cumings succinctly summarizes the overall security environment, as well as the radical shift in US policy from the relative calm that had been achieved in the Clinton years to the chaos which characterized the first George W. Bush term approach to the DPRK:

Imagine that you are a leader in North Korea. The world's only superpower carried out war against you and occupied your territory in 1950. From 1958 to 1991, it targeted you with nuclear weapons emplaced in South Korea. It still targets you with nuclear weapons through its naval and air power. The superpower is run by a president who openly speaks of regime change in your country and clearly hates your guts. Its defense secretary talks openly of using nuclear bunker-busters to decapitate you.³⁵³

³⁵⁰ Harrison (1993), 32-33

³⁵¹ At least on the surface - the Agreed Framework is further discussed later in the chapter as well as in Chapter Four, especially in terms of the other incentives offered to the DPRK to give up its nuclear weapons program.

³⁵² That is, unless it is true that the DPRK pursued HEU weapons during the lull in plutonium production.

³⁵³ Bruce Cumings, "The North Korea Problem: Dealing with Irrationality," *Current History* (September, 2009): 289

This period was a pivotal one in further driving the DPRK's nuclear weapons quest, if it had not already acquired them.

The security driven school of thought is rooted in the notion that states seek whatever measures are available in order to ensure their security in the international system. Perceived escalation in the threat is more likely to drive states to seek such measures. Further escalation came in the US response to the aforementioned suspected DPRK HEU based nuclear weapons development. US Assistant Secretary of State James Kelly accused Pyongyang of HEU activities

just after Bush, in September 2002, had announced his preemptive strike doctrine and targeted the "axis of evil." Then, a few months later, came the preventive war against Iraq. As that invasion was carried out, Pyongyang said essentially the following, through its Central News Agency: The United Nations inspected Iraq for years; it succeeded in disarming Iraq; that is when the United States decided to invade; America would not have invaded if Iraq had had nukes; this is not going to happen to us.³⁵⁴

Thus, the surge in the DPRK program, during which it reached new heights with two nuclear detonations and various claims by the regime in terms of achieving nuclear status, might be seen as a response to a perceived imminent US threat. The perception is shaped by US behaviour in Iraq, a clear demonstration of how it eliminated supposed security threats there, coupled with parallel statements on the so called DPRK threat. The perception by Pyongyang that it might be the next member of the axis of evil to be invaded and subject to regime change appears to have had a significant impact on the considerable nuclear weapons developments during this period.

³⁵⁴ Cumings (2009), 289. Kelly's "message" was that the US had "evidence" of a DPRK HEU program and it chose to confront the regime with the allegation without providing the purported evidence.

As Walker Connor has noted, “it is seldom *what* is that is of political importance, but what people *think* is.”³⁵⁵ One of the essential consequences of the historical US threat is that since the Korean War, “there has been a genuine fear among North Korean residents that U.S. forces might renew hostilities.”³⁵⁶ One can only imagine that this perception is shared by many members of the DPRK elite. Because of the incredible one-sidedness that would characterize a US-DPRK nuclear arms confrontation, most security oriented arguments have assigned a particular form of deterrence as the DPRK ambition in response to the US threat: the shield deterrent. The shield deterrent is one that strives not to the first use of nuclear weapons, but as a deterrent against first use by the US because of the uncertainty involved in the outcome of a strike on the DPRK, including whether or not it could remove all DPRK facilities and capabilities.³⁵⁷ In other words, as Cha points out, the shield rationale sees the DPRK’s security as “achieved not through assured second-strike capability but by creating ‘first-strike uncertainty.’” Whereas the “rules” of the first nuclear age were rooted in the attempt to achieve a state of mutual assured destruction (MAD), the “rules” of the second nuclear age have thus far been fundamentally different, where small and middle powers strive for a modicum of existential deterrence.³⁵⁸

This general introduction to the notion that the DPRK’s nuclear weapons have been a response to insecurity caused by US conventional and nuclear threats is in fact much more nuanced. Only when other historical security related considerations are taken into account can a true appreciation of the security driver arguments occur. Other

³⁵⁵ Walker Connor, *Ethnonationalism: The Quest for Understanding* (Princeton: Princeton University Press, 1994), 140.

³⁵⁶ Park (2002), 21

³⁵⁷ Andrew Scobell & John M. Sanford, “North Korea’s Military Threat: Pyongyang’s Conventional Forces, Weapons of Mass Destruction, and Ballistic Missiles,” *Strategic Studies Institute* (April, 2007), 80

³⁵⁸ Cha (2002), 216

considerations include the perceived threat posed by the ROK, the DPRK's reliance on security alliances, the reliability of these security guarantees, as well as the impact on DPRK security when these guarantees became weakened or failed altogether.

The perceived ROK threat has been inextricably linked to the US threat since the division of the peninsula. Specific military threats from the ROK on its own, as well as threats emanating from the US-ROK alliance such as *Team Spirit* have been cited as possible motives for the DPRK. As such, although the DPRK is, and has been seen to fear various forms of ROK attack, the underlying assumption appears to be that the DPRK takes for granted that the US will become involved in any future conflict in Korea. Beyond Pyongyang's alleged US denial strategy, the motivation for nuclear weapons is said to be rooted in security factors specific to the ROK such as the ROK's attempts to develop its own nuclear weapons, or the general Korean arms race. Otherwise, the ROK is viewed as being part and parcel of the US threat and therefore contributes to DPRK motivations for going nuclear depending on the perceived intensity of the ROK role in the overall threat.

The DPRK fears (as does the ROK) an incursion, or all out invasion by its Korean counterpart. Hayes suggests that the DPRK has had genuine concern over a US-ROK pre-emptive conventional or nuclear attack that cannot simply be attributed as propaganda for domestic or international consumption.³⁵⁹ One move in the 1970s which gave currency to these fears was the ROK's *White Bear* SRBM program, which happened to be a response to the DPRK initialization of a "multi-faceted ballistic missile program."³⁶⁰ Cha also believes that "the primary security contingency that the DPRK feared was

³⁵⁹ Hayes, 134-138

³⁶⁰ Bermudez (1999a), 4. The *White Bear* SRBM never went into production.

defending against unprovoked aggression or pre-emptive attack by the United States and South Korea.”³⁶¹ In the case of such an attack, nuclear weapons are seen as being coveted not for use against the ROK but Japan and possibly the US.³⁶² For domestic political reasons as well as attempting to avoid the effects of nuclear detonation, the weapons would not be used against the ROK.³⁶³

Although the DPRK was once able to boast a strong conventional force, its sliding economic strength vis-à-vis the ROK has also meant that it has sought nuclear weapons as a cost effective “strategic equalizer,”³⁶⁴ in order to make up for its inability to match conventional modernization. This conventional inequality reached new heights in the wake of the Cold War as the DPRK was denied a good deal of the economic and military aid it had once enjoyed from the Soviet Union and thus forced it to seek nuclear weapons to guarantee “security and survival.”³⁶⁵ Part of this fear, it is argued, was based on the possibility that the US, ROK and Japan trilateral alliance would work to ensure ROK absorption of the DPRK much like the west had done to the east in Germany.³⁶⁶ The ROK was expected to continue to increase defence expenditures and therefore nuclear weapons were seen as a means to counter the US nuclear umbrella *as well as* ROK conventional superiority.

Prior to this shift towards a significant conventional imbalance, Etel Solingen notes, the DPRK had already felt the need to procure a means to overcome the ROK conventional threat backed by the US umbrella. Her evidence for this is that the DPRK

³⁶¹ Cha (2002), 221

³⁶² Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (USA: Princeton University Press, 2007), 123

³⁶³ Mansourov (1995), 30

³⁶⁴ Sung-An, 675

³⁶⁵ Cha (2002), 218

³⁶⁶ Harrison (1993), 30-31

had resorted to irregular tactics in its attempts to satisfy its “residual intentions to attack with conventional forces” which she believes shows that the DPRK was well aware of its inferiority.³⁶⁷ In line with this reasoning, Kim Il-sung decided to pursue nuclear weapons because he felt the DPRK had “lost its economic competition with South Korea and [he] did not see any hope of winning a conflict on non-military terms.”³⁶⁸ Similarly, the DPRK may have seen both a manifest and latent value in acquiring the bomb not only for deterrence but also as a way to gain the upper hand in the legitimacy war with the ROK and, some would say to buttress its attempts to reunify Korea through the use of force.

A strong indication that reunification would come on nuclear terms emerged in the context of Richard Nixon’s attempts to remove troops from the ROK in the 1970s. Soon after the US policy announcement to withdraw from Asian affairs, the ROK apparently initiated a clandestine nuclear weapons program which profoundly troubled Kim Il-sung since his regime was “the only potential target.”³⁶⁹ Kim thus had no problem pursuing a program of his own, despite the fact that in pursuing an indigenous capability both Koreas would violate the joint communiqué of 1972 on the principles of national unification. The ROK program “was a serious challenge that the DPRK could not afford to underestimate,” despite the fact that it “never came very close to the threshold.”³⁷⁰ The irony is that in response, the US convinced ROK President Park Chung-hee to end his program in a quid pro quo for the covert placement of more US tactical nuclear weapons on ROK soil in a reaffirmation of the security guarantee to the ROK. The aforementioned arguments have suggested that this development may have assuaged Kim’s fear of the

³⁶⁷ Solingen, 128

³⁶⁸ Valery I. Denisov, “Nuclear Institutions and Organizations in North Korea,” in *The North Korean Nuclear Program: Security, Strategy and New Perspectives from Russia*, ed. James Clay Moltz & Alexandre Mansourov (New York: Routledge, 2000), 23

³⁶⁹ Mansourov (1995), 29

³⁷⁰ Szalontai & Radchenko, 9

ROK threat, but in reality the threat simply morphed into one that was more robust and resilient.

Solingen calls attention here to an important nuance. By assuming that the DPRK's program had reached the tipping point toward military applications well before the ROK initiated its own program, she concludes that the DPRK program was not a case of "reactive proliferation [but] more of a proactive program."³⁷¹ The DPRK's subsequent and persistent calls for ROK nuclear renunciation reveal that at the very least, whether reactive or proactive, a potential ROK nuclear weapon conceivably contributes to DPRK insecurity. Recent revelations by the ROK's scientific establishment regarding nuclear experimentation³⁷² have reminded Pyongyang that the ROK remains a latent nuclear power. For this reason, despite receiving in the early 1990s ROK nuclear renunciation as well as a US "pledge of non-aggression," the DPRK's nuclear weapons pursuit appears to have been increasingly desperate.³⁷³

In 1999, 2002 and again in 2009 DPRK and ROK naval forces skirmished in the Yellow Sea. In all instances DPRK forces were severely damaged and it suffered a disproportionate number of casualties.³⁷⁴ Jung-Hoon Lee and Il Hyun Cho note:

Given this weakened strategic position resulting from its outdated conventional weapons, North Korea's missile program has come to assume a key position in overall military planning...Although the earlier goal of conquering the South by military means is now improbable, the possession of long-range ballistic missiles equipped with WMD warheads at least ensures a minimum level of defense against the informal trilateral alliance among the United States, Japan and South Korea. In this sense, the North Korean missile

³⁷¹ Solingen, 119

³⁷² See for instance Jung-min Kim et al., "South Korea's Nuclear Surprise," *The Bulletin of the Atomic Scientists* (January-February, 2005)

³⁷³ Solingen, 119-120

³⁷⁴ Blaine Harden, "North Korea says Naval Skirmish was 'Planned Provocation' by South," *The Washington Post* (November 12, 2009), <http://www.washingtonpost.com/wp-dyn/content/article/2009/11/12/AR2009111203773.html>

program can be said to be an outgrowth of its strategic thinking that has been driven largely by its sense of insecurity of being besieged...³⁷⁵

Whereas in the past the DPRK's numerical troop strength was thought to be a deterrent or at the very least "a deciding factor determining the outcome of a possible war," it now recognizes the need for other means to deal with its insecurity.³⁷⁶

Clearly the DPRK has numerous historically particular and consistent security grounded motives for seeking nuclear weapons. For this reason it is said that "the DPRK leadership views WMDs as an integral component of the KPA [Korean People's Army] and an essential means by which it ensures the survival of the nation."³⁷⁷ Aside from pursuing its own independent strategic nuclear capability in response to these security concerns, it has also relied heavily on nuclear and security guarantees from its two principal allies, the Soviet Union and China. It is frequently asserted that the end of the Cold War fundamentally altered these relationships thus transforming the DPRK's regional and global security outlook.

In the Waltzian neo-realist lexicon, states are likely to seek superpower security assurances if they are unwilling or unable to provide their own security. In the context of the overwhelming insecurity the DPRK experienced following the Korean War, the neo-realist would argue that it made sense for the DPRK to sign mutual defence treaties with the Soviet Union and China since this offered a measure of defence against both the US-ROK conventional, as well as the US nuclear threat. Given the state of DPRK conventional forces and the seemingly minimal progress in DPRK nuclear capabilities by

³⁷⁵ Jung-hoon Lee & Il Hyun Cho, "The North Korean Missiles: A Military Threat or a Survival Kit?" *Korean Journal of Defense Analysis*, Vol. XII, No. 1 (Summer 2000): 133. Lee and Cho make this argument in the context of the 1999 skirmish but it is equally relevant to the other naval confrontations and has become the rule rather than exception concerning the condition of DPRK conventional forces.

³⁷⁶ Lee & Cho, 143

³⁷⁷ Joseph Bermudez Jr., *The Armed Forces of North Korea* (New York: I.B. Tauris, 2001), 212

the early 1960s when the treaties were signed, superpower reliance is seen as its only option.

Many analysts have drawn attention to the DPRK's security agreements as possibly mitigating the regime's insecurity.³⁷⁸ There are several features of the security assurances that are routinely incorporated into analyses on DPRK security motives, both in terms of the DPRK's willingness to sign such treaties and its decision to seek weapons despite them. For one, it was commonly assumed that the agreements would negate the need for, and therefore terminate any vestige of, a nuclear weapons program. Since there is strong evidence that this was not the case (that is, that the DPRK continued to develop a nuclear weapons infrastructure during the tenure of these assumed nuclear umbrellas), various interpretations of the DPRK's intentions have flourished.

A standard account generally assumes that the end of the Cold War brought for the DPRK greater insecurity vis-à-vis the US-ROK alliance especially since it lost the Soviet umbrella and the Chinese guarantee had become severely weakened, motivating or at least further motivating the DPRK to seek its own deterrent. Of course, such an argument fits well with what is known about the substantial progress the DPRK made at the time towards a functioning nuclear weapons infrastructure. Unfortunately, such an argument ignores the nuclear decisions and progress in the DPRK which occurred well prior to the events of the late 1980s and early 1990s. What is more, such an argument overlooks important nuances in the perceived value of security guarantees.

³⁷⁸ Although this nuclear umbrella for the DPRK was never explicitly incorporated into the security agreements the general consensus seems to be that it was simply assumed to be the case that either the Soviet Union or China (three years after its defence agreement with the DPRK when it became a nuclear state in 1964) would include the DPRK under their umbrellas. The DPRK's presumption of such an umbrella is important but only insofar as it decided to pursue nuclear weapons despite nominally believing that such an umbrella was in place.

It has already been noted that the DPRK signed these mutual defence treaties within two months of Park Chung-Hee's coup in 1961, widely assumed to be motivated by the fear that the militaristic Park had aggressive invasion plans. It appears Pyongyang was genuinely interested in an indigenous capability before the guarantees became weakened and disappeared, and before the DPRK lost faith in them altogether. One of the effects of the Soviet led training of KPA officers was that they became more "familiar with the practical aspects of nuclear warfare."³⁷⁹ Whereas DPRK military strategy until the 1960s had been guided by its experiences in guerrilla warfare struggles against Japan in the 1930s and the "Patriotic War of 1950-1953," consultations with its Soviet ally taught the KPA the value of missile, explosives and nuclear warfare, profoundly shaping the DPRK's future outlook on how war would be waged on the peninsula.³⁸⁰ If the DPRK had not already learned the value of the nuclear bomb by this point, the Soviet experience was driving the point home. Although it is critical not to confuse these experiences as genuine motivations it is important to realize the potential impact they had on DPRK awareness of the value other states placed on such weapons.

The Cuban missile crisis had a considerable impact on the DPRK's faith in superpower patronage because the "perception began to grow in Pyongyang that the Soviet Union had abandoned Cuba, its peripheral ally, for the sake of its own security." Kim Il-sung is believed to have ordered a "reassessment of the DPRK's nuclear policy, with a greater emphasis being placed upon its self-sufficiency and diversification."³⁸¹ Yet, Mansourov suggests that the crisis was not enough to push Kim to a "full-scale

³⁷⁹ Radchenko & Szalontai, 13

³⁸⁰ Report, Embassy of Hungary in North Korea to the Hungarian Foreign Ministry, 10 March 1967.

Quoted in Szalontai & Radchenko, 40-42

³⁸¹ Mansourov (1995), 28

nuclear build-up.” This view holds that DPRK observations of Moscow and Beijing letting down “their Communist allies abroad at critical historical junctures in the past”³⁸² had a significant impact on the regime’s shift toward an independent capability, in which case it is argued “any General sitting in Pyongyang would now move to a more reliable deterrent.”³⁸³

In the wake of the 1963-64 DPRK-Soviet dispute, Soviet aid to the regime was all but eliminated, illustrating to the DPRK the fragility of the alliance which would come to be characterized throughout the 1960s and 1970s as tangled and on-again-off-again.³⁸⁴ Additionally, the 1969 Sino-Soviet conflict left “North Korea’s twin external supports looking like a shaky A-frame roof, the walls of which had collapsed.”³⁸⁵ Consequently, Hayes argues, the DPRK was further driven to seek a self-reliant means to deal with its insecurity. In the atmosphere of strained DPRK-Soviet relations and coinciding with the aforementioned ROK *White Bear* ballistic missile program, the DPRK appears to have sought to focus efforts on its own ballistic missile program when the Soviet Union refused to provide it with additional rockets and missiles.³⁸⁶ Largely as a result of these developments, it is believed that the DPRK felt it could not rely on the Sino-Soviet umbrella and therefore made the decision to pursue its own nuclear capability.³⁸⁷

For the neo-realists it is difficult to comprehend why the DPRK chose the self-help behaviour of “self-reliant nuclear deterrence” over other options such as superpower guarantees. This is because the neo-realist sees self-reliant nuclear forces for a state such as the DPRK as actually increasing its insecurity given its small territory and population

³⁸² Sung-An, 674

³⁸³ Cumings (2004), 100

³⁸⁴ Mazaar, 22-24

³⁸⁵ Hayes, 184

³⁸⁶ Bermudez (1999a), 5

³⁸⁷ Scobell & Sanford, 98

concentration, viewing conventional forces and superpower security guarantees as a more preferable alternative.³⁸⁸ All of which, however, rests on the perceived reliability of such guarantees. As Avery Goldstein has suggested,

Free-riding on allies for security is one way to lighten the burden of national investment in military forces. But [...] the economic appeal of the free ride is limited by the riskiness of the dependence on others in an anarchic world. National nuclear weapons enable states to satisfy basic security requirements self-reliantly...³⁸⁹

In other words, “when abandonment fears are high” superpower reliance becomes an “unattractive proposition.”³⁹⁰ The DPRK simply did not feel that it had any trustworthy friends in the international system.³⁹¹ If this is accepted as true, the DPRK’s ultimate decision to divert its nuclear capabilities toward military purposes was in part driven by the (for various reasons) rejection of the self-help principle of superpower security guarantees.

Although Gorbachev’s perestroika allowed for the DPRK to be free to develop an independent reliance on its own resources, by the late 1980s the DPRK began to part ways with Moscow. Prior to the collapse of the Soviet Union, it had become clear to Pyongyang that “the Soviet Union was no longer an ideological, military and political ally of the DPRK”;³⁹² a view substantiated when the Soviet Union established full diplomatic ties with the ROK in September 1990.³⁹³ Less than two years later China did the same leaving the DPRK isolated and vulnerable to the US-ROK threat without the means to modernize its conventional forces. Despite the DPRK’s inherent lack of faith in the

³⁸⁸ Solingen, 121

³⁸⁹ Avery Goldstein, *Deterrence and Security in the 21st Century: China, Britain, France and the Enduring Legacy of the Nuclear Revolution* (USA: Stanford University Press, 2007), 225

³⁹⁰ Cha (2002), 217

³⁹¹ Jacques E. C. Hymans, “Assessing North Korean Nuclear Intentions: A New Approach,” *Journal of East Asian Studies* 8 (2008): 266

³⁹² Bazhanova, 128-131

³⁹³ The Soviet Union announced soon after that it would not honour its Cold War security guarantees to the DPRK.

security guarantees, it had probably banked on receiving some form of help in the event of a crisis on the peninsula, at least until it had developed its own capability. In order to fill this vacuum, it is argued, the DPRK had become motivated more than ever to develop a viable nuclear weapon.³⁹⁴

Thus, the end of the Cold War arguably pushed the DPRK into its most defensive posture in its history. Consequently, Gordon Chang suggests, it is “no wonder that the Koreans... want[ed] their own buttons to push.”³⁹⁵ Indeed, in the shadow of Moscow’s emerging relations with the ROK in 1990 the DPRK Foreign Ministry made it clear that it would seek “some weapons for which we have so far relied on the alliance.”³⁹⁶ It became less meaningful whether the Sino nuclear umbrella still stood since the DPRK had essentially lost trust in its ally by this time altogether, reinforcing the notion that the DPRK had no other option but to pursue nuclear weapons as its own shield against perceived existential threats.³⁹⁷ Again, the spike in DPRK nuclear weapons infrastructure development in the late 1980s and early 1990s supports these claims.

Finally, although there is a wide array of potential security related drivers for the DPRK’s nuclear weapons program few believe that it is pursuing these weapons to deploy tactically – at least for now – although it is conceivable that the DPRK would be willing to deploy nuclear weapons to prevent or make it difficult for US forces to enter

³⁹⁴ C. Kenneth Quinones, “Reconciling Nuclear Standoff and Economic Shortfalls: Pyongyang’s Perspective,” in *North Korea: The Politics of Regime Survival*, ed. Young Whan Kihl & Hong Nack Kim (New York: M.E. Sharpe, 2006), 81-82

³⁹⁵ Gordon C. Chang, *Nuclear Showdown: North Korea takes on the World* (New York: Random House, 2006), 46

³⁹⁶ Korean Central News Agency Dispatch, translated in *Foreign Broadcast Information Service* (September 19, 1990), 15. Quoted in Leon V. Sigal, *Disarming Strangers: Nuclear Diplomacy with North Korea* (Princeton: Princeton University Press, 1998), 267. See also Bruce Cumings, “Spring Thaw for Korea’s Cold War?” *The Bulletin of the Atomic Scientists* (April, 1992): 22

³⁹⁷ Scobell & Sanford, 99. Whether or not the DPRK is still protected by the Sino nuclear umbrella remains ambiguous.

DPRK territory in any event.³⁹⁸ Gordon Chang has not ruled offensive purposes out. He suggests that since the DPRK has faced “less than fearsome Americans” and has been backed by “seemingly invincible Soviets,” Kim Il-sung “did not need nuclear weapons of his own unless he had plans to use them in some fashion.”³⁹⁹ Not only does Chang deny the severity of the US threat, his argument is based on the notion that Kim began his quest for the weapons long before he became deprived of a reliable nuclear umbrella. Yet, Sigal asks, if the DPRK’s only intent was to produce weapons of its own then why did it delay so many times in the process? Sigal suggests that insecurity did not inspire a “crash-course” effort to build nuclear weapons but rather one that came in “fits and starts.” This was rooted in the recognition that an even bigger threat than insecurity loomed in the DPRK: economic stagnation.⁴⁰⁰

Domestic Level Variables as Motivation

As opposed to arguments identifying security derived variables as motivations which are trained on external threats to the state in the international system, those related to domestic level factors focus on variables below the state level (those which are internally driven). Security is frequently cited as a primary driver with other variables such as domestic factors reduced in importance to secondary status. In other words, they are rarely seen as exclusively motivating a state to proliferate and accounts of the DPRK are no exception. Very often secondary drivers such as domestic factors are highlighted as merely contributing to the DPRK’s already entrenched desire for nuclear weapons. Domestic sources of motivations include regime preservation, economic hardship, domestic politics and policies, and energy needs.

³⁹⁸ Scobell & Sanford, 92

³⁹⁹ Chang, 39

⁴⁰⁰ Sigal, 13-22

The notion of regime preservation can be understood in many ways. Seeking a nuclear deterrent to guarantee regime preservation from external threats has already been discussed at length. Nonetheless, numerous domestic or internal variables also have the potential to drive a state to seek such weapons. In the case of the DPRK this has manifested in the form of internally derived threats to the regime, real or imagined, which have generated the perception that nuclear weapons can aid the regime in overcoming these threats. Frequently proposed domestic stimulants have included ensuring successful transfers of power from Kim Il-sung to Kim Jong-il as well as to the next potential successor; internal political struggles which have been and continue to be propelled by lobbying from hard-line elements in the Worker's Party of Korea (WPK) as well as the KPA and nuclear establishment; to repress citizen dissent; and, to obtain a better relationship with the US which is not only seen as an end in itself for a variety of perceived advantages but also as facilitating the mitigation of the aforementioned internal threats to the regime.

Most of those who point to regime preservation as a driver for the DPRK's nuclear weapons program suggest that security concerns initially drove the regime to pursue the weapons and domestic actors subsequently pushed the program further out of self-interest. Although the political culture of the DPRK is discussed at length below, it suffices here to note that Kim Il-sung's original blend of Maoism and Stalinism in which a central authority instituted a top-down approach has had far-reaching effects on the political process. This resulted in the formation of a strong centralized state with the hallmarks of a strong leader with a cult of close followers who dominated politics.⁴⁰¹

⁴⁰¹ Bruce Cumings, *The Origins of the Korean War (Volume One): Liberation and the Emergence of Separate Regimes 1945-1947* (Seoul: Yuksabipyungsa, 2002), 404-405

Whereas Kim the father had his own methods for controlling the masses and stifling dissent among the upper echelons of the political and military elite, the transfer of power to Kim the son as well as the preservation of that power was apparently seen as problematic. Kim Jong-il lacked any notable qualities to perpetuate the personality cult around which the centrist state was built.⁴⁰²

Oh and Hassig stress that understanding DPRK nuclear decisions requires a recognition that the Kim family has not ruled “for more than 50 years by making foolish decisions.”⁴⁰³ Nuclear weapons were seen well before⁴⁰⁴ the power succession in 1994 as a means to overcome Kim Jong-il’s “lack of political legitimacy, poor governing skills and the absence of a military background.”⁴⁰⁵ Following the death of Kim Il-sung, Kim Jong-il faced a critical test as he attempted to secure power which, among many other techniques, included the continued emphasis on his control and successes of the nuclear weapons program, the aforementioned 1998 *Taepodong* test launch,⁴⁰⁶ and the establishment of a missile division within the KPA in the late 1990s.⁴⁰⁷ In this sense, the value attached to the nuclear weapon and ballistic missile programs is seen as forcing Kim Jong-il’s hand to not only continue, but also expand the program to ensure his smooth and lasting transition to power. The contention is that the ultimate aim of the

⁴⁰² Han S. Park, *North Korea: Ideology, Politics, Economy* (New Jersey: Prentice Hall, 1996), 224

⁴⁰³ Oh & Hassig, 273

⁴⁰⁴ Since Kim Jong-il was put in charge of the nuclear program from “at least the 1980s” it is suggested that nuclear weapons were envisioned as functioning as a way to enhance Kim’s chances for succession and not just as a response to security threats. See Larry A. Niksch, “North Korea’s Weapons of Mass Destruction,” in *North Korea: The Politics of Regime Survival*, ed. Young Whan Kihl & Hong Nack Kim (New York: M.E. Sharpe, 2006), 99

⁴⁰⁵ Mazaar, 31

⁴⁰⁶ Daniel A. Pinkston, “The North Korean Ballistic Missile Program,” *Strategic Studies Institute* (February 2008): 26

⁴⁰⁷ Pinkston, 48

program is to “keep a Kim in power [and] not to assure the security of the North Korean state or improve the welfare of the people.”⁴⁰⁸

Once this power was secured, nuclear weapons or at least the ostensible pursuit of them continued to serve a variety of purposes.⁴⁰⁹ For reasons which are developed further below, society in general including important elements of the polity are said to strongly believe in the DPRK’s pursuit of nuclear weapons which “provides tremendous political benefits to Kim Jong-il and the ruling Korean Worker’s Party.”⁴¹⁰ Missile and nuclear tests and the corresponding international denunciation also contribute to the perception of an external threat, which can solidify national unity.⁴¹¹ The notion that nuclear weapons have enabled Kim and the regime to deflect US power has enhanced his reputation with the people but perhaps more importantly his main pillar of power, the KPA.⁴¹² As the chosen machine for “solidifying the regime,”⁴¹³ nuclear weapon and ballistic missile development serves to placate the KPA by bolstering their role in society because of the accompanying benefits this provides,⁴¹⁴ and therefore reduces the likelihood of a military coup. To be sure, some are convinced that Pyongyang has at times been more concerned with internal rather than external enemies; those members of the general public and elite

⁴⁰⁸ Oh & Hassig, 273. Of course, this is not to suggest that both goals cannot be accomplished simultaneously.

⁴⁰⁹ One example is the recent discussions about the next power transition in light of Kim Jong-il’s allegedly deteriorating health to which the missile and nuclear tests of April [and possibly May] 2009 have been linked based on the reasoning that it worked for Kim Jong-il. See Choe Sang-hun, “North Korea Issues Threat on Uranium,” *The New York Times*, April 29, 2009, <http://www.nytimes.com/2009/04/30/world/asia/30korea.html>

⁴¹⁰ International Crisis Group, “North Korea’s Nuclear and Missile Programs,” *Asia Report No. 168* (June 2009): 4

⁴¹¹ Scott Snyder, “What’s Driving Pyongyang?” *Nautilus Institute Policy Forum Online* (July 7th, 2009), <http://www.nautilus.org/fora/security/09055Snyder.html#sect2>

⁴¹² Chang, 47

⁴¹³ Jeung, 13

⁴¹⁴ Alexandre Mansourov, “Emergence of the Second Republic: The Kim Regime Adapts to the Challenges of Modernity,” in *North Korea: The Politics of Regime Survival*, ed. Young Whan Kihl & Hong Nack Kim (New York: M.E. Sharpe, 2006), 45

who desire to end the Korean revolution from the inside.⁴¹⁵ This suggested motivation for the weapons has been repeatedly stressed in the literature but is much more nuanced because it is deeply tied to other DPRK domestic elements.

Not only has the political elite been a possible threat from the inside, it has arguably dictated the path of the program based on contrasting perceptions of the external environment. In the context of stalled negotiations on the DPRK's nuclear weapons program prior to the Agreed Framework, the DPRK Foreign Minister commented: "We are losing patience. Our Generals and atomic industry leaders insist we resume our nuclear program."⁴¹⁶ This highlights the ways in which domestic actors convert external forces and stimuli into policy. Selig Harrison identified an internal struggle within the WPK beginning in the late 1980s and leading up to the so called "first" nuclear crisis of 1994. Harrison contends that the WPK had become fractured into two primary factions, both concerned with regime preservation although conceived through different lenses. The "reform-minded leaders" saw arms reduction agreements and the abandonment of the nuclear program as a means to achieve integration into the world economy, in order to make up for discontinued Soviet and Chinese aid, with the long term goal of regime preservation. On the other hand, the "powerful old guard centred in the armed forces and a military-industrial complex that includes the nuclear establishment" who were obsessed with continuing the eternal dream of Kim Il-sung⁴¹⁷ saw the end of the Cold War

⁴¹⁵ Jeung, 24

⁴¹⁶ Selig S. Harrison, *Korean Endgame: A Strategy for Reunification and U.S. Disengagement* (Princeton: Princeton University Press, 2002), 227

⁴¹⁷ Chang, 47

differently and believed the fundamental security threat to the DPRK necessitated nuclear weapons.⁴¹⁸

There are thus competing interpretations of domestic dynamics. While some domestic forces may be stronger than others, they are not necessarily detached from one another (that is, numerous factors may have varying degrees of influence on nuclear decisions across time). For the most part the discussion of domestic economic factors as driving DPRK proliferation is anchored in the idea that such motives have been secondary to other, more significant motives such as security threats. Since nuclear weapons and ballistic missiles are viewed as a means to bring in hard currency through sales as well as used as a tool to negotiate aid and concessions, the rationale is that the regime only latched on to this possibility well after the program was initiated. In this sense the potential economic benefits are seen as motivating the program to a limited degree depending on the status of the DPRK economy, which creates a range of opinions on whether the regime would give up the weapons if its economic needs were met.

Without going into DPRK micro-economic details it is safe to say that it has had its ups and downs particularly in relation to the ROK economy, which has had acute effects on DPRK political and military stability. Sigal succinctly summarizes its economic performance since becoming a state:

In the 1950s and 1960s North Koreans had managed to make communism work and the North's economy outperformed the South's. By the 1970s, however, South Korea had caught up and surpassed it. In the 1980s, while the South's growth was accelerating, the North's slowed to a crawl [...] With the collapse of the Soviet empire and the economic transformation of China, the North's supply of imported oil and subsidized prices was sharply curtailed, impeding the mining of coal, its principal energy source [...] Starting in 1990,

⁴¹⁸ Statement of Selig Harrison, 30-31

North Korea's GDP contracted – falling 3.7 percent in 1990, another 5.2 percent in 1991, and 5 percent in 1992...⁴¹⁹

In fact, the DPRK's GDP slid each year between 1990 and 1998 during which time the economy “shrank by about half.”⁴²⁰ After the Cold War when the DPRK lost large amounts of aid and suffered acute economic difficulties, exacerbated by major natural disasters, economic incentive arguments gained more currency.

One exception is that the regime may have perceived nuclear weapons as a cheap alternative to the conventional arms race with the ROK. If Pyongyang had already made the decision to go nuclear, this incentive would only reinforce such a decision. Since the program had already been initiated by the time the economy was in shambles, if there were an economic motive to the program, it may have come afterwards. Nuclear weapons were also seen as reducing the percentage of GNP spent on defence comparable to the threats it faced from the ROK-US alliance.⁴²¹ The overwhelming disparity between the north and south meant that if indeed the DPRK became serious about its program in the late 1980s and early 1990s, in addition to the reduction of conventional expenditures, the economic input required to sustain the program might require the discovery of other economic returns.⁴²²

For a number of complex reasons then, several analysts tend to emphasize a post-Cold War shift from overt security pressures as the primary driver for proliferation to

⁴¹⁹ Sigal, 22-23

⁴²⁰ Chang, 55

⁴²¹ Park (2002), 138

⁴²² On the dedication to the nuclear weapons project one regime official claimed “it will cost much less in the DPRK than in other countries. If we tell our workers [...] that we are taking up such a task, they will agree to work free of charge for several years.” Quoted in Szalontai & Radchenko, 28. Nevertheless, most analyses assume that this has not been enough to counter the economic toll of the program not to mention the general economic distress.

things like regime preservation and economic considerations⁴²³ as enhancing the regime's motivation while not necessarily eliminating the security driver altogether. As an example, the DPRK allegedly uses the sale of missiles and related technology to bring in hard currency to alleviate economic woes. The economic incentive of hard currency earnings in fact carries a double incentive in that the state enjoys the benefits of the sales *and* the Generals who are the primary heads of the arms producing organizations reap part of the earnings of the sales.⁴²⁴ What is more, the perceived benefits that science and technology, especially of the nuclear and military sort, can contribute to the DPRK's development of an indigenous technological base, has an immediate impact on the arms sales, as well as acts as a long term investment in the production of future arms.⁴²⁵ Since the aforementioned economic gains do not seem to measure up to the economic input the program requires, it is frequently argued that additional economic motivations may underlie DPRK proliferation.

One such motivation which is said to have emerged in the post-Cold War period is the regime's use of the nuclear program to extract concessions, both political and economic, from interested parties (that is, the US, ROK, Japan and China).⁴²⁶ Once Kim Jong-il secured power, there was nothing he could do to stop the economic strife he inherited until neighbours such as China and the ROK stepped up aid to the DPRK.⁴²⁷ However, this aid was not an outgrowth of Sino and ROK generosity. On the contrary, it

⁴²³ Mazaar, 36

⁴²⁴ This is a huge incentive in the DPRK where entrepreneurship and private profiteering is generally outlawed. Special trade centres allow the military to reap these economic benefits and a degree of separation from the rest of society giving them a "special status." See Song-Wu Park & Sarah Jackson-Han, "North Korea's Underground Bunkers," *Radio Free Asia*, November 16, 2009, <http://www.rfa.org/english/news/korea/bunkers-11162009134509.html>

⁴²⁵ Park (2002), 138-139

⁴²⁶ This motivation is sometimes referred to as "chip" behaviour or nuclear blackmail.

⁴²⁷ Chang, 58-59

was partly a portion of the promised concessions to the DPRK for suspending its nuclear and missile programs as set out in the 1994 Agreed Framework.⁴²⁸ Among other things, in exchange for cooperation in freezing and eventually completely destroying its nuclear weapons facilities, the DPRK was to receive “two light water reactors worth US \$4 billion and 500,000 tons of heavy fuel oil supply every year until the promised reactors [were] completed.”⁴²⁹ Since the DPRK appears to have made a significant effort towards denuclearization at this point despite its continued fears of US attack, at least until it decided that the agreement had been nullified by US transgressions, it has been argued that the DPRK was more interested in material benefits that could prop up the regime than any other concern.⁴³⁰

The implication is that the regime, which was already motivated to go nuclear for other reasons, began to see the economic payoffs of continuing the program. From this perspective, the Agreed Framework presented a clear message that the “threat of nuclear weapons can bring the United States to the bargaining table and entice substantial economic aid for a failing North Korean economy.”⁴³¹ The DPRK had already displayed a willingness to be bought off in the past. For example, in 1993 Pyongyang nearly made a deal with Israel to cancel the sale of *Rodong* missiles to Iran for an undisclosed amount of cash.⁴³² Yet, in the end, the economic aid promised in the 1994 agreement was not enough to halt the program either because it was insufficient or because the regime was still driven to proliferate for other reasons. As noted in Chapter Two, the DPRK resumed missile tests in the late 1990s and the so called second nuclear crisis played out in fast

⁴²⁸ For mostly political reasons the US did not directly provide portions of the promised concessions and thus the ROK and China were left to pick up the tab.

⁴²⁹ Lee & Cho, 142

⁴³⁰ Solingen, 120

⁴³¹ Oh & Hassig, 276

⁴³² Cumings (2004), 66. The deal did not go through because the US intervened.

forward beginning in the early 2000s. While there have been several agreements since this period, most notably in 2005 and 2007,⁴³³ Pyongyang has still not given up the program.

Condoleezza Rice is typical in insisting that the DPRK is the “evil twin of a successful regime just across its border,” living outside of the international system. Rice suggests that the DPRK has “little to gain and everything to lose from engagement in the international economy,” and that nuclear weapons are Pyongyang’s way of forestalling the inevitability of its twin’s (and conceivably global) magnetic attraction.⁴³⁴ On the other hand, the nuclear program might not be a means to attract aid or usher in economic reforms (or to block them) at all. After all, the DPRK “historically had a powerful industrial economy [...] has a notably strong central state [and] serious reform could happen in North Korea once the key decisions were taken, because [it] is a country that can mobilize everyone for centrally determined tasks.”⁴³⁵ What is more, the DPRK’s nuclear weapons program clearly began much earlier than its serious economic problems arose.

The apparent contradictions within, and timing of the DPRK’s seeming drive to gain economic benefits from the program has led some analysts to believe that the economic factors and bargaining strategy have never been a motivation for proliferation. Such arguments point to the damage to the DPRK economy caused by the sanctions the nuclear weapons program has brought on the regime, hindering its ability to participate in the global economy. Whether or not the regime has ever been interested in economic

⁴³³ The 2005 Six-Party Joint Statement offered all of the benefits of the 1994 Agreed Framework and more “in return for the same denuclearization.” Cha (2009), 123

⁴³⁴ Condoleezza Rice, “Promoting the National Interest,” *Foreign Affairs*, Volume 79, No. 1 (January/February, 2000): 60

⁴³⁵ Cumings (2004), 187-188

liberalization, Cha suggests that the DPRK's actions point to a perpetual return to a preoccupation with primary security drivers. From this point of view, the "bargaining strategy is not a cause of proliferation but a product of it."⁴³⁶ In other words, "there is no evidence that Pyongyang saw the nuclear program as a bargaining chip at its inception,"⁴³⁷ but instead came across it inadvertently.

In many ways intertwined with economic concerns, the quest for a peaceful, stable civilian nuclear energy program has also been offered as a potential motivation. Of course, it is important to make the distinction here between any attempts to divert a civilian program towards military purposes from an infrastructure designed solely for military applications. Disentangling civilian from military goals can reveal more about the nature of the regime's motivations if it can be determined that there was never a genuine need for, or effort towards civilian nuclear energy and instead that the nuclear program has always been weapons designed. Attempts in Chapter Two to outline the nature of the program notwithstanding, the purpose here is to review the arguments claiming that Pyongyang's nuclear program has been at least in part motivated by the potential advantages of nuclear energy.

Until telltale pock marks suggested high explosive detonation experiments, the mid-1980s nearly completed reactor at Yongbyon only indicated civilian nuclear power intent.⁴³⁸ By most accounts it was clear that its initial nuclear program was developed with peaceful, civilian energy purposes in mind⁴³⁹ since the DPRK had until this time ostensibly operated within the parameters of its nuclear agreements with the Soviet

⁴³⁶ Cha (2002), 229

⁴³⁷ Oberdorfer, 249

⁴³⁸ Ibid, 250

⁴³⁹ Denisov, 21. See also Kim & Singh, 75 and Oberdorfer, 252

Union. Thus, until the late 1980s most ignored the possibility of DPRK nuclear weapons proliferation.⁴⁴⁰ The justification for the reactor from the beginning was to substitute nuclear energy for its dependence on coal, hydro power and imported petroleum.⁴⁴¹

In the WPK Congress of 1970, delegates emphasized the need for large scale nuclear power plants in order to satisfy energy needs in the absence of oil exploration and to compensate where hydro and thermal-electric power plants could not suffice in events of power shortages.⁴⁴² This energy incentive alone, further fuelled by the global oil crisis of the early 1970s appears, at least on the surface, to have become a primary catalyst during this period for the DPRK nuclear drive. Kim Il-sung would later remark that the DPRK sought alternative energy sources during this time and continued to do so in order to avoid being strangled by the US control of world oil production.⁴⁴³ Whether the DPRK had already decided on a dual use program by this time or if it was merely seeking to satisfy its energy demands, remains a matter of debate.

In the 1980s the leadership again placed the construction of nuclear power plants on the policy agenda, largely driven by the fact that the ROK already had three, with six more plants under construction.⁴⁴⁴ In this case it is difficult to tell whether the decision was energy or politically motivated since it is conceivable that the DPRK did so in part out of the desire to keep pace with the ROK.⁴⁴⁵ Cumings observes that in

⁴⁴⁰ Hayes, 199

⁴⁴¹ Cumings (2004), 57

⁴⁴² Denisov, 22

⁴⁴³ Cumings (2004), 57

⁴⁴⁴ Alexander Zhebin, "A Political History of Soviet-North Korean Nuclear Cooperation," in *The North Korean Nuclear Program: Security, Strategy and New Perspectives from Russia*, ed. James Clay Moltz & Alexandre Mansourov (New York: Routledge, 2000), 32

⁴⁴⁵ In the 1970s and 1980s, inter-Korean dialogue centred on which side represented the "only legitimate government in Korea," which largely rested on the perception of legitimacy through economic prowess. See Martin Hart-Landsberg, *Korea: Division, Reunification, & U.S. Foreign Policy*. (New York: Monthly Review Press, 1998), 222

1992-93, the North Korean energy profile looked like this (in units of 10^{15} joules): 226 for petroleum, 1,047 for coal, 176 for hydroelectric, and 38 for 'Other,' yielding a total energy usage of 1,486 10^{15} joules. All petroleum was imported; 75.4 joules of coal was also imported (out of 1,047 total usage); that is, coking coal used in steel mills, coming almost exclusively from China now that the USSR is gone [...] This energy regime has been in crisis since 1991, because of the demise of the USSR and the collapse of trade partners in East Europe...

It is not surprising that Cumings concludes the crisis gave the regime "all the more reason to go nuclear."⁴⁴⁶ Of course, he is referring to nuclear power and not weapons at this point of his analysis.

One of the usual methods in attempts to validate the energy motivated arguments is to point to the DPRK's longstanding and ongoing bargaining behaviour and ostensible goals of its nuclear weapons program. Since the first crisis, the regime has regularly (but not always) engaged with the international community's attempts to eliminate the nuclear program. Significant agreements have involved bargain deals in which the DPRK has been expected to freeze and eventually dismantle its nuclear infrastructure in exchange for a variety of concessions. One of Pyongyang's consistent demands is to ensure that it is left with a viable and robust nuclear energy infrastructure.

Clearly DPRK nuclear efforts are no longer solely an attempt to produce nuclear energy. Thus, nuclear energy arguments are based on the notion that the regime has continued its nuclear weapons pursuit as a means to bring other nations to the bargaining table, namely the US, in order to extract concessions such as assistance with developing a nuclear energy program, and perhaps more importantly, security guarantees. It has been suggested that WPK leaders were using the "nuclear card" as early as the 1970s. At that time, although their search for a "nuclear power plant was genuine," it seems that their

⁴⁴⁶ Cumings (2004), 57-58

strategic requests and statements on plans for nuclear facilities “were often planned well in advance and were carefully coordinated with diplomatic manoeuvres.”⁴⁴⁷ Whether or not the regime is genuinely concerned with this goal of civilian energy and would be willing to give up its program for satisfying its energy demands alone is unclear since it has yet to do so. It has demonstrated the need and desire for such energy capacity, however, and this gives some the impression that it is partly motivated by these concerns.

Until the most recent nuclear weapons activity in the DPRK, it was sometimes suggested that if “Pyongyang had wanted to build a useable nuclear arsenal, it would have removed the fuel much more often than this.”⁴⁴⁸ The recent nuclear detonations and claims to having developed nuclear weapons have casted doubt on this thought. Cumings concludes that if Pyongyang always wanted nuclear weapons, it probably would have never joined the NPT in the first place,⁴⁴⁹ implying that it was after something else by voluntarily agreeing to the non-proliferation regime standards. The less proliferation prone reactors it was to receive for signing the NPT would have made it extremely difficult for the regime to produce nuclear weapons grade material and would have profoundly alleviated its energy needs.⁴⁵⁰ The regime was evidently interested in the LWRs and this is frequently offered as a sign that the regime was interested in modernizing its facilities to generate more electrical power.

Pyongyang was also the one that proposed exchanging its graphite reactor nuclear program with US LWRs in the lead up to the 1994 Agreed Framework deal.⁴⁵¹ Although the agreement failed and the reactors were never delivered as promised, it is suggested

⁴⁴⁷ Szalontai & Radchenko, 13

⁴⁴⁸ Cumings (2004), 59-60. “This” refers to the three times in the late 1980s and early 1990s that the regime was suspected of having done so. See also Sigal, 13

⁴⁴⁹ Cumings (2004), 66

⁴⁵⁰ Oberdorfer, 254-255

⁴⁵¹ Cumings (2004), 69

that this DPRK willingness to make concessions and halt its nuclear weapons development signals that it was interested in picking up where it had been left hanging after the failed Soviet four reactor deal. Moreover, Pyongyang consented to the 2005 Six-Party Joint Statement which offered all of the civilian energy assistance previously guaranteed in 1994, and still demands an LWR in exchange for complete dismantlement.⁴⁵² Thus, in light of Pyongyang's consistent demands for assistance with nuclear energy in exchange for its nuclear weapons development, civilian energy needs may have partly, but not completely motivated the regime to proliferate; both in terms of developing dual use nuclear infrastructure and the perceived peripheral benefits of such efforts.

Prestige, Identity and Norms

Much like domestic factors – prestige, identity and norms variables are frequently treated as secondary to security concerns and are perhaps the least developed arguments on DPRK motivations. Such variables are also thought to be more difficult to quantify since they often involve complex human emotions and behaviours, in contrast to state interaction in the international system, or observations of domestic policymaking behaviour. Christopher Hughes notes that “national prestige and identity create temptations for nuclear proliferation, which however are also countered by domestic pressures for conformity with norms and regimes for non-proliferation.”⁴⁵³ While prestige and identity have been highlighted as driving Pyongyang's program, there is only a modest discussion on the role of norms in mitigating this pressure to proliferate.

⁴⁵² Larry A. Niksch, “North Korea's Nuclear Weapons Development and Diplomacy,” *Congressional Research Service Report for Congress* (January 21, 2008): 7

⁴⁵³ Christopher W. Hughes, “North Korea's Nuclear Weapons: Implications for the Nuclear Ambitions of Japan, South Korea and Taiwan,” *Asia Policy*, No. 3 (January, 2007): 76

Consequently, the primary drivers that have been identified within this area relate to the historical circumstances in which the DPRK came into existence, especially within the context of the violent struggles pre and post-Korean War, the state ideology of *Juche* and its apparent ideological successor - *Songun*, the emotional and psychological dispositions of Kim Il-sung and Kim Jong-il, and, the desire for both domestic and international prestige.

Just as in the case of all other possible motivations, the point at, and extent to which prestige is said to have motivated the regime's decisions ranges. There is "little doubt" in some minds that the "prestige motivation is very important for Pyongyang."⁴⁵⁴ The legacy of "Kim Il-sung's genius" is said to rest on the fact that he was the father of the nuclear weapons program, which is lauded by the people. Following the 1998 abortive launch of the *Kwangmyongsong* satellite the primary media outlet in the DPRK was filled with elaborate stories about how the satellite was "transmitting the melody of the immortal revolutionary hymns 'Song of General Kim Il Sung' and 'Song of General Kim Jong Il'"⁴⁵⁵ and that it will "add to the common treasure house of humanity."⁴⁵⁶ In this sense, prestige is conceived as being garnered for the regime internally in the eyes of the masses and the political and military elite, which dovetails nicely with the regime preservation arguments. However, there is no shortage of arguments rooted in the belief that the regime has sought prestige from the international community as well.

As Sagan notes, states sometime pursue nuclear weapons for their symbolic power.

The particular brand of this symbolic power in Asia entails that

⁴⁵⁴ Scobell & Sanford, 85

⁴⁵⁵ "Successful Launch of First Satellite in DPRK," *Korean Central News Agency* (September 4, 1998), <http://www.kcna.co.jp/index-e.htm>

⁴⁵⁶ "Foreign Ministry Spokesman on Successful Launch of Artificial Satellite," *Korean Central News Agency* (September 4, 1998), <http://www.kcna.co.jp/index-e.htm>

nuclear weapons and ballistic missiles are today what armies were in the postcolonial era. They serve as marks of modernity and power. Asia is rich with nationalism growing out of history, colonial legacies, and economic growth. Inherent in this nationalism are aspirations to rise in the international prestige hierarchy and to be treated as a great or major power. Nuclear weapons and ballistic missiles have become an important indicator of this status.⁴⁵⁷

Comments which have been offered to support this notion include the DPRK Defense Minister's declaration crediting the DPRK's nuclear acquisition to Kim Jong-il, praising him for ensuring that the DPRK has "been fortified into an impregnable fortress, and that our country has proudly become an international military power that has a nuclear deterrent for self-defense."⁴⁵⁸ It is also said that the DPRK has made attempts to emulate Egyptian and Syrian successes with "tactical ballistic, coastal-defense, and anti-ship cruise missiles during the October 1973 war"⁴⁵⁹ in order to garner more prestige as a robust military power.

Even earlier in its history, the DPRK may have sought a modicum of "political acceptance"⁴⁶⁰ by pursuing nuclear weapons in order to appear as a legitimate political entity. Hungarian archives suggest that as the legitimacy battle on the Korean Peninsula was waged, the regime chose to develop nuclear power capabilities to "offset the fact that a nuclear power plant is already in operation in South Korea; on the other hand, [the project] is to enhance the DPRK's economic prestige in foreign eyes."⁴⁶¹ The perceived prestige that could be gained from either a nuclear power or nuclear weapons program or

⁴⁵⁷ Cha (2002), 227

⁴⁵⁸ Kim Il Chol, "Congratulatory Report" at a "central report meeting held at the April 25 House of Culture on April 8, 2006, to mark the 13th anniversary of Kim Jong Il's election as the DPRK NDC chairman." *Korean Central Broadcasting Station* (Pyongyang) in Korean, April 8, 2006, U.S. Government, trans., available at www.opensource.gov - Quoted in Scobell & Sanford, 86

⁴⁵⁹ Bermudez (1999a), 5

⁴⁶⁰ Mazaar, 32

⁴⁶¹ *Report, Embassy of Hungary in North Korea to the Hungarian Foreign Ministry*, 9 March 1985 – Quoted in Szalontai & Radchenko, 73

both could have functioned as a driver early in the history of the program. However, prestige is rarely if ever afforded primary driver status in considerations of the DPRK program, let alone any case of nuclear proliferation. Most prestige related arguments include an element of allaying security fears and thus do not put forward prestige as a sole driver.

Pyongyang is also said to be particularly interested in getting the US to “accept it as a nuclear power.” Cha maintains that Pyongyang is seeking to “have the rules of the NPT regime essentially rewritten for them, as they were for India,” whereby Pyongyang would be permitted to “control a portion of their nuclear energy and weapons programs outside of international inspection, which in their eyes could then serve as their nuclear deterrent.”⁴⁶² Rather than being an end in itself, the weapons are seen as a means to get the US to the bargaining table in order to fashion a new relationship between Pyongyang and Washington; the end goal being an improved standing for Pyongyang in the international system.⁴⁶³ This is intimately linked to how such a deal specifically, and Pyongyang’s ability to extract such concessions out of the US in general, impacts the DPRK’s image in the world and at home. Nuclear weapons can in this sense achieve the same end (improved international standing) via two routes: by enabling it to improve ties with the US as well as through the perceived prestige such weapons harvest for the regime.

It is thus somewhat ironic that the upper echelons of the WPK as well as the general public take great pride in denouncing the US and the IAEA as imperialistic and discriminatory for criticizing smaller states for acquiring nuclear weapons while the

⁴⁶² Victor D. Cha, “What do They Really Want?: Obama’s North Korea Conundrum,” *The Washington Quarterly*, Vol. 32, No. 4 (October, 2009): 124

⁴⁶³ Not to mention the perceived security and economic benefits such a situation could offer.

superpower continues to modernize its own weapons.⁴⁶⁴ Pyongyang's self-described "morally right and ideologically correct" stance is a testament to its desire to become a beacon of hope for other third world states which continue to struggle against the developed world. From the perspective of the rest of the international community, it is difficult to understand how this could possibly motivate Pyongyang to go to such lengths to achieve what would seem an insignificant amount of global stature. Perhaps this is because many fail to appreciate the link between prestige and other drivers such as national identity.

Han S. Park notes that a true appreciation of identity based drivers requires an understanding of the nation's political culture which can "help to explain a particular set of beliefs or attitudes as a product of the history of a society."⁴⁶⁵ Political culture both develops out of and shapes the "objective and subjective social, economic and political conditions of a people," which are "conditioned by [their] traditions, beliefs and social practices." Political culture in the DPRK has been profoundly influenced by the history of violence, invasion and domination in and around Korea, as a consequence of it being a "shrimp surrounded by whales."⁴⁶⁶ In recent history, Japanese colonial rule of Korea has been characterized as being "one of political oppression, economic exploitation, social dislocation, demographic disintegration, and most of all, national humiliation." Colonization has largely been attributed (especially by the DPRK) to the inferior military capabilities of the Yi Dynasty which could not defend its sovereignty against Japanese expansion.⁴⁶⁷

⁴⁶⁴ Park (1996), 222

⁴⁶⁵ Park (2002), 10

⁴⁶⁶ Oh & Hassig, 275

⁴⁶⁷ Park (2002), 14

As one might suspect, the unrelenting assault on Korea has had a significant impact on the Korean psyche. Putting these effects into perspective, Cumings notes that the DPRK is an

understandable place, an anti-colonial and anti-imperial state growing out of a half-century of Japanese colonial rule and another half century of continuous confrontation with a hegemonic United States and a more powerful South Korea, with all the predictable deformations (garrison state, total politics, utter recalcitrance to the outsider) and with extreme attention to infringements on its rights as a nation.⁴⁶⁸

Rather than asserting that these historical circumstances have directly influenced the DPRK to respond by developing nuclear weapons, Cumings and the like have used the anti-colonial and anti-imperial experiences in Korea, especially in the north, to demonstrate the influence they have had on the subsequent ideological and political development of the DPRK. The historical record of subordination to great powers such as Japan and the US, coupled with more tangible security concerns such as the US nuclear threat, is said to have both inspired the original pursuit of nuclear weapons as well as contributed to the ideological development of the state which, happens to motivate further the regime to pursue the weapons and the means to deliver them.

Juche⁴⁶⁹ is usually defined as self-identity, self-reliance or the ability to be self-sufficient. A standard ROK dictionary gives “cope with or take care of one’s burden” as a definition. The term “first emerged in 1955 as Pyongyang drew away from Moscow and then appeared full-blown in the mid-sixties as Kim sought a stance independent of both Moscow and Beijing.”⁴⁷⁰ However, there is evidence of its use along with synonyms much earlier and appears to have “structured Kim’s ideology in the 1940s.” Juche’s most

⁴⁶⁸ Cumings (2004), 76

⁴⁶⁹ (주체) Pronounced ‘joo-cheh’

⁴⁷⁰ Cumings (2004), 158

salient component is nationalism. It declares that Korea is a chosen land and seeks more than just independence but rather “invokes hostility against foreign hegemonic powers and promotes the sovereignty of the Korean heritage and its people.” Juche also “views the world as an exploitative system as long as nations are unable to meet their basic needs and provide for military self-defense.”⁴⁷¹ The three primary mutually reinforcing policy goals and priorities of juche are military self-defence, economic self-sufficiency, and political self-determination.⁴⁷²

Regime theoreticians have asserted that the DPRK’s experiences with colonization and subjugation created the conditions for juche to develop. The “military inferiority and weak nationalism” of Korea has been blamed for Japanese colonization and juche has been utilized to remind the people that Kim Il-sung’s “lifelong struggle was to militarily prepare for self-defense and ideologically solidify the people through nationalism.”⁴⁷³ Juche might be described as an extension of an ancient Korean ideal to form a self-sufficient hermit kingdom where freedom is defined as the ability to be Korean and resist foreign influences.⁴⁷⁴ By the mid-1960s, Park believes, juche was influencing every aspect of WPK decision making.⁴⁷⁵ In 1967 during a period of uncertain relations between the DPRK and its two principal allies, Kim made a speech to the Supreme People’s Assembly in which he claimed the government would “increase the defence capabilities of the country so as to reliably safeguard its security on the basis of

⁴⁷¹ Park (2002), 28-31

⁴⁷² Ibid, 90-91

⁴⁷³ Ibid, 18

⁴⁷⁴ Cumings (2004), 151

⁴⁷⁵ Park (1996), 89. In contrast, B.R. Myers suggests that juche is a “sham” ideology for international consumption meant to cover up the DPRK’s deeply race-based nationalistic ideology. See B.R. Myers, *The Cleanest Race: How North Koreans see themselves and Why it Matters* (New York: Melville House, 2010). Whatever the case may be, nuclear weapons can be viewed as being promoted internally as self-sufficiency in defence matters or as a tool to preserve the “purity” of the Korean race against external enemies.

our own forces, by excellently materializing our Party's idea of Juche in all fields." Thus, Kim's decision in the late 1970s to "launch a joint nuclear weapons development program" was easily justified by the juche inspired policy of self-sufficiency in military affairs.⁴⁷⁶ The slogan on the roof of the main reactor at Yongbyon (자력갱생⁴⁷⁷: "regeneration through one's own efforts")⁴⁷⁸ suggests that the regime had linked the development of the nuclear program for energy, militarily or both, to the principles of juche.

The apparent contradiction between the core tenets of juche and the DPRK's reliance on its allies for economic and military assistance has not gone unnoticed in analyses of the impact of juche on proliferation. In addition to material support, there are strong indications that the regime was significantly influenced by China's nuclear success in 1964, "since it clearly demonstrated the feasibility of nuclear self-reliance."⁴⁷⁹ Yet, Pyongyang did lose faith in these guarantees and lost the Soviet one altogether, after which the influence of juche became stronger. In this sense, the demise of the Soviet Union and China's subsequent overtures to the ROK were used to convince the people as well as the members of the nuclear establishment that there was an even stronger incentive to be self-sufficient, despite periodic Sino aid to the DPRK.

The pursuit of the ultimate deterrent, nuclear weapons, was thus fully consistent with juche⁴⁸⁰ and dovetailed nicely with the longstanding feelings of subjugation in the DPRK as well as the increasing feelings of abandonment in the face of persistent security concerns. Ogilvie-White concludes that the use of juche went from promoting self-

⁴⁷⁶ Mansourov, 29

⁴⁷⁷ Pronounced "charyok kaengsaeng."

⁴⁷⁸ Cumings (2004), 57

⁴⁷⁹ Szalontai & Radchenko, 4

⁴⁸⁰ Scobell & Sanford, 83

reliance during the Cold War in the face of external communist influence to denouncing other enemies in the post-Cold War era, including specific actors like the US, Japan and the ROK, but also general concepts such as imperialism, capitalism and an international system dominated by the west in general and US in particular. The resulting conflict between the promotion of *juche* and what English School theorists would consider a more solidarist international society in the post-Cold War era, and its consequential bolstered NPT norms, explains for Ogilvie-White the DPRK's nuclear choices. This is because Pyongyang's refusal to go along with the pressure from international society is its way of increasing its "interaction capacity on its own terms," while letting the world know that it rejects many of the features characterizing the international system.⁴⁸¹

Accordingly, *juche* is not seen as solely motivating the nuclear weapons program but playing a large role in perpetuating the already deeply ingrained mentality of key decision makers of the need for self-reliance. What is more, the *juche* driven single-minded pursuit of nuclear weapons along with the means to deliver them⁴⁸² was carried out because without them, the regime would appear illegitimate in the eyes of the military and political elite, as well as the general public.⁴⁸³ Thus, *juche* was both a product of, and has also helped shape the historical security and nuclear circumstances on the peninsula, and was a key tool for the maintenance of the Kim Il-sung regime. It is no surprise then that the transfer of power to Kim Jong-il consisted of an ideological shift; one with a similar if not more emphasis on the need for nuclear weapons.

⁴⁸¹ Ogilvie-White (2010), 122-123

⁴⁸² The only growth between the mid-1980s and 2000 in the DPRK economy has been in the areas of KPA Special Forces, and the nuclear and ballistic weapons programs. See Bermudez Jr. (2001), 212-213

⁴⁸³ Park (2002), 91

Cha believes that the DPRK's proliferation has driven the internal politics and ideological character of the regime and not the other way around.⁴⁸⁴ Yet Songun,⁴⁸⁵ or military first politics, is the product of longstanding policies in the DPRK. The regime claims that it both "encompasses and supersedes the traditional tenets of Juche."⁴⁸⁶ This doctrinal shift is not seen as being solely motivated by an amplified nuclear weapons drive. Instead, it is frequently argued that songun was intended to be for Kim Jong-il what juche was for his father: a means to secure power.⁴⁸⁷ It just happens that this has involved an even heavier emphasis on the military's integral role in and vital importance to DPRK society; the upshot of which is naturally an inclination for bigger and better arms.

The roots of songun are deep in DPRK policy history and mostly consistent with juche ideals and therefore the regime has had no problem promoting its rise. Since his guerrilla days in Manchuria, Kim Il-sung had insisted that "no amount of resources devoted to building military strength was considered too large."⁴⁸⁸ As a response to the handling of the Cuban missile crisis and the Sino-Soviet border dispute in 1962, Lee and Cho note that

North Korea officially adopted its 'Four-Point Military Guidelines,' at the fifth meeting of the fourth session of the Worker's Party Central Committee. The basic themes of the newly introduced military lines were: (1) the arming of the whole people; (2) the fortification of the entire country; (3) the training of all soldiers as a cadre force; and (4) the modernization of arms.⁴⁸⁹

It is clear that the policy has shaped the overtly martial character of the DPRK. Since about 1980, Cha stresses, the WPK has "given way to military-first politics and a garrison

⁴⁸⁴ Cha (2002), 228

⁴⁸⁵ (선군) Pronounced 'son-goon'

⁴⁸⁶ Hymans (2008), 266

⁴⁸⁷ Solingen, 138-139

⁴⁸⁸ Park (2002), 24

⁴⁸⁹ Lee & Cho, 134

state in which virtually all the key positions of power are occupied by the military.”⁴⁹⁰ More recently, Kim Jong-il has pushed songun so far so as to nearly eliminate the role of the WPK in many sectors of society altogether.⁴⁹¹

The implications for proliferation can be found in the rise of militarism associated with Kim Jong-il’s ascent⁴⁹² and the corresponding increase in the role of the military in DPRK society. On account of the strong role for the military in state politics, nuclear weapons and the modernization of other arms inevitably boost the role of the KPA not only in political and economic affairs, but also in society in general. Mansourov sums up this role as being

not only the military defender of the nation and the principal guarantor of regime survival but also an important economic actor in agriculture, infrastructure construction, research and development, professional education, arms sales and hard currency earnings; the major ideological educator, socializer of the youth, and the general backbone of the society; as well as the principal veto power in all policy deliberations.⁴⁹³

Songun policy has thus ensured that the pursuit of nuclear weapons and ballistic missiles for the KPA has become its *raison d’être*, driving the program from the inside.⁴⁹⁴ As such, military first politics is “not simply a wartime mobilization policy but a new way of North Korean life and the trademark of the Kim Jong-il regime.”⁴⁹⁵

In sharp contrast to the security and domestic level variables as motivations, while still encompassing such factors, Jacques Hymans has also applied his national identity

⁴⁹⁰ Cha (2002), 228. The phrase ‘garrison state’ refers to the DPRK as a heavily armed fortress to defend against outsiders.

⁴⁹¹ Chang, 73

⁴⁹² This did not just occur after his father’s death in 1994 but had been planned well in advance. Consequently, the emphasis on an increase in militarism coincided with the end of the Cold War and the end of Soviet security assurances which facilitated the shift to songun and boosted Kim Jong-il’s status internally.

⁴⁹³ Mansourov (2006), 45

⁴⁹⁴ Cha points out that this goes against former deterrence schools of thought which “argued that the military is divorced from the chain of command on nuclear issues.” See Cha (2002), 228

⁴⁹⁵ Oh & Hassig, 274

conception (NIC) to the case of the DPRK. National identity has already been briefly discussed in terms of the nationalist and anti-colonialist character of the DPRK. The reader will recall from Chapter One that Hymans' analysis measures the effects of the NIC on a leader's choice to seek nuclear weapons. Hymans' approach is unique because although it recognizes that leaders incorporate both internal and external factors in their decisions, he applies fundamentally different assumptions about how those leaders process those factors and make decisions.

As Potter and Mukhatzhanova highlight, Hymans identifies and debunks four myths concerning why states choose to acquire nuclear weapons:

(1) states want the bomb as a deterrent; (2) states seek the bomb as a “ticket to international status”; (3) states go for the bomb because of the interests of domestic groups; and (4) the international regime protects the world from a flood of new nuclear states [...] Each of these assumptions is faulty [...] because of its fundamental neglect of the decisive role played by individual leaders in nuclear matters.⁴⁹⁶

More precisely, Hymans has suggested that the two basic points of view in the US both assume that the DPRK is a “unitary, rational actor; it knows how to build the bomb; and its nuclear weapons drive is a function of the external incentive structure it faces.”⁴⁹⁷ As an alternative, Hymans suggests employing different assumptions about the general dynamics of proliferation; assumptions which recognize that the “choice to go or not to go nuclear is a revolutionary one that rarely if ever lends itself to standard cost benefit calculation.”⁴⁹⁸

⁴⁹⁶ William C. Potter & Gaukhar Mukhatzhanova, “Divining Nuclear Intentions: A Review Essay,” *International Security*, Vol. 33, No. 1 (Summer 2008): 162

⁴⁹⁷ Jacques E. C. Hymans, “North Korea’s Nuclear Neurosis,” *Bulletin of the Atomic Scientists*, Vol. 63, No. 3 (May/June 2007):46

⁴⁹⁸ Hymans (2008), 260

Recall that an NIC is defined as an “individual’s understanding of the nation’s identity – his or her sense of what the nation naturally stands for and how high it naturally stands, in comparison to others in the international arena.”⁴⁹⁹ In particular, those with *oppositional nationalist* NIC’s are likely to go nuclear simply because it “seems like nothing less than the natural choice.” Oppositional nationalists “believe that their nation’s core interests and values are naturally in stark opposition to ... [and] that their nation can and should hold its head high in its dealings with its key comparison others.” The result of these beliefs is intense feelings of pride and fear which “produces a desire for markers of security” to both overcome this fear as well as “decrease actual dangers,” for which nuclear weapons are the “gold standard.”⁵⁰⁰

The corollary is that leaders “decide to go nuclear more with their hearts than with their heads,” without thought to the consequences. It becomes “not just a means to an end, but as an end in itself – a matter of national self-expression,” and a desire which subsequently becomes “very hard to dislodge.” In the case of the DPRK, Hymans points to archives of former communist states which suggest the DPRK very early in its history chose to pursue nuclear weapons, with oppositional nationalist-like emotions directed at not only the US but Japan, Russia and China as well.⁵⁰¹ Moreover, Hymans concludes that although oppositional nationalism is “at the core of the regime’s official ideology of *Juche*” as well as *songun*, the decision to go nuclear is fundamentally a result of its NIC and not ideology.⁵⁰² He concludes that the DPRK’s precarious international situation since the 1980s might have further inspired it to attain nuclear weapons; however, the

⁴⁹⁹ Hymans (2007), 18

⁵⁰⁰ Hymans (2008), 263

⁵⁰¹ Hymans (2007), 46-47

⁵⁰² Hymans (2008), 265-266

root of its desire can be traced back to the height of the Cold War, when the DPRK's oppositional nationalism began to take shape.⁵⁰³

There is ample evidence to suggest that the DPRK also sees itself detached from the international system, although not in a core/periphery dichotomy. Although some might say that the DPRK is clearly an irrational regime on the periphery,⁵⁰⁴ especially when it comes to its nuclear weapons, the regime's choices seem flush with its domestic policies and perception of its enemies and the treachery of international standards. This attitude was evident even in the 1960s when officials questioned the validity of imposing non-proliferation on hopeful nuclear states. Paradoxically, however, although Pyongyang's weapons might be an extension of its inherent distrust of its enemies, they are also viewed from within as giving Pyongyang an improved status in the international system, the effect of which is conceivably better relations with (or at least leverage over) those same sworn enemies. From this angle, nuclear weapons are not only seen as guaranteeing existential security via deterrence but also regime security and the permanence of the DPRK as a state by ensuring normalization and even eventual integration.

Conclusion

There are many explanations for what has driven the DPRK's nuclear weapons program. The interpretation within established international relations schools of thought of the various drivers and how Pyongyang has chosen to deal with them, largely determines the perceived weight of particular catalysts on the program. In line with the predominant theories on proliferation, analyses of the DPRK case have identified a

⁵⁰³ Hymans (2008), 271

⁵⁰⁴ Condoleezza Rice, for example.

variety of motivations which have been categorized into security, domestic, and prestige, identity and norms related variables. Also corresponding to the predominant proliferation theories, security concerns appear to be highlighted as the primary driver for the DPRK's nuclear weapons pursuit, with varying features of security having different degrees of influence on the decision to go nuclear. It is plain to see that even in arguments focussed on other drivers such as domestic politics or identity, security concerns are rarely forgotten and usually incorporated into the equation in some manner.

While the compartmentalization of these variables makes understanding the DPRK's proliferation easier, it is clear that it tends to distort an already complicated issue. Since many of the drivers for proliferation are inherently interconnected it is problematic to categorize them into frameworks focussed on one level, such as the function of the state in the international system. This is because, notwithstanding the rare efforts at multi-causal analysis, there is a tendency to downplay other variables which might be equally, if not more important, in driving the DPRK's program at different points in time. Moreover, there is also the challenge of dealing with potential drivers which do not appear to fit neatly into any of the typical categories. A prime example in the DPRK's case which has only been briefly mentioned here is the notion that it has utilized the program to fashion a new relationship with the US. Such a conception is derived from all three main categories of drivers and as such, seems to cross the lines of the established theoretical framework on proliferation.

By stepping outside of the proliferation theory box, so to speak, and understanding that the DPRK has neither been driven for the entire duration of its program by single variables or even particular combinations of these variables, a completely different picture of the DPRK begins to emerge. Such a picture would attempt to overcome the

shortcomings of the dominant proliferation theories to explain the complexities of the DPRK case.

Chapter 4

Crossing the Threshold: Necessary and Sufficient Drivers for the DPRK's Nuclear Weapons Program

The DPRK's nuclear weapons ambitions have existed in some form for more than six decades. The competing interpretations of what has driven these ambitions across time have encompassed a wide range of theories concerned with security, domestic level variables, prestige, identity and norms. It is unlikely, however, that these variables have driven the program equally across time. Although there have been some constants (such as security factors), even the constant variables have shifted in nature and overall relative importance in motivating the drive for nuclear weapons. The push and pull of internal and external forces has given rise to what initially attracted the regime to nuclear weapons being quite different from its motivations in the post-Cold War era. It is also clear that as Pyongyang became closer to a functioning infrastructure for a nuclear weapons program, certain motivations coalesced to ensure that even as certain motivations became less consequential, Pyongyang remained sufficiently driven to seek nuclear weapons.

This fourth and final chapter sketches what these motivations have been and how they have transformed over time. In so doing, it incorporates the Scobell and Sanford decade by decade model for analyzing the evolution of DPRK motivations. Compartmentalizing DPRK motivations by decade enables a more manageable analysis, yet tends to gloss over motivations which do not fit neatly into brief time distinctions. As a remedy, this chapter divides the tenure of the DPRK's nuclear efforts into Cold War and post-Cold War era developments.⁵⁰⁵ By analyzing nuclear infrastructure developments and other nuclear related activities laid out in Chapter Two and the rival perceptions of DPRK motivations laid out in Chapter Three, this chapter isolates the necessary and

⁵⁰⁵ This distinction is made because of the apparent shift in the significance of the primary drivers for the DPRK's program, even though this shift was apparent prior to the end of the Cold War, and because Pyongyang appears to have had both the necessary and sufficient conditions to go nuclear sometime in the post-Cold War period. The distinction should not be taken as a clear demarcation in the DPRK's program since important drivers have existed in both periods.

sufficient conditions in which the DPRK was driven to seek nuclear weapons. Consequently, the most significant drivers and major transitions between drivers become more readily apparent, the upshot of which is an illustration of the incapacity of standard proliferation theories to explain fully the case of the DPRK.

Framework

As part of their analysis of the DPRK’s overall military capabilities, Scobell and Sanford sketch the evolution of the DPRK’s nuclear weapons motivations from their supposed first emergence in the 1950s roughly through to the present day. Although the attempt to understand the cross-temporal changes in the nature of DPRK motivations is a relatively brief portion of their analysis, it does represent a significant departure from the rest of the literature on the subject and thus partially fills a gap. However, Scobell and Sanford provide only a basic conception of this evolution, which is adapted here to develop a more robust analysis of the degree to which various motivations have driven the DPRK’s nuclear weapons and ballistic missile programs.

For Scobell and Sanford, this evolution appears as such:

1950s	Umbrella (someone else’s)
1960s	Umbrellas/Shield (aspirational)
1970s	Umbrellas/Shield [+Sword?] (aspirational)
1980s	Umbrellas/Shield [+Sword?] (aspirational)
1990s	Shield, Badge, Chip [+Sword?]
2000s	Shield, Badge, Chip [+Sword?]

⁵⁰⁶

It is important to note the use of the term “umbrella” by the authors at times diverges from its standard usage in the nuclear weapons lexicon. While a nuclear umbrella normally refers to the guarantee to use nuclear weapons as a possible means in the

⁵⁰⁶ Scobell & Sanford, 79

protection of a non-nuclear state, otherwise known as extended deterrence, Scobell and Sanford's use denotes an "independent strategic capability," with the exception of the 1950s period which refers to an umbrella in the classic sense. Pursuing nuclear weapons as a "shield" refers to doing so for reasons of defence or deterrence. The "sword" conceptualization indicates that the motivation was for offensive purposes, not simply as a weapon to use pre-emptively but to deter possible US intervention in the case of a DPRK attack on the ROK. Finally, "badge" refers to pursuing nuclear weapons for "national prestige," while "chip" is a means to gain "diplomatic leverage" in order to secure economic or political gains.⁵⁰⁷ Scobell and Sanford's interpretation is notable because it both recognizes an evolution of motivations and incorporates a certain degree of multi-causality.

A better appreciation of the relative importance of the variables motivating the DPRK's nuclear weapons quest requires an understanding of both the necessary and sufficient conditions for the DPRK's decision to seek nuclear weapons. A *necessary* condition (or cause) is that which must be present in order for a phenomenon to take place; in other words, in the absence of a necessary condition the phenomenon will not occur. A *sufficient* condition is one which if present, guarantees that a particular phenomenon will take place. A sufficient condition is not necessarily the "*only* possible cause of a particular effect"⁵⁰⁸ and can be part of a larger group of conditions which suffice to guarantee that the phenomenon will occur. For these reasons, a condition can be sufficient but unnecessary and of course, necessary but insufficient. For example,

⁵⁰⁷ Scobell & Sanford, 78. The chip motive is also frequently termed "nuclear blackmail" in the literature on nuclear proliferation.

⁵⁰⁸ Earl Babbie & Lucia Benaquisto, *Fundamentals of Social Research* (Canada: Thomson/Nelson, 2002), 68

oxygen is a necessary condition for human life. If humans do not get oxygen then they will cease to live. Oxygen, however, is not a sufficient condition for human life since humans also require many other things to guarantee life including, among other things, food and water.⁵⁰⁹

The case of DPRK nuclear proliferation is a complicated one for numerous reasons. Although social science calls for a rigorous analysis of verifiable empirical data, such information is often difficult to come by when dealing with state nuclear secrets, especially when it is the secrets of one of the most closed nations on earth. DPRK nuclear proliferation has also not been one of uniform linear progression but one that has come in fits and starts. What is more, the early stages of the DPRK's nuclear drive were characterized by an ostensible division between acquiring nuclear weapons from external sources and building them indigenously.⁵¹⁰ By identifying all of the necessary and sufficient conditions for the DPRK's nuclear weapons program, the true nature and evolution of DPRK motivations can be better understood. This is because identifying motivations and matching them to apparent efforts at developing an indigenous nuclear weapons capacity can further demonstrate the importance of those motivations.

While states are theoretically driven by a wide range of variables in an infinite number of combinations and degrees, the list of necessary conditions driving a nuclear weapons program is actually quite short. If a necessary condition is that which must be present in order for a phenomenon to take place, and drivers related to security or domestic level factors, for example, differ from case to case, it cannot be said with any

⁵⁰⁹ Norman Swartz, "The Concept of Necessary and Sufficient Conditions," *Simon Fraser Department of Philosophy* (1997), np, <http://www.sfu.ca/philosophy/swartz/conditions1.htm>

⁵¹⁰ The necessary conditions for both means of acquiring nuclear weapons are fundamentally different. Since the DPRK became sufficiently motivated to seek nuclear weapons and was apparently unable to acquire them from its allies, this thesis focusses on the necessary and sufficient conditions for its indigenous nuclear weapons pursuit.

certainty that any particular variable from the list of potential drivers in Chapter One is absolutely necessary for indigenous nuclear proliferation to occur. Save for acquiring nuclear weapons externally, there are several core entities necessary for the development of an indigenous nuclear weapons program such as adequate infrastructure, weapons grade plutonium or uranium and the means to finance such a venture.⁵¹¹ If these necessary variables are a given, thus demonstrating the intent to produce nuclear weapons, the remaining task is to determine what single or combination of variables are *sufficient* for a state, in this case the DPRK, to generate the political will to seek a viable nuclear weapon option. The point at which both the necessary and sufficient conditions are met ought to result in DPRK nuclear proliferation – the nuclear weapons threshold.

Cold War Era Drivers

If the equation $x + y =$ the sufficient conditions for proliferation, what are the x 's and y 's in the DPRK's case? What is special about the decades leading up to DPRK proliferation and the time since that has inspired it to presumably remain steadfast in its possession of nuclear weapons? In the Cold War period, the DPRK became gradually yet consistently closer to the necessary conditions for its nuclear weapons pursuit. In the meantime, the critical element of political will may have started to emerge as early as the 1950s. Drivers for the nuclear program in general appear to have shifted in significance throughout the Cold War era. While security concerns appear to have been the primary

⁵¹¹ It is tempting to think that the will to acquire nuclear weapons is also a necessary condition. However, will is not what inspires a state to seek nuclear weapons. Instead, an infinite number of causes lie behind the manifestation of a state's will to acquire nuclear weapons. The complexity of such causation makes narrowing down and labelling particular cause(s) as necessary conditions impossible. Thus, although this thesis argues that states require concrete motivations for going nuclear, and assumes that some forms of driver(s) are necessary conditions for a nuclear weapons quest, it can only be said that the *motivation* to go nuclear is necessary. Since this is overly vague, a more complex description of the motivation is expressed as composing the sufficient condition(s) to go nuclear. Although it is theoretically possible to have a cause which is both necessary and sufficient for a particular effect, in the case of DPRK nuclear proliferation this does not hold true when utilizing specific terminology beyond "motivation."

driver for most of the period, it is unclear whether security alone inspired the regime to go nuclear. There is ample evidence throughout the Cold War period to suggest that other drivers ensured that Pyongyang became sufficiently motivated to proliferate. Most importantly, by the end of the Cold War Pyongyang was apparently driven more by regime preservation (from within) than any other concern.

Although the late 1940s and 1950s were a dynamic part of its nuclear history, it is unclear whether Pyongyang had become sufficiently motivated to proliferate. There is no apparent declaration by the regime to pursue such weapons or efforts to acquire them from others during this period. The existence of sufficient drivers to motivate the regime to seek nuclear weapons could have been tempered by an unwillingness to request such weapons or, there may in fact have been requests that remain unknown. This suggests several possible scenarios. Pyongyang could have had early intentions to seek nuclear weapons because of already established sufficient motivations. If so, it could have been developing its nuclear infrastructure as part of a long term plan to develop nuclear weapons indigenously. It could have also been pursuing such infrastructure with the hopes that it would inspire its allies to assist it with nuclear weapons when the program reached a point of near bomb making fruition. Alternatively, Pyongyang may have had few if any thoughts about its own nuclear weapons and merely sought to develop a domestic source of peaceful nuclear energy. If the latter is true, the drivers during the early stages of the Cold War were the beginning of a process of accumulation that would eventually become sufficient for DPRK proliferation.

Contrary to the claims of some authors, technology is necessary but insufficient to drive any state, let alone the DPRK, to seek an indigenous nuclear weapons capability.⁵¹² While it is true that the DPRK's nuclear experiences with the Soviet Union during the 1950s may have given Pyongyang some nuclear weapons proclivities, there is no evidence to suggest that the regime eventually sought such weapons solely because it had already made inroads on the technological front. The DPRK of the early Cold War years can be likened to other states which have experience with nuclear research and civilian nuclear energy programs such as Canada or Japan, where technology and experience are necessary, but insufficient on their own for an indigenous nuclear weapons drive.

On the other hand, the emergence and maturation of certain drivers which would eventually inspire the DPRK to acquire nuclear weapons, whether built indigenously or acquired externally, did conceivably materialize at this time. It frequently goes unnoticed, or at least unmentioned, that after the Japanese, Koreans were the chief victims of the atomic bombs dropped on Hiroshima and Nagasaki.⁵¹³ After near elimination as a state during the Korean War, the 1950s were for the DPRK a period of tremendous insecurity. The US had demonstrated its willingness to use whatever means necessary in the Korean conflict. This included the indirect threat to use nuclear weapons, dropping more napalm on the northern portion of the peninsula than it used on North Vietnam, and by finishing its air campaign by destroying huge irrigation dams which supported 75% of

⁵¹² The technical versus motivational school debate is outlined in Stephen M. Meyer, *The Dynamics of Nuclear Proliferation* (Chicago: The University of Chicago Press, 1984). The technical school of thought is rooted in the belief that some states pursue nuclear weapons simply because they can; because they are technically feasible. In contrast, the motivational school assumes that states require a reason in light of the associated political and economic costs of nuclear proliferation.

⁵¹³ Unnoticed except in the DPRK where the fact is frequently brought up in the Korean and English media. For a recent reference see "Foreign Ministry Issues Memorandum on N-Issue," *Korean Central News Agency* (April 21, 2010), <http://www.kcna.co.jp/index-e.htm>

the food production.⁵¹⁴ Despite managing to force a stalemate, US war fighting left a lasting impression on the DPRK. And as Thucydides observed, war is a “most violent master.”⁵¹⁵

There was every reason to believe that the US intended to keep its options open in the years immediately following the war. Although the conflict had been informally ended with an armistice, the US maintained massive numbers of troops in the ROK. Personnel levels went from 510 prior to the war to 326,863 by 1951, and this number remained steady throughout the duration of the conflict. By the end of the decade nearly 50,000 US personnel remained.⁵¹⁶ Moreover, in the midst of the late 1950s peaceful nuclear energy developments in the DPRK, despite the armistice clause prohibiting the introduction of qualitatively enhanced weaponry, the US introduced nuclear weapons in the ROK and made it known soon after that it was willing to use them if necessary.⁵¹⁷ Once Kim Il-sung became aware of this, the incentive to seek his own nuclear equalizer intensified.

Yet, despite the US measures to intimidate the DPRK during this period, and a constant fear of an ROK attack, there is no concrete indication that Pyongyang considered a nuclear option. This does not mean that Pyongyang was not concerned for its security or did not entertain a nuclear option at this time. Even prior to the official announcement of US nuclear weapons deployment in the ROK, the DPRK released a joint statement

⁵¹⁴ Cumings (2004), 16-20; 28

⁵¹⁵ Thucydides, *History of the Peloponnesian War*, ed. Thomas Hobbes, 3.82, <http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0247%3Abook%3D3%3Achapter%3D82>

⁵¹⁶ Tim Kane, “Global U.S. Troop deployment, 1950-2003 (Troops Dataset),” *The Heritage Foundation* (October 27, 2004), www.heritage.org/Research/NationalSecurity/troopsdb.cfm US personnel in Japan ranged from 136,554 to 209,168 during the Korean War and remained at 85,387 at the end of the decade.

⁵¹⁷ The official announcement of US nuclear weapons placement in the ROK came in 1959 via the UN Command in Seoul. See Chang Chun-ik, *북한 핵-미사일 전쟁* “North Korean Nuclear-Missile War” (Seoul: Somundang, 1999), 116

with China which provided that China would send troops in the event of a disintegrating DPRK, suggesting that it may have known about US nuclear weapons prior to the official announcement or, simply anticipated a breakdown in security.⁵¹⁸ Nevertheless, in the absence of tangible evidence it can be surmised that the security concerns of the 1950s, although significant, were independently insufficient (that is, they needed to be combined with other drivers) in order to inspire a more distinct interest in nuclear weapons.

This situation changed dramatically in the 1960s and was ostensibly motivated by an increased fear of ROK bellicosity. There is little doubt that the DPRK's perception of the US and ROK threat during this period was that it was increasingly menacing. In the ROK, leadership went from one characterized by peaceful reform to one of outright militarism after the General Park Chung-hee led coup, or at least the DPRK believed that the ROK had become more threatening.⁵¹⁹ The abovementioned consistent conventional and nuclear threat posed by the US was also becoming more ominous as the US introduced more lethal weapons and stepped up its posture on their early use.⁵²⁰ The US also stationed an average of 58,357 personnel in the ROK during the 1960s.⁵²¹ Although the DPRK's nuclear infrastructure was still relatively embryonic during this period, security concerns reached a point of saturation to sufficiently inspire it to seek nuclear weapons and also the necessary elements for what would become a functioning indigenous program.

⁵¹⁸ Vadim Tkachenko, "Korea and Her Great Neighbour" in *Korean Peninsula: The Time of New Challenges* (Moscow: Institute of Far Eastern Studies, 2009), 58

⁵¹⁹ Mazaar, 23. Mazaar suggests that the DPRK was unsure about what to expect; the upshot was a drive to put "equal emphasis on military preparedness and economic development," resulting in about one-third of the DPRK's budget spent on defence.

⁵²⁰ Cumings (2004), 52-53

⁵²¹ US Troop dataset, www.heritage.org/Research/NationalSecurity/troopsdb.cfm. Beginning in 1971 personnel levels hovered around 40,000 until the 1990s when around 37,000 troops remained in the ROK, with slightly higher numbers in Japan during the same period.

The relatively brief interlude between the introduction of nuclear weapons in the ROK and the DPRK's quest for security assurances from its allies suggests that security concerns in the late 1950s and 1960s were most influential in the DPRK's nuclear weapons interest.⁵²² As a result of its fruitless efforts to acquire nuclear weapons from its principal allies, and persistent drivers throughout the decade, a corresponding surge in its indigenous capacity can be observed in the 1960s and throughout the 1970s. However, aside from requests for the weapons, it is difficult to link what could be mostly harmless nuclear energy developments during this period to nuclear weapons intent.

The development of the DPRK's nuclear infrastructure including its Soviet supplied research reactor, training of nuclear scientists and other outcomes of the 9559 contracts signed in 1959, all appear to have progressed with the aim of peaceful civilian nuclear energy.⁵²³ Except for the acquisition of various missiles⁵²⁴ and attempts to obtain ballistic missiles during the 1960s, which in theory could be used to deliver nuclear weapons if the DPRK could ever get its hands on some, there is no concrete evidence of steps forward on indigenous nuclear weapons capabilities. Notwithstanding the potential peripheral effects of nuclear training and research on the future DPRK weapons program, the notion that Pyongyang sought nuclear weapons by the 1960s can only be corroborated by reviewing the drivers at the time and the statements and actions of the regime. Most

⁵²² It is difficult to attribute the DPRK's prior experience with outside states as a driver for proliferation but based on the DPRK's historiography (both in the way it has presented its history as well as the available data on the topic) it seemingly had an impact during this period and throughout the tenure of its nuclear weapons drive. As such, its historical experience may have been a factor for its pursuit by the early 1960s, and not just existential security concerns. Of course, the two are inherently inseparable in this case.

⁵²³ The DPRK's First vice Foreign Minister, Kang Sok-ju, in the 1990s told US negotiators that the DPRK's nuclear program *began* in good faith, "using natural uranium, which is mined in the country, and gas-graphite technology, which was widely available." (emphasis added) See Oberdorfer, 289

⁵²⁴ Although the DPRK's interest in and acquisition of missiles during this period seems to coincide with interest in nuclear weapons, there is no empirical foundation for the claim that they were necessarily connected.

important here is the way in which the DPRK dealt with the indigenous versus allied supplied nuclear weapons choice that accompanied the DPRK's emergent inclination to proliferate at this time.

Ironically, some of the ways in which the DPRK dealt with these threats actually contributed to its insecurity, in turn reinforcing already ingrained but still somewhat dormant notions of the need for self-reliance, thus further motivating it to seek nuclear weapons. Kim Il-sung once remarked: "Political self-reliance is not subject to compromise, although economic interdependence and military alliances may be accepted to the extent that political sovereignty does not suffer."⁵²⁵ The military alliances with the Soviet Union and China signed in the early 1960s were meant to assuage some of the DPRK's insecurity. Yet, the implied nuclear umbrella for the DPRK did not preclude Pyongyang from pursuing its own nuclear deterrent.⁵²⁶ Deteriorating trust in the alliances altogether during this period clearly contributed to DPRK insecurity. The four point military guidelines policy of the early 1960s was a clear step towards self-sufficiency in military affairs as a means to overcome the waning trust in the face of overwhelming security concerns. Nuclear weapons were a logical policy goal of those guidelines. It is thus plausible that by the 1960s the DPRK's enhancement of its nuclear infrastructure was progressing with an energy *and* weapon purpose.

The interconnectivity of certain drivers is readily apparent at this juncture in the DPRK's program. Pyongyang's alleged loss of faith in its allies is often said to be based

⁵²⁵ Kim Il-sung, *With the Century* (1992); quoted in Park (2002), 97

⁵²⁶ It is worth noting that the Korean Worker's Party newspaper recently suggested that it has *never* been provided with a nuclear umbrella from its allies to deal with the nuclear threat from the US. (우리에게는 미국의 핵위협을 막아줄 외부의 핵우산이란 있어본적이 없다) "The US Spreads tales of Nuclear Chain Reactions," *Rodong Sinmun* (DPRK Daily in Korean), July 27, 2009, <http://www.kcna.co.jp/today-rodong/rodong.htm>

on observations of its allies' behaviour in the international system. While this certainly appears to have been the case, the DPRK was also conceivably influenced by its own experiences with the Soviet Union and China.⁵²⁷ It is challenging to quantify such experiences and gauge the degree to which they have influenced nuclear decisions, made all the more difficult because history and the resultant attitudes of decision makers arguably have a bearing on perceptions of the relative weight of other potential drivers. Making matters worse, if the DPRK truly does craft foreign policy and nuclear weapons decisions within a framework of domestic political discourse, and is not completely dictatorial, assigning a collective consciousness to a group of decision makers, which are referred to throughout as "the DPRK," is inherently problematic.

Nevertheless, even a perfunctory survey of the DPRK's historical experiences might help to explain why it has been so reluctant to accept superpower guarantees to deal with its overwhelming security concerns. For instance, the DPRK is the only communist state to have been occupied by anti-communist forces in the post-Second World War era. Cumings suggests that this is "alive and well, burned into the minds of several generations."⁵²⁸ Korea's division at the hand of external powers, and the consequent death and suffering of its people, is frequently linked to a "lack of military preparedness and the absence of a national consensus on a nationalist ideology."⁵²⁹ Thus, while the DPRK might be expected to place value on Sino-Soviet contributions to overcoming wartime occupation, Cumings poses an important question: "Is it any wonder that for a Communist arrested by both Chinese and Soviet 'comrades,' independence and

⁵²⁷ A nation's historical experiences can be lumped into identity based drivers a la Ziemke who was discussed briefly in Chapter One. Regardless, whether derived from the DPRK's observations of its allies or its own historical experience as shaping its relationships, the end result of a weak or loss of faith in the alliances is the same.

⁵²⁸ Cumings (2004), 32

⁵²⁹ Park (2002), 19

self-reliance would later become Kim Il-Sung's leitmotiv?"⁵³⁰ Political and military self-reliance becomes explicable when understood within the Korean historical context in general and anti-colonial experiences of DPRK elites in particular.

There is reason to believe that the Sino-Soviet split emerging in the late 1950s had a great impact on both the necessary and sufficient conditions for the DPRK's nuclear weapons drive. As a result of the split, Kim Il-sung was able to play his allies off each other as they vied for control over the DPRK, enabling him to secure economic and military aid which had an indirect bearing on its nuclear weapons infrastructure. The split was also perceived by Kim in the same way that he eventually saw the Soviet Union's abandonment of Cuba; demonstrating to him the fragility of the socialist bloc and willingness of the Soviets to turn their back on their primary allies. Consequently, the split contributed to the DPRK's nuclear weapons drive as it became increasingly aware of its need for its own self-reliant deterrent.

Rather than lamenting the dearth of information on whether the DPRK did not trust its security guarantees from the beginning, the increasing influence of *juche* (fundamentally shaped in part by the DPRK's historical memory) on DPRK policy during this period fits well with the overall lack of faith in the alliances, superseding the importance of any immediate concerns with a nuclear umbrella. Yet, the overt push for self-reliance was prudently hedged. In other words, although Pyongyang may have been inherently unsatisfied and indeed uncertain about the nuclear guarantees, it was not about to renounce them altogether at a time when it had no other alternative. In this sense *juche* was not detached from other active drivers but was complementary to the overarching security issues the DPRK was experiencing. Pyongyang's repeated requests to the Soviet

⁵³⁰ Cumings (2004), 117-118

Union for assistance with its nuclear program and to China for aid with the development of its own nuclear weapons, indeed for the weapons themselves, must have seemed odd to its allies considering their professed guarantees, but were consistent with being sufficiently driven and seeking the necessary means to achieve its nuclear aim. The DPRK really had nowhere else to turn but an indigenous nuclear weapons program when these requests went unfulfilled.

The 1970s was characterized by the explosion of new drivers and the strengthening of pre-existing ones. Whereas the regime appears to have reached a critical point in its realization that it required such arms in the 1960s, the particular events of the 1970s sculpted this recognition to the point where it was willing officially to activate a weapons program of its own. Nevertheless, nuclear efforts at this time were split between considerations of both potential sources of the weapon; bombs both externally supplied and indigenously spawned. Despite being able to determine that Pyongyang had at least reached a point of sufficiency in the 1960s, the question of the resilience of those drivers to continue to motivate the regime is another matter.

Beyond inspiring an initial nuclear weapons drive, the conglomeration of those drivers deemed sufficient to drive a nuclear weapons search need to remain as strong and cannot be mitigated by other factors which might cause the regime to change course, in order to remain sufficient. New drivers may emerge, others may weaken, and the decision to acquire nuclear weapons might be fragile in an environment where few, if any, choices are available. The 1970s, however, not only presented the DPRK with more numerous and severe drivers, but also more options to deal with its concerns. For Pyongyang, the ability to manage its security concerns in a way which not only accommodated but reinforced its domestic political situation, and the subsequent

investment by the regime into an indigenous nuclear weapons program, reaffirmed its commitment to nuclear weapons acquisition. Kim Il-sung's decision in the late 1970s to establish a wide scale nuclear weapons development project and the 1975 separation of plutonium were definitive moments in the DPRK's pursuit because they demonstrated Pyongyang's dedication to its goal of acquisition.

Important aspects of the perceived existential threat grew in significance during this timeframe. In military terms, with the US doctrine on the use of nuclear weapons taking shape and already significantly impacting DPRK insecurity, other developments in the mid to late 1970s clearly sustained the DPRK's motivation. The ROK's short range *White Bear* ballistic missile and its own efforts to establish a nuclear weapons program are some examples. Although the US managed to stifle these projects for fear of a regional arms race, it was unable to eliminate the perception of insecurity in the DPRK. The 1977 initialization of the *Team Spirit* US-ROK joint military exercises may have simply been icing on the cake. Although the US was keen on ensuring the ROK would not tempt the DPRK to respond militarily, the US did a good enough job doing so on its own. In non-military terms, the DPRK felt threatened as well. By effectively equalling and then surpassing the DPRK in economic strength, the ROK seemed poised to win the peninsula's legitimacy battle, causing Kim Il-sung to conclude that reunification would only be on military and even nuclear terms.⁵³¹ In this sense, nuclear weapon acquisition may have been twin motivated in that they were viewed as having military utility as a means to prevent a southern takeover of the north, as well as having prestige utility for the Korean legitimacy battle.

⁵³¹ Sergei Radchenko & Balazs Szalontai, "North Korea's Efforts to Acquire Nuclear Technology and Nuclear Weapons: Evidence from Russian and Hungarian Archives," *Working paper #53, Cold War International History Project* (August 2006), 55

Accordingly, Mansourov's position that Kim Il-sung initiated an all out drive for an indigenous nuclear weapons program in the 1970s⁵³² fits quite well with the available data on the necessary nuclear infrastructure enhancements of the late 1970s and early 1980s. Additionally, Scobell and Sanford's sketch of the DPRK's 1970s intentions⁵³³ in both acquiring from allies and developing its own nuclear weapons appears quite accurate. Pyongyang perceived a potential US and/or ROK conventional and/or nuclear attack and nuclear weapons were seen as a "shield" to deter such an attack. With the misnomer "umbrella," Scobell and Sanford suggest that the DPRK sought its own strategic defence capability, that it pursued them to decrease reliance on its allied supplied nuclear umbrella. However, while the DPRK sought an independent strategic capability, it seems more appropriate to say that it did so in part because it felt there was nothing else to rely on.

Scobell and Sanford's uncertainty on whether the DPRK desired the weapons as a "sword" also warrants mention. While this certainly may have been the case in the 1970s, there is little, if any, evidence to support the assertion aside from general notions of DPRK bellicosity. To be sure, there has been no shortage of suggestions that the regime had an interest in attacking the ROK, and forcefully reunifying the peninsula, in which case nuclear weapons might be useful in preventing US action. Yet, there is much uncertainty regarding what sort of targets the DPRK might pursue (counter-force or counter-value) and against which countries (ROK, US or Japan).⁵³⁴ To be clear, uncertainty over potential targets does not disqualify so called sword intentions. Rather, the failure to identify indications that the regime sought weapons for this purpose

⁵³² Mansourov (1995), 26

⁵³³ Outlined above

⁵³⁴ Scobell & Sanford, 92-93

suggests that the sword motive was either inconsequential or cannot be substantiated. For this reason, Scobell and Sanford's questioning of the sword motive from the 1970s throughout the duration of the program is justified, but not so much as to be included in a list of verifiable drivers.⁵³⁵

The shift away from a reliance on traditional alliances towards the development of a self-sufficient defence capability was also in harmony with the DPRK's state ideology of *juche* and the four-point military guidelines policy of 1962, giving Pyongyang the added incentive of adhering to its domestic political commitments with the introduction of an indigenous nuclear weapons program. Thus, Solingen's suggestion that the DPRK's decision to go nuclear was somehow proactive as opposed to reactive because it preceded significant drivers in the late 1970s lacks context.⁵³⁶ There were numerous requests for the bomb and for assistance with its own program, hints that it would go nuclear, and eventually, efforts to do so throughout the decade. The drivers for these decisions were carried over from both deep in history and from previous decades and only became more severe during the 1970s. States simply do not go nuclear because they feel like it; in the DPRK's case, the 1970s plainly demonstrated this.

It is important not to accept blindly the DPRK's nuclear efforts during the 1980s as a natural continuation of its initial decision and instead examine whether the rapid expansion of its nuclear weapons and ballistic missile programs during this period was carried forward by the cadence of already ingrained motivations, whether there were newly significant drivers that emerged, or a combination of both. Despite the fact that the

⁵³⁵ The exception here is comments from Hwang Chang-Yop, a high level defector from the DPRK who in 1998 claimed that the DPRK would "use them [nuclear weapons] if South Korea starts a war. For another, they intend to devastate Japan to prevent the United States from participating. Would it still participate, even after Japan is devastated? That is how they think." "Defector Hwang-Chang Yop Interviewed," *Foreign Broadcast Information Service – East Asia, 98-191* (328-345), quoted in Bermudez (2001).

⁵³⁶ Solingen, 119

DPRK's necessary conditions blossomed during the 1980s to the point where it likely produced weapons grade plutonium, the stage had already been set in terms of its reasons for doing so, even though the drivers appear to have varied in strength and relevance in terms of their influence on Pyongyang. The late 1970s and early 1980s may have represented the thin end of the wedge in its nuclear weapons production progress, but the wedge was sure to take shape because Pyongyang's original motivations did not disappear. Also noteworthy about the 1980s is the emergence of other drivers at the domestic level.

The perpetual US conventional and nuclear threat arguably intensified as the annual *Team Spirit* exercises became somewhat institutionalized. The DPRK made it known how it felt about the exercises with a steady invective throughout the 1980s.⁵³⁷ At the same time, the 1980s marked the beginning of growth in ROK military expenditures, further deteriorating any confidence the DPRK may have had that its security fears could be allayed.⁵³⁸ The ROK continued to prove itself as stronger economically and was building more nuclear reactors, giving it an edge in the legitimacy war. The DPRK's increased investment in science and technology beginning in the 1980s⁵³⁹ and its dedication to getting its indigenous 30MWe reactor operational was thus conceivably not only motivated by its security concerns. Other benefits such as prestige within the inter-

⁵³⁷ Hayes, 134-135. The harangue on such exercises (though the exercise name has changed to "Key Resolve and Foal Eagle") continues to the present day. For example, the KWP's *Rodong Sinmun* recently reported that joint military exercises between the ROK and US have created an extremely tense situation in Korea and that the exercises constitute insane behaviour making nuclear war a dangerous and likely possibility. - "요즘 조선반도에 초긴장상태가 조성되고있다. 미국과 남조선호전세력은 우리의 거둬드는 경고와 국제사회의 반대에도 불구하고 지난 8일부터 침략적인 《키리졸브》, 《독수리》 합동군사연습을 발광적으로 벌리고있다." See "Extremely Dangerous Nuclear War Frenzy," *Rodong Sinmun* (March 15, 2010), <http://www.kcna.co.jp/today-rodong/rodong.htm>

⁵³⁸ Bazhanova, 133

⁵³⁹ Denisov, 22

Korean context reinforced the already sufficient will to construct a viable nuclear weapon.

Perhaps most importantly, however, was the transformation of the already precarious alliances with the Soviet Union and China and the impact this had on the DPRK's security and domestic political situation. Because of structural imperatives during the Cold War, there was an implicit understanding on all sides that the DPRK's allies would extend nuclear deterrence, regardless of formal security treaties. In 1983, the DPRK openly called for extended deterrence from its allies as a response to possible first use of nuclear weapons by the US. Such a shift from Kim Il-sung's previously overt self-reliant stance was "strong prima facie evidence that Pyongyang was genuinely frightened" since this meant going against previous calls for, and emphasis on, people's war,⁵⁴⁰ and suggests that he was genuinely uncertain about taking his allied umbrella for granted.

The DPRK's deteriorating economic situation coupled with its increasing security concerns thus necessitated a renewed reliance on its untrustworthy allies, at least until Pyongyang was confident that it could provide for its own security with indigenous nuclear weapons. Moscow continued to provide fuel for Pyongyang's indigenous reactor until it was no longer able to pay.⁵⁴¹ Although the DPRK was already thoroughly convinced of the need for its own nuclear deterrent, attempting to wean itself from its allies during the 1980s proved too problematic for the DPRK. Once the structural imperatives of the international system and the formal security guarantee from the Soviet

⁵⁴⁰ Hayes, 135

⁵⁴¹ Kaurov, 17-18

Union disappeared, leaving the DPRK with only potential Chinese backing, the DPRK's nuclear weapons drive understandably accelerated.

Herein lay a critical juncture in DPRK drivers. The DPRK's hesitant, yet necessary dependence on its allies came at the cost of its self-professed dedication to independence in security affairs, the economy and all other matters of state, thus causing a contradiction in the internal political environment. When abandonment fears were at their highest in the DPRK, relations with the Soviet Union soured with the coming to power of Gorbachev and both the Soviet Union and China making overtures toward the ROK.⁵⁴² In a sense, the outcome of the aforementioned subsequent internal political debate over the direction of the nuclear program reaffirmed that the DPRK was sufficiently motivated to continue its nuclear weapons search while simultaneously driving the program as well because of the influence of important domestic actors on the debate. Kim Jong-il's control of the nuclear program by this time⁵⁴³ and the perceived benefits for the ruling military elite gave strong impetus to continue to seek nuclear weapons as opposed to resolving economic and security concerns in other ways.

The choice to remain dedicated to acquiring nuclear weapons as a perceived means to deal with DPRK deficiencies in the 1980s such as security and economic problems, when alternatives to ameliorating these problems existed (such as *not* pursuing weapons, pursuing market reforms and trusting the US and ROK not to attack in exchange for economic assistance and security assurances) has important implications. It suggests that the DPRK did not believe that its problems could be resolved by renouncing

⁵⁴² Solingen, 130

⁵⁴³ This has been confirmed by secret reports from the Soviet KGB to the Soviet Communist Party. See Nicksch (2006), 99. The reader will recall the importance of Kim Jong-il's control of the program for eventual power transition, the results of which would manifest later but still relevant during the 1980s insofar as the continued importance of the program partially drove the nuclear weapons pursuit from within.

nuclear weapons to satisfy international pressure; these problems were perceived inaccurately or were not as important as outsiders like to think; or, Pyongyang had other motivations for going nuclear that could not be reconciled by giving up its program. Since the DPRK was likely to be distrustful of any security guarantees from the US, clearly had concerns other than market reforms, and seems perpetually unaffected by any form of international pressure, the first scenario is doubtful. Furthermore, the assumption that the economy and the well-being of a people ought to take higher priority than ensuring state security might make sense to a western observer, but does not necessarily hold as much weight in the DPRK. The last scenario appears most likely considering the importance of the program for solidifying Kim Jong-il's stature as regime successor by this time, which clearly hinged on not only continuing but expanding the program.

As the Cold War drew to a close, the drivers for Pyongyang's nuclear weapons pursuit remained sufficient, yet, the drivers themselves shifted in quantity and relative influence on the regime. At some point during the DPRK's economic stagnation it might have lacked a necessary condition to continue the nuclear weapons pursuit. After all, it did rely on Moscow to fuel its main reactor and seemingly had an interest in negotiating its ascension in 1985 to the NPT in return for favourable trade with the Soviet Union and valuable LWRs. Similarly, Soviet and Chinese sources have suggested that it is quite possible that the DPRK had hit a wall with its program by the late 1980s because of the limitations of the nuclear training it received.⁵⁴⁴ Nevertheless, despite the alleged lack of these necessary conditions, the DPRK's moves to construct two much larger reactors and its efforts at separating plutonium during the late 1980s and early 1990s suggest that both

⁵⁴⁴ Mazaar, 46

the will and the means remained intact, albeit the necessary means seemingly infrequently interrupted for brief periods.

Pyongyang's use of the nuclear weapons program at this time for bargaining leverage or as a "chip," also cannot be ruled out. This notion takes on greater significance in the 1980s because the international community began to take notice of Pyongyang's possible drive for nuclear arms. To be clear, the bargaining incentive was not and seemingly cannot be sufficient to initiate a nuclear weapons drive, but it certainly seems to have helped propel the regime's already well advanced program. If, however, the regime were uncertain of the future of its program, considering the threat to its security and inability to deal with said threat, it is at least plausible that the regime appreciated the ability of a continued nuclear effort to bring tangible benefits such as economic aid, without really being confident that the program could see results. The NPT deal which it signed to bring four 440MWt LWRs, although never received, demonstrated this.

The willingness to take this offer in exchange for joining the NPT while still hedging during a period of extreme existential uncertainty was the beginning of a long process of such behaviour. This is noteworthy not just because it signals the ripening of the chip driver but also because bargaining behaviour has become a reliable indicator of where the DPRK's motivations lie. Anything the regime received through bargaining was unlikely to satisfy its unmistakable perceived need for the weapons so long as the drivers for the perceived need remained sufficient. If delivered, the LWRs may have satisfied the DPRK's energy concerns and alleviated its economic woes, but would have failed to alter fundamentally the regime's nuclear weapons ambitions since security concerns and domestic politics variables were evidently the strongest drivers of the

nuclear weapons campaign, although not necessarily in that order. Thus, instead of unfounded sword claims, the chip motive was already taking root during this period, and propped up existing drivers.

Post-Cold War Era Drivers

Perhaps paradoxically, rather than encumbering the DPRK's necessary infrastructure, or ending the need for nuclear weapons as one might expect, the early years of the post-Cold War era ushered in the most significant breakthroughs in Pyongyang's quest for the bomb. Eventually, however, the 1990s were a period of punctuated progress in the necessary conditions due to extreme economic distress. Although the regime continued to feel the need for nuclear weapons, even if for changing reasons, it was often unable to provide the necessary conditions to sustain a nuclear effort and outwardly halted progress temporarily in exchange for limited guarantees.

The post-Cold War era has been characterized by the influence of numerous drivers on the regime. Most notably was the transition which began in the Cold War period from security to regime preservation (from within), as the most readily apparent motivation. Whereas these two drivers have had varying degrees of influence during this period, the notion that the DPRK could alone be inspired from within to seek nuclear weapons has important implications for theories of proliferation, especially those theories which posit security as the only or primary motivation for going nuclear. Other factors in the post Cold War era such as nuclear blackmail for economic and political concessions, ideology and prestige, while important, have clearly been intertwined with the other dominant drivers, and in some ways have reinforced the regime's decision, and in others have been borne out of the program itself. Nevertheless, Pyongyang reached a point in

the post-Cold War period where it acquired the necessary means to go nuclear, all the while remaining sufficiently driven to do so.

Even prior to the so called nuclear crisis of the early 1990s, nuclear weapons had become for Pyongyang largely, if not primarily driven by domestic considerations such as regime preservation, made all the more critical in the wake of Kim Il-sung's death in 1994, giving weight to Scobell and Sanford's "badge" classification.⁵⁴⁵ Kim Il-sung once asked: "What would be the point of making one or two nuclear weapons when you [the US] have ten thousand plus delivery systems that we don't have?"⁵⁴⁶ The answer is that even the ostensible pursuit of the weapons, let alone a few bombs, fulfilled several of Pyongyang's goals from regime preservation to putting it in the position to satisfy at least partially its security and energy concerns, if only for a while.

As the program began to be seen at this time as a means to better US relations, while still being a tool for Kim Jong-il's political career, domestic level variables were clearly taking a more prominent role in shaping the DPRK's motivations. At the same time, after a brief hiatus, the *Team Spirit* exercises resumed in 1993, after the DPRK agreed to IAEA inspections.⁵⁴⁷ Consequently, security concerns had not disappeared with the removal of US nuclear weapons from Korea. The DPRK was still conscious of the US naval and air based nuclear threat and so the effect was understandably minimal. The end of the Cold War also brought with it an end to Soviet political and economic support, official Sino-ROK relations, and the reunification of Germany which meant for

⁵⁴⁵ Scobell & Sanford, 79. Scobell and Sanford also posit a degree of international prestige derived from the weapons which fits nicely with Scott Sagan's notion on the prestige of joining the nuclear club noted in Chapters One and Three and Victor Cha's point in Chapter Three.

⁵⁴⁶ Oberdorfer, 322

⁵⁴⁷ Harrison (1993), 34

Pyongyang a feared ROK absorption of the DPRK.⁵⁴⁸ The exacerbation of these security fears understandably contributed to the rapid developments in the program in the early 1990s.

Mazaar maintains that if Pyongyang's nuclear program were visible in the 1970s, it might have been willing to dismantle it in exchange for alleviating its security concerns.⁵⁴⁹ By 1994, however, Pyongyang was "offered all of these things" with no apparent effect on the ultimate drive for the weapons.⁵⁵⁰ Yet, all indications suggest that there was an impact, at least on the DPRK's necessary conditions for going nuclear, since there is a noticeable gap in the DPRK's progress from the Agreed Framework in 1994 until approximately 1998 when it tested missiles and possibly pursued an HEU based nuclear weapons program.⁵⁵¹ Since the regime remained sufficiently driven to seek nuclear weapons for domestic reasons, there was probably less visible progress on the nuclear front, at least for international eyes. There is also the chance that Pyongyang simply could not provide the necessary conditions (that is, it lacked the financial means) to continue its program during this period, made all the more likely considering the reduction in aid from its principal Cold War allies. Consequently, Pyongyang's use of its program as a chip takes on greater substance.

⁵⁴⁸ Park (1996), 224

⁵⁴⁹ Including removing US tactical nuclear weapons from the ROK, an end to ROK nuclear ambitions and a promise of US nuclear non-aggression.

⁵⁵⁰ Michael J. Mazaar, "Going Just a Little Nuclear: Nonproliferation Lessons from North Korea," *International Security*, Vol. 20, No. 2 (Autumn, 1995): 101

⁵⁵¹ Niksch (2008), 7. See also Kim & Singh, 90. The ROK Ministry of Defense has claimed that as many as two hundred scientists from Russia and former Soviet republics were reportedly still in the DPRK as late as 2002. Aside from the possibility that they were there for peaceful nuclear energy cooperation, their presence suggests that Pyongyang remained active in its pursuit of nuclear weapons and at a minimum wanted to keep its options open while still reaping benefits from the Agreed Framework. See Niksch (2006), 98

Pyongyang's use of the nuclear program in the early years of the post-Cold War era as a chip may have been driven by the potential benefits from negotiating a nuclear freeze, but only because the perceived benefits were integrally linked to its underlying drivers. In other words, Pyongyang's chip behaviour was more than it simply banking on the program to bring in cash. The DPRK's emphasis on assistance with a robust civilian nuclear energy network (and energy assistance in general) and a negative security guarantee from the US in exchange for denuclearization reinforce the notion that these two factors were significant drivers in the early part of the 1990s. The peripheral effects of bringing in aid or the US to the table of course also benefitted Kim Jong-il's status. In this sense, Pyongyang's use of the program as a chip accented its main concerns of regime preservation, security concerns, and economic concerns in general and energy concerns in particular, and was an expression of its primary drivers.

Pyongyang's choice to "put the brakes on bomb making"⁵⁵² may have shown that it was relatively satisfied with the 1994 agreement. It is also possible that Pyongyang already had a nuclear device by this time or, felt that its nuclear ambiguity was enough to deter a US or ROK attack.⁵⁵³ Kenneth Quinones suggests that giving up its arms and capabilities completely would "require that [Kim Jong-il] trust his enemy not to attack his domain."⁵⁵⁴ In other words, Kim Jong-il can be likened to a mugger with a gun at one's head asking for valuables. One can promise to give the mugger money and swear not to say anything to the authorities as long as the mugger will just put the gun down first, but the mugger is unlikely to acquiesce. Despite illustrating some of the DPRK's

⁵⁵² Sigal, 25

⁵⁵³ Alternatively, the DPRK acquired its first nuclear weapon by the 2000s which the available evidence seems to support. In any case, any motivations for its continued nuclear weapon efforts after developing its first nuclear weapon apply both to the desire to remain a nuclear state as well as possibly improve on its arsenal.

⁵⁵⁴ Quinones, 82

motivations, the failure to provide the DPRK with the promised energy assistance and the somewhat meaningless security guarantee did little to verify how significant these drivers were because they were never assuaged.

The prevalence of domestic level and prestige and identity related drivers carried over from the 1990s and continued to function as a catalyst for DPRK efforts. As such, Mansourov posits that the elevation of songun and the “strong and great nation strategy” were more a means to deal with dissent from the security agencies in the DPRK than for external threats. By 1999 the DPRK’s relations with the US, the ROK and other concerned states were relatively stable and the economy was seeing signs of recovery.⁵⁵⁵ The ostensible emphasis on militarism and any nuclear weapon or ballistic missile progress and even domestic targeted rhetoric during this period was essential to ensure Kim Jong-il’s reign, as a means of pandering to any military and political hardliners unhappy with the Agreed Framework, even if these nuclear efforts came in fits and starts.

Having never lost the main motivations for going nuclear and only delicately held in check by the Agreed Framework, with the collapse of the agreement around 2002, Pyongyang’s nuclear efforts again went into hyper drive, in stark contrast to the inactivity of its program from 1994 onward. The continued importance of domestic level variables⁵⁵⁶ and prestige and identity in driving the DPRK as well as the strong re-

⁵⁵⁵ Alexandre Mansourov, “Emergence of the Second Republic: The Kim Regime Adapts to the Challenges of Modernity,” in *North Korea: The Politics of Regime Survival*, ed. Young Whan Kihl & Hong Nack Kim (New York: M.E. Sharpe, 2006), 46

⁵⁵⁶ For example, the 2009 missile test has also been directly linked to the issue of leadership succession, ushering in domestic structural political changes to accommodate a smooth transition from Kim Jong-il to his chosen successor. Scott Snyder, “What’s Driving Pyongyang?” *Nautilus Institute Policy Forum Online* (July 7th, 2009), <http://www.nautilus.org/fora/security/09055Snyder.html#sect2>. Nuclear provocations and the alleged 2010 DPRK torpedoing of an ROK warship which killed 46 sailors have also been linked to the succession issue. See Jeremy Paltiel, “Why the DPRK cannot survive three years,” *CanKor Report #325* (28 June, 2010), http://www.cankor.ca/index.php?page=home&page_id=167&ref=news&i=36421&u=31558&t=127801069

escalation of security related drivers courtesy of the George W. Bush administration⁵⁵⁷ ensured that the regime's nuclear calculus remained unchanged. Additionally, the DPRK clearly remained inferior to the ROK's conventional capabilities. It is perhaps no surprise that Pyongyang restarted its facilities at Yongbyon, producing most of its plutonium since 2002.⁵⁵⁸ More recently, despite changes in US international nuclear posture, the Obama administration has reaffirmed extended nuclear deterrence to the ROK, including the possible pre-emptive use of nuclear weapons on the DPRK.⁵⁵⁹

For whatever reason, the regime has been much more willing in the post-Cold War period to discuss its motivations for nuclear weapon and ballistic missile development. While it would be unwise not to approach such comments cautiously, it would be even more imprudent to ignore them completely. In 2006, a KPA statement released through the state run news outlet declared it the sovereign right of the DPRK to test missiles as regular KPA activities in the defence preparation of the DPRK.⁵⁶⁰ Following UN sanctions against the regime in 2009, the KCNA announced that the DPRK "regards the security of the country and the sovereignty of the nation as its life and

⁵⁵⁷ Bush's national security strategy of 2002 in which he laid out the so called pre-emptive doctrine, his axis of evil speech which included the DPRK as a threat to international security, and the US invasion of Iraq, coupled with the effective end of the Agreed Framework (apparently brought about in large part because of the axis of evil speech), heightened fears in the DPRK that it might be next on the US' target list. For the first time in a while the DPRK faced tangible evidence that the US harboured ill will against it, as opposed to previously abstract notions of US hegemonic aspirations in the region. The US made efforts to move its troops stationed in the ROK back from the demilitarized zone, which could have been construed as a preparation for pre-emptive attack on the North, and also mobilized strategic bombers and fighter jets in the region. In addition, US armed forces personnel ranged from approximately 28,000 to 41,000 during the 2000s. On this last point see US Troop dataset, www.heritage.org/Research/NationalSecurity/troopsdb.cfm. On the US personnel and equipment redeployments see Chalmers Johnson, *The Sorrows of Empire: Militarism, Secrecy, and the End of the Republic* (New York: Owl Books, 2004), 93-94

⁵⁵⁸ Arms Control Reporter (2007), 344

⁵⁵⁹ The posture has singled out the DPRK and Iran as "outliers" while narrowing the overall conditions in which it intends to use nuclear weapons. See Jee-ho Yoo & Chan-ho Kang, "Obama Restricts Nuclear Posture Except for North," *Joong Ang Daily* (ROK Daily in English and Korean), April 7, 2010, <http://joongangdaily.joins.com/article/view.asp?aid=2918878>

⁵⁶⁰ "DPRK Foreign Ministry Spokesman on its Missile Launches," *Korean Central News Agency* (July 7, 2006), <http://www.kcna.co.jp/index-e.htm>

soul and was compelled to take measures for bolstering up its deterrent for self-defence to cope with the increasing nuclear threat and military provocations of the hostile forces.”⁵⁶¹

DPRK vice Foreign Minister Kim Kye-kwan has stated that the DPRK’s “nuclear program is [...] not aimed at attacking the US.”⁵⁶² Similar statements have emphasized the pursuit of nuclear weapons for deterrence purposes,⁵⁶³ and for contributing to the peace and security of the Northeast Asian region by reducing the likelihood of war.⁵⁶⁴ Such comments are consistent with claims from numerous “outsiders” who have had the opportunity to meet with ranking DPRK officials who have consistently emphasized that nuclear weapons are to guarantee the nation’s survival.⁵⁶⁵

All indications suggest that the 2000s were not a period in which Pyongyang was as motivated by playing the nuclear card to receive concessions, not simply because it had recovered to a degree economically, but also because security considerations meant that the regime could no longer leave any doubt that it was serious about being a nuclear weapon state. The 2005 Six Party Agreement essentially offered the same incentives for denuclearization as had the Agreed Framework, highlighting Pyongyang’s continued interest in security assurances and assistance with nuclear energy. Yet, roughly a year later the DPRK’s alleged first nuclear detonation indicated the agreement had clearly

⁵⁶¹ “DPRK Completes Reprocessing of Spent Fuel Rods,” *Korean Central News Agency* (November 3, 2009), <http://www.kcna.co.jp/index-e.htm>

⁵⁶² “North Korea Admits Building More Nuclear Bombs,” *ABC News Online* (June 8, 2005), <http://abcnews.go.com/WNT/story?id=831078&page=1>

⁵⁶³ “A Nominal Defence against Pre-emptive Attack,” *Rodong Sinmun* (April 13, 2006), <http://www.kcna.co.jp/today-rodong/rodong.htm>, “우리 나라의 핵무기보유는 철두철미 자위를 위한 것이며 평화수호를 위한 위력한 방패이다.”

⁵⁶⁴ “The US Spreads tales of Nuclear Chain Reactions,” *Rodong Sinmun* (July 27, 2009), <http://www.kcna.co.jp/today-rodong/rodong.htm>, “우리가 자체의 핵을 보유함으로써 비로소 동북아시아에서는 겨우 핵균형이 초보적으로나마 잡히게 되었으며 결과적으로 전쟁이 한결 억제되게 되었다.” See also “DPRK Successfully Conducts Underground Nuclear Test,” *Korean Central News Agency* (October 10, 2006), <http://www.kcna.co.jp/index-e.htm>

⁵⁶⁵ Park (2002), 135. It is interesting to note how the “nation’s survival” can also refer to survival from within.

failed to alleviate its main concerns. Similarly, the deceleration of its program and dismantlement of the Yongbyon facilities, the consequence of the 2007 agreement, were also short lived. To be sure, nothing drastic followed the 2006 nuclear test to alter fundamentally Pyongyang's sufficient grounds for going nuclear. This is not to suggest that Pyongyang was uninterested in any material benefits it might gain but that it had reached a point where it was unlikely to give up its program and stockpile of bombs in any case.⁵⁶⁶

Conclusion

As a consequence of an analysis of the arguments on DPRK proliferation vis-à-vis its nuclear weapon and ballistic missile developments, the evolution of the DPRK's necessary and sufficient conditions for nuclear proliferation appears as such:

Time	Necessary Conditions?	Drivers	Sufficiency
1940s/1950s	No	Security; identity; domestic (energy)	Insufficient?
1960s	No	Security; identity; prestige; domestic (energy)	Sufficient
1970s	No	Security; prestige; identity; domestic (energy); norms (domestic)	Sufficient
1980s	No	Security; domestic (regime preservation); chip; norms (domestic)	Sufficient
1990s	Yes?	Domestic (regime preservation); security; chip (economic gains and new relationship with US); norms (domestic ideology)	Sufficient
2000s	Yes	Domestic (regime preservation); security; prestige; norms (domestic ideology); chip	Sufficient

⁵⁶⁶ It is possible that the US, the main negotiator with the DPRK, has acknowledged this which has reduced its incentive to go to great lengths to denuclearize the DPRK. If Pyongyang recognizes this attitude, the chip motivation will carry much less weight from now on. For a recent argument along these lines see Andrei Lankov, "US Finally Wise to Pyongyang's Ways," *Asia Times Online* (November 12, 2009), <http://www.atimes.com/atimes/Korea/KK12Dg01.html>

The complexity of variables such as security prohibits a more detailed breakdown of the particular aspects of security having a bearing on the DPRK's nuclear decisions. Nevertheless, drivers have been listed in order of their relative influence on the DPRK. It should be noted, however, that beyond the obvious impact of security and regime preservation, less dominant drivers frequently intermingled with more significant elements. Consequently, placing less significant drivers in order of their impact on Pyongyang is difficult, to say the least.

This analysis expands on Scobell and Sanford's graphic outlining the evolution of DPRK nuclear motivations since the inception of the program. Grouping these motivations by decade facilitates a better grasp of the morphing of Pyongyang's motivations by highlighting trends in the DPRK's behaviour and nuclear weapons efforts. Going further by lumping drivers into Cold War and post-Cold War periods further emphasizes that the regime's motivations for going nuclear are not static, while respecting that the end of the Cold War ushered in a fundamental transition from security to regime preservation as the primary driver. The DPRK's motivations for originally determining to seek nuclear weapons are different than they are today because they are a product of history. A review of this history has reaffirmed the suspicions of many but also called attention to some less acknowledged aspects of the DPRK's motivations which proliferation theories are unable to cope with, not to mention difficult to validate empirically.

By thinking about the DPRK's motivations in a framework of necessary and sufficient conditions for going (and remaining) nuclear, the relative strength of its underlying drivers becomes more transparent, yet not complete. If one accepts the core tenet of the motivational school of thought that states require concrete stimuli for going

nuclear, then there can be no necessary condition for doing so beyond the technical expertise, nuclear materials and infrastructure, financial resources, and of course, some degree of motivation. This thesis has ventured to decipher the nature of, changes in, and relative importance of the drivers which have shaped the DPRK's will. The existence of a single or combination of drivers which appears to have motivated the regime to an extent which it felt the need for such weapons was said to constitute a sufficient condition for doing so. It is clear that the DPRK has been sufficiently motivated much more often than not throughout the history of its existence as a state.

The arguments on DPRK proliferation encompass a wide range of theories. All of the interpretations seemingly struggle to explain fully DPRK behaviour cross-temporally. Sagan's suggestion that the best theories should explain the most instances of a phenomenon, in this case proliferation, is commendable. Yet even Sagan's approach lacks depth. Proliferation theories should be able to explain a phenomenon over time, and be equipped to explain shifts in the drivers for a program. Although this is sure to result in a theory which is less robust and universal, it is also more likely that the static nature of individual cases of nuclear proliferation will be less hindered by theories which refuse to recognize the potential for less noticeable drivers to have a significant impact on state nuclear decisions.

In the DPRK's case, interpretations have projected a variety of positions on the regime from rational to irrational, as a struggle against evil oppressors to being the evil one itself, and to being influenced to some degree by an infinite number of variables. An essentialist view of the DPRK sees its behaviour as "fixed and all of a piece" and its

nature as determining its actions.⁵⁶⁷ On the contrary, this analysis has demonstrated that the DPRK's nuclear weapons behaviour has by no means been guaranteed across time. At times it has carefully weighed its options, such as relying on its allies for nuclear protection instead of pursuing an indigenous program, and did not make the decision to go nuclear simply because it is led by an irrational member of the Kim family. In contrast to popular belief, there is an element of internal political discourse in Pyongyang which has had a modicum of sway on the decision to go nuclear. Even once the regime crossed the necessary and sufficient threshold there is evidence to suggest that it was at a minimum, on the verge of reconsidering its nuclear options and program altogether.

More to the point is that no one driver has consistently been the DPRK's primary motivation. Although security related drivers have seemingly been a considerable preoccupation across time, they have not always been the primary driver for its nuclear weapons. What is more, at the various points in time at which security drivers have been relevant, the nature of the security threats have varied. While this is less important for determining the sufficient causes of DPRK proliferation, it has implications for any efforts to alleviate Pyongyang's perceived need for the weapons. So called secondary drivers which have historically been given less weight in driving states to proliferate have had significant bearing in the DPRK's case, especially in the post-Cold War era. Perhaps most remarkable are domestic level variables such as regime preservation and intimately connected prestige and identity related factors such as ideology. Consequently, the case of the DPRK discounts proliferation theories which posit security concerns as an essential primary motivation for going nuclear. Although the DPRK seems to have initiated its program out of insecurity, the 1990s illustrates that motivations unrelated to security can

⁵⁶⁷ Sigal, 33

be a primary driver. This also goes to show that for whatever reason, once a program is initiated, the program itself can induce other incentives, becoming a self-serving part of the overall equation.

On the other hand, some of the secondary variables identified in the theoretical literature such as norms are only *prima facie* inapplicable in the DPRK case. The discussion on norms as motivating states to acquire nuclear weapons necessitates making an important distinction. First, international and domestic rooted norms are two different variables. While both clearly have a role within norms based discussion, they can be mutually exclusive. The common practices of a state, including the day to day functions of the state machinery as it relates to nuclear weapons decisions, may or may not be tied in some way to considerations of international norms. A state can be uninfluenced by any so called standard operating procedures of international relations such as voluntarily submitting to the non-proliferation regime, either because it does not recognize such standards, disapproves of them, or, its domestic situation supersedes them. In other words, variables external to the state can influence state behaviour, but they can also be left at the border.

The notion that the DPRK is somehow influenced by the international non-proliferation regime and the stigma attached to becoming a nuclear weapons state in the second nuclear age carries little weight. Not only has the regime been steadfast in its pursuit of nuclear weapons in the face of international derision and attempts at reining in its program through the usual channels,⁵⁶⁸ it also has been vocal in its criticism of these channels as decadent tools of a hypocritical west that is intent on manipulating the affairs of otherwise compliant sovereign states. Accordingly, international norms based theories

⁵⁶⁸ Such as the IAEA, NPT and UN.

are skewed because they approach the issue of proliferation through a western lens, extraneous in the DPRK case. Oddly enough, however, the DPRK case illustrates that the irrelevance of international norms for constricting its behaviour is actually meaningful. The drive to remain ideologically consistent makes a nuclear option one of the only ways the DPRK can symbolically reject international society and at the same time remain connected, if only nominally, to that same society on its own terms.

On the other hand, what are sometimes referred to as domestic norms motivations may in fact be more appropriately labelled identity driven or grouped into the domestic level variable category. In the end, it is less important to agonize over nomenclature and instead recognize the inherent interconnectivity between such drivers which has the potential to make individual cases of proliferation so complex. While international norms are only seemingly a nonfactor, domestic norms and identity also cannot be detached from the DPRK's decision to go nuclear. Accordingly, domestic norms related to DPRK socio-political culture such as the ideological and national character of the country evidently have had a significant impact at various times on the decision to proliferate. The essential invisibility of certain drivers in explanations of DPRK nuclear behaviour might be a result of the difficulties with which the complex relationship between multiple drivers can be observed and quantified, especially when compared to the relative ease with which material security concerns are quantified into motivations for proliferation decisions.

If states require tangible incentives for going nuclear, they can also renounce nuclear weapons if their incentives wane, even after successfully acquiring them. This is a difficult notion to accept if one assumes that all states seeking nuclear weapons, with the exception of South Africa, have faced a certain degree of insecurity in an anarchical

international system. In the DPRK's case it is even more challenging to envision a situation where it will eventually give up its weapons altogether. The recent succession debate in light of Kim Jong-il's failing health suggests that the nuclear weapons may remain as important a function in the domestic political scene as they were for his rise to power.⁵⁶⁹ If Hymans is wrong and oppositional nationalist states can let go of their desire for the bomb, and the DPRK is able to normalize relations with the US thus reducing its security fears, perhaps a nuclear DPRK is not doomed to be an eternal reality.

⁵⁶⁹ Kim Jong-il's third son, Kim Jong-un, is viewed as a potential successor and has reportedly been in control of economic reforms but also military affairs to boost his image in the Party and with the people, comparable to Kim Jong-il's nuclear responsibilities in the 1980s and 1990s.

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