

THE BEST DEFENSE:
MAKING MAXIMUM SENSE OF MINIMUM DETERRENCE

BY

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The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the US Government, Department of Defense, the United States Air Force, or Air University.



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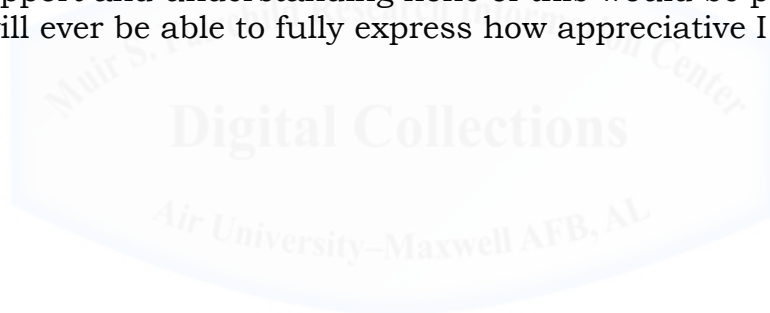
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ABSTRACT

This paper argues that minimum deterrence is a viable policy option for the United States. The 2010 Nuclear Posture Review has laid the groundwork for a reduction in size of the US nuclear arsenal while at the same time, constrained economic resources promise to force the Department of Defense look for responsible ways to reduce its budget. Given this situation, the question must be asked as to whether the United States can achieve effective nuclear deterrence with a limited number of weapons. This paper argues that it can. A careful study of the nuclear weapons programs of China, India and Pakistan—three countries that espouse minimum deterrence policies—supports the theory that statesmen are not sensitive to the number of nuclear weapons a rival state possesses, they are sensitive to the fact that they have them at all. So long as a state possesses an overt nuclear weapons program and the capability to deliver an assured second-strike, deterrence is successfully achieved with a limited number of weapons. Minimum deterrence is, therefore, not only a viable policy for the United States to pursue, given future economic constraints it is also the most prudent.



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Introduction

Two decades after the fall of the Soviet Union, the United States still maintains a nuclear infrastructure and deterrence posture largely based upon Cold War paradigms. The 2010 Nuclear Posture Review issued guidance aimed at changing this paradigm, listing “Reducing the role of nuclear weapons in U.S. national security strategy,” and “maintaining strategic deterrence and stability at lower nuclear force levels” as two of its five key objectives.¹ Separately, after nearly a decade of being involved in two wars and in the wake of a near economic meltdown, the United States government finds itself \$14 trillion in debt and with a budget deficit of more than \$1.3 trillion.² As political leaders seek cost-saving measures in an effort to control federal spending, many have set their sights squarely on the \$700 billion Department of Defense budget.³

In light of the NPR-directed force drawdown, the search for prudent cost-saving measures, and a complex security environment that will likely include the continued proliferation of nuclear weapons, one should ask if a small nuclear weapon arsenal would allow the United States to achieve the same level of deterrence as the much larger arsenal of today or even that of the past? Advocates of minimum deterrence theory would state that that answer to that question is a resounding “Yes!” This paper will, therefore, seek to answer the question, “Is minimum nuclear deterrence a viable policy for the United States?”

¹ US Department of Defense. *Nuclear Posture Review Report*. Washington, D.C.: April 2010.

² <http://www.usdebtclock.org/> (accessed 5 May 2011)

³ Office of the Undersecretary of Defense (Comptroller)/CFO, “United States Department of Defense Fiscal Year 2012 Budget Request”, February 2011.

http://comptroller.defense.gov/defbudget/fy2012/FY2012_Budget_Request_Overview_Book.pdf, (accessed 5 May 2011)

The Political Effects of Nuclear Weapons

That nuclear weapons deter the use of nuclear weapons is a commonly accepted maxim. The reality is, though, that the effects of nuclear weapons span well beyond simply deterring the use of nuclear weapons. Nuclear weapons “also serve to limit escalation. The temptation of one country to employ increasingly larger amounts of force is lessened if its opponent has the ability to raise the ante.”⁴ This, in turn, limits the size and scope of war: “The axiom that limited wars are wars fought for limited objectives now tends to be an inversion of the truth, which is that we are willing to limit objectives in order to keep wars limited.”⁵ Limiting wars to limited objectives has an overall stabilizing effect on the international order. Robert Gilpin points out that historically, the primary means of changing international order has been hegemonic war.⁶ He further stated that “hegemonic war is characterized by the unlimited means employed and by the general scope of the warfare.”⁷ By keeping warfare limited, hegemonic war is avoided and the international order remains stable. The presence of nuclear weapons in the world means that “force is more useful than ever for upholding the status quo, though not for changing it, and maintaining the status quo is the minimum goal of any great power.”⁸

Why do nuclear weapons have such a limiting effect on war? Simply put, the sheer destructive power of nuclear weapons causes statesmen to act with extreme caution when dealing with a potential conflict with a nuclear armed adversary. The potential cost incurred by absorbing an attack by even a single nuclear weapon far outweighs any benefit that could be gained via armed conflict. “Nuclear weapons

⁴ Kenneth Waltz, *Theory of International Politics* (Long Grove, Ill.: Waveland Press, 2010), 188.

⁵ Bernard Brodie, *Strategy in the Missile Age* (New RAND ed. Santa Monica, CA: Rand Corp., 2007), ix.

⁶ Robert Gilpin, *War and Change in World Politics* (Cambridge: Cambridge University Press, 1981), 197.

⁷ Robert Gilpin, *War and Change in World Politics* (Cambridge: Cambridge University Press, 1981), 200.

⁸ Kenneth Waltz, *Theory of International Politics* (Long Grove, Ill.: Waveland Press, 2010), 191.

socialize statesmen to the dangers of adventurism, which in turn conditions them to set up formal and informal sets of rules that constrain their behavior.”⁹ Prior to nuclear weapons, rising powers may have used war as a method to challenge the great power and affect a change in the international order (or conversely, the great power may have used war as a means of knocking down a rising challenger, thereby extending their reign). The presence of nuclear weapons means the potential cost of such a war is far too great. Anytime nuclear-armed states enter a conflict against each other, there is always an element of uncertainty as to how far the conflict might escalate. As Thomas Schelling observed, “While it is hard for a government, particularly a responsible government to appear irrational whenever such an appearance is expedient, it is equally hard for a government, even a responsible one, to *guarantee* its own moderation in every circumstance.”¹⁰ A state will see no benefit from changing the international order if doing so could mean that they cease to exist.

A second, though similar, effect that nuclear weapons have on world politics is that “nuclear weapons provide the nuclear state ‘with an infrangible guarantee of its independence and physical integrity.’”¹¹ For reasons outlined above, “even the most powerful state will think twice before attacking the smallest state with nuclear weapons.”¹² Therein lies the allure of nuclear weapons for those states who feel threatened within their security environment. Compared to the massive build-up of conventional defenses, nuclear weapons provide a relatively cheap guarantee of state survival.

In summary, while the primary purpose of nuclear weapons may be to serve as a deterrent against the use of other nuclear weapons, they

⁹ James Wood Forsyth, Jr., B. Chance Saltzman, and Gary Shaub, Jr., “Remembrance of Things Past: The Enduring Value of Nuclear Weapons,” *Strategic Studies Quarterly*, Spring 2010, 80.

¹⁰ Thomas Schelling, *Arms and Influence* (New Haven: Yale University Press, 1966), 41.

¹¹ Robert Gilpin, *War and Change in World Politics* (Cambridge: Cambridge University Press, 1981), 215.

¹² Robert Gilpin, *War and Change in World Politics* (Cambridge: Cambridge University Press, 1981), 215.

also serve, intentionally or not, to both deter and limit conventional conflict. In keeping wars limited, nuclear weapons have the effect of maintaining stability in international order.

A Theory of Minimum Deterrence

While nuclear weapons can overtly be leveraged to deter more than just conventional attack, it is unnecessary to do so. The effect is inherent in the very existence of the weapon itself. Instead, responsible nuclear weapons states understand that the only acceptable “official” role nuclear weapons can play is to deter the use of other nuclear weapons. The 2010 NPR recognized this with guidance stating: “The United States will continue to reduce the role of nuclear weapons in deterring non-nuclear attack.” The obvious question arises then as to how many weapons are necessary to deter such an attack? Before addressing this question, however, a brief review on general deterrence theory is in order.

At its core, the concept of deterrence is really quite simple: if an actor thinks that the costs of taking a particular action outweigh the benefits of successfully completing that action, that actor will be deterred from taking that action. To make the equation more useful, probability must be factored in. That is to say that an actor will likely make a calculation as to not only costs and benefits, but as to the probability of incurring those costs and achieving those benefits. So, if costs multiplied by the probability of incurring those costs are greater than the benefits multiplied by the probability of achieving those benefits ($C(p) > B(p)$), then an actor will be deterred from taking action.

So, to slightly reframe the question posed above: how many nuclear weapons are necessary to ensure an actor perceives the costs of their actions outweigh the benefits? Proponents of minimum deterrence argue: not many. “At its core, the argument for minimum deterrence has been that, despite the fine calculations of strategic planners, political

leaders in particular will recoil at the terrible destructiveness of nuclear war, making the balance of terror quite robust regardless of differences in the number or type of weapons.”¹³ One problem in accepting this notion is that, as Bernard Brodie observed, “The capacity to deter is usually confused with the capacity to win a war.”¹⁴ Granted, a plan must exist in case deterrence fails, but political leaders do not appear to be impressed by such plans.¹⁵ In recapping the events of the Cuban missile crisis, McGeorge Bundy noted that “the confrontation required both leaders to examine the possibility of nuclear war, but it did not lead them to double-check the detailed consequences of an exchange, or to review how such a war might be fought. Both of them had a healthy disrespect for such exercises, and both knew that the avoidance of such a war was imperative.”¹⁶ Large arsenals are useful for fighting wars, but Bundy’s analysis suggests leaders are not interested in fighting those wars, only avoiding them.

Additional analysis from the Cuban Missile Crisis further highlights the insensitivity statesmen show to specific numbers of nuclear weapons. In an article written for *Time* magazine in 1982, Dean Rusk, Robert McNamara, George Ball, Roswell Gilpatric, Theodore Sorenson, and McGeorge Bundy wrote: “American nuclear superiority was not in our view a critical factor [during the Cuban Missile Crisis], for the fundamental and controlling reason that nuclear war, already in 1962, would have been an unexampled catastrophe for both sides; the balance of terror so eloquently described by Winton Churchill seven years earlier was in full operation. No one of us ever reviewed the

¹³ Jeffrey Lewis, “Minimum deterrence,” *Bulletin of the Atomic Scientists* 64, no. 3 (July/August 2008): 38.

¹⁴ Bernard Brodie, *Strategy in the Missile Age* (New RAND ed. Santa Monica, CA: Rand Corp., 2007), 274.

¹⁵ Jeffrey G. Lewis, *The Minimum Means of Reprisal: China's Search for Security in the Nuclear Age* (Cambridge, Mass.: American Academy of Arts and Sciences, 2007), 4.

¹⁶ McGeorge Bundy, *Danger and Survival: Choices about the Bomb in the First Fifty Years* (New York: Random House, 1988), 461.

nuclear balance for comfort in those hard weeks.”¹⁷ McNamara, himself, stated that “In 1962 it would have made no difference in our behavior whether the ratio had been seventeen to one, five to one, or two to one in our favor—or even two to one against us.”¹⁸ In other words, statesmen are not sensitive to the numbers of nuclear weapons that exist, they are sensitive to the fact that they exist at all.

If statesmen are not sensitive to the numbers of nuclear weapons that exist then, in theory, a state would only need one weapon to effectively deter. This fails to take into account, however, the probability calculation of deterrence theory. For deterrence to be effective, an actor needs to know that not only is the probability of incurring unacceptable costs greater than zero, but that the probability of a successful first strike aimed at eliminating an adversary’s nuclear capability is less than 100 per cent. In the words of Bernard Brodie: “It should be obvious that what counts in basic deterrence is not so much the size and efficiency of one’s striking force before it is hit as the size and condition to which the enemy thinks he can reduce it by a surprise attack—as well as his confidence in the correctness of his predictions.”¹⁹ For minimum deterrence to be practical, a state must possess an assured second-strike capability. To some extent, numbers can help ensure a second-strike capability, but “the technology of warheads, of delivery vehicles, of detection and surveillance devices, of command and control systems, counts more than the size of forces.”²⁰ So, for the purposes of this paper, the theory of minimum deterrence to be tested holds that deterrence can be achieved with a small number of weapons, but that those weapons

¹⁷ Jeffrey G. Lewis, *The Minimum Means of Reprisal: China's Search for Security in the Nuclear Age* (Cambridge, Mass.: American Academy of Arts and Sciences, 2007), 7.

¹⁸ Jeffrey G. Lewis, *The Minimum Means of Reprisal: China's Search for Security in the Nuclear Age* (Cambridge, Mass.: American Academy of Arts and Sciences, 2007), 7.

¹⁹ Bernard Brodie, *Strategy in the Missile Age* (New RAND ed. Santa Monica, CA: Rand Corp., 2007), 281.

²⁰ Kenneth Waltz, *Theory of International Politics* (Long Grove, Ill.: Waveland Press, 2010), 181.

must be survivable and capable of inflicting a punishing retaliatory strike.

Road Map

To test the theory of minimum deterrence and its viability as a policy to the United States, this paper will examine the cases of China, India and Pakistan. Each of these countries has proclaimed some form of minimum deterrence as their official nuclear policy. Further, each of these countries has built a nuclear force structure that both remains small in size and possesses the adequate technological advancements necessary to ensure a second-strike capability. Since the development of their nuclear capabilities, each of these countries has participated in limited conflict against other nuclear-armed adversaries. These conflicts will be examined to determine what, if any, role nuclear weapons played in deterring an escalation in these conflicts. Analysis of these case studies will provide evidence as to the usefulness of minimum deterrence as a theory as well as provide insight as to the viability of a minimum deterrence policy for the United States.

Chapter 1

China Case Study

Introduction

China's view, toward its nuclear weapons arsenal and programs, has been characterized by many as being one of minimum deterrence. Of all the Non-Proliferation Treaty signatories, China deploys the smallest nuclear force and is the only country to publicly state a policy of "no first use."¹ Further, China has maintained this posture largely without the benefit of being under the umbrella, conventional or nuclear, of a powerful ally. A careful analysis of China can, therefore, provide valuable insight into the viability of minimum deterrence. This chapter will first examine the evolution of Chinese nuclear doctrine and strategy, beginning with China's earliest thoughts on the value of nuclear weapons. Next this chapter will take a look at China's nuclear infrastructure and how it has evolved along with its strategy and doctrine. Finally, this chapter will examine the 1969 border conflict between China and the Soviet Union to see what role, if any, Chinese nuclear weapons played in deterring a Soviet nuclear attack and preventing a much larger-scale conflict.

The Evolution of Chinese Nuclear Strategy and Doctrine

China's earliest attitude toward nuclear weapons was reflected by Mao Zedong when he made the now famous comment to an American reporter in 1946, "The atomic bomb is a paper tiger which the US reactionaries use to scare people. It looks terrible, but in fact it isn't. Of course, the atomic bomb is a weapon of mass slaughter, but the outcome

¹ Jeffrey G. Lewis, *The Minimum Means of Reprisal: China's Search for Security in the Nuclear Age* (Cambridge, Mass.: American Academy of Arts and Sciences, 2007), 26.

of a war is decided by people, not by one or two new types of weapon.”² Mao, along with much of the world, had yet to come to terms with the special nature of nuclear weapons, instead viewing them as little more than conventional weapons of high explosiveness.³ Given this belief, Mao’s early thoughts about nuclear weapons were consistent with his view on warfare in general, “Weapons are an important factor in war,” he stated, “but not the decisive factor; it is the people, not things, that are decisive.”⁴

While Chinese leadership remained somewhat ambivalent toward nuclear weapons into the early 1950s, they began to acknowledge the incredible destructive power of nuclear weapons and the psychological impact those weapons can have in the mind of its people. Propaganda aimed at allaying the fears of the Chinese people claimed that the United States would not be able to use an atomic bomb against China—using the atomic bomb against another Asian country would be an immoral act that would draw the ire of the international community. Further the Soviet Union now possessed nuclear weapons that would “force our common enemy to lay down its own bomb.” Finally, Chinese leadership adhered to its belief that nuclear weapons could not prove decisive on the field of battle. A CCP study from December 1950 concluded that “since China and its ally, the Soviet Union, are countries of such a vast land that we can easily disperse our people, industries and military materials,

² Shu Guang Zhang, “Between ‘Paper’ and ‘Real Tigers’: Mao’s View of Nuclear Weapons.” *In Cold War Statesmen Confront the Bomb: Nuclear Diplomacy Since 1945*, ed. John Lewis Gaddis et al. (Oxford: Oxford University Press, 1999), 196.

³ Shu Guang Zhang, “Between ‘Paper’ and ‘Real Tigers’: Mao’s View of Nuclear Weapons.” *In Cold War Statesmen Confront the Bomb: Nuclear Diplomacy Since 1945*, ed. John Lewis Gaddis et al. (Oxford: Oxford University Press, 1999), 196.

⁴ Shu Guang Zhang, “Between ‘Paper’ and ‘Real Tigers’: Mao’s View of Nuclear Weapons.” *In Cold War Statesmen Confront the Bomb: Nuclear Diplomacy Since 1945*, ed. John Lewis Gaddis et al. (Oxford: Oxford University Press, 1999), 195.

the atomic bomb has no use in a war against our countries.”⁵ Despite the rhetoric, Mao and the rest of China’s leadership were beginning to realize the utility of possessing their own nuclear deterrent.

Beginning in 1951 Beijing and Moscow entered into a series of agreements supplying China with nuclear prototypes, expertise and professionals.⁶ For the Soviets’ part, such agreements were intended to only transfer the technology and knowledge necessary to use nuclear power for peaceful purposes, repeatedly asserting that the Soviet nuclear umbrella would deter attack against China.⁷ Mao, however, desired more. Faced with the possibility of nuclear attack from the United States during the Korean War and the 1954 Taiwan crisis, Mao repeatedly requested the Soviets provide him with nuclear weapons claiming, “that China’s possession of even one or two atomic bombs would be a surprise for the United States and would allow China to deter a possible US nuclear attack without any involvement by Soviet military forces.”⁸ The Soviets consistently hedged against such requests, providing China instead with increasing resources intended toward developing a peaceful nuclear industry, while promising to address the weapons question at a later time.

Sensing, perhaps, that Soviets may never transfer such capability and that they would be unwilling to risk a world war to protect Chinese interests, especially in Taiwan, China established its own Ministry for Nuclear industry and made the decision to develop its own nuclear

⁵ Shu Guang Zhang, “Between ‘Paper’ and ‘Real Tigers’: Mao’s View of Nuclear Weapons.” *In Cold War Statesmen Confront the Bomb: Nuclear Diplomacy Since 1945*, ed. John Lewis Gaddis et al. (Oxford: Oxford University Press, 1999), 197.

⁶ , Ta-Chen Cheng, “The Evolution of China’s Strategic Nuclear Weapons.” *Defense & Security Analysis* 22, no. No. 3 (2006): 241.

⁷ Viktor M. Gobarev, “Soviet policy toward China: Developing nuclear weapons 1949-1969.” *The Journal of Slavic Military Studies* 12, no. 4 (1999): 21.

⁸ Viktor M. Gobarev, “Soviet policy toward China: Developing nuclear weapons 1949-1969.” *The Journal of Slavic Military Studies* 12, no. 4 (1999): 20.

weapons in 1955.⁹ In his April 1956 address to the Politburo, Mao offered insight as to the rationale behind this decision stating, “in today’s world, if we don’t want to be bullied by others, we should have atomic weapons by all means.”¹⁰

That statement, by Mao, offers great insight as to not only why China decided to develop a nuclear weapons capability, but also into China’s thinking on nuclear weapons today. According to Fravel and Medeiros, “The view and beliefs of China’s top leaders, mainly Mao Zedong and Deng Xiaoping, had a consistently dominant influence on Chinese nuclear strategy.”¹¹ They further stated that “both Mao Zedong and Deng Xiaoping viewed nuclear weapons as tools for deterring nuclear aggression and coercion, not as tools to be used in combat to accomplish discrete military aims.”¹² Fravel and Medeiros, consistent with other Chinese scholars, break down the purpose of Chinese nuclear weapons as being twofold: First, to deter nuclear attack and second, to counter nuclear coercion.¹³ Christopher Twomey and Yao Yunzhu see the Chinese view of nuclear weapons as being consistent with China’s overall view toward the use of force, “One famous tenet laid down by Chairman Mao Zedong is the Sixteen Character Guideline for the use of force: ‘We will never attack unless we are attacked; and if we are attacked, we will certainly counterattack.’”¹⁴

⁹ Jeffrey G. Lewis, *The Minimum Means of Reprisal: China's Search for Security in the Nuclear Age* (Cambridge, Mass.: American Academy of Arts and Sciences, 2007), 55.

¹⁰ Shu Guang Zhang, “Between ‘Paper’ and ‘Real Tigers’: Mao’s View of Nuclear Weapons.” *In Cold War Statesmen Confront the Bomb: Nuclear Diplomacy Since 1945*, ed. John Lewis Gaddis et al. (Oxford: Oxford University Press, 1999), 205.

¹¹ Taylor M. Fravel and Evan S. Medeiros. “China’s Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure.” *International Security* 35, no. No. 2 (2010): 51.

¹² Taylor M. Fravel and Evan S. Medeiros.. “China’s Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure.” *International Security* 35, no. No. 2 (2010): 57.

¹³ Taylor M. Fravel and Evan S. Medeiros. “China’s Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure.” *International Security* 35, no. No. 2 (2010): 58.

¹⁴ Christopher P. Twomey and Yao Yunzhu, “Chinese Nuclear Policy and the Future of Minimum Deterrence.” *In Perspectives on Sino-American Strategic Nuclear Issues*, ed. Christopher P. Twomey (New York: Palgrave Macmillan, 2008), 116.

To deter nuclear attack and counter nuclear coercion, China sought a nuclear posture that has been described as “minimum deterrence” or in the words of Marshal Nie Rongzhen, “the minimum means of reprisal.”¹⁵ Mao believed that possession of even a small number of nuclear weapons freed China from the threat of nuclear attack, “When I have six atomic bombs, no one can bomb my cities...The Americans will never use an atom bomb against me.”¹⁶ This view has remained consistent throughout China’s history with nuclear weapons. In 2002, Jiang Zemin was quoted as saying, “China developed strategic nuclear weapons, not to attack but for defense...[I]t is a kind of great deterrent toward nuclear weapons states and makes them not dare to act indiscriminately.”¹⁷

Despite the consistency in the CCP leadership’s view on nuclear weapons and minimum deterrence, there is some reason to believe that attitudes in China may be changing. This perception is largely due to China’s military embracing a strategy of “active defense” as well as comments made by Chinese military officers about a potential conflict over Taiwan.

China adopted a strategy of “active defense” in 1993 after studying the results of the 1991 Gulf War and to contend with the change in the security environment caused by the collapse of the Soviet Union.¹⁸ According to China’s 2008 Defense White Paper, in following a strategy of “active defense” China “adheres to the principle of featuring defensive operations, self-defense and striking and getting the better of the enemy

¹⁵ Jeffrey G. Lewis, “Chinese Nuclear Posture and Force Modernization.” *The Nonproliferation Review* 16, no. 2 (2009): 198.

¹⁶ Taylor M. Fravel and Evan S. Medeiros. “China’s Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure.” *International Security* 35, no. No. 2 (2010): 65.

¹⁷ Taylor M. Fravel and Evan S. Medeiros “China’s Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure.” *International Security* 35, no. No. 2 (2010): 67.

¹⁸ Department of Defense, *Military and Security Developments Involving the People’s Republic of China 2010: A Report to Congress* (Washington, DC: Department of Defense, 2010), 22.

only after the enemy has started an attack.”¹⁹ The Science of Military Strategy states, however, the definition of an attack can be defined in political terms: “Striking only after the enemy has struck does not mean waiting for the enemy’s strike passively...It doesn’t mean to give up the ‘advantageous chances’ in campaign or tactical operations, for the ‘first shot’ on the plane of politics must be differentiated from the ‘first shot’ on that of tactics...if any country or organization violates the other country’s sovereignty and territorial integrity, the other side will have the right to ‘fire the first shot’ on that of tactics.”²⁰ China, it should be noted, makes no distinction between ‘strategic’ and ‘tactical’ nuclear weapons.²¹ Further, after discussions with scholars in Shanghai and Beijing, Larry Wortzel concluded that “some Chinese believe that the concept of ‘active defense’ permits the conduct of preemptive attack.”²² Wortzel also points out that *Zhanyi Lilun Zuexi Zhinan (A Guide to the Study of Campaign Theory)* states, “Advance warning may come to the Second Artillery before an attack if there is notice that the enemy may use nuclear weapons on any scale.” According to Wortzel, this “implies that the PLA might order a launch to preempt an enemy surprise attack.”²³

While the ambiguity surrounding “active defense” may show a shift in thinking, statements made by Chinese military officials and scholars regarding the use of nuclear weapons, particularly in response to a conflict over Taiwan, are even more telling. First, it is important to

¹⁹ Information Office of China's State Council, *China's National Defense in 2008*, PRC Government White Paper, http://english.gov.cn/official/2009-01/20/content_1210227.htm, (accessed 2 March 2011), 8.

²⁰ Department of Defense, *Military and Security Developments Involving the People's Republic of China 2010: A Report to Congress* (Washington, DC: Department of Defense, 2010), 24.

²¹ Christopher P. Twomey and Yao Yunzhu, “Chinese Nuclear Policy and the Future of Minimum Deterrence.” In *Perspectives on Sino-American Strategic Nuclear Issues*, ed. Christopher P. Twomey (New York: Palgrave Macmillan, 2008), 114.

²² Larry M. Wortzel, *China's Nuclear Forces: Operations, Training, Doctrine, Command, Control, and Campaign Planning* (Carlisle, PA: Army War College, Strategic Studies Institute), 9.

²³ Larry M. Wortzel, *China's Nuclear Forces: Operations, Training, Doctrine, Command, Control, and Campaign Planning* (Carlisle, PA: Army War College, Strategic Studies Institute), 14.

remember that China does not consider Taiwan to be an independent state, viewing it instead as Chinese territory. With that in mind, some scholars have observed that China's no first use policy does not appear to pertain to use against an enemy on Chinese territory. Kenneth W. Allen observed that, "Faced with the threat of a conventional Soviet invasion in the 1980s, Beijing's military strategists argued that the first-use of nuclear weapons on Chinese territory would not have violated its pledge."²⁴ Russian military scholars, Colonel Mikhail Gatsko and Colonel Sergy Sukov claim that Chinese nuclear doctrine, "does not exclude the possibility of delivering a first nuclear strike...on its own territory should it be occupied by the enemy."²⁵

Statements made by Chinese military officers indicate, that in the event of conflict over Taiwan, China may be willing to use nuclear weapons against more than just invading military forces. In 2000, Colonel Zhu Chenghu stated that "China has the capability to launch a nuclear attack against the United States. If the United States tried to interfere in our dispute with Taiwan, it would suffer a powerful blow as a result." In 2005, Zhu Chenghu reiterated the statement by threatening "the destruction of several hundred U.S. cities if the United States used conventional weapons against China in response to a Chinese attack on Taiwan."²⁶

In light of such statements, the question must be addressed as to whether China has changed its view on the use of nuclear weapons and specifically its no-first use policy. Several observations may be made that can help shed light on the question. First, much of the debate is fueled over academic interpretation regarding China's doctrine. It should

²⁴ Mark Schneider, "The Nuclear Doctrine and Forces of the People's Republic of China." *Comparative Strategy* 28, no. 3 (2009): 247.

²⁵ Mark Schneider, "The Nuclear Doctrine and Forces of the People's Republic of China." *Comparative Strategy* 28, no. 3 (2009): 247.

²⁶ Mark Schneider, "The Nuclear Doctrine and Forces of the People's Republic of China." *Comparative Strategy* 28, no. 3 (2009): 248.

be re-iterated, that the official Chinese position regarding nuclear weapons has remained consistent from the beginning. The 2008 Chinese Defense White Paper states, “China remains committed to the policy of no first use of nuclear weapons, pursues a self-defensive nuclear strategy, and will never enter into a nuclear arms race with any other country.”²⁷ It later states, “The Second Artillery Force sticks to China’s policy of no first use of nuclear weapons, implements a self-defensive nuclear strategy, strictly follows the orders of the CMC, and takes it as its fundamental mission the protection of China from any nuclear attack.”²⁸

The second observation is that while the above quotes from Colonel Zhu Chenghu are indicative of many other statements made by military officials, they are all made by *military* officials. Similar to the United States, civilians retain control over the use of nuclear weapons with the CMC exercising direct command and control of the Second Artillery Force.²⁹ Despite suggestions that China should consider a nuclear response to a conventional attack on its strategic systems, Larry Wortzel reports that PLA officials have remained cool to the idea, insisting that China abide by its no-first use policy.³⁰ Instead, these statements from the Chinese military may simply be part of China’s deterrence strategy. As Kenneth Waltz points out, “deterrence operates by frightening a state out of attacking, not because of the difficulty of launching an attack and carrying it home, but because the expected reaction of the opponent may

²⁷ Information Office of China's State Council, *China's National Defense in 2008*, PRC Government White Paper, http://english.gov.cn/official/2009-01/20/content_1210227.htm, (accessed 2 March 2011), 9.

²⁸ Information Office of China's State Council, *China's National Defense in 2008*, PRC Government White Paper, http://english.gov.cn/official/2009-01/20/content_1210227.htm, (accessed 2 March 2011), 29.

²⁹ Information Office of China's State Council, *China's National Defense in 2008*, PRC Government White Paper, http://english.gov.cn/official/2009-01/20/content_1210227.htm, (accessed 2 March 2011), 29.

³⁰ Larry M. Wortzel, *China's Nuclear Forces: Operations, Training, Doctrine, Command, Control, and Campaign Planning* (Carlisle, PA: Army War College, Strategic Studies Institute), 27.

result in one's own severe punishment.”³¹ Such statements may simply be a means of reminding the United States of the possible stakes involved over a conflict involving Taiwan.

Evidence, thus far, seems to indicate that China has maintained a policy akin to minimum deterrence. As has been shown, however, statements by military officials and doctrine can be interpreted to show otherwise. Examining China's nuclear infrastructure can provide insight as to what China's actual capabilities are and may help clarify the debate over their intentions.

Chinese Nuclear Infrastructure

China is a notoriously closed society that consistently shuns transparency with regard to its nuclear force structure. As a result estimates as to the exact size and composition of China's nuclear force structure vary. Most Chinese scholars and watch-dog organizations turn to the U.S. intelligence committee and their annual report to congress for the most accurate assessment of Chinese delivery vehicles. China relies almost exclusively on land-based ballistic missiles as their delivery mechanism. While China is undergoing efforts to modernize their B-6 bomber fleet, the lack of associated infrastructure—such as airfield-based, nuclear storage facilities—leave questions as to their intentions of utilizing the bomber as a nuclear delivery platform.³² Further, the B-6s age and limited range make them unlikely to be useful against anything but a regional adversary with limited anti-aircraft capability.³³ Additionally, China has developed the nuclear-capable, JIN-class

³¹ Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate Renewed* (New York: W.W. Norton and Company, 2003), 5.

³² Nuclear Threat Initiative, “China Profile,” http://www.nti.org/e_research/profiles/China/index.html, (accessed 2 March 2011).

³³ Nuclear Threat Initiative, “China Profile,” http://www.nti.org/e_research/profiles/China/index.html, (accessed 2 March 2011).

submarine. The associated JL-2 SLBM has had repeated flight test failures, however, and it is unknown when the JIN-class submarine/JL-2 combination will be operationally capable.³⁴

Table 1: China's Missile Force

<i>China's Missile Inventory</i>	Ballistic and Cruise		Estimated Range
	Missiles	Launchers	
CSS-2	15-20	5-10	3,000+ km
CSS-3	15-20	10-15	5,400+ km
CSS-4	20	20	13,000+ km
DF-31	<10	<10	7,200+ km
DF-31A	10-15	10-15	11,200+ km
CSS-5	85-95	75-85	1,750+ km
CSS-6	350-400	90-110	600 km
CSS-7	700-750	120-140	300 km
DH-10	200-500	45-55	1,500+ km
JL-2	Developmental	Developmental	7,200+ km

Source: Military and Security Developments Involving the People's Republic of China 2010: A Report to Congress

As Table 1 illustrates, the majority of China's land-based ballistic missiles are short or medium range missiles. At most, China possesses 35 missiles capable of hitting the continental United States. The CSS-2 and CSS-5 missiles give China the capability to hit most of Russia, while the CSS-3 and DF-31 provide the capability to hit most of Europe and Alaska.

Estimations of the number of nuclear warheads China possesses vary dramatically, with assessments ranging from 80 to 2,000.³⁵ Most

³⁴ Department of Defense, *Military and Security Developments Involving the People's Republic of China 2010: A Report to Congress* (Washington, DC: Department of Defense, 2010), 34.

estimates vary between 120 – 300 warheads. The Stockholm International Peace Research Institute (SIPRI) Yearbook 2009 estimates China to have 186 operational weapons and a total stockpile of 240 weapons.³⁶ China is believed to have stopped producing the Highly Enriched Uranium (HEU), necessary for nuclear weapons, in 1989. However, it is also estimated that China possesses enough HEU to produce an additional 700 – 1050 warheads.³⁷

Despite having the smallest nuclear arsenal of the NPT countries, China has the most aggressive modernization program. The focus of this modernization effort is on replacing older liquid-fuelled ballistic missiles with solid-fueled ballistic missiles. Modernization is being propelled by two key factors. The first is China's economy. It is no secret the boom that China's economy has experienced in the last 10 – 15 years. Plans to update China's ballistic missile forces have been in place since the early 1980's, but China has lacked the economic means to make the desired improvements. Solid-fueled ballistic missiles provide reliability and safety advantages over liquid-fueled missiles. The United States eliminated liquid-fueled ballistic missiles from its operational inventory by the late 1980's. While China's modernization efforts may raise speculation as to its intent, it should be seen as little more than China playing "catch up" with the rest of the world.

The second motivating factor is China's perception of the threat posed by U.S. ballistic missile defense systems and the call for procurement of conventional prompt global strike capabilities. China believes it can achieve nuclear deterrence with a limited number of weapons, but with a no first-use policy, those weapons need to be

³⁵ Jeffrey Lewis estimates China possesses 80 warheads (Lewis, *Minimum Means of Reprisal*, 1) while Russian Colonel Viktor V. Stefashin estimates the number to be 2,000 (Schneider, *The Nuclear Doctrine and Forces of the PRC*, 256.)

³⁶ Stockholm International Peace Research Institute, *SIPRI Yearbook 2009*. <http://www.sipri.org/yearbook/2009> (accessed 2 March 2011), 364.

³⁷ Nuclear Threat Initiative, "China Profile," http://www.nti.org/e_research/profiles/China/index.html, (accessed 2 March 2011).

survivable and capable of second strike. Prompt global strike and ballistic missile defense threaten that second strike capability by either destroying missiles on the ground or negating a retaliatory attack. China's efforts to build road-mobile ICBMs and counter-missile defense capabilities are little more than a reaction to the perceived threat environment.

China's military expenditures rose from an estimated \$16 billion in 1989 to a little less than \$100 billion in 2009, in constant 2008 U.S. dollars.³⁸ While China is slowly building a small global military capability, the majority of their expenditures remain focused on securing regional objectives.³⁹ While an exact breakdown of Chinese military expenditure is unavailable, it appears that much of the increased expenditure is being used to increase their regional anti-access/area-denial capabilities, to include a build-up of conventional short and medium range ballistic missiles, space and counter-space capabilities and information warfare capabilities.⁴⁰

What does all this mean? A few conclusions may be drawn. First, although China is making improvements to the survivability and capability of its strategic nuclear forces, it does not appear to be dramatically increasing the size of its force. Instead, China appears to still believe that a relatively small, but survivable strategic nuclear force is capable of deterring nuclear aggression and coercion from the United States. Second, China seeks to use its conventional capabilities in combination with its strategic nuclear forces to attain its regional objectives, and in particular to deter the United States from interfering in a conflict over Taiwan. Finally, although most of their efforts appear to

³⁸ Stockholm International Peace Research Institute "SIPRI Military Expenditure Database 2010, <http://milexdata.sipri.org>," (accessed 2 March 2011)

³⁹ Department of Defense, *Military and Security Developments Involving the People's Republic of China 2010: A Report to Congress* (Washington, DC: Department of Defense, 2010), 29.

⁴⁰ Department of Defense, *Military and Security Developments Involving the People's Republic of China 2010: A Report to Congress* (Washington, DC: Department of Defense, 2010), 29 – 37.

be focused on the United States, China's maintenance of CSS-2 and CSS-5 missiles imply China still seeks to maintain a deterrence capability against Russia. Much like China's stance against the United States the number of missiles capable of hitting Russia, particularly eastern Russia, implies that China is content with a posture of minimum deterrence.

Sino-Soviet Border Dispute

In examining China to determine the viability of minimum deterrence, it is useful to look at any dispute to which the Chinese nuclear arsenal may have played an influencing role. The only qualifying example is the Sino-Soviet border dispute which reached a height of tension in 1969. This is not only the only instance of a nuclear armed China squaring off against another nuclear armed opponent, it is one of the few instances in world history where combat took place between two nuclear armed rivals.

The border dispute had its roots in the early 1950s when China and the Soviet Union had formed a strategic partnership, through which Mao sought to gain nuclear technology and weaponry from the Soviets. Despite disagreements at the time over the control of border lands, Mao chose a passive attitude toward the region in an apparent effort to maintain good relations.⁴¹ The Soviets were slow to provide China with the nuclear capability Mao desired and by the mid-1950s were become suspicious of Mao's intentions.⁴² Finally, in 1959, convinced the Soviets had made a mistake in transferring nuclear weapon technology to the

⁴¹ Arthur A. Cohen. "The Sino-Soviet Border Crisis of 1969." In *Avoiding War: Problems of Crisis Management*, ed. Alexander L. George and Tov Yaacov (Boulder: Westview Press, 1991), 270.

⁴² Viktor M. Gobarev, "Soviet policy toward China: Developing nuclear weapons 1949-1969." *The Journal of Slavic Military Studies* 12, no. 4 (1999): 21.

Chinese, Khrushchev abrogated the agreement, and cut off Soviet support to China's nuclear weapons program.

Sino-Soviet relations began to quickly deteriorate. Mao began asserting China's claims to the disputed regions and in the early 1960's China began a series of small-scale border intrusions into Soviet-claimed territory.⁴³ Emboldened by a successful Chinese nuclear weapons test in 1964, Mao soon began to build up conventional forces along the Soviet border.⁴⁴ Believing that China's nuclear weapons would force the Soviets to proceed cautiously toward China, Chinese troops steadily increased the number of border intrusions but with the orders to fight only when necessary.⁴⁵ Although some of these intrusions occasionally resulted in hand-to-hand combat, the first firefight between Chinese and Soviet forces did not occur until March 2, 1969, when Chinese military members, disguised as civilians, ambushed a Soviet patrol.⁴⁶ This was followed by larger-scale fighting on March 15—a skirmish that involved tanks, armored vehicles and artillery fire.⁴⁷ Similar short, but intense battles would occur until an agreement to cease hostilities was reached in October 1969.⁴⁸

Throughout the conflict, both sides took a measured approach to avoiding a larger-scale war. Mao, correctly assessing Soviet intentions, believed that small-scale incursions and fighting would not bring a massive Soviet response. The Soviets, indeed wishing to avoid a general

⁴³ Arthur A. Cohen. "The Sino-Soviet Border Crisis of 1969." In *Avoiding War: Problems of Crisis Management*, ed. Alexander L. George and Tov Yaacov (Boulder: Westview Press, 1991), 271.

⁴⁴ Viktor M. Gobarev, "Soviet policy toward China: Developing nuclear weapons 1949-1969." *The Journal of Slavic Military Studies* 12, no. 4 (1999): 36.

⁴⁵ Arthur A. Cohen. "The Sino-Soviet Border Crisis of 1969." In *Avoiding War: Problems of Crisis Management*, ed. Alexander L. George and Tov Yaacov (Boulder: Westview Press, 1991), 276.

⁴⁶ Arthur A. Cohen. "The Sino-Soviet Border Crisis of 1969." In *Avoiding War: Problems of Crisis Management*, ed. Alexander L. George and Tov Yaacov (Boulder: Westview Press, 1991), 278.

⁴⁷ Arthur A. Cohen. "The Sino-Soviet Border Crisis of 1969." In *Avoiding War: Problems of Crisis Management*, ed. Alexander L. George and Tov Yaacov (Boulder: Westview Press, 1991), 279.

⁴⁸ Arthur A. Cohen. "The Sino-Soviet Border Crisis of 1969." In *Avoiding War: Problems of Crisis Management*, ed. Alexander L. George and Tov Yaacov (Boulder: Westview Press, 1991), 288.

war with China, opted for a “tit-for-tat” strategy, responding only to Chinese aggression.⁴⁹

As to what role nuclear weapons played in keeping the conflict to a minimum, the answer appears to be inconclusive. By summer of 1969, in an effort to coerce China, the Soviet Union had threatened China with “a crushing nuclear retaliation,” to which Mao reportedly told his generals “not to worry...we too have atomic bombs.”⁵⁰ Additionally, during the heart of the crisis, China carried out two nuclear tests in an attempt to send a message to political leadership in Moscow.⁵¹ Lyle Goldstein points out, however, that the Soviets were not likely to be impressed by this display or deterred by China’s nuclear arsenal. China, he claims, lacked a delivery vehicle for its nuclear weapons. Further, the Soviets knew the location of all of China’s nuclear systems, making them highly vulnerable to a preemptive attack.⁵² Instead, Goldstein concludes that the Soviets avoided escalation out of fear that war with China would have been the Soviet Union’s Vietnam—difficult to win and a huge drain on resources.⁵³

Concluding Thoughts

China’s view toward nuclear weapons and the development of their nuclear forces provide interesting evidence toward the viability of a minimum deterrence posture. Despite the need to deter the world’s two

⁴⁹ Arthur A. Cohen. "The Sino-Soviet Border Crisis of 1969." In *Avoiding War: Problems of Crisis Management*, ed. Alexander L. George and Tov Yaacov (Boulder: Westview Press, 1991), 283.

⁵⁰ John Wilson Lewis and Xue Litai. "Strategic Challenges and the Struggle for Power, 1964 - 1969." In *Imagined enemies: China prepares for uncertain war*. (Stanford, Calif.: Stanford University Press, 2006), 52-53.

⁵¹ John Wilson Lewis, , and Xue Litai. "Strategic Challenges and the Struggle for Power, 1964 - 1969." In *Imagined enemies: China prepares for uncertain war*. (Stanford, Calif.: Stanford University Press, 2006), 60.

⁵² Lyle J. Goldstein, "Do Nascent WMD Arsenals Deter? The Sino-Soviet Crisis of 1969." *Political Science Quarterly* 118.1 (2003): 69, 71.

⁵³ Lyle J. Goldstein, "Do Nascent WMD Arsenals Deter? The Sino-Soviet Crisis of 1969." *Political Science Quarterly* 118.1 (2003): 73.

largest nuclear armed countries, China has maintained the smallest nuclear infrastructure of all the NPT countries. By possessing the capability to deliver a punishing blow through an assured second-strike capability, China believes it can not only deter nuclear aggression and coercion, but limit the level of conventional conflict within the region.

While the Sino-Soviet border battle does not prove the efficacy of minimum deterrence, neither does it disprove it—a conclusion Lyle Goldstein erroneously came to based upon the above evidence. If in fact China did not possess a capability to deliver a nuclear weapon, and if their nuclear arsenal was vulnerable to annihilation by a Soviet preemptive strike, then China's nuclear arsenal did not possess the characteristics necessary to meet the needs of minimum deterrence.



Chapter 2

India Case Study

Introduction

India's nuclear arsenal is self-described as being one of "credible minimum deterrence." With small numbers of nuclear weapons that are kept off alert and in a disassembled state, India's arsenal indeed comes close to even the most restrictive definitions of minimum deterrence. The Kargil crisis, discussed later in this chapter, represents only the second time in history that two nuclear-armed states have faced off against each other in combat. Despite the fears that a conflict between two newly-armed and hated rivals would quickly escalate and lead to a nuclear exchange, no such escalation occurred. The presence of nuclear weapons, even in small numbers, caused both India and Pakistan to approach the conflict with extreme caution. A study of India's nuclear doctrine, their infrastructure and their conduct during the Kargil crisis has great potential to shed light on the viability of minimum deterrence as a policy.

The Evolution of Indian Nuclear Strategy and Doctrine

India's nuclear program began before India had even achieved independence in 1947.¹ Throughout its entire history, India's nuclear program has had two distinct motivating factors: the desire for national prestige and security concerns. These motivating factors have consistently been counter-balanced by a moral aversion to nuclear weapons amongst many of India's ruling elites. Although he was adamantly opposed to nuclear weapons, Prime Minister Jawaharalal

¹George Perkovich, "What Makes the Indian Bomb Tick?" In *Nuclear India in the Twenty-First Century*, ed. D. R. SarDesai and G. C. Thomas Raju (New York: Palgrave, 2002), 26.

Nehru wrote in 1948, “The future belongs to those who produce atomic energy. That is going to be the chief national power of the future...The probable use of atomic energy in warfare is likely to revolutionize all our concepts of war and defense. For the moment, we may leave [this] out of consideration except that it makes it absolutely essential for us to develop the method of using atomic energy for both civilian and military purpose.”² Nehru’s leadership set the stage for what has been essentially a hedging strategy, with regard to nuclear weapons, ever since.

With no overt external security threat, Indian nuclear development was motivated mostly by a search for prestige during the 1950s. Nehru and India’s chief nuclear scientist, Homi Bhabha, looked to nuclear power as a means to fuel India’s economic development and bring India to the upper echelon of modern industrial states.³ Further, by developing the civilian use of nuclear power, while avoiding weaponization, India sought to set a moral example for the rest of the world to follow. In 1958, Nehru stated, “We have the technical know-how for manufacturing the atom bomb. We can do it in three or four years if we divert sufficient resources in that direction. But we have given the world an assurance that we shall never do so.”⁴

Indian attitudes about security began to slowly change with events in the early 1960s. India’s loss to China in the Sino-Indian border dispute of 1962 led to calls for an increased conventional force.⁵ China’s successful nuclear test in 1964 shifted some attention to India’s need to develop nuclear weapons. Homi Bhabha pressed Prime Minister Shastri to approve a nuclear test so that India could both showcase the

² Bharat Karnad, *India's Nuclear Policy* (Westport, Conn.: Praeger Security International, 2008), 40.

³ George Perkovich, "What Makes the Indian Bomb Tick?" In *Nuclear India in the Twenty-First Century*, ed. D. R. SarDesai and G. C. Thomas Raju (New York: Palgrave, 2002), 27.

⁴ George Perkovich, "What Makes the Indian Bomb Tick?" In *Nuclear India in the Twenty-First Century*, ed. D. R. SarDesai and G. C. Thomas Raju (New York: Palgrave, 2002), 27.

⁵ Ashley J. Tellis, *India's Emerging Nuclear Posture: Between Recessed Deterrent and Ready Arsenal* (Santa Monica, CA: RAND, 2001), 10.

capabilities of the Indian nuclear program as well as deny the Chinese any kind of political and military ascendancy in the Third World.⁶ In response, and despite his own personal reservations, Shastri approved the Subterranean Nuclear Explosion project which sought to develop nuclear explosives under the guise of “peaceful” purposes.⁷ Despite earlier claims, India was indeed more than three or four years removed from being capable of conducting a nuclear test explosion.⁸ The untimely death of Homi Bhabha in 1966 and war with Pakistan in 1971 served to further delay India’s official entrance into the nuclear club.

India has consistently championed global disarmament of nuclear weapons. When Nuclear Non-Proliferation Treaty (NPT) talks began in 1966, India took a hard-line stance to demand such reductions be made in return for agreeing to not further pursue nuclear weapons. When it was apparent that such concessions would not be made by states already in possession of nuclear weapons, India opted to not sign the NPT and continued down the path toward testing a nuclear weapon.⁹ This path culminated in 1974 when India successfully conducted its first nuclear test. India’s ambivalence toward nuclear weapons, pressure from the United States, and domestic turmoil combined to prevent India from further testing or development of nuclear weapons in the years immediately following their first test. In fact, not until May 1998, in the face of the growing perception of threats from Pakistan and China, did India conduct additional nuclear testing.¹⁰

⁶ Bharat Karnad, *India's Nuclear Policy* (Westport, Conn.: Praeger Security International, 2008), 50.

⁷ Rajesh M. Basrur, *Minimum Deterrence and India's Nuclear Security* (Stanford, Calif.: Stanford University Press, 2006), 61.

⁸ George Perkovich, "What Makes the Indian Bomb Tick?" In *Nuclear India in the Twenty-First Century*, ed. D. R. SarDesai and G. C. Thomas Raju (New York: Palgrave, 2002): 27.

⁹ George Perkovich, "What Makes the Indian Bomb Tick?" In *Nuclear India in the Twenty-First Century*, ed. D. R. SarDesai and G. C. Thomas Raju (New York: Palgrave, 2002), 31.

¹⁰ Rahul Roy-Chaudhury, "India's Nuclear Doctrine: A Critical Analysis." *Strategic Analysis* 33, no. 3 (2009): 404.

Perhaps reflecting Indian leaderships' overall disdain for nuclear weapons, and their belief that nuclear weapons are unusable, the Indian military was rarely, if ever, involved in any aspect of India's nuclear enterprise. Not until the mid-1990s was the military even made aware of how many ready weapons existed in the Indian arsenal.¹¹ This lack of military involvement, combined with a desire to not think about the use of nuclear weapons led to a dearth in nuclear doctrine for much of India's nuclear history. Not until May 1998, in addressing the Indian Parliament for the first time after the 1998 tests, did Prime Minister Vajpayee first outline any semblance of a nuclear doctrine stating that that India "did not intend to use these weapons for aggression or for mounting threats against any country; these are weapons of self-defence, to ensure that India is not subjected to nuclear threats or coercion."¹² In December of 1998, Vajpayee expounded further stating that India would seek to develop a "minimum credible deterrent," and that India had a "no first-use" policy.¹³

In 1999, one month after the end of the Kargil Crisis, India made its first attempt to codify its nuclear doctrine when it issued the Draft Report of National Security Advisory Board on Indian Nuclear Doctrine.¹⁴ The draft report expounded Vajpayee's earlier outline stating that as a sovereign state, India has the right to protect its security in pursuit of its economic, political, social, scientific and technological development. Further, in the absence of global nuclear disarmament, India must have a credible nuclear deterrent and adequate retaliatory capability. India, the document stated, "shall pursue a doctrine of credible minimum

¹¹ Bharat Karnad, *India's Nuclear Policy* (Westport, Conn.: Praeger Security International, 2008), 56.

¹² Rahul Roy-Chaudhury, "India's Nuclear Doctrine: A Critical Analysis." *Strategic Analysis* 33, no. 3 (2009): 404.

¹³ Rahul Roy-Chaudhury, "India's Nuclear Doctrine: A Critical Analysis." *Strategic Analysis* 33, no. 3 (2009): 404.

¹⁴ Draft Report of National Security Advisory Board on Indian Nuclear Doctrine, 17 August 1999, <http://www.pugwash.org/reports/nw/nw7a.htm> (accessed 23 March 2011).

deterrence,” and that “India will not be the first to initiate a nuclear strike, but will respond with punitive retaliation should deterrence fail.” The draft doctrine also stated that India’s nuclear forces will be based on a triad of aircraft, mobile land-based missiles and sea-based assets and that the principles of credibility, effectiveness and survivability were central to India’s nuclear deterrent.¹⁵

In a January 2003 press release, India officially announced to the world its nuclear doctrine, summarized in eight points:¹⁶

- i. Building and maintaining a credible minimum deterrent;
- ii. A posture of “No First Use”: nuclear weapons will only be used in retaliation against a nuclear attack on Indian territory or on Indian forces anywhere;
- iii. Nuclear retaliation to a first strike will be massive and designed to inflict unacceptable damage.
- iv. Nuclear retaliatory attacks can only be authorised by the civilian political leadership through the Nuclear Command Authority.
- v. Non-use of nuclear weapons against non-nuclear weapon states;
- vi. However, in the event of a major attack against India, or Indian forces anywhere, by biological or chemical weapons, India will retain the option of retaliating with nuclear weapons;
- vii. A continuance of strict controls on export of nuclear and missile related materials and technologies, participation in the Fissile Material Cutoff Treaty negotiations, and continued observance of the moratorium on nuclear tests.
- viii. Continued commitment to the goal of a nuclear weapon free world, through global, verifiable and non-discriminatory nuclear disarmament.

Consistent with the draft doctrine of 1999, the official doctrine states that India seeks to establish a credible minimum deterrent and that it will not be the first to use nuclear weapons in a conflict. This is

¹⁵ Draft Report of National Security Advisory Board on Indian Nuclear Doctrine, 17 August 1999, <http://www.pugwash.org/reports/nw/nw7a.htm> (accessed 23 March 2011).

¹⁶ “The Cabinet Committee on Security Reviews operationalization of India’s Nuclear Doctrine,” 4 January 2003, <http://girder.docuweb.ca/India/news/pr/pr-030120.html> (accessed 23 March 2011).

qualified; however, by the statement that India reserves the right to retaliate to a biological or chemical attack with nuclear means. This ambiguity has drawn the attention and critique of many observers and has been interpreted by some as a move away from minimum deterrence toward something that looks more akin to U.S. or Russian nuclear doctrine. Ambiguity, it should be pointed out, is prevalent in every nuclear powers' doctrine. To understand India's true intentions and capabilities, one must look at their nuclear infrastructure.

Indian Nuclear Infrastructure

Rajesh Basrur observed that "the Indian conception of minimum deterrence encompasses the understanding that it is not necessary to have large numbers of sophisticated weapons to deter nuclear adversaries; that nuclear "balances" are not meaningful; and that weapons need not be deployed and kept in a high state of readiness in order that deterrence be effective."¹⁷ India's nuclear infrastructure appears to support his assertion.

India paid little attention to delivery systems for its nuclear weapons until the late 1970s and early 1980s when it began purchasing nuclear-capable aircraft from Russia, Britain and France.¹⁸ Additionally, in 1983, India began a program to develop, test and produce ballistic missiles.¹⁹ Today, aircraft constitute the most mature component of India's nuclear strike capability, but India continues to pursue land-based and sea-launched ballistic missiles.²⁰

¹⁷ Rajesh M. Basrur, *Minimum Deterrence and India's Nuclear Security* (Stanford, Calif.: Stanford University Press, 2006), 1.

¹⁸ Bharat Karnad, *India's Nuclear Policy* (Westport, Conn.: Praeger Security International, 2008), 59.

¹⁹ George Perkovich, "What Makes the Indian Bomb Tick?" In *Nuclear India in the Twenty-First Century*, ed. D. R. SarDesai and G. C. Thomas Raju (New York: Palgrave, 2002), 36.

²⁰ Stockholm International Peace Research Institute, *SIPRI Yearbook 2009*, <http://www.sipri.org/yearbook/2009> (accessed 2 March 2011), 367.

Table 2: India's Nuclear Delivery Capabilities

Type/Designation	Range (km)	Payload (kg)	Comment
Aircraft			
Mirage 2000 H/Vajra	1,800	6,300	
Jaguar IS/IB/Shamsher	1,600	4,775	
Land-Based Missiles			
Prithvi I	150	1,000	
Agni I	700+	1,000	
Agni II	2,000+	1,000	
Agni III	3,000+	1,500	
Sea-based missiles			
Dhanush	350	500	
Sagarika/K-15	300-700	500-600	

Source: *Indian Nuclear Forces, 2010, Bulletin of the Atomic Scientists 2010* 66:76

India's nuclear deterrent efforts are aimed at Pakistan and China.²¹ This focus is readily evident by looking at the range of each of India's nuclear-capable weapon systems. When discussing the Agni III, India's newest ballistic missile, an Indian Army spokesman said, "India can even strike Shanghai."²² India is also currently developing the Agni V IRBM that would have a range of 5,000 km. Indian officials claim the Agni V will be test-launched for the first time in 2011.²³

²¹ Vernie Liebl, "India and Pakistan: Competing Nuclear Strategies and Doctrines." *Comparative Strategy* 28 (2009): 156.

²² Robert S. Norris and Hans M. Kristensen, "Indian nuclear forces, 2010", *Bulletin of the Atomic Scientists* 66, no. 76, available at <http://bos.sagepub.com/content/66/5/76> (accessed 17 March 2011): 78.

²³ "Agni-V To Be Test Fired in 2011: DRDO," 12 September 2010, available at <http://www.india-defence.com/reports-4519> (accessed 17 March 2011).

The Bulletin of Atomic Scientists estimates that India has 60 – 80 nuclear warheads in its inventory, with about 50 fully operational.²⁴ India is proficient in the plutonium and uranium fuel cycles and has unmatched experience in the thorium fuel cycle.²⁵ Published sources claim India produces between 20 and 40kg of plutonium every year and has likely accumulated enough to build an additional 40 to 120 weapons.²⁶

India does not maintain any nuclear forces in a state of alert.²⁷ Warheads are stored separately from the delivery vehicles and the warhead components themselves are disassembled and stored separated.²⁸

The Kargil Crisis

Since being granted independence from Great Britain in 1947, India and Pakistan have fought three or four wars, depending on how one counts the Kargil Crisis, and numerous skirmishes. The seeds for the Kargil Crisis were planted in 1984 when Indian military forces successfully occupied the disputed Siachen Glacier in northern Kashmir. The loss of over 100 square miles of territory cut a deep scar in the psyche of the Pakistani military.²⁹ Through the rest of the 1980s and

²⁴ Robert S. Norris and Hans M. Kristensen, "Indian nuclear forces, 2010", *Bulletin of the Atomic Scientists* 66, no. 76, available at <http://bos.sagepub.com/content/66/5/76> (accessed 17 March 2011): 76.

²⁵ Bharat Karnad, *India's Nuclear Policy* (Westport, Conn.: Praeger Security International, 2008), 37.

²⁶ Nuclear Threat Initiative, "India profile," http://www.nti.org/e_research/profiles/India/Nuclear/index.html (accessed 17 March 2011), 5.

²⁷ Nuclear Threat Initiative, "India profile," http://www.nti.org/e_research/profiles/India/Nuclear/index.html (accessed 17 March 2011), 5.

²⁸ Rajesh M. Basrur, *Minimum Deterrence and India's Nuclear Security* (Stanford, Calif.: Stanford University Press, 2006), 45.

²⁹ Peter R. Lavoy, "Introduction: the importance of the Kargil conflict." In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 16.

into the 1990s, low-scale conflict was the norm along the Pakistan-Indian border.

Tensions between India and Pakistan reached new heights in May 1998, when Pakistan responded to India's nuclear tests by conducting nuclear tests of its own. In pursuit of defusing the situation, India and Pakistan entered into the Lahore peace process a short time after Pakistan's test. The new peace talks left Indian leadership with the belief that the nuclear-deterrent relationship with Pakistan would bring a level of peace between the two states. Prime Minister Vajpayee stated, "Now both India and Pakistan are in possession of nuclear weapons. There is no alternative but to live in mutual harmony."³⁰

Pakistan, however, saw the new relationship differently. Pakistani leaders believed their nuclear capability would prevent India from using its conventional superiority against Pakistan for fear of approaching the nuclear threshold.³¹ In contrast to Vajpayee's statement, General Pervez Musharraf stated that the presence of nuclear weapons "does not mean that conventional war has become obsolete. In fact conventional war will still remain the mode of conflict in any future conflagration with our traditional enemy."³² Even as the Lahore peace process was taking place, Pakistan's army was making plans for the Kargil intrusion.³³

During the late winter and early spring months of 1999, Pakistan's Northern Light Infantry, disguised as mujahideen freedom fighters, snuck across the Kashmir Line of Control, and occupied traditionally

³⁰ Timothy D. Hoyt, "Kargil: the nuclear dimension." In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 150.

³¹ Manpreet Sethi, "Conventional War in the Presence of Nuclear Weapons." *Strategic Analysis* 33, no. 3 (2009): 416.

³² Timothy D. Hoyt, "Kargil: the nuclear dimension." In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 154.

³³ Timothy D. Hoyt, "Kargil: the nuclear dimension." In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 155.

Indian controlled territory.³⁴ India did not learn of the intrusions and occupation until early May.³⁵ In response, on May 20th, India launched Operation Vijay, a counter-offensive aimed at recovering lost territory and to “restore the sanctity of the LoC with an unambiguous term of reference that the LoC should not be crossed.”³⁶ Using a combination of ground and air forces, India gained the upper hand in the conflict by mid-June. By 8 July, when Pakistani president Nawaz Sharif agreed to withdraw forces, India had already re-gained control over most of its lost territory.³⁷

As the first conflict between India and Pakistan as declared nuclear-weapon states, the presence of nuclear weapons played a role in shaping the character of the conflict. A retrospective look at the conflict indicates that neither side actually threatened the other with the use of nuclear weapons.³⁸ This was not perfectly clear during the conflict, however. According to one source, rhetorical nuclear threats were issued between Pakistan and India no fewer than 13 times throughout the conflict.³⁹ The most prominent of these was made by Pakistan’s Foreign Secretary Shamshad Ahmad when he stated, “We will not hesitate to use any weapon in our arsenal to defend our territorial integrity.”⁴⁰ Additionally, it was believed during the crisis that both sides had

³⁴ Robert Wirsing, *Kashmir in the Shadow of War: Regional Rivalries in a Nuclear Age* (Armonk, N.Y.: M.E. Sharpe, 2003), 36.

³⁵ Due to the severe Himalayan winters, Indian forces typically vacate their posts in the Kargil region until they are easily accessible and supportable again in the spring.

³⁶ V.P. Malik, “Kargil War: Reflections on the Tenth Anniversary.” *Strategic Analysis* 33, no. 3 (2009): 352.

³⁷ John H. Gill, “Military operations in the Kargil conflict.” In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 117.

³⁸ Timothy D. Hoyt, “Kargil: the nuclear dimension.” In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 156.

³⁹ Robert Wirsing, *Kashmir in the Shadow of War: Regional Rivalries in a Nuclear Age* (Armonk, N.Y.: M.E. Sharpe, 2003), 49.

⁴⁰ Robert Wirsing, *Kashmir in the Shadow of War: Regional Rivalries in a Nuclear Age* (Armonk, N.Y.: M.E. Sharpe, 2003), 49.

increased their nuclear readiness levels.⁴¹ U.S. intelligence agencies believed Pakistan had mobilized and was arming its missiles with nuclear warheads—a fact that caused President Clinton to lean heavily on Sharif to withdraw Pakistani forces and bring the conflict to an end.⁴² India, too, was believed to have placed its forces at “Readiness State 3”—preparing aircraft as well as short and medium-range ballistic missiles for use.⁴³

Whether overt threats were actually exchanged or nuclear forces were mobilized matters little, however. The mere presence of nuclear weapons and the threat of escalation appear to have played a role in how each side fought during the conflict. Of the two states, India was most notable for the restraint it put on its armed forces to prevent the conflict from escalating. Unlike previous military responses to Pakistani aggression, Indian leadership took great caution in avoiding sending Indian forces into Pakistani territory.⁴⁴ According to P.R. Chari, Indian forces “were under strict orders not to cross the LoC under any circumstances. Hot pursuit of retreating enemy forces was not permitted, nor could their bases across the LoC be attacked.”⁴⁵ Additionally, though it may have been militarily prudent to divert Pakistani attention, India refrained from taking the fight outside of the immediate Kargil region.⁴⁶

⁴¹ Timothy D. Hoyt, “Kargil: the nuclear dimension.” In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 158.

⁴² P.R. Chari, “Reflections on the Kargil War.” *Strategic Analysis* 33, no. 3 (2009): 363.

⁴³ Timothy D. Hoyt, “Kargil: the nuclear dimension.” In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 158.

⁴⁴ Timothy D. Hoyt, “Kargil: the nuclear dimension.” In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 160.

⁴⁵ P.R. Chari, “Reflections on the Kargil War.” *Strategic Analysis* 33, no. 3 (2009): 362.

⁴⁶ John H. Gill, “Military operations in the Kargil conflict.” In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 124.

Although the cover of nuclear weapons may have played a role in convincing Pakistan it could get away with the initial incursion, when the miscalculation became apparent, Pakistan showed careful resolve to avoid further escalation. Like India, Pakistani forces may have benefitted from opening a second or multiple fronts, but even in the face of India's successful counter-offensive, Pakistan kept fighting limited to the Kargil region.⁴⁷

Nuclear weapons may also have ensured diplomatic channels remained open between Pakistan and India throughout the entire conflict. Pakistani and Indian leadership met both officially and in secret through the conflict in attempts to diffuse the situation and prevent further escalation.⁴⁸ The presence of nuclear weapons almost certainly ensured the international community took a more active role in ending the conflict. The United States, in particular, took great efforts to encourage both India and Pakistan to avoid escalation and end the conflict. As noted above, pressure from President Clinton may have been the final deciding factor in Sharif's decision to withdraw Pakistani troops.

Concluding Thoughts

The Kargil crisis highlights the deterrence effects of even small nuclear arsenals. In 1999, neither India nor Pakistan possessed a large nuclear arsenal. In fact, there is reason to believe that in 1999, Pakistan's nuclear capability had not yet even been operationalized.⁴⁹ Yet despite the small size of their arsenals and the lack of capability, both India and Pakistan were deterred from escalating the conflict further. As Robert Jervis points out, "the immense destruction of

⁴⁷ P.R. Chari, "Reflections on the Kargil War." *Strategic Analysis* 33, no. 3 (2009): 363.

⁴⁸ Peter R. Lavoy, "Why Kargil did not produce general war: the crisis management strategies of Pakistan, India, and the United States." In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 194 – 196.

⁴⁹ Peter R. Lavoy, "Introduction: the importance of the Kargil conflict." In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 11.

nuclear war not only means that the risk of use is very low, but that even a slight risk can exert significant influence.”⁵⁰ In the case of Kargil, that influence limited the scope of conventional conflict. It should also be highlighted that neither India nor Pakistan had anything close to formal nuclear doctrine or strategy prior to the Kargil conflict nor any “history, organizational apparatus, or guidelines in sending nuclear signals.”⁵¹ Despite this fact, each side managed to carefully maneuver both militarily and diplomatically to avoid an escalation of conflict. The presence of nuclear weapons, even in small numbers, forced each side to proceed with caution and helped deter an escalation in conflict.

India, through its early thoughts on nuclear weapons, to its doctrine and force structure appears to readily accept the concept that small numbers of nuclear weapons can achieve the same deterrent effect as much larger arsenals. Soon after the 1998 nuclear test, Foreign Minister Jaswant Singh said, “All that we have done is give ourselves a degree of strategic autonomy by acquiring those symbols of power which have universal currency.”⁵² Even a small arsenal, based on the concept of “credible minimum deterrence” is capable of giving India strategic autonomy and assuring their security.

⁵⁰ Robert Jervis, “Kargil, deterrence, and international relations theory.” In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 391.

⁵¹ Timothy D. Hoyt, “Kargil: the nuclear dimension.” In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 158.

⁵² George Perkovich, “What Makes the Indian Bomb Tick?” In *Nuclear India in the Twenty-First Century*, ed. D. R. SarDesai and G. C. Thomas Raju (New York: Palgrave, 2002), 47.

Chapter 3

Pakistan Case Study

Introduction

Pakistan and its nuclear capabilities has been no stranger to the news. Following India and Pakistan's nuclear tests in 1998 and the subsequent Kargil Crisis, President Clinton said that South Asia had become "the most dangerous place on earth."¹ In the wake of the terrorist attacks of 9/11, much scrutiny has been placed on the security of Pakistan's nuclear arsenal in attempt to assess the possibility of a Pakistani weapons falling into the hands of terrorist. In 2004, nuclear scientist A.Q. Khan brought more attention to Pakistan's nuclear programs when he admitted to selling nuclear secrets, greatly undermining world efforts to combat nuclear proliferation. What has been largely lost in all this is that during the same time frame, Pakistan has leveraged its small and relatively rudimentary nuclear arsenal no less than three times to deter aggression against the Pakistani state. This makes Pakistan a valuable case study in determining the effectiveness of minimum deterrence.

The Evolution of Pakistan's Nuclear Strategy and Doctrine

Pakistan's nuclear program began in 1957 in response to the U.S. "Atoms for Peace" program.² The original intention for Pakistan's nuclear program was to provide energy as well as radio-isotopes for agriculture, health and industry.³ There is no evidence to suggest that in these early

¹ Lowell Dittmer, "Introduction" In *South Asia's nuclear security dilemma: India, Pakistan, and China*, ed. Lowell Dittmer (Armonk, N.Y.: M.E. Sharpe, 2005), vii.

² Mahmud Ali Durrani, *Pakistan's Strategic Thinking and the Role of Nuclear Weapons*, Cooperative Monitoring Center Occasional Paper 37 (Albuquerque, NM: Sandia National Laboratories), 18.

³ Bhumitra Chakma, *Pakistan's Nuclear Weapons* (London: Routledge, 2009), 11.

years Pakistan had any interest in building nuclear weapons and in fact, support for even the peaceful use of nuclear energy was moderate at best. Pakistan's first reactor, which it received from the United States, did not become operational until 1965.⁴

Pakistani attitudes toward weaponization began to slowly change during the early 1960s as Indian leadership, in response to China, began to focus its own efforts more intently on developing nuclear weapons. Attitudes began to drift further toward weaponization after Pakistan suffered a defeat to India in the war of 1965. The effect of this war was twofold on Pakistan. First, it realized that Pakistan's military was incapable of regaining control in the Kashmir region. Second, the U.S., whom the Pakistani's had relied on to aid in their security, had failed to provide any support during the war.⁵ Realizing they could no longer count on the U.S. for support, leaders in Pakistan began to search for ways to ensure their security. One year later, as Indian leaders continued their own calls for weaponization, Pakistani foreign minister Zulfikar Ali Bhutto said that if India builds a nuclear bomb, so would Pakistan, "even if Pakistanis have to eat grass."⁶

Despite the political rhetoric and increased sense domestically that Pakistan should pursue nuclear weapons little effort was made to that end until the early 1970s.⁷ This changed abruptly with the loss of East Pakistan, now Bangladesh, in a bloody war with India. One month after the end of the war Bhutto, now Pakistan's president, ordered the start to a secret nuclear weapons program.⁸ India's 1974 test further

⁴ Bhumitra Chakma, *Pakistan's Nuclear Weapons* (London: Routledge, 2009), 13.

⁵ Bhumitra Chakma, *Pakistan's Nuclear Weapons* (London: Routledge, 2009), 16.

⁶ Bhumitra Chakma, *Pakistan's Nuclear Weapons* (London: Routledge, 2009), 32.

⁷ Bhumitra Chakma, *Pakistan's Nuclear Weapons* (London: Routledge, 2009), 18.

⁸ Paul K. Kerr and Mary Beth Nikitin, *Pakistan's Nuclear Weapons: Proliferation and Security Issues* (Washington DC: Congressional Research Service, 2010), 2.

strengthened Pakistani resolve to develop a nuclear weapon.⁹ Lacking the indigenous capability to produce such a weapon, Pakistan looked outside for help. In 1974 Pakistan signed an agreement with France to supply a reprocessing plant for extracting plutonium from spent fuel from power reactors. International pressure caused France to terminate this agreement in 1977.¹⁰ Additionally, Bhutto signed a secret agreement with China, whereby China would provide Pakistan with blueprints for small nuclear weapons as well as missile technology.¹¹ To fill in additional knowledge and technology gaps, Pakistan turned to clandestine means to “acquire critical components, materials, equipment, and know-how.”¹² According to retired Pakistani Major General Mahmud Ali Durrani, “From the perspective of Pakistani policy makers, scientists, and engineers, this clandestine effort was a sacred task for the defense of Pakistan against an Indian nuclear threat.”¹³

By the mid-1980s, Pakistan had achieved the capability to assemble a nuclear weapon. In 1998, A.Q Khan claimed that Pakistan had achieved this capability in 1984.¹⁴ In 1986, U.S. intelligence agencies reported that Pakistan had the capability to produce several nuclear weapons per year.¹⁵

⁹ Zahid Hussain, “Deliberate Nuclear Ambiguity.” In *Pakistan and the Bomb* ed. Samina Ahmed and David Cortright (Notre Dame, IN: University of Notre Dame Press, 1998), 33.

¹⁰ Zahid Hussain, “Deliberate Nuclear Ambiguity.” In *Pakistan and the Bomb* ed. Samina Ahmed and David Cortright (Notre Dame, IN: University of Notre Dame Press, 1998), 34

¹¹ See Gordon Corera, *Shopping for Bombs: Nuclear Proliferation, Global Insecurity, and the Rise and Fall of the A.Q. Khan Network* (Oxford: Oxford University Press, 2006), 13; Paul K. Kerr and Mary Beth Nikitin, *Pakistan's Nuclear Weapons: Proliferation and Security Issues* (Washington DC: Congressional Research Service, 2010), 3.; Vipin Narang, "Posturing for Peace? Pakistan's Nuclear Postures and South Asian Stability." *International Security* 34, no. 3 (2009), 48.

¹² Mahmud Ali Durrani, *Pakistan's Strategic Thinking and the Role of Nuclear Weapons*, Cooperative Monitoring Center Occasional Paper 37 (Albuquerque, NM: Sandia National Laboratories), 19.

¹³ Mahmud Ali Durrani, *Pakistan's Strategic Thinking and the Role of Nuclear Weapons*, Cooperative Monitoring Center Occasional Paper 37 (Albuquerque, NM: Sandia National Laboratories), 19.

¹⁴ Paul K. Kerr and Mary Beth Nikitin, *Pakistan's Nuclear Weapons: Proliferation and Security Issues* (Washington DC: Congressional Research Service, 2010), 3.

¹⁵ Zahid Hussain, “Deliberate Nuclear Ambiguity.” In *Pakistan and the Bomb* ed. Samina Ahmed and David Cortright (Notre Dame, IN: University of Notre Dame Press, 1998), 37.

Pakistani nuclear doctrine was, and remains today, India-centric.¹⁶ Through the 1980s and until the late 1990s, their doctrine is best described as one of “deliberate nuclear ambiguity.”¹⁷ With no proven nuclear capability or delivery methods Pakistani leadership resorted to rhetorical statements about their potential capability to achieve any kind of deterrence effects. During the 1986-87 Brasstacks crisis, for example, A.Q. Khan told an interviewer that Pakistan had produced nuclear weapons and would use them if necessary.¹⁸

Vipin Narang suggests that Pakistan’s nuclear doctrine during this time was less about deterring India and more about sending a signal to the international community, compelling them to intercede and deescalate any conflict.¹⁹ Narang cites evidence from the 1990 Kashmir crisis, as an example, where Pakistan began mobilizing nuclear assets in a manner deliberately detectable to the U.S. intelligence community, yet outside of Indian collection capabilities.²⁰ Pakistan’s tactics, in this case, evidently succeeded, as the U.S. quickly acted to restrain Indian action.

In 1998, when India conducted its nuclear tests, Pakistan was caught off-guard. In the view of Pakistani leadership, nothing had changed in the security environment that warranted India making their nuclear capability overtly known.²¹ This led many to believe that India “would use its nuclear status to pressure Pakistan to accept India’s

¹⁶ Timothy Hoyt, "Strategic Myopia: Pakistan's Nuclear Doctrine and Crisis Stability in South Asia." In *South Asia's nuclear security dilemma: India, Pakistan, and China*, ed. Lowell Dittmer (Armonk, N.Y.: M.E. Sharpe, 2005), 116

¹⁷ Bhumitra Chakma, *Pakistan's Nuclear Weapons* (London: Routledge, 2009), 41.

¹⁸ Bhumitra Chakma, *Pakistan's Nuclear Weapons* (London: Routledge, 2009), 42.

¹⁹ Vipin Narang, "Posturing for Peace? Pakistan's Nuclear Postures and South Asian Stability." *International Security* 34, no. 3 (2009), 42.

²⁰ Vipin Narang, "Posturing for Peace? Pakistan's Nuclear Postures and South Asian Stability." *International Security* 34, no. 3 (2009), 54.

²¹ Hasan-Askari Rizvi, "Pakistan's Nuclear Testing." In *South Asia's nuclear security dilemma: India, Pakistan, and China*, ed. Lowell Dittmer (Armonk, N.Y.: M.E. Sharpe, 2005), 100.

perspectives on the regional issues and especially on India-Pakistan disputes.”²²

Pakistan’s response to India’s nuclear tests was anything but given. Domestic opinion was split between a small group who thought Pakistan should denuclearize, a much larger group who thought Pakistan should maintain its policy of ambiguity, and those who called for immediate testing.²³ In just a few short weeks, opinion drifted more and more toward the need to test, until finally, on May 28 and May 30, Pakistan carried out a series of six tests in western Pakistan.²⁴ Pakistan’s leadership wasted little time in making it known that India was the reason for their testing. In announcing the tests, Prime Minister Nawaz Sharif stated, “The nuclear tests, have demonstrated Pakistan’s ability to deter aggression. Pakistan has been obliged to exercise the nuclear option due to weaponization of India’s nuclear programme. This had led to the collapse of the ‘existential deterrence’ and had radically altered the strategic balance in our region.”²⁵

Since testing, Pakistan has yet to publicly disclose its nuclear doctrine in the same way that India has. Shireen Mazari claims that this is because Pakistan “does not see a political/status utility for its nuclear capability—rather it envisages this capability as having a purely defensive, security-related purpose.”²⁶ Statements made by Pakistan’s public officials in the years since testing, portray a doctrine in which the first-use of nuclear weapons is not ruled out, and that Pakistan views its nuclear arsenal as not only deterring nuclear attack, but conventional

²² Hasan-Askari Rizvi, In *South Asia's nuclear security dilemma: India, Pakistan, and China*, ed. Lowell Dittmer (Armonk, N.Y.: M.E. Sharpe, 2005), 101.

²³ Hasan-Askari Rizvi, “Pakistan’s Nuclear Testing,” In *South Asia's nuclear security dilemma: India, Pakistan, and China*, ed. Lowell Dittmer (Armonk, N.Y.: M.E. Sharpe, 2005), 105.

²⁴ Paul K. Kerr and Mary Beth Nikitin, *Pakistan's Nuclear Weapons: Proliferation and Security Issues* (Washington DC: Congressional Research Service, 2010), 3.

²⁵ Scott Sagan, “The Evolution of Pakistani and Indian Nuclear Doctrine.” In *Inside Nuclear South Asia*, ed. Scott Sagan (Stanford, CA: Stanford Security Studies, 2009), 227.

²⁶ Mazari, Shireen M.. "Understanding Pakistan's Nuclear Doctrine." *Military Technology*, November 2006, 28.

attack as well. In 2001, Lieutenant General Khalid Kidwai said that nuclear weapons would only be used, “if the very existence of Pakistan as a state is at stake. He further clarified his statement by saying, “Nuclear weapons are aimed at India. In case that deterrence fails, they will be used if: a) India attacks Pakistan and conquers a large part of its territory (space threshold); b) India destroys a large part either of its land or air forces (military threshold); c) India proceeds to the economic strangling of Pakistan (economic threshold); and d) India pushes Pakistan into political destabilization or creates a large scale internal subversion in Pakistan (domestic destabilization).”²⁷

From the decision to develop nuclear weapons to the development of its nuclear doctrine, it is clear that Pakistan’s small nuclear arsenal is focused almost entirely on the deterrence of India. Before examining another conflict in which Pakistan successfully deterred India from further escalation, this paper will examine Pakistan’s nuclear infrastructure to determine exactly what it is capable of doing.

Pakistan’s Nuclear Infrastructure

Retired Major General Durani says that the basic concept of Pakistan’s credible minimum deterrence posture is that “Pakistan should possess the capability to strike back and inflict unacceptable damage after having absorbed a nuclear strike.”²⁸ While Pakistani officials have reportedly claimed that they have produced sufficient numbers of warheads to satisfy their requirements for minimum deterrence, they appear to be expanding their nuclear weapons programs both

²⁷ Scott Sagan, “The Evolution of Pakistani and Indian Nuclear Doctrine.” In *Inside Nuclear South Asia*, ed. Scott Sagan (Stanford, CA: Stanford Security Studies, 2009), 234.

²⁸ Mahmud Ali Durrani, *Pakistan’s Strategic Thinking and the Role of Nuclear Weapons*, Cooperative Monitoring Center Occasional Paper 37 (Albuquerque, NM: Sandia National Laboratories), 31.

quantitatively and qualitatively.²⁹ Their current arsenal, however, remains small and their delivery systems limited.

Table 3: Pakistan's Nuclear Delivery Capabilities

Type/Designation	Range (km)	Payload (kg)	Comment
Aircraft			
F-16 A/B	1,600	4 -500	
Mirage 5 PA	1,300	N/A	
A-5	600	N/A	
Land-Based Missiles			
Ghaznavi (Hatf-3)	~400	500	
Shaheen I	>450	750 - 1000	
Shaheen II	2,000	~1,000	
Ghauri I	>1,200	700 - 1000	
Ghauri II	1,800	1,500	
Cruise Missiles			
Barbur (Hatf-7)	700	N/A	Ground/Sea-Launched
Ra'ad (Hatf-8)	350	N/A	Air-Launched

Sources: SIPRI Yearbook, 2009; Chakma, Pakistan's Nuclear Weapons

Like India, aircraft play an important role in Pakistan's nuclear delivery capability. Although land-based ballistic missiles are the Pakistan's primary method for delivering nuclear weapons, Pakistan believes that by retaining aircraft as nuclear delivery vehicles, the credibility of their nuclear deterrence is strengthened.³⁰ All Pakistani nuclear-capable aircraft were acquired from foreign sources to include

²⁹ Stockholm International Peace Research Institute, *SIPRI Yearbook 2009*, <http://www.sipri.org/yearbook/2009> (accessed 2 March 2011), 372, and Nuclear Threat Initiative, "Pakistan Profile," http://www.nti.org/e_research/profiles/Pakistan/Nuclear/index.html, 2.

³⁰ Bhumitra Chakma, *Pakistan's Nuclear Weapons* (London: Routledge, 2009), 62.

the F-16A/B from the United States, the Mirage III and V from France, and the A-5 from China.

In response to India's 1988 test of its Prithvi ballistic missile, Pakistan embarked on its own missile program.³¹ Pakistan's current missile inventory consists mostly of short- and medium-range ballistic missiles capable of carrying either conventional or nuclear payloads and all of which are believed to be variants of Chinese or North Korean missiles.³² The Ghaznavi, Shaheen-I, and Shaheen-II are all road-mobile, solid-fuel missiles. The Ghuari-I and Ghuari-II are road mobile, liquid-propellant missiles. In addition to the ballistic missiles, Pakistan also has two cruise missiles. The Babar is ground or sea-launched and closely resembles the American Tomahawk cruise missile, while the RAAD is Pakistan's air-launch cruise missile.³³

Estimates vary as to the number of nuclear weapons in Pakistan's arsenal. On 31 Jan 2011, the New York Times and the Washington Post both reported that the U.S. intelligence community had increased their estimates of the size of Pakistan's nuclear arsenal to between 90 and 110 weapons.³⁴ In 2009, SIPRI estimated Pakistan's arsenal to be "approximately 60 weapons."³⁵ If the most recent estimates are correct, that would indicate a fairly significant increase in arsenal size in a fairly short time. George Perkovich suggests that the reason for the increase in weapons is that Pakistani leaders may have come to view nuclear

³¹ Paul K. Kerr and Mary Beth Nikitin, *Pakistan's Nuclear Weapons: Proliferation and Security Issues* (Washington DC: Congressional Research Service, 2010), 7.

³² Bhumitra Chakma, *Pakistan's Nuclear Weapons* (London: Routledge, 2009), 64- 66.

³³ Bhumitra Chakma, *Pakistan's Nuclear Weapons* (London: Routledge, 2009), 66.

³⁴ David E. Sanger and Eric Schmitt, "Pakistani Nuclear Arms Pose Challenge to U.S. Policy," *New York Times*, 31 January 2011, http://www.nytimes.com/2011/02/01/world/asia/01policy.html?_r=2&scp=1&sq=pakistan%20nuclear&st=cse (accessed 23 March 2011) and Karen DeYoung, "New estimates put Pakistan's nuclear arsenal at more than 100," *The Washington Post*, 31 January 2011, <http://www.washingtonpost.com/wp-dyn/content/article/2011/01/30/AR2011013004136.html> (accessed 23 March 2011).

³⁵ Stockholm International Peace Research Institute, *SIPRI Yearbook 2009*, <http://www.sipri.org/yearbook/2009> (accessed 2 March 2011), 372.

weapons as a “psychological equalizer.”³⁶ Having fallen behind India in every measurable aspect of national power, possessing more nuclear weapons gives them at least one victory over India. If that rationale is correct, it may indicate a drift away from Pakistan’s policy of “credible minimum deterrence” and their desire to avoid an arms race with India. It is also completely unnecessary. As was illustrated in the Kargil Crisis and will be further illustrated below, Pakistan’s nuclear arsenal—at much smaller numbers—has already proven sufficient in deterring India.

By today’s standards, Pakistan’s nuclear warheads are relatively rudimentary in design. Most of their weapons are thought to be low-yield Highly-Enriched Uranium devices.³⁷ Pakistan is currently working on building a second plutonium processing facility—a facility that will bring them closer to having the capability to develop more powerful plutonium-based nuclear weapons.³⁸

Pakistan does not keep its nuclear arsenal in a ready status. Similar to India, Pakistan is thought to keep its nuclear weapons separated and stored in component form. When needed, Pakistan will quickly assemble and deploy the weapons to their alert posture.³⁹

The 2001-02 India-Pakistan Crisis

On 13 December 2001, terrorists attacked the Indian parliament building killing a total of fourteen people. India claimed to have evidence that the terrorists were members of the Lashkar-e-Taiba and Jaish-e-Mohammend organizations, both headquartered in Pakistan. India

³⁶ Karen DeYoung, “New estimates put Pakistan’s nuclear arsenal at more than 100,” *The Washington Post*, 31 January 2011,

<http://www.washingtonpost.com/wp-dyn/content/article/2011/01/30/AR2011013004136.html>

³⁷ Bhumitra Chakma, *Pakistan’s Nuclear Weapons* (London: Routledge, 2009), 60.

³⁸ Stockholm International Peace Research Institute, *SIPRI Yearbook 2009*, <http://www.sipri.org/yearbook/2009> (accessed 2 March 2011), 372

³⁹ Bhumitra Chakma, *Pakistan’s Nuclear Weapons* (London: Routledge, 2009), 60-61.

additionally claimed that a link existed between these organizations and the Pakistani Services Intelligence Directorate.⁴⁰ Pakistan strongly denied these accusations and reportedly offered its assistance in a joint investigation.⁴¹ Unconvinced by Pakistan's rebuttal, India recalled its ambassador to Pakistan, ended rail and bus service between the two countries, banned Pakistani commercial aircraft use of Indian airspace and demanded that Pakistan shut down terrorist group operations in the Kashmir region.⁴² Additionally, India launched Operation Parakram, mobilizing nearly 800,000 troops along the India-Pakistan border, and prepared for a limited war in the Kashmir region.⁴³ Pakistan responded with similar troop mobilizations to counter the looming Indian threat.

As Indian and Pakistani troops squared off against each other along the border small scale skirmishes began to break out and mortar and artillery fire was exchanged.⁴⁴ War appeared imminent and inevitable. In early January, however, at the urging of the U.S., India backed away slightly from its aggressive posture.⁴⁵ A few days later, Pakistani President Musharraf, in an attempt to further defuse the situation while also proving Pakistan's commitment to the War on Terror, banned several known Islamic terrorist organizations to include Lashkar-e-Taiba and Jaish-e-Mohammend.⁴⁶ Despite the simmered tensions, both Indian and Pakistani troops remained deployed to the region.

⁴⁰ Robert Wirsing, *Kashmir in the Shadow of War: Regional Rivalries in a Nuclear Age* (Armonk, N.Y.: M.E. Sharpe, 2003), 65.

⁴¹ Mahmud Ali Durrani, *Pakistan's Strategic Thinking and the Role of Nuclear Weapons*, Cooperative Monitoring Center Occasional Paper 37 (Albuquerque, NM: Sandia National Laboratories), 15.

⁴² Robert Wirsing, *Kashmir in the Shadow of War: Regional Rivalries in a Nuclear Age* (Armonk, N.Y.: M.E. Sharpe, 2003), 66.

⁴³ Vipin Narang, "Posturing for Peace? Pakistan's Nuclear Postures and South Asian Stability." *International Security* 34, no. 3 (2009), 61 and V.K. Sood and Pravin Sawhney, *Operation Parakram: An Unfinished War* (Delhi: Sage, 2003), 74.

⁴⁴ V.K. Sood and Pravin Sawhney, *Operation Parakram: An Unfinished War* (Delhi: Sage, 2003), 62.

⁴⁵ V.K. Sood and Pravin Sawhney, *Operation Parakram: An Unfinished War* (Delhi: Sage, 2003), 80.

⁴⁶ V.K. Sood and Pravin Sawhney, *Operation Parakram: An Unfinished War* (Delhi: Sage, 2003), 42.

In May 2002, Pakistani-based terrorists once again attacked India. The attacks, focused on military encampments, killed 32 people—mostly wives and children of Indian army personnel. Indian officials again prepared for war, this time planning a full-scale invasion of Pakistan with the main thrust taking place in the Thar Desert, far south of the Kashmir region.⁴⁷ By mid-June, however, India's leadership had again backed down from the idea of starting a war against Pakistan and in October, had removed the bulk of their forces from the border regions.

Throughout the conflict, nuclear rhetoric was exchanged by both sides. Early in the crisis, the president of India's Bharatiya Janata Party warned that Pakistan's "existence itself would be wiped of the world map if it attempted to use nuclear weapons."⁴⁸ In January, Indian chief of army staff General S. Padmanabhan stated, "If anyone uses nuclear weapons against India, Indian forces, Indian assets at sea, Indian economic or human interests, the perpetrators of that particular outrage will be punished so severely that their continuation in any fray will be in doubt...Yes, we are ready. Take it from me, we have enough."⁴⁹ Not to be left out on the war of words, Pakistani Lieutenant General Javed Ashraf Qazi stated, "If Pakistan is being destroyed through conventional means, we will destroy them by using the nuclear option."⁵⁰

Pakistan's nuclear signaling did not stop with words. In May, as India prepared for its full-scale invasion, Pakistan test fired two nuclear capable ballistic missiles. Several scholars and Indian military professionals have concluded that Pakistan's signaling combined with

⁴⁷ Vipin Narang, "Posturing for Peace? Pakistan's Nuclear Postures and South Asian Stability." *International Security* 34, no. 3 (2009), 62.

⁴⁸ Timothy Hoyt, "Strategic Myopia: Pakistan's Nuclear Doctrine and Crisis Stability in South Asia." In *South Asia's nuclear security dilemma: India, Pakistan, and China*, ed. Lowell Dittmer (Armonk, N.Y.: M.E. Sharpe, 2005), 128.

⁴⁹ Scott Sagan, "The Evolution of Pakistani and Indian Nuclear Doctrine." In *Inside Nuclear South Asia*, ed. Scott Sagan (Stanford, CA: Stanford Security Studies, 2009), 241.

⁵⁰ Vipin Narang, "Posturing for Peace? Pakistan's Nuclear Postures and South Asian Stability." *International Security* 34, no. 3 (2009), 62.

the belief by Indian leadership that Pakistan's nuclear threshold was low prevented India from following through on their war plans. Two senior Indian officials interviewed by Praveen Swami said, "(Prime Minister) Vajpayee feared that a full-scale military response...could precipitate a wider conflagration. Although Vajpayee believed that the risk of nuclear war was small, he nonetheless saw no advantage in precipitating a crisis of which it might be an outcome."⁵¹ Retired Indian Lieutenant General V.K. Sood and Pravin Sawhney concluded, "The single reason which stopped the Indian political leadership from starting the war was the fear that Pakistan might use its nuclear weapons."⁵² Sumit Ganguly and Devin T. Hagerty reach a similar conclusion: "the fear of Pakistan's resort to a possible nuclear threat was paramount in the minds of Indian decision-makers, thereby inhibiting a resort to all-out war."⁵³

Concluding Thoughts

As has been illustrated in both the Kargil and the 2001-2002 crises, Pakistan's small nuclear arsenal effectively deterred India from escalating the crises to anything resembling full-scale war. The successful effects of Pakistan's nuclear deterrent do not end there, however. On 26 November 2008, Lashkar-e-Taiba militants executed a terrorist attack in Mumbai. In describing the effectiveness of nuclear weapons as a deterrent, former Indian army chief of staff, General Roychowdhury stated, "Pakistan's nuclear weapons deterred India from attacking that country after the Mumbai strikes."⁵⁴

⁵¹ Vipin Narang, "Posturing for Peace? Pakistan's Nuclear Postures and South Asian Stability," *International Security* 34, no. 3 (2009), 63.

⁵² V.K. Sood and Pravin Sawhney, *Operation Parakram: An Unfinished War* (Delhi: Sage, 2003), 116.

⁵³ Sumit Ganguly and Devin T. Hagerty, *Fearful Symmetry: India-Pakistan Crises in the Shadow of Nuclear Weapons* (Seattle: University of Washington Press, 2005), 180.

⁵⁴ "Pakistan's nuclear weapons deterred India," *The Hindu*, 10 March 2009, <http://www.hindu.com/2009/03/10/stories/2009031057391200.htm> (accessed 23 March 2011).

Evidence also exists that Pakistan's nuclear arsenal deterred the United States from considering invading Pakistan as a means to solve the quagmire in Afghanistan. In the search for a solution, the Obama administration appointed Bruce O. Riedel as Chairman, Interagency Policy Review of Afghanistan-Pakistan. According to Bob Woodward, in a briefing of Riedel's findings to Secretary of Defense Gates and Chairman of the Joint Chiefs Admiral Mullen, Riedel stated, "On the stick side...they had looked at the extreme option of invading Pakistan, and, of course, immediately dismissed it. Invading a country that possessed dozens of nuclear weapons would be something beyond madness."⁵⁵ Everyone present at the meeting reportedly agreed. While there is certainly a long-list of very good reasons why the United States should not have invaded Pakistan, this comment suggests that none of them were even considered! Instead, the mere presence of a nuclear arsenal in Pakistan—an arsenal not even remotely capable of attacking the U.S. homeland—was enough to deter senior civilian and military officials from even considering the idea.

Proving the effectiveness of nuclear deterrence, be it minimum or otherwise, is a difficult task. Numerous causal factors exist as to why any given conflict did not occur. The case of Pakistan, however, provides a smoking gun as to the effectiveness of nuclear deterrence. What is more, it proves that a large and sophisticated arsenal is not necessary to deter even the world's greatest power. Gregory S. Jones calculates that Pakistan's nuclear arsenal "could kill perhaps up to 10 million Indians and cause major damage to a number of its large cities."⁵⁶ 10 million lives lost is certainly no small number, but as Jones further points out, it is less than one percent of India's total population. By comparison, during the Cold War, the United States expected that in the event of a

⁵⁵ Bob Woodward, *Obama's Wars*, (New York, NY: Simon and Schuster, 2010), 100.

⁵⁶ Gregory S. Jones, "Pakistan's 'Minimum Deterrent' Nuclear Force Requirements." In *Pakistan's Nuclear Future: Worries Beyond War*, ed. Henry D. Sokolski (Carlisle, PA: US Army Strategic Studies Institute), 96.

Soviet nuclear attack, every major city would be destroyed and more than 50 percent of the population would be killed.⁵⁷ In the cold calculation of Cold War standards of deterrence, the threat Pakistan poses to India is miniscule. Yet that miniscule threat was not only enough to deter India from escalating the level of conflict on three separate occasions, it also deterred the United States from even considering an invasion of Pakistan. The mere presence of nuclear weapons, no matter their number or capability, forces leaders to act cautiously. As McGeorge Bundy observed in 1969, "In the real world of real political leaders...a decision that would bring even one hydrogen bomb on one city of one's own country would be recognized in advance as a catastrophic blunder; ten bombs on ten cities would be a disaster beyond history; and a hundred bombs on a hundred cities are unthinkable."⁵⁸



⁵⁷ Gregory S. Jones, "Pakistan's 'Minimum Deterrent' Nuclear Force Requirements." In *Pakistan's Nuclear Future: Worries Beyond War*, ed. Henry D. Sokolski (Carlisle, PA: US Army Strategic Studies Institute), 96.

⁵⁸ Lawrence Freedman, *The Evolution of Nuclear Strategy*, 3rd ed. (Houndmills, Basingstoke, Hampshire: Palgrave Macmillan, 2003)

Chapter 4

Findings and Implications

Introduction

The previous three chapters have examined the nuclear doctrine, infrastructure and the role nuclear weapons played in conflicts of China, India and Pakistan. In doing so, several observations may be made regarding minimum deterrence. This chapter will examine the findings of the case studies, look at the implications of those findings for the United States and look at some of the obstacles that stand in the way of adopting a policy of minimum deterrence.

Findings

The first major finding from the case studies is that from the very beginning, each country had a firm grasp as to the nature of nuclear weapons and what possessing them would mean for their country. Each seemed to understand that nuclear weapons are inherently a political weapon—a weapon that gives a larger voice in the international stage while simultaneously acting as the ultimate guarantor of sovereignty. While Mao coveted nuclear weapons almost immediately, India and Pakistan became nuclear weapons states a bit more reluctantly. Regardless, it was in response to their perceived security environment that each state made the decision to weaponize. What speaks volumes to their understanding of the nature of nuclear weapons is the fact that each has consistently sought to avoid engaging in a nuclear arms race. To do so would not only detract from the means of developing other instruments of national power, but would be unnecessary. The effects sought by possessing nuclear weapons are achieved with the possession of only a few weapons. Political leaders are not sensitive to how many

nuclear weapons a state has, they are sensitive to a state having them at all.

The second major finding is what constitutes minimum deterrence is different for each individual state. The main variables in defining the minimum requirement is the security environment and what state or states the actor is seeking to deter. Two universal requirements for minimum deterrence can be gleaned from the case studies. The first is the necessity for a second strike capability. As Kenneth Waltz points out, “Deterrence is achieved not through the ability to defend but through the ability to punish...Second strike nuclear forces serve that kind of strategy.”¹ Whether through hardened infrastructure, dispersion of capability, or a combination of the two, each of the countries studied sought to ensure their capability to respond to a nuclear attack, with a punishing nuclear attack of their own. The second requirement of minimum deterrence is that a country’s nuclear weapon capability must be overtly known. From the mid-1980’s onward, India and Pakistan were both thought to have the capability to build and deliver nuclear weapons. It was not until the Kargil Crisis—a crisis that occurred shortly after the detonation of nuclear weapons by both actors—that the presence of nuclear weapons influenced how each side approached mutual conflicts.

Once the requirements are met for minimum deterrence, the difference in defining minimum deterrence is not seen so much in the numbers of weapons possessed as it is in the capability of the delivery systems. China, for example, seeks to primarily deter the United States and Russia. As such, China has developed, and continues to develop, weapon systems that are capable of surviving a first strike from either adversary, and assuring their ability to respond in kind by striking at the heartland of each country. India seeks to primarily deter Pakistan and India while Pakistan is focused solely on the perceived threat from India.

¹ Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate Renewed*, (New York, NY: W.W. Norton & Company, 2003), 5.

This focus is readily evident as both India and Pakistan have developed weapon systems capable of delivering nuclear weapons to targets located in adversary territory, while avoiding development of weapon systems capable of much longer range.

The final major finding from the case studies is that deterrence can, in fact, be achieved with a small number of nuclear weapons. This is because nuclear weapons “produce patterns of caution and war-avoidance among states that possess them. From time to time, states strain at the leash, but inevitably they draw back, sobered by the prospect of mass annihilation.”² The case studies of India and Pakistan exemplify this fact. Indian plans to escalate conflict in response to Pakistani attacks in the Kashmir region date back to 1949.³ The India-Pakistan war in 1965 illustrated India’s intent to respond to any Pakistani offensive with cross-border counter-attacks aimed at the key cities of Lahore and Sialkot.⁴ India responded in a similar, though more subdued manner, to crises in the 1980s. The Kargil Crisis and 2001-2002 crisis stand in stark contrast to India’s long-held plans. As noted in the case studies, troops were mobilized and massed along the border, but strict orders were given to not breach the border. Pakistan, for its part, showed similar restraint by keeping its regular forces on the Pakistani side of the border. The threat, no matter how small, of the conflict escalating to the nuclear level, was enough to encourage both Indian and Pakistani leadership to limit the intensity of conflicts and find quick exit strategies.

² Rajesh M. Basrur, *Minimum Deterrence and India's Nuclear Security* (Stanford, Calif.: Stanford University Press, 2006), 4-5.

³ Timothy D. Hoyt, “Kargil: the nuclear dimension.” In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 159.

⁴ Timothy D. Hoyt, “Kargil: the nuclear dimension.” In *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (Cambridge: Cambridge University Press, 2009), 160.

A study of the Sino-Soviet border dispute of 1969 proved to be inconclusive in proving the effectiveness of small arsenals to deter. While China certainly possessed nuclear weapons, it likely did not possess the survivable delivery means necessary to effectively deter the Soviet Union. Looking back even further in history, however, can provide insight as to how even major powers react in the face of smaller states possessing nuclear weapons. Recall that China actively sought nuclear weapons technology from the Soviets beginning in the early 1950s. The Soviets, however, were reluctant to provide such technology. The question should be asked as to why. Both Stalin and Khrushchev viewed the Soviet alliance with China as vital to Soviet interests—Stalin for geo-strategic reasons and Khrushchev for ideological reasons—yet Stalin flatly refused to give China nuclear weapon information and Khrushchev abruptly cut Soviet assistance in 1959 after only two years of limited assistance.⁵ What Khrushchev appeared to realize in 1959 is what Stalin understood all along: “the geo-strategic reality that Mao could turn his nuclear weapons on the Soviet Union once they were built.”⁶ Even more to the point, the Soviets viewed China as the sub-ordinate in the Sino-Soviet relationship. China’s possession of nuclear weapons, in any number, would affect the dynamic of this relationship.

Implications for the United States

Several implications, for the United States, may be drawn from the findings and general discussions of the case studies. The first implication is that the United States should continue to maintain a safe and reliable nuclear deterrent. Despite the most well-intentioned hopes of those who desire a nuclear-free world, nuclear weapons will continue

⁵ Viktor M. Gobarev, "Soviet policy toward China: Developing nuclear weapons 1949-1969." *The Journal of Slavic Military Studies* 12, no. 4 (1999), 9, 18.

⁶ Viktor M. Gobarev, "Soviet policy toward China: Developing nuclear weapons 1949-1969." *The Journal of Slavic Military Studies* 12, no. 4 (1999), 30.

to play a prominent role in power politics of the world. Mao understood that in order for China to fully exercise its sovereignty and to avoid coercion, it must possess nuclear weapons. In addition to its security concerns, India viewed nuclear weapons as a means to proving to the world that it was a modern country with a first-rate scientific base. India's arrival into the nuclear club forced Pakistan, in-turn, to make its weapons program overtly known. Since India and Pakistan joined the ranks of nuclear powers, North Korea has followed suit and Iran has shown its desire for nuclear weapons. All of this has occurred in spite of a non-proliferation treaty that, since 1972, has attempted to establish international norms against the proliferation of nuclear weapons. The United States' nuclear arsenal will continue to act as the underlying, and hopefully silent, means of ensuring favorable international order.

The second implication is that despite the enduring value of nuclear weapons, Cold War standards of deterrence can be discarded. During the Cold War, the United States' nuclear deterrence strategy ranged from Eisenhower's massive retaliation, to McNamara's assured destruction and on to the search for selective options that ensured escalation dominance.⁷ The sum of these strategies left the United States with a nuclear arsenal many times larger than necessary to achieve effective nuclear deterrence. This is not to point a finger at policy makers of the past for missing the blindingly obvious. On the contrary, given the nature of a weapon whose political properties were not fully understood, combined with the intense ideological and geo-strategic stand-off with the Soviet Union, it is easy to see why theorists, policy makers, and military leaders failed to fully grasp that effective deterrence has such minimal requirements. In contrast to the Cold War, today's theorists and policy makers have the opportunity to develop a strategy for deterrence that more accurately reflects the true nature of nuclear

⁷ For a review of U.S. nuclear strategies see Lawrence Freedman, *The Evolution of Nuclear Strategy*, 3rd ed. (Houndmills, Basingstoke, Hampshire: Palgrave Macmillan, 2003).

weapons. The three case studies presented in this paper and other evidence from over 60 years of history in a world with nuclear weapons, such as the Cuban Missile Crisis, show that the large numbers of weapons and sophisticated nuclear war-fighting schemes that characterized Cold War deterrence are unnecessary. Instead a small but survivable arsenal, capable of inflicting an assured second strike is all that is necessary to achieve the effect of deterrence. “Because,” as Forsyth, Saltzman and Schaub point out, “nothing threatens survival more than nuclear war, leaders restrain themselves from engaging in conflicts that could lead to all-out war.”⁸

The final implication follows from the previous: the United States could dramatically reduce the size of its nuclear arsenal and achieve the same effect as today’s force structure. More succinctly, minimum deterrence is a viable policy for the United States to pursue. As noted earlier, minimum deterrence is not a one-size-fits-all concept. The strategy a state uses to pursue a policy of minimum deterrence is dependent upon their security environment, role in maintaining international order, and perhaps their commitments to other countries among other factors. The purpose of this paper is not to make a recommendation as to how the United States should structure its nuclear arsenal. As a point of reference, however, Forsyth, Saltzman and Schaub offer a compelling argument that the United States can develop an effective nuclear deterrence strategy around 311 nuclear weapons.⁹ 311 weapons, they claim, would allow the United States to maintain the readiness, survivability, and flexibility inherent in its current triad of delivery systems, ensuring that deterrence objectives are met and that a credible war-fighting capability exists should deterrence fail. 311 may or

⁸ James Wood Forsyth Jr., B. Chance Saltzman, and Gary Schaub Jr., “Minimum Deterrence and its Critics,” *Strategic Studies Quarterly*, Winter 2010, 7.

⁹ James Wood Forsyth Jr., B. Chance Saltzman, and Gary Schaub Jr., “Minimum Deterrence and its Critics,” *Strategic Studies Quarterly*, Winter 2010, 4.

may not be the right number, but Forsyth, Saltzman, and Schaub's suggestion provides a useful framework from which strategists and policy makers can begin shaping a minimum deterrence strategy.

One final point about a minimum deterrence strategy should be made. Unlike deterrence under Cold War models, the number of weapons required for a minimum deterrence strategy is not directly correlated to the numbers of weapons a potential adversary has in possession. As Robert Oppenheimer observed, "Our twenty thousandth bomb, will not in any deep strategic sense offset their two-thousandth."¹⁰ Effective nuclear deterrence is reached when a specific force size and capability is reached. Anything beyond that number is quickly subject to the law of diminishing returns. As the case studies of India and Pakistan so adequately illustrate, that force size and capability is achieved with minimal numbers.

Obstacles to a Policy of Minimum Deterrence

If successful, this paper has illustrated to the reader that minimum deterrence is a viable policy for the United States to pursue. The benefits of minimum deterrence are obvious: while maintaining the same level of deterrence that exists today, the United States would realize a substantial cost savings in the reduced force structure necessary for a strategy in support of a minimum deterrence policy. Additionally, adopting a policy of minimum deterrence would reassert the United States' leadership role for nuclear matters, illustrating to the world that large numbers of weapons are not necessary. Instead, effective deterrence can be achieved with a minimum number of safe, secure, and reliable weapons. If one is inclined to agree with the argument thus far,

¹⁰ Jeffrey G. Lewis, *The Minimum Means of Reprisal: China's Search for Security in the Nuclear Age* (Cambridge, Mass.: American Academy of Arts and Sciences, 2007), 4.

one may also ask themselves why the United States does not immediately adopt such a policy. Several obstacles, in fact, stand in the way.

The first obstacle exists in the cognitive domain. Minimum deterrence poses a challenge to the perceptions many political and military leaders have formed about how nuclear deterrence is achieved. Borrowing from Robert Jervis, leaders' perceptions are formed by lessons learned from historical events, which in turn shape future decisions.¹¹ In the case of deterrence, Cold War paradigms of deterrence characterized by numerical and technological parity, large numbers of weapons, and sophisticated counter-force war-fighting plans, provide the historical example that shape decision-makers' perceptions. In their unconscious quest for cognitive consistency, decision-makers may flatly reject or ignore evidence that challenges their well-formed perceptions about deterrence. Solving this dilemma is not a simple task as it involves the many key decision-makers taking the time to critically challenge and analyze their pre-existing perceptions. Even in doing so, there is no guarantee they will come to the conclusions espoused in this paper. What decision-makers should be keep in mind, however, is that Cold War theories of deterrence were not so much based upon real-world *evidence* of how leaders react in the face of a nuclear threat, but instead were based upon *expectations* of how those leaders would react. As noted previously, more than 60 years of nuclear history provides sound evidence from which to base a more accurate theory and subsequent policy.

Even if the cognitive hurdle can be overcome, domestic politics provides another significant obstacle toward pursuing minimum deterrence as a national policy. The military-industrial complex provides a significant economic impact to many regions of the United States and the nuclear enterprise is no exception. Significantly reducing the nuclear

¹¹ See Robert Jervis, *Perception and Misperception in International Politics* (Princeton, NJ: Princeton University Press, 1976) Chapter 6, for a discussion on How Decision Makers Learn.

force structure would likely have a negative economic impact on several of these communities. To illustrate this point, it is helpful to revisit the recommendations of Forsyth, Saltzman and Schaub. The force structure envisioned in their article consisted of, among other things, “two ICBM squadrons of 50 Minuteman III missiles located at two different locations.”¹² This stands in stark contrast to the 450 Minuteman III missiles that stand alert today, divided amongst nine squadrons at three different locations. The implications of implementing the proposed solution would likely mean the closure of at least one missile base, and the significant draw down of personnel at the remaining two. As the response to every BRAC recommendation illustrates, political leadership fiercely contests base closures and realignments that may have a negative economic impact on their districts and states. It does not take a significant leap to envision a similar response to the draw-down of nuclear force structure. While such politics would ideally not play a role in shaping U.S. deterrence policy, the reality is that it will be an obstacle to overcome.

The final obstacle will come from within the military institutions that act as the primary custodians of the United States’ nuclear war-fighting capability. Historically, the services have jealously guarded their mission sets. For those acquainted with organizational theory, this should offer no surprise as “almost everything we know in theory about large bureaucracies suggests not only that they are hard to change, but that they are *designed not to change*.”¹³ The source of the military organizations’ discontent toward minimum deterrence will likely not stem from a rejection of the theory itself, but more in what the execution of its details mean for the services. As Barry Posen writes, “Often...soldiers

¹² James Wood Forsyth Jr., B. Chance Saltzman, and Gary Schaub Jr., “Minimum Deterrence and its Critics,” *Strategic Studies Quarterly*, Winter 2010, 5.

¹³ Stephen Peter Rosen, *Innovation and the Modern Military: Winning the Next War* (Ithaca, NY: Cornell University Press, 1994), 2.

will elevate the narrow technical requirements of preferred operations above the needs of civilian policy.”¹⁴ If the response to the Forsyth, Saltzman, Schaub article is any indication of the institutional push-back minimum deterrence will receive, the arguments will largely be based around two problems. The first is the cost-effectiveness of a reduced force structure. The second is the difficulty the services will face in establishing and managing meaningful career paths for the small cadre of individuals assigned to nuclear duty. Both of these are valid concerns in that they do indeed pose a leadership and management problem for military leadership. But they are just that—a military leadership problem. Policy makers need to be aware of such concerns so that they may properly resource the services to meet the challenges they face, but these problems should have no bearing on the decision to adopt a policy of minimum deterrence.

Concluding Thoughts

As alluded to in the introduction to this paper, political and economic pressures will likely continue to pressure the United States to slowly shrink the size of its nuclear weapons arsenal. Those charged with ensuring the national security of the United States should rest easy. Small nuclear arsenals deter just as effectively as large arsenals. In fact, such draw downs should be welcomed and possibly accelerated. Why continue to spend valuable resources supporting an infrastructure that is many times larger than necessary to achieve the desired effect?

While this paper has concluded that minimum deterrence is both a viable theory and policy for the United States, further questions remain to be answered. To name just a few: What is the most appropriate strategy

¹⁴ Barry R. Posen, *The Sources of Military Doctrine: France, Britain, and Germany Between the World Wars* (Ithaca, NY: Cornell University Press, 1984), 53.

to implement a policy of minimum deterrence? How many weapons are actually needed? What is the most desirable force structure? What can be certain, however, is that only a minimum number of weapons are necessary to ensure the security of the United States and a stable, safe, and favorable international order.



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