In the name of Allah, the most compassionate, the most merciful and benevolent

NUCLEAR SOUTH ASIA: STABILITY VS INSTABILITY

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A Dissertation submitted in partial fulfilment of the requirement for the degree of Master of Philosophy in Defence and Strategic Studies

Department of Defence and Strategic Studies

QUAID-I-AZAM UNIVERSITY
ISLAMABAD
2004

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It is certified that we have read the dissertation submitted by Mansoor Ahmed, entitled: **Nuclear South Asia: Stability vs. Instability**, as a partial fulfilment for the award of degree of Master of Philosophy in Defence and Strategic Studies. We have evaluated the dissertation and found it up to the requirement in its scope and quality for the award of the degree.

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ACKNOWLEDGEMENT

At the outset, I must acknowledge that it would have been impossible for me to complete this dissertation without the active assistance and support of the Department of Defence and Strategic Studies, and its faculty members. In this connection, my deepest gratitude and thanks are due to my supervisor, Dr. Noman Omar Sattar, and Chairman of the Department of Defence and Strategic Studies. I must emphasize that my supervisor's constant encouragement, kind guidance and valuable input has played a critical role in the completion of this study.

I must also acknowledge the valuable contribution and support of various libraries, especially the Q.A.U. Central Library, and the Library of the Department of Defence and Strategic Studies.

Last but not the least, I express my deepest gratitude for my parents, especially my father, whose constant encouragement, guidance and support enabled me to complete this study.

DEDICATION

This dissertation is dedicated to the architect of Nuclear Pakistan and former Chairman of the Pakistan Atomic Energy Commission (1972-91), Mr. Munir Ahmad Khan (Hilal-I-Imtiaz), who along with his team of dedicated scientists and engineers put Pakistan on the nuclear map, and who developed the entire nuclear weapons programme, despite sanctions, scarcity of resources, and who served Pakistan with the utmost patriotism, impeccable honesty, and an iron-will, and enabled us to acquire nuclear technology so as to safeguard our sovereignty and honor as a nation!

CONTENTS

INTRODUCTION

India and Pakistan became overtly nuclear after the 1998 tests, and the world believed that minimum nuclear deterrence had come into place from non-weaponized deterrence. Nuclear deterrence was tested against the complex realities of South Asia. In the formative stages of superpower nuclear competition, deterrence theorists identified a stability-instability paradox associated with the acquisition of offsetting nuclear capabilities. The essence of this paradox was that nuclear weapons were supposed to stabilize relations between adversaries, and to prevent a major war between them. At the same time, offsetting nuclear capabilities might well prompt provocations, instability, and even conflict at lower levels, precisely because nuclear weapons would presumably provide protection against escalation. Nuclear deterrence theorists and strategic analysts argue about the stability–instability paradox. "Deterrence optimists" who believe in the stabilizing attributes of offsetting nuclear capabilities are convinced that the specter of the mushroom cloud will rationalize national security policies. For example, the most fervent deterrence optimists in the west attribute the limited duration and scope of the Kargil war, as well as the concerted international efforts to end the hostilities, to the nuclear dangers present. Other deterrence theorists are not as sanguine about the stabilizing impact of nuclear weapons.

Most strategic analysts believe that offsetting nuclear forces could only provide for stability when both sides' nuclear forces are safe, secure, and survivable against pre-emptive attack. Even then, "deterrence pessimists" argue that nuclear capabilities are no guarantee of sensible national security policy. If there is one lesson to be learned from these cases, it is that stability is far from assured once states cross the nuclear threshold. Instead, stability and safety from nuclear danger require constant attention, hard work, and unilateral steps to put in place redundant and reliable command and control, as well as steps to improve and co-ordinate intelligence capabilities. These measures are absolutely necessary, but they are also insufficient. Cooperation between nuclear adversaries is also essential if nuclear dangers are to be managed properly. Reducing nuclear dangers requires collaboration amidst competition. Issues of nuclear command,

control, communications, nuclear safety and clearly defined nuclear doctrines are at the center of the debate relating to stability in nuclear South Asia. Closely linked to nuclear deterrence, but largely ignored, is the concept of conventional deterrence and the ongoing conventional arms race that is going on in both India and Pakistan, despite having minimum nuclear deterrence in place. The Indians wrongly presumed that weaponization would further enhance their superiority vis-à-vis Pakistan, yet paradoxically, Pakistan has been able to neutralize Indian conventional superiority by acquiring its own minimum nuclear deterrent capability. In addition to this there is the dilemma in both countries of continuing to acquire and indigenously develop high tech and advanced conventional weapons technologies including advanced missile capabilities, while at the same time increasing the defence allocations and sustaining large and modern standing forces. These developments have a direct bearing on nuclear stability in south Asia, and have the potential of adversely affecting the delicate balance of power in the region, with potentially catastrophic consequences.

India and Pakistan have tested, before and after the overt nuclearization, deterrence stability in south Asia. During the cold war, India and Pakistan came close to nuclear war twice, during the 1987 Indian army exercise Brasstacks and the 1990 crisis over Kashmir. Existential deterrence prevented even a limited conventional conflict in both cases, but after the 1998 tests, India and Pakistan went to war in Kargil and fought a limited conventional conflict under the threat of nuclear escalation that prevented an all out conventional war. Brasstacks, 1990 Crisis and Kargil are classic examples where nuclear pessimists and optimists win arguments over one another, and where the paradoxes of nuclear stability come out in the open. Nuclear Command and Control structures in South Asia are rudimentary by western standards and are in the process of their early development. India has come out with an open Nuclear Doctrine that includes China as a major threat, and Pakistan does not subscribe to India's No-first Use policy. Pakistan is driven by its own security concerns and India is compelled to deal with a threat perception of two nuclear neighbors that exacerbates the equation. India is engaged in acquiring high technology platforms for nuclear delivery that shift the already adverse conventional balance in South Asia more in India's favour, thus forcing Pakistan to take

steps to maintain its own nuclear and conventional capability. Thus both countries have entered into a never-ending spiral of matching one another in weapons systems and technologies and endangering the delicate balance in the region. Pakistan has offered de-nuclearization and no war pact to India, but this does not correspond to India threat perceptions and the simmering conflict over Kashmir will continue to prevent any long lasting and durable détente and stability in the region.

The literature available on the subject primarily consists of western and Indian sources, and a lot of in-depth research has been done by American and Indian think tanks and organizations. Thus, the material is not very balanced and objective in its approach, but it is the best available literature available to the researcher. Most of the material is found in journals of international repute and books written by leading American writers. The Indians have been very active in doing research and propagating their own version of nuclear stability and related issues, and abundant material from Indian sources can be easily found in their journals and magazines. Pakistani sources are less numerous, but the best source of latest and diverse material on nuclear issues is the Internet. Because there is a dearth of transparent and objective information, one has to carefully scrutinize whatever is available.

This study is aimed at a relatively unbiased and balanced understanding of the dynamics of nuclear south Asia and the factors affecting stability in the region, especially within the context of arms buildup by India and its future implications on stability. The study will focus on the theoretical aspects of nuclear and conventional deterrence, motives for nuclearization, nuclear politics and history of deterrence in the region, and the interests of the regional and world powers in nuclear South Asia. The primary sources on the subject include literature that has been published both, inside and outside Pakistan in the form of books, journals and magazines.

The format of the dissertation will comprise of an introduction, seven chapters and a conclusion in addition to the bibliography.

Chapter one will provide a theoretical framework for the thesis. It will help in conducting the research in accordance with the contemporary thought on nuclear stability.

Chapter two will focus on the history of nuclear crisis stability before the nuclear tests of 1998 and how it has affected security and stability in the region.

Chapter three will focus exclusively on the Kargil Crisis of 1999 and will be studied as a case study of limited war under the nuclear umbrella. It is an excellent point of reference for understanding the dynamics of nuclear crisis stability in post-nuclear test South Asia.

Chapter four is aimed at examining the nuclear doctrines and postures in the region and how they affect stability and security in the region, along with the theories regarding the employment and targeting of nuclear weapons.

Chapter five is aimed at understanding the command and control challenges in south Asia and the nuclear command structures of India and Pakistan, and how these affect stability in the region.

Chapter six is aimed at understanding the close link between conventional and nuclear deterrence, and how conventional balance in the region and the arms and missile race affects the nuclear force postures and vice versa, nuclear and conventional doctrines and stability.

Chapter seven is aimed at the understanding of the missile proliferation and strategic stability in the region, with particular focus on introduction of ballistic missiles defence technologies in south Asia and their potential of altering the strategic balance in the region, with long term consequences for deterrence stability.

CHAPTER 1

DETERRENCE- A THEORETICAL FRAMEWORK

MEANING OF "DETERRENCE"

It is widely agreed today that "deterrence" as a term means preventing war either through fear of punishment or fear of defeat, or sometimes even through fear of undefined negative consequences. The word "deterrence" is derived from the Latin *de* + *terrere*, literally "to frighten from" or "to frighten away." Thus, fear is central to the original meaning of deterrence. The idea that vast, indiscriminate, and unacceptable damage would be inflicted in retaliation for aggression, as was associated with the prospect of the aerial bombing of open cities in the 1930s, or the employment of nuclear weapons since World War II, has long been central to the popular understanding of the term deterrence. That fear of defeat could be powerfully deterring, although a long-standing idea, has been less widely understood.[1]

Nuclear deterrence both as a concept and as practical doctrine had several variations during the Cold War. These included the declared doctrine of massive retaliation, with its stark punitive threat and heavy reliance on the strategic nuclear air offensive. The mature U.S. nuclear strategy, which obtained from the 1960s until the collapse of the Soviet Union, was extended nuclear deterrence. Under this doctrine, the United States deterred direct attack upon itself with strategic nuclear forces, while extending protection to its Cold War allies and friends by promising to escalate a war to the nuclear level if they were in danger of defeat by Soviet-led forces, even if this entailed first use of nuclear weapons by the United States. Extended deterrence was achieved via the "seamless web" of conventional, theater, and strategic nuclear forces. Although this strategy did have an important conventional component, it ultimately depended on the threat of escalation to large-scale nuclear use. One interesting late

variation on the theme of extended nuclear deterrence was that the fear that deterred could be a threat to destroy not urban-industrial areas per se but those items the opposing regime valued most. In the case of the Soviet Union, this was postulated to be the survival of the regime itself and its ability to preserve and perpetuate its control over the Soviet state. Another variation was that deterrence could be strengthened by posing the threat that the Soviets' strategic nuclear strike would not succeed because of the operation of U.S. strategic missile defenses, especially if linked to the prospect for subsequent punishment. It is also true that the idea of deterrence was subsumed within a system of mutual deterrence because of the deployment of large-scale Soviet nuclear forces in the 1950s and 1960s. However, neither mutuality nor parity is a necessary or inherent characteristic of the concept of deterrence.

DETERRENCE THEORY

The fundamentals of nuclear deterrence theory have changed little since the creation of Nuclear weapons during the Second World War. The most important aspect of deterrence remains its purpose - how to influence what an enemy thinks and does. Deterrence is a state of mind that prevents a deterree from acting in a way the deterrer considers harmful. Deterrence works only if the intended deterree chooses to be deterred. Its components are both physical and psychological. First, a series of military instruments are required that are sufficient to threaten an opponent in certain ways. Second, he must be convinced to not even think of attacking. Deterrence is successful only if the deterring nation has the political will to use its weapons and deterrence is credible only if the deterring nation is able to convey to the deterree that it is both capable and willing.

Many historians argue that the absence of a large-scale war in Europe after the Second World War proved that nuclear deterrence worked. British Prime Minister Margaret Thatcher argued this point in remarks she made to the Soviet General Secretary Mikhail Gorbachev in 1987, "Both our countries know from bitter experience that

conventional weapons do not deter war in Europe whereas nuclear weapons have done so over 40 years."

Though her statement is most likely true, the effectiveness of deterrence is hard to measure. When it works, the effects of deterrence are almost invisible. It is assumed to be successful when deterrence prevents actions by adversaries. During the Cold War, nuclear weapons and their potentially catastrophic destructive capabilities created a unique security environment whereby rational statesmen never went to the brink due to the unimaginable consequences. Creating a secure environment with the right mix of nuclear weapons remains the challenge for today.

James Schlesinger, former Secretary of Defense for President Ford, explained the critical elements of deterrence. He maintained that the goal of the military might of the U.S. and its allies during the late forties was to create an effective structure of deterrence that precluded outright military assault by the Soviet Union. He remarked that the heart of deterrence laid in the credibility of strategies and forces to respond in the event of a direct military assault. He contended that in the absence of a credible response, deterrence is nothing but a façade. The capacity to threaten with a credible response made deterrence effective and thereby making credibility a key component of deterrence.[2]

The purpose of these weapons is to deter the use of WMD - nuclear, chemical, and biological - in crisis or conflict. Nuclear deterrence prevents other possessors of nuclear weapons from using them by the threat of nuclear retaliation. The nuclear force may also be used to threaten and to discourage biological, chemical or large-scale conventional aggression. During the Cold war, the U.S. threatened the use of nuclear weapons to deter a massive conventional attack by the Soviet Union against NATO. Additionally, the U.S. did not rule out the first use of nuclear weapons in such an event.

Deterrence emerged in its modern form in the 1930s in the context of the newfound capability to attack the whole of an enemy's civilian population and civil infrastructure without first defeating its ground and naval forces. Airplanes and dirigibles were first used militarily in World War I and were employed to attack cities almost as soon as they

were used for reconnaissance and attacks on the battlefield. Although the impact of these terror attacks was minor, the development of air power in the 1920s and 1930s allowed for the theories of Douhet and other military strategists. Their theory of strategic air warfare argued that air forces could by themselves conduct a strategic campaign against the vital elements of state power that could win a war, with little or no involvement by ground and naval forces. The implications of this theory led to the emergence of the theory of deterrence.

As it turned out, both sides in World War II resorted early to urban bombing. Conventional bombing could be defended against to some extent; the prospect of strategic conventional bombing did not deter war, nor was strategic bombing by itself able to secure the defeat of the opposing side (even though, eventually, the fire-bombing of Dresden and Tokyo, and the devastating thousand plane raids, approached nuclear strikes in the magnitude of damage they inflicted).

The lessons of World War II changed abruptly with Hiroshima and Nagasaki. Nuclear weapons clearly threatened damage that was unacceptable by any definition and would be almost impossible to defend against. Bernard Brodie, in his book *The Absolute Weapon*, in 1946, swiftly developed the theory of nuclear deterrence.

The end of the Cold War raised more doubts. Maintaining a ready nuclear strike force when the putative enemy had become a potential partner and seemed to be on the path to democracy appeared unwarranted. Moreover, continuing to rely heavily and directly on nuclear forces could be seen as reinforcing the idea that nuclear weapons have utility in assuring a nation's security interests, an argument that undermines the desire to make these weapons unattractive to potential proliferant states

REQUIREMENTS FOR MAINTAINING NUCLEAR DETERRENCE [3]

Credibility

Deterrence can succeed only if the combination of threats and incentives is credible, and this requires both capabilities and political will. The United States, for example, can call on a wide range of political, economic, and military capabilities that would be overwhelming in most cases. However, several adversaries have not been deterred because they judged that the United States lacked the political will to incur casualties, sustain costs, take risks, and deepen its involvement when vital interests were not at stake. Also, many potential adversaries probably doubt that the United States will use nuclear weapons short of responding to a major nuclear attack on the United States or U.S. forces.

To persuade an opponent not to take proscribed actions, the capabilities and prospective outcomes invoked as a deterrent must convince the opponent that the costs, in terms of opportunities and value lost, judged by his own means of measuring them, will not be worth paying, and that in any case the deterring capabilities will prevent him from achieving his objectives. Furthermore, the opponent must be convinced that punishment will be forthcoming, and he must fear the punishment. Likewise, he must perceive that inducements offered will in fact be delivered.

Communications

Deterrence requires effective communications correctly perceived, so that the potential adversary knows that by undertaking the prohibited action he will incur substantial loss, or that by not undertaking it he can make a substantial gain. This can pose a dilemma for the deterring party in terms of the degree of specificity or ambiguity that should be communicated with regard to responses. In some cases, one may want a potential adversary to be uncertain about whether the he will respond and in what manner. In other cases—usually involving more important interest, one wants potential adversaries to know very clearly that he will respond with overwhelming force. In the

latter cases, the message can be communicated through exercises demonstrating the capability to respond, as well as by direct and unambiguous communication. Indeed, coupling the two may make for the most powerful deterrent.

Similarly, the extent to which one nation should be transparent or secretive will vary with the specific situation. As a general rule, one may want to be more secretive when his capability or will may be inadequate, and he should be more transparent when he is more confident in his ability to act decisively.

When to communicate is also an important aspect of the message to be conveyed. It is difficult to know from historical situations what effect the timing of communications may have had on some action. Strategic games, such events as movements of British forces to Kuwait in 1961, and apparently the prelude to the Gulf War and the October 1994 U.S. deployment to the Gulf to counter threatening Iraqi troop movements, all suggest that movement of forces when a crisis appears imminent, perhaps together with verbal communications, has a more powerful effect than forces that remain in their pre crisis posture, however powerful the latter may be. In the Cold War, heightening of alert status of forces had a similar effect. This observation simply conveys that communication need not be only verbal; the key is to make the message understandable, and to time it properly, and to make certain that it has been received and understood.

Perceptions

One nation's perceptions of what it takes to achieve effective deterrence may be different from the perceptions of those it is trying to deter. This possibility places a priority on understanding the other party, particularly in terms of vulnerabilities and needs. It is also necessary to judge the propensity of opposition leaders to take risks. Calculating what constitutes unacceptable losses for a particular opponent is quite difficult. North Vietnam, for example, demonstrated an exceptional willingness and ability to sustain heavy losses; although deterrence was not an explicit part of U.S. strategy in Vietnam, dissuading the North Vietnamese from continuing the war by punishing them and thereby inhibiting their ability to pursue the war was a part of that strategy, even though it was largely unsuccessful.

Cultural and perceptual blind spots also present a danger in developing a strategy involving deterrence. Unfortunately they usually become apparent only after a disaster. Additionally, they may be peculiar to leaders, attendant on their political positions and the attention they must give to various internal constituencies. As a minimum, a nation should assume that the rest of the world, including allies and potential adversaries, do not think as it does. Another nation may be more willing to sacrifice human life to achieve certain goals; they may be willing to suffer more damage than one would in a similar situation; they may hold dear things that one would not, and vice versa. Bridging such fundamental gaps requires concerted efforts to understand the perspectives of all the parties with stakes in a situation.

Intelligence

There is a need for much enhanced intelligence and better means of interpreting intelligence data. The earlier a potential problem can be identified, the wider the range of options for action and the more likely that the problem may be deterred or deflected. Policy makers cannot avoid paying more attention to specific current events than to the distant future. Thus, there is a need, in association with an enhanced intelligence capability, for a recognized, high-level body of "strategic warriers," experts having a diversity of views and approaches, who can look at the more distant future and identify issues that need to be addressed as far upstream as possible. Once such problems are identified, timely and accurate intelligence, interpreted in light of the strategic issues related to a country's national interest, is required to support strategies of deterrence. Such information will have to be developed on a worldwide basis and address the full range of capabilities, vulnerabilities, intentions, and likely perceptions of potential problem threats in a region.

TYPES OF DETERRENCE

Extended Deterrence

"Extended deterrence" refers to the umbrella extended over to a nuclear power's allies to protect their homelands, as well as its own, from attack. In the Cold War, extended deterrence referred mainly to nuclear attack, nuclear attack and conventional attack in NATO Europe were, by design, not decoupled from each other in deterrence policy. Extended deterrence also serves to obviate the need for the allies to develop nuclear weapons capabilities of their own. Germany and Japan, for example, could easily (in a technical sense) develop nuclear weapons but instead rely on a close security relationship with the United States. However, the spread of nuclear weapons and other weapons of mass destruction to smaller states, and neighboring rogue states, could change those states' perceptions of need for their own weapons. Thus, although the drift of events and world power structures appears to favour reserving nuclear weapons to be used only to deter the use of nuclear weapons, including their use in extended deterrence, their potential use as a deterrent against conventional attacks in some future circumstances cannot be totally ruled out. In this case however, by necessity or by design, ambiguity should be preserved until the need for a decision in a specific situation appears.

Existential Deterrence

"Existential deterrence" simply means the existence of powerful forces that a potential challenger knows can be brought into action if the need arises. In connection with existential deterrence, however, nuclear weapons play a special role. They provide existential deterrence whether they are actually deployed or not. Nuclear weapons have been given credit by some for having produced the longest absence of all-out world war in recent history. This role of nuclear weapons might even continue in the form of "virtual extended deterrence," since most industrial nations could regenerate nuclear weapons in a period as short as 1 or 2 years if an extended worldwide conflict were to occur again.

Unilateral and Multilateral Deterrence

Unilateral deterrent capabilities are attractive because they provide more freedom to act, they have simpler requirements than multilateral actions do and thus can be undertaken more quickly, and they are likely to be more secure, with preparations that can be undertaken in secret. However, "mutual deterrence" of one party by another has lost much of its meaning with the end of the Cold War. The objects of deterrence—the "deterrees"—are less easily foreseen.

Multilateral deterrence offers compensating advantages. Most importantly, a widely shared effort may be perceived as overwhelming. Also, with a shared burden, the cost of deterrence is lower for each party. Furthermore, a multilateral effort is more legitimate in international perceptions than are unilateral efforts, particularly when it includes states from different regions and cultures. A broadly based coalition also may be less vulnerable to attacks by the party to be deterred, and it would allow a wider variety of potential responses. Unilateral deterrence and multilateral deterrence are not always mutually exclusive; unilateral actions can be used to stimulate or to complement multilateral actions.

A difficulty with multilateral deterrence, illustrated in Bosnia, is that it would be more constraining. Achieving agreement within the deterring coalition as to when and how to react to provocation could be more difficult, thus potentially presenting many opportunities for the aggressor to play on individual coalition members' special interests, and so to divide the coalition or force it into inaction. In this respect, regional coalitions of nations that have a commonality of interest in a specific situation, such as NATO during the Cold War, will prove more powerful than generalized coalitions such as the United Nations.

Escalation

A major problem for deterrence is dealing with incremental, threatening steps taken such that each one may not warrant a major response, but which cumulatively will result in a situation we want to deter. Taking a massive punitive action in anticipation of a possible but not certain outcome toward which only a first small step may have been

taken, will raise public concerns and objections that can have undesirable domestic and international political consequences. A related problem involves a kind of counter-deterrence when an opponent raises the stakes to a level we find unacceptable.

No First Use

During the Cold War, the United States was under pressure from the Soviet Union and China to adopt a policy of "no first use" of nuclear weapons. Subsequently, however, Russia abandoned this public policy position, although China and other states still call for such official statements on the part of all nuclear powers. Many argue that a no-first-use policy is not credible, nor is it binding. For example, nuclear weapons may be used in "defense-of-last-resort" circumstances by weaker countries under mortal attack by powerful neighbors.

The United States has offered some assurances to the effect that such weapons will not be used against non-nuclear weapons states that are Non-Proliferation Treaty (NPT) signatories other than in circumstances such as alliance with another nuclear power.

The Indians have adopted a policy of No First Use in their Nuclear Doctrine.

NUCLEAR VS CONVENTIONAL DETERRENCE

Nuclear deterrence differs contextually from conventional deterrence. That is, whereas conventional deterrence is inextricably linked to defence, nuclear deterrence seeks to distinguish between the two. Conventional deterrence is premised on denial and/or punishment. In the second instance, you seek to deter by making the cost of the undesired action far outweigh any contemplated gain. In the first instance, you deny the other side the achievement of its military/political goals — which is operationally the same as defence — where you build up your war-fighting capability to a level where the enemy knows it cannot use military force to achieve its ends. But, even in the case of deterrence by denial, if conventional deterrence fails, states have the usable military capability to punish the opponent in a viable fashion.

However, in the case of nuclear deterrence, the focus is on punishment, which may well be so devastating that it makes the political ends irrelevant, if operationalized. One is seeking to deter the act by threatening severe reprisal, rather than preparing to deny military success to the enemy once hostilities have begun; but these are reprisals that one hope will never need to be operationalized. Yet, at the same time, nuclear deterrence strategy has a dialectical dimension in that it has had to deal with this notion of deterrence - by threat of punishment — alongside the issue of defence as well.

CRISIS STABILITY, GENERAL STABILITY AND DETERRENCE

Much of the literature on defence policy has concentrated on crisis stability, i.e. the notion that it is desirable for both sides in a crisis to be so secure that each is able to wait out a surprise attack fully confident that it would be able to respond with a punishing counterattack. In an ideal world, because of its fear of punishing retaliation, neither side would have an incentive to start a war no matter how large or desperate the disagreement, no matter how intense the crisis. It is also believed that crisis stability is 'delicate': easily upset by technological or economic shifts.[4]

There is a more general form of stability, on the other hand, that is concerned with balance derived from broader needs, desires and concerns. It prevails when two powers, taking all potential benefits, costs, and risks into account, greatly prefer peace to war, in the extreme, even to victorious war, whether crisis stability exists or not. For example it can be said that general stability prevails in the relationship between the United States and Canada.

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A telephone conversation between the two antagonists finally defused the crisis. A nuclear threat is believed to have been issued to India during the nuclear on January 28,1987 by Pakistan's head of the uranium enrichment facility at Kahuta, Dr. A.Q. Khan during the course of an interview to a prominent Indian journalist, Kuldip Nayar, in the presence of a well-known Pakistani journalist, Mushahid Hussain. Apparently, Khan informed the two journalists that Pakistan had enriched uranium to weapons-grade and affirmed that a nuclear device could be tested by simulation techniques. He then added, "Nobody can undo Pakistan or take us for granted. We are here to stay and let it be clear that we shall use the bomb if our existence is threatened."[15]

This course of events is extremely unusual, but its veracity remains shrouded in mystery, since Khan later denied its contents. Doubts in this regard have been strengthened since "much of the interview, though not its most provocative passages, was an un-attributed, nearly verbatim repetition of an article Khan had written six months earlier in the Karachi English newspaper, Dawn."[16]

Moreover, the crisis had peaked on January 26 when Pakistan agreed to send an official delegation to New Delhi for negotiating the withdrawal of troops from the border. Large exercises in India and Pakistan, including those held in sensitive areas, need not precipitate a crisis, but this occurred as no details of the exercise had been provided by India; neither was there a modicum of trust obtaining between the two countries. Its original setting having an East-West orientation, which Pakistan found highly disquieting, heightened the danger that this exercise could have transformed into a military operation. There is a sensational account that the then Indian Army Chief, General Sundarji, "had a secret plan to use Brasstacks to provoke Pakistan into war. It was to begin with a feigned attack at Khaplu in Pakistani Kashmir But the real plan was to attack Pakistan's Punjab and cut off its access to Sindh. The objective was to pulverize Pakistan before its nuclear capability matured and made it nearly impossible for India to wage a massive conventional battle without risking an atomic war." [17]

In early February, opposition politicians called on the Pakistani government to pursue a jihad (holy war) in Kashmir, and one urged it to build nuclear weapons in order to meet the Indian threat. Robert Oakley, the U.S. ambassador to Islamabad at the time, remembers that although the initial popular uprising in Kashmir was "primarily spontaneous," the Pakistani government "began to take a more active role in support of the Kashmiri protests. Training camps of various kinds multiplied . . .. There were more people and more material going across the border from Pakistan into Kashmir."[28]

Several Indian moves in early 1990 led observers to speculate that New Delhi was raising its nuclear profile, perhaps to send a deterrent message to Pakistan. Two V.P. Singh appointments--Raja Ramanna as minister of state for defense, and P.K. Iyengar as chairman of the Indian Atomic Energy Commission--put prominent nuclear scientists into senior government posts. In February, Singh "said India would have to review its peaceful nuclear policy if Pakistan employed its nuclear power for military purposes." He also "told newsmen that Pakistan's going nuclear would bring about a radical change in the security environment in the region. If this were to happen, 'we will have to take stock of the situation and act accordingly'." An influential nuclear trade publication suggested that Singh's appointments and public utterances meant that India was increasing its nuclear preparedness.[29]

The Indian Army's chief concern, according to then-COAS V.N. Sharma, was to stem the infiltration of Pakistan-backed Sikh and Kashmiri "terrorists," who threatened to overwhelm local Indian police forces. Sharma told an interviewer in 1993: "Terrorist groups backed by agencies in Pakistan were able to attack railway stations and vital installations which could affect any military movement on our side. . . . Therefore, there was need for the Indian army to go in there to take care of the communication lines and other bottlenecks so that if there was a military flare-up, we could conveniently move our fighting forces from locations deep in the country to the border areas."[30]

Indian military planners were also concerned about residual deployments of Pakistan Army forces after a late 1989 military exercise called Zarb-i-Momin. According to Beg, these maneuvers tested a new Pakistani strategy: "In the past we were pursuing a

defensive policy; now there is a big change since we are shifting to a policy of offensive defence. Should there be a war, the Pakistan Army plans to take the war into India, launching a sizeable offensive on Indian Territory." [31] After the exercise was over, the Indian COAS Sharma said, "we found that these troops were not going back to their peace stations, but they were staying on in the exercise area which is quite close to the international border and the cease-fire line in Jammu and Kashmir." New Delhi believed "Pakistan was keeping troops ready as a back up support to the increased terrorist activities, in Indian Territory, across the border and could take full advantage of terrorist successes to support military intervention."

Further south, according to Sharma, the Indian army in February sent two new tank units for training at its field firing range at Mahajan, in Rajasthan. With Brasstac' fresh in their minds, Pakistani planners grew alarmed that the Indian armored ur' Mahajan were "ginning up another large exercise of that nature, or, indeed, pre launch an attack from the training range."[32] Sharma told U.S. Ambassador W ark that the Indian Army could not launch an effective offensive against from Mahajan, and the U.S. embassy staff concurred. Clark's air attac' . John Sandrock, remembers "what was unusual from our perspective w eployment of additional troops in Kashmir as a result of the reported cross infiltration from Pakistan into Kashmir and then along the border, south thro ie rest of Jammu and Kashmir and into the [Indian state of] Punjab." Accordi o Sandrock, there was no evidence that this deployment included tanks and artille hich appeared to corroborate Indian claims that the "buildup of forces on the order was to prevent cross-border infiltration and did not constitute a buildup of fo es preparing for any hostile action against Pakistan." U.S. military attaches in New Delhi took the first of several reconnaissance trips in February, confirming their impression that Indian forces were not preparing for an offensive military thrust. U.S. attaches in Islamabad undertook a similar series of fact-finding missions on their side of the border in February, also finding little unusual military activity. Of special importance, one of the attaches noted, was that the two Pakistani strike corps were not on the move, and that the Pakistan Air Force's forward operating bases were not opened.[33]

Meanwhile, the war of words between India and Pakistan escalated. On March 13, Bhutto traveled to the Pakistan-held area of Kashmir, where she promised a "thousand-year war" in support of the Kashmiri militants. V.P Singh quickly responded that India would react decisively against Pakistani intervention in Kashmir. "There should be no confusion," he told the Indian parliament. "Such a misadventure would not be without cost."[34] In early April, the BJP's national executive committee passed a resolution urging the Indian government to "knock out the training camps and transit routes of the terrorists."[35] Congress leader and former Prime Minister Rajiv Gandhi added to the clamor by urging the government to take "some very strong steps on Kashmir." He added: "I know what steps are possible. I also know what is in the pipeline and what the capabilities are. The question is, does the government have the guts to take strong steps?" On April 10, Singh made an extraordinary speech, warning Indians to be "psychologically prepared" for war. Addressing Islamabad, he said: "Our message to Pakistan is that 'you cannot get away with taking Kashmir without a war'. They will have to pay a very heavy price and we have the capability to inflict heavy losses." Singh responded to Bhutto's threat by saying that "those who talk about 1000 years of war should examine whether they will last 1000 hours of war." As if to dispel any notion that Pakistan's nuclear weapon capabilities would give Islamabad a deterrent umbrella under which to carry out offensive operations against India, Singh said that if Pakistan deployed nuclear weapons, "India will have to take a second look at our policy. I think, we will have no option but to match. Our scientists have the capability to match it."[35]

On April 11, Pakistan's army chief convened a meeting of his corps commanders to carry out a "detailed threat assessment." Beg told his subordinates that India had deployed a strike force of up to 100,000 men within fifty miles of the border in Rajasthan. He was referring to the Indian army units that were on winter exercises in the Mahajan area, which Pakistani officials now declared extended. They estimated that the Indian units were deployed in such a way as to "halve India's normal mobilization time to one week." In addition, Islamabad noted that New Delhi continued to move military forces into Kashmir. One reporter wrote: "The concern in Islamabad is that India might be preparing an attack on Pakistani Kashmir on the pretext of destroying Kashmiri

'freedom fighter' training camps. There is also concern that a simultaneous attack might be launched into Sindh province, where the only road and rail link between north and south Pakistan is located about 40 km from the Indian border."

Indian officials confirmed that they were putting more men and arms into Kashmir. Diplomats in New Delhi "said forces on both sides of the border were on a higher than normal state of alert, but several levels lower than would indicate imminent hostilities."[36] Western military analysts reported no major troop mobilization near the international frontier, but speculated that by extending their exercises, Indian military planners may have positioned tanks and heavy artillery near the border. In the words of one analyst, "everything the Indians have been doing fits under the category of defensive preparedness, but some of it is ambiguous." In the meantime, sentiment was growing among influential Indians for offensive strikes against Pakistan. The Indian home minister argued that war "would be fully justified if the objective of freeing Kashmir from the stranglehold of the secessionists was achieved." BJP leader L.K. Advani warned that Pakistan would "cease to exist" if it attacked India. Despite severe domestic political pressures, however, "the Indian military leadership deliberately refrained from moving armor associated with its strike forces out of peacetime cantonments," and Pakistan "deliberately refrained from moving its two strike corps to the front."

Throughout the spring, Washington had grown increasingly alarmed over the escalating Kashmir crisis. U.S. concern crystallized in the middle of May with the visit to South Asia by Deputy National Security Adviser Robert Gates. In his May 20 meeting with Ghulam Ishaq and Beg, Gates made the following points: Washington had thoroughly war-gamed the Indo-Pakistani confrontation, and Pakistan was the loser in every scenario; in the event of a war, Islamabad could expect no help from Washington; and Pakistan must refrain from supporting terrorism in Indian-occupied areas of Kashmir, avoid threatening military deployments, and tone down its war rhetoric.[37]

In New Delhi, Gates met with Singh, Sharma, and other Indian leaders. In these meetings, his message was similar: India must avoid provocation that could spiral out of control. In sum, according to one official, the gist of the message to both sides was that

war would be to neither side's advantage. India would win, but even if it did, the long-term costs would exceed any short-term benefits. In early June, India announced that the armor it had sent to the Mahajan range in February would be returned to its normal station. Within two weeks of the Gates mission to South Asia, the crisis passed.

Seymor Hersh reports that as the Kashmir crisis intensified, Pakistan responded to India's movement of military forces to Kashmir and Rajasthan by preparing to attack India with nuclear weapons. Specifically, he contends that:

Sometime in the early spring of 1990, intelligence that was described as a hundred per cent reliable--perhaps an NSA intercept--reached Washington with the ominous news that General Beg had authorized the Pakistan Atomic Energy Commission to put together nuclear weapons. Such intelligence, of "smoking gun" significance, was too precise to be ignored or shunted aside. The new intelligence also indicated that General Beg was prepared to use the bomb against India if necessary. Precisely what was obtained could not be learned, but one American summarized the information as being, in essence, a warning to India that if "you move up here"--that is, begin a ground invasion into Pakistan--"we're going to take out Delhi."

Washington subsequently increased its satellite coverage of South Asia, which "sometime in May" yielded "photographs of what some officials believed was the evacuation of thousands of workers" from Pakistan's uranium enrichment installation at Kahuta. One analyst told Hersh that he thought that in the event of an Indian ground thrust into Sindh, Pakistan would "cut it off with a nuke. We thought they'd go for Delhi." This analyst continued: "We thought the reason for the evacuation of Kahuta was that they expected a retaliatory attack by India." Soon thereafter, U.S. intelligence produced signs of a truck convoy moving from a suspected nuclear storage site to an air force base in the western Pakistani province of Baluchistan. Eventually, the same analyst told Hersh, U.S. intelligence indicated that Pakistan "had F-16s pre-positioned and armed for delivery--on full alert, with pilots in the aircraft. I believed that they were ready to launch on command and that the message had been clearly conveyed to the Indians . . .. These guys have done everything that will lead you to believe that they are locked and loaded."

CIA official Kerr told Hersh: "There's no question in my mind that we were right on the edge. This period was very tense. The intelligence community believed that without some intervention the two parties could miscalculate--and miscalculation could lead to a nuclear exchange." Indeed, according to Hersh, the Gates mission "defused what looked to be inevitable warfare."[38]

Since the publication of Hersh's article, his account of the crisis has been roundly criticized. Most damaging to his thesis have been the categorical denials of many of the key elements of his story by U.S. diplomats and military attaches posted in Islamabad and New Delhi during the spring of 1990. In particular, the U.S. ambassadors involved in the crisis decision-making, Oakley in Islamabad and Clark in New Delhi, directly contradict Hersh's central claims. Moreover, they strongly imply that Hersh manipulated the information he collected to highlight evidence that supported his thesis, and discount that which contradicted it. Other senior officials involved in the 1990 decision-making--U.S., Indian, and Pakistani--agree that, at a minimum, Hersh exaggerated the nuclear dimension of the crisis. Hersh also has his defenders, though, who contend that the dangers he describes were real, and that those who disagree with his assessment are themselves guilty of what one U.S. intelligence analyst calls "historical revisionism.

However, the ranking U.S. diplomats in Islamabad and New Delhi directly refute Hersh's allegations about Pakistani preparations to deliver nuclear weapons against India in 1990. Clark says, "From my side of it, I'm not aware of any of . . . them." Oakley and Clark deny knowing of any NSA intercept that Hersh claims may have indicated that the Pakistani leadership had authorized the assembly of nuclear weapons. Oakley says that invoking the Pressler Amendment "had nothing to do . . . at least so far as we knew, with the preparation or deployment of nuclear weapons. It had to do with other factors, which were required for certification." On the supposed evacuation of the Pakistani nuclear facility, Oakley says: "we know nothing about any evacuation of Kahuta." He further maintains: "So far as I can recall, we never had any credible evidence that the F-16s were fitted out to deliver a nuclear device; that Pakistan had a nuclear device that could be delivered by an F-16.... Nor did we know anything about any nuclear devices being moved from point 'x' to point 'y,' if there were any." Colonel Don Jones, the U.S. air force

and, hovering over it all, the two sides had the capability to inflict enormous damage against each other. Clark remembers that the Pakistanis made "slightly veiled threats" to the effect that "'we have something that will make you very sorry'." The Indians replied that "'if something happens, we will respond in the appropriate manner'." Clark says, "I know how to read that: 'we've got one too'." Beyond this, however, there was a distinct divergence of opinion within the U.S. government. On the more relaxed side of the ledger, the U.S. ambassadors in Islamabad and New Delhi saw little to indicate that war--either nuclear or conventional--was imminent. On the more alarmed side, Bush and his aides were hearing from the intelligence community that Pakistan had definitely resumed enriching uranium and that certain signs indicated possible Pakistani preparations for the delivery of nuclear weapons. Given these conflicting estimates, and the small but real possibility of a nuclear catastrophe in South Asia, Bush opted to err on the side of caution by sending a high-level U.S. delegation to help ease tensions in the region.

U.S. intelligence estimated that there was a 50-50 chance of war. As one former senior Bush administration official says, the U.S. view was that "there was a considerable chance of war. That said, no one could map out exactly what it meant. How serious it would go, how it might escalate, whether it would become a major conventional war, or something else; nobody knew exactly whether it would take place, much less how it might evolve." This official also recalls that Indian and Pakistani leaders "were not acting with sufficient sobriety. There was a little bit of recklessness in the air." Furthermore, he says.

I think for most of us who were involved, nuclear weapons formed the backdrop for the crisis.... the concern was not that a nuclear exchange was imminent; the concern was that this thing was beginning to spin out of control and that that would lead to clashes, potentially conventional warfare. Most of our analysis suggested that India would fare better than Pakistan, and that very early on; as a result, Pakistan might want to consider threatening . . . a nuclear action. Or, that India, thinking about that, would escalate conventionally very early on, to eradicate it.

According to this official, the Hersh article "exaggerated considerably the sense that there was kind of a situation where the nuclear trigger was cocked or something." Summing up the nuclear dimension of the crisis, Clark remembers: "There was a little bit of nuclear tension: 'don't threaten me with yours because I've got mine.' I don't think it went beyond that. Nobody was loading weapons." [42]

Nevertheless, both Indian and Pakistani leaders were adequately aware of the possibility of escalation of any conventional war over in the wake of the popular uprising in Kashmir, into a nuclear exchange with catastrophic consequences. The United States knew too that if the crisis is not nipped in the bud right from the start and allowed to follow its own course, it will inevitably get out of control with very dangerous repercussions for the world. This explains why Robert Gates was sent to cool tensions and it was partly due to the American intervention to control the crisis that it subsided. Thus, existential nuclear deterrence provides the most persuasive explanation of why New Delhi did not go on the offensive in 1990.

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mistaken. The nuclear factor in fact, worked in both ways, in encouraging the crisis and also in limiting the conflagration. The proponents of 'total war-no possibility' overlooked the chances of limited war as it happened in Kargil. The architects of Kargil strategy, much too carried away but the nuclear factor, assumed that a weak interim government in India will acquiesce to the Kargil seizure and avoid risking a full-scale war. They misjudged and underestimated Indian resolve and possible reaction to the intrusion and Indian Prime Minister Vajpayee resolve who was contesting an election campaign with nukes on top of his agenda.

LOCATION OF KARGIL AND GEOSTRATEGIC IMPORTANCE

The terrain around Kargil is amongst the most beautiful in the world. It is also amongst the most difficult to conduct military operations in. The Kargil mini- war was fought over an area extending from Drass to Kargil and Batalik, an area spanning about a hundred kilometers in length. Craggy peaks abound the region range in height from 13000 feet to 18000 feet, with the floor of the valleys at around 7000 feet. Each crest line is followed by another, with ravines in between, and there are frequent depressions (even along the crest line of one continuous feature), which could range from a few hundred feet in depth to a few thousand. Therefore, infantry attacks, unless backed by surprise, are an exceedingly costly venture. What is more, they are almost certainly doomed to failure. The extremely harsh and inhospitable nature of the terrain was the reason for the Indian troops taking a 'calculated risk ', leaving it unoccupied during winters, and returning at the advent of spring. What are referred to, as 'roads' in this mountainous terrain are usually tracks, which nevertheless can accommodate heavy traffic, including military vehicles. The tracks invariably run along valleys, in this case from Drass to Kargil fairly close to the heights. At Drass, the road curves right under the predominant heights, making the entire Main Supply Route (MSR) feeding the surrounding area (including Siachen) vulnerable to interdiction, even with small arms. Kargil is contiguous to Siachen and to the strategically important Pak-China border and the Karakoram and Khunjerab passes that link Pakistan to China.

GENESIS, EVOLUTION AND DEVELOPMENT OF THE CRISIS:

The Plan

Sometime around mid-November 1998, Lt. General Mahmud Ahmed, then commanding 10 Corps, Pakistan Army, sought an appointment with the Chief of Army Staff (COAS), General Pervez Musharraf, through the Chief of General Staff (CGS),Lt. Gen Aziz. When he went to see him the General Officer Commanding (GOC), Force Command of the Northern Areas (FCNA), Major General (now Lt. Gen) Javed Hassan, accompanied him. They sought permission to execute a plan, code name "Operation Badr", which had previously been shelved, to occupy terrain in the Drass-Kargil sector, along a 160 km stretch of the LOC, vacated by the Indians every winter. The rationale was that it would provide a fillip to the Kashmiri freedom movement. The plan was approved in principle, with instructions to commence preparations. Knowledge of this plan was to be confined to the four people present, for the time being. It is useful to interrupt the sequence of events here, in order to draw a brief pen-picture of these four principal actors in order to come to a better understanding of the Pakistani adventure in Kargil in which these characters played a prime role.

Gen. Pervez Musharraf: A sharp and intelligent artillery officer, he commanded infantry formations from brigade upwards, and held a large variety of staff and instructional appointments. A bold commander, who takes pride in being decisive, quick to take decisions and, therefore, a good commander of troops and keen to assume responsibility.

Lt. Gen. Mahmud Ahmed: Again an artillery officer, with a wide variety of experience. He was known to be sharp, intelligent and arrogant. So arrogant, in fact, that towards the end of his career it became overwhelming. A strong, forceful, decisive and highly ambitious individual, he was secular until he 'discovered 'the force of Islam late in life.

Lt. Gen. Muhammed Aziz: *Deeply* religious, but very balanced, he was born Kashmiri, and has served in some of the most rugged reaches of it at various stages of his career. He is strongly patriotic and deeply committed to the cause of Kashmir, but not to the extent that it might jeopardize Pakistan. He is intelligent, sharp, very balanced, progressive and dynamic.

Major General Javed Hassan: A highly intelligent and well-read officer, he is more of an academic than commander, and bears that reputation. He, therefore, was the only one with point to prove.

While preparations for executing the plan began in November/December 1999,the subject was casually broached with Prime Minister Sharif at some point in December. He was presented with the same argument that the freedom struggle in Kashmir needed a fillip, which could be provided by an incursion into these (temporarily unoccupied) territories. Sharif, accepted the statement at face value. The military leadership had not presented a complete analysis of the scale of the operation or its possible outcome, nor had they set out its political aim and how it would be achieved. At this stage the rest of the army was unaware of plans for the operation (as indeed were the Chief of Air Staff [CAS] and the Chief of Naval Staff [CNS] too),and preparations proceeded in secret. The operation was, perhaps, not intended to reach the scale that it finally did. In all likelihood, it grew in scale as the troops crept forward to find more unoccupied heights, until finally they were overlooking the valley. In the process, they had ended up occupying an area of about 130 square kilometers over a front of over 100 kilometers, and a depth ranging between seven to fifteen kilometers. They were occupying 132 posts of various sizes. Whereas the total number of troops occupying these posts never exceeded 1000 (from all ranks), four times this number provided the logistical backup to undertake the operation. While the occupants were essentially soldiers of the Northern Light Infantry (NLI) under the FCNA, there were some local *Mujahideen* assisting as labor to carry logistical requirements. It was at this stage, in March 1999, that the leadership of the army was apprised of the operation and the Military Operations (MO) Directorate in GHQ was tasked to evolve a strategic operational plan, which would have

military aim to fulfill a political objective. Given the fact that they were developing a plan to justify an operation already underway, the response was no less than brilliant. Given the total ratio of forces of India and Pakistan, which was about 2.25:1,2 the MO concluded that the initial Indian reaction would be to rush in more troops to IHK, further eroding their offensive capabilities against Pakistan. As a consequence, they concluded that India would not undertake an all-out offensive against Pakistan, since by doing so it would run the risk of ending in a stalemate, which would be viewed as a victory for Pakistan... The political aim underpinning the operation was 'to seek a just and permanent solution to the Kashmir issue in accordance with the wishes of the people of Kashmir '. However, the military aim that preceded the political aim was 'to create a military threat that could be viewed as capable of leading to a military solution, so as to force India to the negotiating table from a position of weakness '. The operational plan envisaged India amassing troops at the LOC (Line of Control) to deal with the threat at Kargil, resulting in a vacuum in their rear areas. By July, the *Mujahideen* would step up their activities in the rear areas, threatening the Indian lines of communication at pre-designated targets, which would help isolate pockets, forcing the Indian troops to react to them. This would create an opportunity for the forces at Kargil to push forward and pose an additional threat. India would, as a consequence, be forced to the negotiating table. While it is useless to speculate on whether it could in fact have succeeded, theoretically the plan was faultless, and the initial execution, tactically brilliant. The only flaw was that it had not catered for the 'environment '. Quite clearly, it was an aberration to the environment, and the international reaction soon left little doubt of that.[1]

Soon thereafter, the first formal briefing of the entire operation was made for the benefit of the Prime Minister in April, in the presence of the other services. Since the CNS was on a visit abroad, the navy 's reaction was voiced cautiously, but the CAS was openly critical and skeptical of the conclusion that India would not opt for an all-out war. He also voiced the view that in the event of war, the air force would not be able to provide the support that the army might seek.

Clinton asked Sharif if he knew how advanced the threat of nuclear war really was and did Sharif know that his military was preparing their nuclear-tipped missiles? Sharif seemed taken aback and said only that India was probably doing the same. The U.S President reminded Sharif how close the U.S. and Soviet Union had come to nuclear war in 1962 over Cuba. Did Sharif realize that if even one bomb was dropped . . . Sharif finished his sentence and said it would be a catastrophe.

Under intense pressure, Sharif agreed to order a withdrawal from Indian-controlled Kashmir, defusing the conflict and the immediate potential for a nuclear exchange. Pakistan was also forced, as a consequence of the events, to agree to respect the sanctity of the Line of Control in Kashmir. Thereafter, India used the Kargil misadventure by Pakistan as a linchpin of its allegations of cross-border infiltration. President Clinton however, only promised to take "personal interest" in resolving the Kashmir dispute, which Sharif used to save his face domestically and he claimed it was a major gain by Pakistan as the U.S President had been committed to intervening and mediating in pressurizing India to resolve the Kashmir dispute, which as we now know, never happened. The crisis was over by 19 July, 1999. India was jubilant, Pakistan morose. The fighting had taken a toll. Estimates of the dead on both sides vary. Indians usually claim 1300 killed on both sides, Pakistanis cite around 1700. As soon as the Pakistani forces were back across the LOC Clinton pressed India for a cease-fire in the Kargil sector.[2]

IMPACTS OF KARGIL CRISIS ON INDIA AND PAKISTAN

Kargil crisis exposed the military vulnerability of India along the LoC Line of Control especially in the northern sector. According to India's own estimates, the number of the intruders was in several hundreds. They did not possess the weaponry of a regular army since they were only a guerilla force. To throw out the small numbers of intruders, India deployed a force of over twenty thousand or more regular troops, including some elite commandos, backed by heavy artillery (over 170 155mm Bofors Self Propelled guns) and the latest aircraft of the IAF (Mirage 2000s, SU-30s, Mig-27s). During the

fighting, the Indians made painfully slow progress. Two months into the conflict, the Indians had made only limited military gains on the ground. The eviction of the Mujahideen was eventually secured through a political decision. In the process, the Indians suffered heavy losses. That clearly raised questions about the quality of the Indian military and its morale, despite all the hype generated by the Indian media.[3]

Moreover, India paid a heavy financial price for its military campaign, probably running into billions. It lost at least two aircraft and one helicopter. The reported cost of firing one shell from a Bofors gun in use of the Indian army was about 1000 US dollars, thousands of which were fired , and the Indian army ran out of spares and shells for the Bofors, and had to buy them at hefty prices in the international market.[4]

The morale of the Indian Army was very low throughout the Kargil crisis due to a variety of reasons, as they faced military defeat against the Mujahideen. The Indian demoralization was evident in the number of official contradictions which came out at the highest official levels, while the civilian officials said one thing, the Army sources said another.[5]

Nothing had been more illustrative of Indian demoralization than the manner in which it first made hue and cry that its Islamabad based Defence Attaché was not permitted to visit POW Flt.Lt. Nachiketa, the Indian pilot who ejected to safety on the Pakistani side after his plane had been hit by Pakistani fire. When he was allowed to do so, it was the fanfare of taking a birthday cake for the young prisoner pilot. Yet few days later, when Flt. Lt. Nachiketa was released as a unilateral gesture of goodwill by Pakistan, no one, not even the Defence Attaché turned up to receive their own pilot, the reason being that they did not want to be publicly seen receiving their prisoner pilot back.[6]

Jasjit Singh, Director of Institute of Defence Studies and Analyses (IDSA) said: " Kargil represents the failure of India's conventional military deterrence".[7] Indian Army Chief , General V. P. Malik emphasized: " the reason for the delay in striking decisively in Kargil was that the forces were ill-prepared for such an offensive. Preparedness is not a light switch that you can turn on and off at will, it needs time and planning."

The Indian army morale remained low because of losses, including the loss of self esteem, suffered during the battles in Drass and Kargil sector at the LoC, and also because of the lack of high-tech equipment, lack of satellite images, RPVs (Remotely Piloted Vehicles), surveillance helicopters, specialized troops, and mountaineering equipment and winter clothing."[8]

An inquiry Committee was set up later that made a comprehensive report on the Indian failure in Kargil which detailed its recommendations in the "Kargil Review Committee Report".

The Kargil incident occurred at a time when there was no elected government in India. At that time, Kargil was an invasive shock which had to be handled by the caretaker government.[9] The BJP did not want to treat Kargil as an issue on the political chess board but as a harsh reality to be pondered over in a sober manner and the Prime Minister suggested that it should be kept out of partisan debate. The BJP had engaged in a national debate on how Kargil should not be a partisan issue and a host of its leaders had participated. The BJP diplomatically dealt with Kargil, the country had been put through an emotional ordeal through the electronic media for an unusually long period.

The contradictory statements by Indian leaders like Advani, Fernandes and Brajesh Mishra on Kargil, compiled and transmitted around the world on the internet, provided ample evidence of confusion at the highest levels of decision making. There was excessive dependency on diplomacy to impress the nation about the growing respect for the Indian position , but there was extreme reluctance to face not only the opposition , but even the Parliament. That was the reason why the consultation process with the political parties was deferred for long and the door was decisively shut on a session of the Rajya Sabha. The fear of criticism and searching questions by the law makers only showed to the world that there was a lot to hide and the county was really not united.[10] Prime Minister Vajpayee presented the withdrawal of the Mujahideen from the Kargil peaks as a major success of his government, while the major opposition Congress Party termed it as complete negligence and failure on the part of the government and intelligence agencies.[11] The BJP and its National Democratic Alliance portrayed *Kargil* as the greatest success of the Vajpayee Government, a success big enough for the voters to ignore the BJP led coalition's rather patchy record in office. More than blowing their Kargil trumpet, the BJP and its allies were bound to portray the Congress and the Communists in bad light for allegedly not supporting the Vajpayee Government during the conflict. BJP accused the Congress of undermining the morale of Indian troops in Kargil.

The political opposition had also begun to sharpen its attacks against the BJP-led caretaker government. The Congress strongly criticized the government handling of the Kargil crisis. According to an internal report of the Congress Party, "BJP had mishandled the situation since the beginning of the crisis."[12] The main points of the report are:

1. The Military Intelligence (M.I.) had reports of two visits of General Pervez Musharraf to Skardu in the last three months before the Kargil crisis, an unusual frequency for the Army Chief during the period when the infiltrator's game plan was put into effect. The military establishment ought to have followed up on that clue with greater intensity.
2. The Lahore Declaration was taken more sincerely that it ought to have been and as a result an entire brigade was withdrawn along the border just after the Lahore trip.
3. The defence minister and Army headquarters were speaking in different voices on developments of operations in Kargil. Heated verbal exchanges were reported to have taken place between Lt. General Krishna Pal, the GOC 15 Corps and Jammu and Kashmir Chief Secretary Ashok Jaitley over the Kargil situation.
4. The Joint Intelligence Committee which was supposed to collate information from the various agencies and provide assessments to the cabinet had been dormant for a year and was burdened by the additional task of being the Secretariat of the National Security Council.[13]

A very senior Congress leader said: " The Kargil episode has been the product of sheer incompetence ,operational as well as political. The BJP government has to answer for the loss of so many precious lives and resources suffered by the country. All that was entirely due to their failures.

All opposition Parties, especially the Congress launched a massive critique against the BJP-led caretaker government, the BJP succeeded in diplomatically sustaining the advantages from the conflict in Kargil. Government had raised tensions to a dangerous point at the LoC in order

to deflect the attention of the Indian people from the humiliation that their army had suffered at Kargil. So the common perception in India after the conclusion of Operation Vijay was that the *status quo ante* along the LoC had been restored, whatever the cost incurred in the process, and Vajpayee had been praised for the restraint he practiced during the Kargil conflict.[14] Before the elections of 1999, a BJP-led coalition looked some what better placed than a Congress-led, because of the Kargil issue as the BJP's popularity had increased. The Kargil issue loomed large over the Indian elections and carried Atal Behari Vajpayee to the victory stand and the BJP and its allies won the majority of seats. Before elections, the BJP was in government, and it was unstable with internal disputes. There were indicators that the BJP may lose the elections, but when the hostility began at Kargil, BJP government projected a war like situation to gain sympathy from both internal and external audience and welded a grand 24 parties alliance, which helped it win the elections, even though its vote bank had shrunk from the last elections.

The Kargil operation may have been launched by Pakistan with specific aims. But in that process, those who had masterminded that grand operation did not take into account its feasibility. They thought that the Kashmir issue would be internationalized and the situation would be ripe to bleed India, in Siachen and Laddakh. The manner in which the world reacted to that operation discredited Islamabad's stand on that issue. In the end, the threat of full-scale war with India created conditions for Pakistan's retreat from the policy it had adopted on the Kargil issue since the middle of May, 1999. The Nawaz-Clinton talks and the issue of Pak-US Joint Statement in the Washington Declaration proved the reality that the entire operation was a fiasco.

The whole Kargil episode was a reflection of misunderstanding and mishandling. Falling into the trap laid by the Indians to build up the image of being a terrorist supporter of the crisis, the Pakistani government kept on harping on the wrong theme. Their attempt to act straight and be supportive of the Kashmir cause was first ridiculed by the Indians, and later rebuffed by the Americans. Pakistan's Kargil policy failed because it was ill planned and the worse case scenario had not been conceived by the Armed Forces, and had given the impression that the operation was plagued by an unreliable and weak political leadership and therefore unsuccessful.[15]

The Washington declaration shocked the national polity and naturally resulted in a manner of accusations and insinuation being case against the political leadership. The reaction of the opposition political parties in Pakistan was as expected. They welcomed the Kargil fiasco as an opportunity to launch a nation-wide movement to dislodge the Nawaz government, while the Pakistan People's Party (PPP) did not question the Washington Declaration out of fear of upsetting the U.S, it criticized Sharif on launching an imprudent plan in the first place. The religious/nationalist parties on the contrary condemned Sharif as a traitor for selling out the Kashmir cause in Washington. None, however, criticized the military as they realized that at some stage of their current movement against Sharif's ruling PML-N , the role of the army might prove crucial. They said it was the Prime Minister, who as the Chief Executive of the country, was eventually responsible for whatever happened in Kargil.

The problem with government leaders and officials was an obsessive desire to prove that, "all is well and that everything is in control". They feared that any admission of failure or lack of progress would perhaps

damage or destroy their careers. Hence, every visit was described as a success and everything was said to be going Pakistan's way. Unfortunately that could hardly be so.

Although there existed bodies such as the Defence Committee of the Cabinet (DCC) and the Defence Council, designed precisely to formulate consensual defence policies and military policies respectively, the ruling regime's style of governance had rendered them dysfunctional. Mr. Nawaz Sharif virtually ensured his political demise, when he quested for absolute power. His love-hate" approach toward India, epitomized as it was by the polar-opposite moves of the February 1999 Lahore Summit on the one hand and the May-July 1999 Kargil episode on the other, especially the controversial withdrawal of troops from Kargil, only compounded his domestic difficulties as it had made him look increasingly indecisive, irresolute and capricious in the eyes of the public.[16] So on 12 October, 1999 when Nawaz Sharif's government was dismissed by Army Chief General Musharraf, there was no public outcry against the coup, which clearly showed that the Nawaz Government had lost its popular support after the Kargil crisis.

The military leadership had also failed to apprise Nawaz Sharif of the politico-diplomatic fallout and he characteristically made no effort to analyze this aspect. The international pressure was becoming unbearable and, when the posts at Drass fell, he began looking for an escape route, not appreciating the military causes of battle, which the army made no effort to explain. Sharif was very worried about the reaction of the military leadership, realizing that a withdrawal might result in his ultimate ouster. He responded by dispatching his brother, Shahbaz Sharif to Washington before the coup, where he succeeded in getting the U.S administration to issue a warning that it would regard a military coup in

Pakistan as unacceptable. Not only did this serve to warn the military leadership of the Prime Minister's fears, it also shed some light on the possible course he might pursue later. The Indian leadership had been offering Sharif an 'out'- a statement by him that the Pakistan Army had undertaken the operation without political sanction. Had he accepted this offer in time, he might have survived (even though it would have made him look foolish). He lacked the political acumen , however. When he finally accepted the offer-after being forced from power, he found few believers. During the last briefing in late June, the COAS, General Musharraf, told Sharif that, while the military did not believe that India would succeed in ousting Pakistani troops and the Mujahideen from the posts they were holding, the Army would pull back if the government so desired. After some frantic telephone calls by Sharif to U.S President Clinton, in which he conveyed his desperation at the course of events, he went to Washington. He met Clinton on 4 July, and armed with guarantees of his support, returned to announce the withdrawal of the 'freedom fighters' occupying Kargil. Sharif was still apprehensive, however, and also uncertain of his ability to survive his decision to pull back. Had he been otherwise, things might have continued more or less as normal, and the Pakistani people may still be saddled with him. Instead, he began to call upon the COAS to proceed against the principal actors in the Kargil episode and get rid of them. He also convinced Mr.Niaz Naik give an interview to the BBC stating that India and Pakistan had been working towards a peaceful solution of Kashmir, which was hijacked by Kargil. Musharraf resisted, believing that if heads were to roll, his would be the first. Sharif's plot to get rid of him was unsuccessful , and the rest is history. Sharif was deposed and Musharraf assumed the mantle of leadership. The military takeover was ' written on the walls of Kargil'. Even if Sharif had succeeded in his endeavors to oust Musharraf, he could

wars can entail high levels of violence and are consequently quite problematic, they do not involve an organized application of military force in the way that limited wars invariably do. Organized applications of force bring in their wake the potential for escalation both horizontally and vertically and, as a result, challenge stability in a way that sub conventional violence and unconventional violence often do not. The prospect for the outbreak of limited wars in South Asia therefore merits brief examination. How likely is limited aims war in the future?

To begin with, it must be recognized that Kargil *was*, in some sense, a limited aims war in that at least one of Pakistan's objectives was to secure territory, however marginal. Of course, its other objective, to internationalize the conflict, was just as salient—if not more so—than these meager territorial ambitions. One of the principal deterrents to initiating limited aims war in South Asia is the inability to assure international intervention and the cessation of hostilities after the achievement of a state's immediate operational aims. Pakistan did seem to believe that the international community would intervene in a fashion both timely and consonant with Pakistan's strategic interest once it had secured its operational aims early in the conflict. Given this assumption— however flawed it was to begin with—it is no surprise that Pakistan initiated the Kargil war, because the expectation of international intervention leading to a quick termination of hostilities served in effect to remove one of the principal deterrents to the initiation of limited aims wars: the fear that, absent quick, on-demand termination of conflict, the war could spin out of control and degenerate into a major, open-ended campaign that would redound to Islamabad's disadvantage. However, one of the lessons that Pakistan *has* learned from Kargil is that such optimistic expectations of the international community's role in South Asian rivalries are unwarranted. Such a conclusion could deter Kargil-like limited aims wars in the future. In another sense, however, Kargil can be seen as an example not of a limited aims war (in the conventional sense described in the literature) but, rather, of Pakistan pushing the envelope with respect to LIC or Low Intensity Conflict. This reading is reinforced by the fact that Islamabad went to great lengths to disguise its participation in the war and to this day has not officially admitted its role in the initiation of the Kargil conflict. To the degree that

Kargil turns out to be an example of a de-tour in what is otherwise LIC, the explanation for deterrence failure in this event is less complicated, though it does ride on a bewildering number of peculiar assumptions that informed Pakistani decision-making with respect to this event—for example, that the presence of Pakistani forces would not be detected, and that if detected, would have no political consequences; that the Indian response to the Pakistani fait accompli would be passive and quiescent; and that the Kargil war would have little real effect on India-Pakistan relations.

The cumulative effect of such peculiar assumptions renews the concerns many observers have traditionally had about the character of Pakistani decision making with respect to grand strategy and about the effects of that strategy on strategic stability in South Asia. Thus, while it is possible to conclude that Pakistan, having learned once again that favorable international intervention and on-demand war termination cannot be assured, is unlikely to initiate a future Kargil-like operation, the uncertainty about whether Pakistan's higher decision making institutions—which, all admit, are relatively weak—can in fact internalize these lessons permanently and institutionally gives rise to legitimate fears that Islamabad might be tempted to replicate some facsimile of the Kargil operation in the future and also in case of renewed Indian suppression of the Kashmiri struggle for the right of self determination.

These fears are only exacerbated by the fact that Pakistan's evaluation of the consequences of Kargil is still ambiguous. Had Pakistan concluded that the Kargil operation was an outright failure, the prospects of recurrence would have been minimal. However, Pakistan's lessons learned are more complex.

Even as the overall failure of the Kargil operation dominates the consciousness of many Pakistani stakeholders, several important constituencies still tend to rationalize Kargil, even if only as an after-thought, as some sort of a victory. The lingering possibility that future Kargils might arise—however remote that seems at present—is rooted ultimately in the particular dynamics of the current India-Pakistan rivalry in South Asia, and is likely to endanger stability so long as the Kashmir dispute is not resolved.

Finally, Pakistan's evolving nuclear capabilities might be judged to provide effective strategic cover for an activist Kashmir policy that sanctions episodic limited aims operations if the strategic environment is in fact believed to be conducive to the initiation of such operations. On the Indian side, New Delhi's commitment to an internal solution to the Kashmir problem creates greater incentives for Pakistan to assert it equities in the ongoing dispute through means of overt force if necessary. While the Indian conviction about the desirability of an internal solution is rooted in larger beliefs about the liberal, secular, and multiethnic nature of the Indian Union, the unwitting by-product of pursuing such a solution will be an increased resistance on the part of Pakistan. Precisely because the positions of the two antagonists are in *absolute* conflict—because neither can sacrifice its cherished approach to the problem without subverting other equally critical political goals—the currently reigning condition of "ugly stability" in South Asia may be occasionally punctuated by episodes of "uglier stability" from time to time. In such an environment, a wide variety of Kargil-like operations could occur, each differing in scale, intensity, and consequences. But if all goes well, any such intense and episodic "crisis slide" will gradually recede to the pre-existing condition of ugly stability.

The interplay of these Indian and Pakistani dynamics and the diverging trend lines in the political futures of both countries—a dissatisfied and revisionist Pakistan vs. a status-quo oriented and growing India— almost ensures that the India-Pakistan rivalry will persist. In fact, a good argument could be made that the Kargil war itself was conditioned at least in part by the growing Pakistani recognition that India is on the verge of becoming the hegemonic state in South Asia: the closing window of opportunity represented by this fact implied the need for dramatic action at a time when the international community still shared a certain sympathy for Pakistan in the aftermath of India's May 1998 nuclear tests. In any event, even if operations on the scale and intensity of Kargil do not occur in the future, political-military crises in South Asia are likely to surface over the course of the next decade.

Three issues that come to the fore in thinking through the possibilities for deterrence breakdown in the long term. The first is Pakistan's inability or unwillingness to control the jihadi elements existing within and immediately outside its territory, and the impact of these groups on Pakistan's civil society and internal security. The second issue that emerged is the possibilities arising from India's contemplation of "limited war." As thinking about limited war evolves in India, this issue merits further scrutiny. Analysts need to assess and understand the meaning of the concept and its implications for breakdown, the current state of Indian planning or limited operations, and the doctrinal changes that would be necessitated by the formal adoption of this concept. The third area is the likelihood that China and the United States will seek to reconfigure their bilateral relations with India. This issue has most import for the longer-term prospects of conventional deterrence breakdown insofar as it affects the incentives for India, Pakistan, and China to contemplate various kinds of dyadic wars.[17]

Also, High-level political and military stakeholders as well as key non-state actors in Pakistan believe that Islamabad's future options are quite limited. Most interlocutors indicated that while Kargil-like situations are certainly not preferred, Pakistan's only realistic military option in the future is to continue seeking to calibrate the heat of the insurgency. Many in the Pakistani government and most in the military believe that this is a low-cost strategy by which Indian security forces in Kashmir and elsewhere can be tied up effortlessly. It imposes high costs on India in terms of the military manpower and logistics investments needed to sustain the counterinsurgency grid.

It must be acknowledged that the Pakistani Army has a number of incentives to prefer the status quo. First, with the current, presumably low-cost strategy, Pakistan ties up many hundreds of thousands of troops in India's counterinsurgency grid. It is far preferable, from a Pakistani military point of view, to have these troops in Jammu and Kashmir—where they pose a minimal threat to Pakistan than in the Punjab or Rajasthan where they could in fact become serious objects of security concern.

The Pakistan Army has been unable to sell the case that its interests in Kashmir are legitimate and are responsive to India's human rights violations in the region. And it has been unable to convincingly corroborate its claims about India's incursions across the LOC, including India's occupation of Siachen.

Indeed, Kargil has seriously compromised the legitimacy of Pakistan's claims on Kashmir. The Washington Declaration turned the so-called sanctity of the Line of Control into a political tool in the hands of the Indians who successfully raised the issue of "Cross-border terrorism/infiltration". The operational impact of the Kargil war and its resultant effects on regional stability has been a renewed Indian commitment to maintaining a robust forward defense. Additionally, India is modernizing its physical infrastructure in Kashmir. For example, India is likely to create a new road system to Siachen that does not come within range from the strategic heights of the Kargil-Drass sector. And finally, it will improve its rapid-response capabilities and its counterinsurgency grid system to deny the insurgents freedom of movement to the maximum extent possible.

Moreover, India has completed the fencing of the LOC and installed radars and surveillance equipment to check infiltration, and has plugged holes in its vigilance along the LOC. Pakistan has had to pay dearly for the Kargil war as the issue of 'Cross border infiltration' from its side into Indian Occupied Kashmir has been internationalized instead of the intended purpose of executing Kargil, i.e. internationalization of the freedom struggle of Kashmiris. India successfully used the issue of cross border infiltration in the wake of the US attack on Afghanistan and embarked upon its own version of the "Doctrine of Pre-emption" in the 2001-2 mobilization of troops along the border with Pakistan and the LOC whereby India aimed at coercive diplomacy coupled with military pressure to force Pakistan to withdraw its support of Kashmiris by threatening surgical and punitive air strikes at alleged training camps inside Azad Kashmir along with commando raids. This caused a corresponding mobilization by Pakistan and a clear warning to India that Pakistan would reply with "full force" to any Indian attempt to cross the LOC or the International border. Pakistan was forced to shut down the jihadi camps,

and to clamp down on religious elements. Thus Kargil became a living example of the "Stability-Instability Paradox" and has ushered in new elements into the stability calculations in Indo-Pak relations, such as the successful execution of limited war under the nuclear umbrella, and the Indian policy maker's new found belief in the "Doctrine of Pre-emption" which they could possibly use in the future to carry out a limited war of their own against Pakistan, in the same belief that Pakistan held, that a limited war could be fought under a nuclear umbrella, without the fear of escalation. This may or may not happen, but the hawks on both sides of the border are likely to subscribe to this idea in the future.

Therefore we can conclude that:

a- A proxy or sub-conventional war in the Indo-Pak security scenario can easily escalate into a conventional war.

b- Acquisition of nuclear weapons by India and Pakistan has not reduced / eliminated the probability of a war between them. A limited conventional war remains possible.

c- The imbalance in civil-military relations and lack of strategic culture on the sub-continent has an impact on Indo-Pak security relations.

d- Assumption and misperceptions, a fairly consistent feature, mostly in Pakistan, have been a major cause of Indo-Pak conflicts. Greater transparency and Confidence and Security Building Measures are necessary to reduce tension and chances of a war.

e-Kargil War has re-established political sanctity of the Line of Control in J&K with the international community; Militarily, over the years, the defence of Actual Ground Position Line (AGPL) in Siachen Sector, Line of Control (LoC) in the rest of J&K, and International Boundary have got linked. Any attempt to disturb status quo and re-draw the LoC or AGPL forcibly, is more likely to lead to conflict all along the Indo-Pak border. Also, there is no military solution to the J&K problem.

f- India's defence modernization in the coming decade on account of Kargil may cause the arms race between India and Pakistan to continue. However, this would have a serious adverse impact on Pak economy and socio economics.

Supplementary Note:

An alternative view on the Kargil war was presented by Dr. Shireen Mazari, Director-General of the Institute of Strategic Studies, Islamabad, in her book, published in 2003, **"Kargil Conflict 1999----Separating Fact from Fiction".** She contends that Kargil was an operation planned to counter India's insidious designs; Sharif was aware of it; he failed to convert Pakistan's "tremendous military success" into a politico-diplomatic victory. The book concludes that had Nawaz Sharif not dashed to Washington to give in and had the Kargil tactical operation been allowed to sustain itself for a few more weeks (till the end of August 1999), it would have led to an Indo-Pak dialogue.

Her idea was to explode a few 'myths'. One of these pertained to media reports that there had been a long-standing 'Kargil Plan' but it was never executed because army chief Gen Jehangir Karamat (1996-1999) and then PM Benazir Bhutto had rejected it.

Mazari says there were suspicious movements in the Shaqma sector, north of the LoC at Kargil, in the late 1998-early 1999. The Pakistan high command asked the Force Command Northern Areas (FCNA) to evolve a plan to counter possible Indian incursions. Even this defensive planning is dated March '99, and not during Vajpayee's visit earlier in the year, as India claims. No movement across Burzil Pass was possible prior to mid-March. By keeping two well-equipped Indian brigades at Mashkoh/Drass, India possessed the capacity to occupy positions in the Shaqma sector.

The FCNA did plan a defensive action with its troops. Replenishment was provided only after Indian attacks on Pakistani posts. This fact alone is sufficient to debunk the claim of a so-called strategic offensive operation planned by Pakistan at Kargil. Any major offensive would, obviously, have entailed some sort of additional troops and logistic build-up.

What sparked the Kargil war then? India's adventurism, she says. According to her, India, as per its plan, moved its troops to the watershed on their side of the LoC and initially came across those Mujahideen who were familiar with the terrain and had moved to occupy some of the heights across the LoC to interdict the Indian supply route along the Dras-Kargil road. In other words, the guerrillas had been deployed to nix India's plan. She says the FCNA took defensive measures by positioning troops on the heights/features, overlooking Indian routes, which in fact had been mostly unoccupied previously. But as a result of the Indian counter-attacks, numerous new posts were established and fighting patrols were pushed ahead for early warning and depth and flank protection. Conclusion: Pakistan was successfully countering India's possible adventurism.

She arraigns Sharif's regime with this line of attack: it wasn't in the battlefield but in the diplomatic arena that Pakistan was worsted. India managed to portray its lack of

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CHAPTER 4

NUCLEAR DOCTRINES AND POSTURES IN SOUTH ASIA

India's Draft Nuclear Doctrine

In April 1998, the Indian government had constituted a Task Force to recommend the establishment of a National Security Council (NSC). The Task Force submitted its report in June 1998 and, in November 1998, the government constituted a three-tier NSC with a full time National Security Advisor and a National Security Advisory Board (NSAB). Although the first task that was planned to be originally entrusted to the NSAB was to conduct a strategic defence review, because of post-Pokhran II compulsions, the NSAB was asked to first formulate India's nuclear doctrine. The NSAB submitted a draft nuclear doctrine paper to the government that was released to the public for wider debate on August 17, 1999.

The key features of the proposed nuclear doctrine are reproduced below:

India shall pursue a doctrine of credible minimum deterrence. In this policy of 'retaliation only', the survivability of arsenal is critical. The actual size, components, deployment and employment of nuclear forces will be decided in the light of these factors. India's peacetime posture aims at convincing any potential aggressor that:

1-Any threat of use of nuclear weapons against India shall invoke measures to counter the threat; and

2-Any nuclear attack on India and its forces shall result in punitive retaliation with nuclear weapons to inflict damage unacceptable to the aggressor.

3-The fundamental purpose of Indian nuclear weapons is to deter the use and threat of use of nuclear weapons by any state or entity against India and its forces. India will not be the first to initiate a nuclear strike but will respond with punitive retaliation should deterrence fail.

4-India will not resort to the use or threat of use of nuclear weapons against states that do not possess nuclear weapons, or are not aligned with nuclear weapons powers.

The draft nuclear doctrine, while generally following the policy guidelines enunciated by the Indian Prime Minister in Parliament, fleshed out his pronouncements and "provides a broad framework for the development, deployment and employment of India's nuclear forces." The draft paper proposed that India should establish a credible, minimum nuclear deterrent capability comprising sufficient, survivable and operationally ready nuclear forces based on the principle of no first use of nuclear weapons. [1]

It emphasized that the level of India's nuclear capability should be consistent with maximum credibility, survivability, effectiveness, safety and security. It provided for the establishment of effective intelligence and early warning systems. It recommended that India's nuclear forces be based on a triad of strategic bombers, land-based ballistic missiles and submarine launched ballistic missiles (SLBMs). Though a sea-based nuclear capability will take many decades to develop, the requirement of SLBMs is considered inescapable due to their relatively lower vulnerability. Nuclear forces that need to survive a first strike have no option but to ensure that at least 50 to 60 per cent of the arsenal is made comparatively invulnerable by being maintained as SLBMs. The draft paper proposed that India's nuclear strike capability be configured to inflict punitive retaliation the consequences of which would be unacceptable to a potential adversary who will therefore be deterred from doing the unthinkable. The doctrine highlighted the cardinal supremacy of civilian control over India's nuclear weapons and proposes that the final authority for the release of nuclear weapons must vest with the Prime Minister or his designated successor(s).

The proposed doctrine also rejected the concept of nuclear war fighting and did not, hence, consider it necessary for India to match its nuclear warheads and delivery systems with those of its potential nuclear adversaries. A small number of survivable nuclear warheads and delivery systems that can inflict damage, which would be unacceptable to the adversary, are considered adequate for the purposes of deterrence.

Although the paper has left some ambiguity by not clearly rejecting the need for tactical or battlefield nuclear weapons in India's context, the tenor of the paper and its emphasis on a retaliatory policy appear to rule out any thinking towards tactical nuclear weapons.

DETERRENCE BY DENIAL

India's "minimum credible nuclear deterrence" doctrine and "no first use" policy are based on the concept of deterrence by denial, rather than deterrence by punishment. Should deterrence ever break down, India will have to pay an enormous price for a nuclear first strike by an adversary before launching massive punitive retaliation. Nuclear doctrine has to be ultimately tested in the crucible of operational reality. Across the entire spectrum of conventional conflict, the first use of nuclear weapons by India does not make sound strategic sense, as India enjoys a conventional superiority over all its neighbours, especially Pakistan.

The object of deterrence is to persuade an adversary that the costs to him of seeking a military solution to his political problems will far outweigh the benefits. The object of reassurance is to persuade one's own people, and those of one's allies, that the benefits of military action, or preparation for it, will outweigh the costs.

India's nuclear policy is underpinned by a categorical and unambiguous commitment to "no first use" of nuclear weapons against nuclear-armed adversaries and the non-use of nuclear weapons against non-nuclear weapons states. Though Indian leaders have always wanted the world to believe that India is committed to nuclear restraint and peaceful coexistence, "no first use" doctrine would only be applicable to declaratory level of India's nuclear policy, whereas this may or may not be followed at the operational level of policy or during actual war time. There has been a broad national consensus in India on the development of a credible minimum nuclear deterrent capability and the doctrine of no first use. Minimum deterrence may be defined as "a small force of survivable nuclear weapons (that) would deter an adversary from initiating military action that would threaten a nation's vital interests." [2]

India's no first use and the concept of deterrence by denial, rather than deterrence by punishment, is aimed at creating the impression that it is central to Indian strategic thinking and, by voluntarily renouncing its sovereign right of the first use of nuclear weapons to defeat nuclear threats and to prevent nuclear blackmail, India has made an immense strategic sacrifice and imposed a heavy burden upon itself.

The government and key decision-makers recognize that should deterrence ever break down, India will have to pay an enormous price for a nuclear first strike by an adversary before retaliating in kind. Hence, India's no first use doctrine demands a robust, infallible and potentially insuperable nuclear deterrent capability to ensure that India never has to suffer a nuclear strike.

As expected, the draft doctrine initiated a major debate in India about its nuclear policies. Amitabh Mattoo called it "an unapologetic realpolitik articulation of the principal raison d'être of India's nuclear weapons and the requirements needed to lend credibility to the country's deterrent posture."[3] While agreeing with the thrust of India's nuclear policy, he wrote that India's primary quest appeared to be to acquire the strategic autonomy necessary for making independent decisions in an often unfriendly world and to pursue economic and political development without fear of external threats. R. Prasannan called the draft doctrine a wish list attached to the collective speeches of the Prime Minister and his Cabinet colleagues.[4]

Bharat Wariavwalla criticized the draft doctrine on the grounds that the definition of minimum deterrence would be very different vis-à-vis China and Pakistan and, hence, the term is much too loose to pass off as doctrine.[5]

The worst criticism of the draft doctrine has been that opting for a triad of nuclear forces is not indicative of a minimalist posture but of a maximalist one, particularly as sea-based nuclear weapons have been envisaged to form part of the nuclear force.[6]

Indian strategists believe that this criticism fails to take into account the fact that the credibility of a nuclear deterrent that is limited to retaliatory strikes only hinges around the ability of the nuclear force to survive a first strike in sufficient numbers to inflict unacceptable punishment in retaliation. Since submarines offer the best survival potential, India has to rely on a small number of SLBMs for credible deterrence. Raja Menon has also criticized the proposed doctrine:" There is a serious dysfunction between 'minimum deterrence' and a tri-Service arsenal. The two cannot go together, and is akin to yoking a horse and camel together." [7]

Some critics have averred that the nuclear threats have not been enunciated and that the draft document does not define the nuclear force levels that India considers "minimum". Others have protested that the costs of India's nuclear deterrent have not been spelt out.

The exception in the draft doctrine that India's non-use of nuclear weapons policy against countries that are not nuclear weapons states does not apply if they are militarily aligned with nuclear weapons states has also been criticized. This exception would include non-nuclear members of NATO and the military allies of the US such as Japan.

Efficacy of No First Use

The concept of no first use logically flows out of the current conventional wisdom that the sole purpose of nuclear weapons, if they have a purpose at all, is to deter the use of nuclear weapons. As is well known in nuclear theology, Bernard Brodie had argued many decades ago that the advent of nuclear weapons had fundamentally altered the relationship between war and national policy and that nuclear weapons were so destructive that their only real purpose could be the avoidance of war itself. On the other hand, many other strategists saw nuclear weapons as simply one more addition to a nation's or even a military commander's arsenal, though a very destructive one, and convinced themselves that the use of nuclear weapons could be incorporated into war

fighting strategies. Those who saw nuclear weapons as serving a military purpose in real combat naturally opted for first use and pre-emptive nuclear strategies and developed complex war fighting doctrines while the others saw no real purpose except that of deterrence and adopted deterrence strategies, including no first use.

India's declaration of its no first use doctrine has once again focused international debate on the efficacy of no first use policies. It is often mistakenly believed that the concept of no first use is China's contribution to international peace and stability. In fact, the no first use formulation goes back to 1925 when the international community concluded a no first use treaty on chemical weapons and toxins in the Geneva Protocol.[8]

Though enormous stockpiles of chemical weapons were produced during the Second World War, neither side used them. This was because mutual deterrence continued to operate among the nations that had chemical weapons stockpiles till the 1993 Chemical Weapons Convention finally delegitimised these. However, in situations of asymmetry, deterrence did not operate and chemical weapons were used on several occasions, by the Italians in Ethiopia, by the Japanese against the Chinese and finally by Saddam Hussein against the Iranians. It could be concluded that a no first use policy works best during conditions of mutual deterrence.

A no first use commitment is not merely a verbal or even a negotiated assurance; it can and must be seen to be reflected in the nuclear force structure, the deployment patterns, the types of surveillance assets in place and the state of readiness of a country's nuclear forces. China announced a no first use commitment immediately after its nuclear test in October 1964. In recent years it has diluted this policy by emphasizing that such a declaration does not apply to territories that belong to China. While Taiwan falls in this category, so does Arunachal Pradesh in India which China still claims as its own territory. Hence, it can be plausibly stated that China could contemplate the use of nuclear weapons during a war over Taiwan or a border conflict with India in Arunachal Pradesh. The former Soviet Union had also subscribed to the no first use policy. As far back as 1955, the Soviet Union had proposed a no first use pledge by all nuclear weapons

states. However, Russia's recently declared military doctrine has withdrawn that pledge and Russia is now committed to a first use nuclear policy even against conventional military threats. Several US thinkers, some of them important former members of the US military establishment such as Robert McNamara and George Kennan, have repeatedly called for a no first use pledge. Despite the end of the Cold War, the US and its NATO allies and friends, including the United Kingdom and France have refused to heed such wise counsel. In fact, the US has said that it would consider the use of its nuclear weapons against chemical and biological weapons and NATO, under US leadership, has developed an "out of area" strategic concept that undermines peace and stability in the international order.

The No First Use Dilemma for India

Ever since the May 1998 nuclear explosions and the Indian government's advocacy of the doctrine of no first use and a minimum credible deterrent, a major debate has been raging in the strategic community in India on the issue of no first use of nuclear weapons. Many Indian analysts have averred that India has gained nothing and has unnecessarily elected to bear the horrendous costs of a nuclear strike by choosing to adopt a purely retaliatory nuclear policy. Rear Admiral Raja Menon asks: "Will India... be committed to absorbing a nuclear strike in case deterrence fails?" And answers: "Hardly, because in the event that an intelligence warning of a 'definite' nuclear strike is received, the NCP (National Command Post) will have to consider, among other options, a first launch." [9]

To advocate no first use and then consider first use as soon as the alarm bells are sounded would be duplicitous and worthy of the strongest possible condemnation. It is argued that after all India's no first use doctrine is only a declaratory doctrine and if other nuclear powers are not willing to accept India's offer of a negotiated no first use treaty, why should India subject itself to the ravages of nuclear destruction? It is the earnest desire of Indian policy makers that eventually one or more Nuclear Weapon States (including Pakistan) will come around to accepting India's offer of a negotiated bilateral or

multilateral no-first-use treaty. Meanwhile, some hard questions need to be asked. Is India likely to be faced by situations occasioned by operational realities when it might become necessary for the Indian political leadership to order the first use of nuclear weapons? When will the situation become operationally so critical that India might be forced to do the unthinkable? So, is India's no first use doctrine merely rhetorical nonsense or is it based on sound operational reasoning? These issues pose a strategic dilemma and present a complex challenge that is not at all easy to rationalize.

It is now universally accepted that nuclear weapons are political weapons and not weapons of 'war fighting'. However, the close link between nuclear weapons and a nation's conventional military capabilities is undeniable. If a nation's conventional capability is extremely low vis-à-vis a nuclear armed adversary, it may be necessary for that nation to adopt an in extremis 'first use' strategy to thwart a conventional military offensive that may threaten to undermine its territorial integrity and lead to its break up. This is the situation that Pakistan finds itself in at present. While India may have no intentions of launching a major conventional offensive into Pakistan, given India's conventional superiority (no matter how slender the edge may be), Pakistan has based its national security strategy on the first use of nuclear weapons to prevent its dismemberment and military defeat like in 1971 and, consequently, its disintegration as a nation. It is for this reason that Pakistan does not accept India's offer of a bilateral no first use treaty as a nuclear confidence building and risk reduction measure.

Though overall China's conventional military forces far outnumber India's, due to China's problems in inducting, deploying and logistically sustaining large forces in Tibet, India enjoys a reasonable defensive capability at present and therefore does not need a 'first use' nuclear strategy to deter a conventional Chinese offensive backed by nuclear-tipped ballistic missiles deployed in Tibet. However, India's existing defensive capability is being quickly eroded as China is rapidly modernizing its armed forces, raising rapid deployment divisions and improving the logistics infrastructure in Tibet while exhibiting extreme intransigence in resolving the outstanding territorial and boundary dispute with India.

While nuclear doctrine must undoubtedly be based on sound theoretical underpinnings, it has to be ultimately tested in the crucible of operational reality. The proponents of a first use strategy for India need to more deliberately ponder the threat scenarios that might justify the unthinkable. Some plausible scenarios are worth considering in this context. Starting at the lower end of conventional conflict with low intensity conflict (LIC) and ongoing insurgency in Kashmir, would the use of a Stinger or Anza surface-to-air (SAM) missile by the militants in Kashmir to bring down an Indian Airlines aircraft over Kashmir Valley justify an Indian nuclear strike? Or, would a pro-active punitive response across the Line of Control (LoC) with massive artillery and air power sustained over a few weeks be more desirable? In another scenario, would a battalion or even a brigade size attack by the Pakistan army across the LoC, or even Kargil-type intrusions on the Indian side of the LoC, that result in major gains for Pakistan, justify the first use of nuclear weapons by India when their retaliatory use by Pakistan would be a certainty? Or, would a punitive ground and air forces conventional response across the LoC (and perhaps across the international boundary by the IAF) in another sector yield better dividends? After all, it is well known that there are areas on the LoC where Indian forces could be heading for key value objectives in Pakistani Azad Kashmir within days of the outbreak of hostilities in Jammu and Kashmir (J&K).

In case such exchanges across the LoC escalate to a larger conventional conflict, as they well might, Pakistan may launch its Army Reserve North (ARN)/ (Mangla based I Strike Corps), through the Shakargarh Bulge in the Sialkot sector and threaten to cut off Kashmir's lifeline NH-1A between Pathankot and Jammu. If Pakistan achieved initial success, such an offensive would pose a grave danger to the security of J&K. Would the first use of nuclear weapons be a rational choice for India under such circumstances? Or would it perhaps be more prudent to launch one or more Indian Strike Corps counter-offensives across the International Boundary in Punjab, Rajasthan and Gujarat, as General Harbaksh Singh did in 1965 with Lal Bahadur Shastri as Prime Minister, to make the Pakistanis recoil from their offensive in the Jammu sector? Surely, the launching of

sizeable counter offensives into Pakistan's heartland would be a better way to relieve pressure on J&K.

Inherent in an Indian nuclear first strike option, as advocated by the opponents of no first use, is the Pakistani nuclear retaliation that would inevitably follow on Indian cities and military targets. Cities like Jodhpur, Bikaner, Ahmedabad, Jalandhar, Ludhiana and perhaps even New Delhi and Mumbai would be the likely targets of a retaliatory Pakistani nuclear strike. In all the above scenarios, given the limited gains that an Indian first strike may achieve and the real possibility of successful Pakistani nuclear retaliation, the resounding answer to the first use nuclear option by India is no. An Indian nuclear first strike would not be justified, as the costs of Pakistani retaliation would be prohibitive. Nor would it be operationally expedient. In none of the above scenarios India's survival as a nation-state is likely to be seriously threatened. Various other even more pessimistic scenarios could be considered but the result would be the same.

It clearly emerges that across the entire spectrum of conventional conflict, the first use of nuclear weapons by India does not make sound strategic sense, given the clear conventional superiority India enjoys vis-à-vis Pakistan, which is likely to grow over time in the wake of massive increase in India's defence budget and ongoing and planned high-tech arms acquisitions. Besides, a first use doctrine would invite international opprobrium. It is not generally well appreciated that a first use doctrine requires a massive investment in surveillance and target acquisition infrastructure by way of satellite and aerial reconnaissance and human intelligence to execute 'launch on warning' and 'launch through attack' strategies, with the nuclear forces being maintained on permanent hair trigger alerts. A first use doctrine also requires quick political decision-making and decentralization of the control of nuclear weapons to theatre commanders in the armed forces. Hence, such a doctrine is inherently more risky and more likely to lead to the accidental, even unauthorized, use of nuclear weapons, where no clear Nuclear Command and Control systems are in place or in the absence of PALs or Permissive Action Links.

It would, of course, be far better to mutually negotiate a no first use treaty with adversarial nuclear-armed states as that would be the best nuclear risk reduction measure. But given Pakistan's first use doctrine, this is most unlikely. Russia and China have signed a mutual no first use treaty. Indian analysts argue that in case India's nuclear-armed adversaries continue to be recalcitrant in signing a binding no first use pact, it would be worthwhile for India to consider some essential qualifications to India's unilateral no first use doctrine. The first is to clearly spell out that a nuclear strike on Indian soldiers even within Pakistani territory would be deemed to be a nuclear strike on India and would invite massive punitive nuclear retaliation. The absence of this rider would negate India's conventional edge over Pakistan as the army would be forced to plan on launching only shallow limited objective offensives to avoid risking nuclear strikes on the mechanized spearheads leading India's advance. Only the capability of executing deep offensive strikes can ensure conventional deterrence and present viable policy options to prevent India's conventional superiority.

They further argue that the second caveat should be that even a conventional bombing or missile attack on India's nuclear establishments and nuclear weapons storage sites during war, that results in casualties due to a nuclear explosion or even radiation leaks, would invite a nuclear response. Though India and Pakistan have signed an agreement on not targeting each other's nuclear facilities, such agreements have little value when war is declared. Also, state-sponsored acts of terrorism or sabotage of India's nuclear establishments and storage sites should also result in nuclear retribution against the sponsoring country. With better surveillance systems and improvements in the intelligence gathering apparatus, it should be possible to accurately determine the identity of the originator of such heinous crimes. Without these inescapable qualifications, with others to be added when necessary, it would be extremely difficult for India to implement a credible no first use doctrine.

NUCLEAR TARGETING PHILOSOPHIES IN SOUTH ASIA

A decision that would bring even one hydrogen bomb over 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.

— McGeorge Bundy[10]

Counter Value or Counter Force?

At the heart of a nation's targeting philosophy is the question: what deters? Is the adversary to be deterred by threatening his major cities with annihilation? Or, is he to be deterred by threatening decapitating strikes against his political and military leadership? Or, would rendering deter him his strategic nuclear forces and conventional offensive strike corps incapable of effective and coherent action? Civilian and military nuclear planners have for long wrestled with the dilemma of whether to base their targeting philosophies on "value targets" or on "counter force" targets or a judicious mix of the two.

"Counter Value" targets consist of major population centres and industrial installations and are the ones that exemplify terror in the "balance of terror" equation. After the horror of the bombing of Hiroshima and Nagasaki in 1945, ordinary people the world over find it easy to understand what might happen if portions of their own city were to be flattened by a nuclear weapon.

"Counter force" targets are primarily strategic military targets and are generally those that are connected with the storage, launching and delivery of nuclear weapons and their command, control and communications (C3). Large mechanized military formations in the field, particularly when concentrated before or during employment, are also classified as counter force targets. Even if counter force targets are attacked exclusively,

there is an inherent danger of "collateral" civilian casualties since most of these are likely to be located close to cities and small towns.

Democratic states, in particular, are increasingly placing much greater emphasis on the value of human life than was the case even a few decades ago and are most uncomfortable with the concept of massive urban and industrial destruction that was the hallmark of Cold War strategies such as "Mutually Assured Destruction" (MAD). Robert McNamara's concept of MAD was the assured destruction of one-fifth to one-fourth of the population and half of the industry of USSR in a second strike, after absorbing a Soviet first strike. One of the reasons given in justification of such a massive nuclear strike was that the damage acceptability threshold of totalitarian states is much higher than that of democratic states where the government is directly answerable to the people.

At the peak of the Cold War, the United States (US) and the erstwhile Soviet Union had between them about 50,000 to 60,000 nuclear warheads. For them, a "mix and match" option between counter value and counter force targets and between various types of land, sea and air-delivered warheads was not only practically feasible but also eminently desirable. However, no Western analyst has as yet been able to advance a convincing argument justifying the necessity of employing such a large number of warheads to deter the adversary when it was widely accepted that one nuclear bomb on one city was one too many. On the other hand, China, France and the United Kingdom, with their small nuclear forces (SNF), are all known to have opted for an exclusive counter value (city-busting) targeting policy and correctly so.

Another major advantage of targeting mainly counter value objectives is that, being fixed targets, their planning parameters can be determined accurately during peace time and detailed prioritized plans for engaging them can be drawn up well in advance of likely hostilities. . A counter value targeting policy also makes it unnecessary to invest in elaborate surveillance and tracking systems capable of providing real-time intelligence about the location, posture and state of readiness of mobile targets.

However, a counter value targeting policy need not rule out nuclear strikes on counter force targets whenever these are considered necessary. For example, if it ever

becomes necessary for India to launch a retaliatory strike against Pakistan. A decapitating retaliatory strike that endeavors to cripple the adversary country's leadership would almost certainly include its military headquarters complex, even though it may otherwise be classified as a counter force target. Similarly, other counter force targets, some of them mobile, may also be included with a lower priority so as to ensure that the adversary country's war waging potential, particularly its remaining nuclear forces, are crippled into ineffectiveness to the extent possible.

Nations with large nuclear arsenals, such as the US and Russia, can choose from a range of responses whenever warning is received about the likelihood of a nuclear attack. Even if nuclear weapons release orders are finally given, there is a fair likelihood of a graduated response through counter force attacks, with attacks on cities at the bottom end of the list of options. Herman Kahn, one of the foremost thinkers on nuclear war, lists eight different types of reaction to warning of eminent attack:[11]

1- Increase alert.

2- Decrease vulnerability.

3- Initiate "positive control" (bombers airborne towards targets but without final attack orders).

4- Local counter force (shooting down intruding aircraft not positively identified as hostile).

5- Institute negotiations.

6- Limited counter force (in case of reasonable doubt about hostile enemy intentions in firing a few missiles vis a vis accidental firing).

7- Controlled war (all-out counter force attacks for intra-war deterrence plus reasonable peace offers).

8- Unlimited retaliation (attacks on cities).

The Targeting Process

Though the process of planning attacks by nuclear forces against the adversary's targets is essentially simple in concept, it presents complex challenges in filling in the detail necessary to ensure a successful strike. Postol has formulated the following criteria for selecting nuclear targets:[12]

1- The direct military value of targets.

2- Their contribution in performing important functions for the civilian or military leadership (protection, communications support and so on).

3- The indirect support provided to the enemy's war effort.

4- Their importance in assisting post-war recovery.

5- Energy production centres (electricity and petroleum production facilities).

5- Heavy and light civilian and military production centres (steel, transportation equipment, electronics and chemicals factories).

6- Military and industrial storage sites (petroleum and chemical storage sites and storages sites for tanks, trucks, ships and nuclear weapons).

It may be necessary to individually destroy several of these targets located within a single enemy military complex or city. Contrary to popular belief, a single nuclear bomb of a yield of 10 to 20 kilotons is not sufficiently powerful to destroy a complete military-industrial complex, leave alone a city. If that city is a large population and industrial center, it would be necessary to plan nearly simultaneous strikes with two or more nuclear warheads to ensure that all the key targets in the group are effectively destroyed. These warheads may be of varying yields ranging from tens of kilotons to one or more megatons. The military planner dealing with nuclear targeting must also take into account the inherent inaccuracy of the delivery system (the Circular Error Probable—CEP, also called the "miss distance" from "ground zero"—GZ) and the probability of interception of the delivery vehicle carrying the warhead before the weapon has been

effectively released. Besides yield and accuracy, the effectiveness of a nuclear strike also depends on the "hardness" of the target. Counter force targets, in particular, are usually hardened to withstand blast intensities of between 30 to 50 pounds per square inch (psi). Since he will have only a finite nuclear arsenal to draw from, he must also decide the inter se priorities of various target groups and of individual targets within each group.

Another key decision to be made is whether to attack a given group of targets only with land-based ballistic missiles, or with a mix of land-and sea-based ballistic missiles or with a mix of nuclear warheads from all the three elements of the triad. Since different delivery systems have varying times of flight to target. The most probable delivery platforms for counter value targets for India and Pakistan would be aircraft and land based ballistic missiles. For counter force targeting or tactical nuclear weapons employment, nuclear capable Self-Propelled (SP) Artillery or Ground Attack aircraft will be used.

Options for India

The fundamental purpose of Indian nuclear weapons is to deter the use and threat of use of nuclear weapons by any State or entity against India and its forces. India will not be the first to initiate a nuclear strike, but will respond with punitive retaliation should deterrence fail.

India's "minimum deterrence" nuclear policy and declared "no first use—punitive retaliation" doctrine appears to suggest retaliation mainly against the large population and industrial centers of its adversaries to obtain maximum payoffs with its small nuclear force, after absorbing the full impact of what may be a massive first strike. However, it needs to be rationalized whether that is a viable doctrine in all contingencies, or whether a doctrine of proportionate and graduated retaliation will suffice in certain scenarios. A doctrine of "proportionate response" would also seriously undermine the credibility of India's deterrence by considerably lowering the threshold level for India's adversaries to launch a first strike on India. If, on the other hand, India was to adopt the approach that, as stated, the sole reason for India's possession of nuclear weapons is to deter the use of nuclear weapons against India and that this deterrence would be premised on massive

"punitive retaliation" to inflict "unacceptable damage" against the adversary's large cities and industrial assets regardless of the level (quantum, yield, type of target, location) of a first strike against India and Indian armed forces, the credibility of India's deterrence would be qualitatively enhanced. India's adversaries would then be quite clear that the consequences of launching a first strike against India would be disastrous to them and that the level of damage likely to be inflicted by a retaliatory Indian strike would be definitely unacceptable. After all, no rational government, and perhaps even an irrational one for that matter, would be willing to countenance a "disaster beyond history", particularly as the leadership of the governing regime and its organizational structure might itself be decapitated.

Brahma Chellaney, a defence analyst of repute, favors a graduated response to a nuclear strike on India and for this reason advocates the introduction of tactical (or 'battlefield') nuclear weapons into India's nuclear inventory. He writes: "Without tactical nuclear weapons, a failed-deterrent situation could uncontrollably spark counter-city attacks, wreaking limitless destruction...After failing to deter an adversary from committing aggression, efforts have to shift to force him to halt aggression. Such intra-war deterrence or compellence can succeed if responses are judiciously modulated to allow for only a stage-by-stage escalation, with (the) opponent's civilian population held hostage but not under attack. If cities are already under attack, the adversary will have little else to lose."[13]

However, the prevalent view of other Indian analysts appears to be opposite to that of Brahma Chellaney.

Brigadier Vijay K. Nair did pioneering work in analyzing the nuclear threats faced by India and in recommending policy options and a force structure during the early 1990s when nuclear weapons were under wraps in both India and Pakistan and to even talk about them was considered an anathema by the Indian intelligentsia. Should deterrence fail, in a retaliatory strike, he recommends:[14]

Against Pakistan: The assured destruction of six to ten metropolitan centers, the destruction of a minimum of one corps-sized offensive formation in its concentration

area, the neutralization of a large number of communications centers, industrial facilities, strategic bridges, military airfields, nuclear installations, hydroelectric and thermal power stations, railway centers and ports which would critically limit Pakistan's war potential.

Against China: The destruction of four to five of her metropolitan centers and nine to ten of her strategic industrial centers, thereby radically degrading China's economic growth.

In Brigadier Nair's view, "The core of India's deterrent strategy, to counter the possibility of a pre-emptive nuclear strike by Pakistan, must rest on an assured ability to administer retribution of a magnitude that would demolish the national fabric of that country—the deterree (sic) should perceive a threat to its ability to continue to exist as a viable socio-economic system...If India can pose a credible threat of this nature, the political leadership in Pakistan will be suitably deterred." However, in the case of China he feels that the threat of destruction of four to five of her metropolitan centers and some strategic industries would be adequate to achieve deterrence. Despite several references to the complete destruction of Pakistan as a viable political entity, Brigadier Nair offers no justification for these varying perceptions of deterrence between Pakistan and China. (Brigadier Nair has listed 17 targets in Pakistan and only eight in China for a retaliatory Indian nuclear strike.)

PAKISTAN' S NUCLEAR DOCTRINE

Before we discuss the nuclear doctrine of Pakistan it would be appropriate to dilate somewhat on the factors that have conceived the concept, which has formulated the nuclear doctrine. Pakistan's main concern has been with her security and territorial integrity, which has been threatened and violated by India many times since 1947, when both countries became independent. Pakistan has fought three wars and two border conflicts short of war with India. In 1971 Pakistan was dismembered by Indian military intervention. Today troops of both countries are in an eyeball-to-eyeball deployment on either side of the Line of Control in Kashmir and along the Siachen Glacier in the

northern areas. These facts have a great bearing on Pakistan's concern for a viable security parameter.[15]

It is well known that Pakistan does not have a "No First Use Policy". Pakistani nuclear weapons will be used, according to Gen. Kidwai of the Strategic Plans Division (SPD) of the Pakistan Army, only "if the very existence of Pakistan as a state is at stake". This has been detailed by Gen. Kidwai as follows:[16]

"Nuclear weapons are aimed solely 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 strangling) or naval blockade.
d. India pushes Pakistan into political destabilization or creates a large scale internal subversion in Pakistan (domestic destabilization) "

Pakistan does not subscribe to a "no-first use" policy.

Examples of economic strangling of Pakistan include a naval blockade and the stopping of the waters of the Indus River.

The political destabilization and the internal subversion scenarios are considered as distinct possibilities. According to Gen. Khalid Kidwai , the answer to the criticism that the above conditions for the use of nuclear weapons were at the same time too broad and too vaguely defined and what in his view was the risk of inadvertent nuclear conflict in the subcontinent, has been, that there will be no risk of nuclear conflict assuming "rational decision making" by the interested parties. The example of the cold war, when no nuclear conflict was initiated, has been quoted few times to support the idea that India - and Pakistan - will stay clear of the nuclear threshold and restrain from an aggressive

behavior that could trigger a nuclear reaction. Asked if Pakistan has prepared something like a ladder of nuclear escalation, Gen. Kidwai answered that of course there were options available in the nuclear response, but he re-emphasized few times that nuclear war will not happen since India and, for that matter, Pakistan will avoid getting close to the nuclear threshold.

Also there has been very little discussion about the possible consequences of Pakistan's nuclear attack on India, namely on the effects of Indian nuclear retaliation. This possibility has been discarded again on the basis of the fact that rational decision-making will keep both countries away from the nuclear brink. Anyway, Pakistan does not intend to develop (and make public) for the time being, a "nuclear doctrine" in a fashion analog to the nuclear doctrine of in India

It is also clear that nuclear weapons are perceived in Pakistan as an instrument to countervail a manifest conventional inferiority vis-à-vis the Indian military force. Presumably Pakistan feels or will feel compelled to enlarge and diversify its nuclear arsenal so to increase the nuclear options and make the threat of nuclear retaliation more credible. If this diversification will move Pakistan away from a doomsday machine vision, it will also increase the likelihood of the use of nuclear weapons in a situation of crisis.

It is now a matter of recorded history that at the time of its inception, while Pakistan was trying to cope with the onerous administrative and logistics problems facing the new state, independent India sent her Army and Air Force into the princely state of Jammu and Kashmir in October 1947 to settle a dispute by resort to arms. Having used force against a neighbour barely two months after gaining independence, India continued to use force as an instrument of her foreign policy in pursuit of her national goals and objectives in the region. After Kashmir Indian troops entered Junagadh and Manawadar, the following year it was Hyderabad, in Deccan. In 1961 the Portuguese territories of Diu, Daman and Goa were attacked and captured. In 1962 a border conflict was initiated

against China and for the first time India was defeated by a neighbour of comparative size. The reverberations from this defeat still rankle the command structure of the large and well-equipped Indian Army. India has also used force to absorb tiny Sikkim, sent troops into Sri Lanka on the pretext of peace keeping, blockaded Nepal to change her government and flown troops into Maldives islands as a show of force. These actions by India over the years certainly do not inspire confidence in her small neighbours.

Unfortunately in South Asia a balance of power cannot be maintained by conventional means alone, owing primarily to India's sheer size and ample resources. India is larger than all her neighbours combined, by a wide margin. Add to this India's ambitions across her frontiers in the region and beyond and there is a situation fraught with long-term defence and security implications for Pakistan.

Surprisingly India's defence experts and thinkers have also been advocating the use of military force as an instrument of state policy. Mr T.T. Paulose wrote in the 'Hindustan Times, on March 12, 1998. 'The humiliating defeat at the hands of China (in 1962) awakened India to the new realities of military power as a major factor in international politics and inter-state relations'.

There was no military justification whatsoever for India to have detonated a series of nuclear devices in May 1998. There was no threat to India's security from her small neighbours. In any case nothing had changed on her borders to cause any alarm. As far as China was concerned, her Army Chief had visited India and there was an agreement for mutual reduction of troops along their common border. By her nuclear tests India disturbed the defence parity maintained in the region. This had been achieved by an undeclared mutual nuclear capability and without the visible deployment of ballistic missiles on both sides. This state of ambiguity had helped to preserve military equilibrium in the region resulting in 27 years of continues peace in South Asia. In comparison there were three Indo-Pak wars in the first 24 years of their independence

With Pakistan's atomic tests her nuclear weapons capability was overtly demonstrated for all to see. It was surprising to note that India's aggressive tone based on her military muscle immediately changed for the better. There was now talk of peace and

negotiations. The war hysteria seemed to have subsided. This is what deterrence is all about. By a demonstrated nuclear capability and parity on either side of the border, a form of defence equilibrium has been restored between India and Pakistan. If not disturbed any further this should augur well for future peace in the region.

India's offer of a treaty to be signed by the two countries, agreeing not to be the first to use nuclear weapons against each other is one-sided and would benefit India only, as it has a superior conventional force. It may be more appropriate for both countries to sign a mutual test ban treaty to start with, followed by a no-war pact.

India has military superiority over Pakistan in troop's ratio and conventional arms. This superiority is being augmented every year from indigenous and outside sources, while there is no apparent danger to her security from her small neighbours. On the other hand Pakistan's defence capability has somewhat been reduced owing to the unwillingness of the United States and Russia to allow the import of modern weapons from their countries. French weapons are far too expensive. China remains a steadfast friend and supporter.

What would be Pakistan's reaction in case of an overwhelming Indian conventional attack? In this context it would be worth reminding what Field Marshal Montgomery said in October 1954. 'I want to make it very clear that we are basing all our operational plans on using atomic and thermo-nuclear weapons in our defence. With us it is no longer: 'They may possibly be used'. It is very definitely: 'They will be used, if we are attacked'. The reason for this action is that we cannot match the strength that could be brought against us unless we use nuclear weapons.... There are some who say that if war is joined, nuclear weapons will not be used: I would disagree with that. My opinion is that the fear of atomic and thermonuclear weapons is a powerful deterrent to war: but once a World hot war has started, both sides are likely to use them. We would certainly use them if we are attacked'.[17]

From the above it is absolutely clear what Western Europe would have done if attacked by the USSR. To offset Soviet superiority in manpower and conventional weapons NATO would use nuclear weapons if attacked. Another point that was evident

from the Field Marshal's statement is that a deterrent is viable only as long as a nation is prepared to use it. The political will is essential, and certainly an important factor.

During any future Indo-Pak armed conflict India's numerical superiority in men and conventional arms is likely to exert pressure beyond endurance. In a deteriorating military situation when an Indian conventional attack is likely to break through our defences or has already breached the main defence line causing a major set-back to the defences, which cannot be restored by conventional means at our disposal, the government would be left with no other option except to use nuclear weapons to stabilize the situation. India's superiority in conventional arms and manpower would have to be offset by nuclear weapons. The political will to use nuclear weapons is essential to prevent a conventional armed conflict, which would later on escalate into a nuclear war.

Pakistan's Nuclear Doctrine would,therefore,essentially revolve around the first-strike option. In other words we will use nuclear weapons if attacked by India even if the attack is with conventional weapons. With his American experience of a graduated nuclear response Professor Stephen P. Cohen feels that Pakistan would use what he calls an 'option-enhancing policy' for a possible use of nuclear weapons. This would entail a stage-by-stage approach in which the nuclear threat is increased at each step to deter India from attack. The first step could be a public or private warning, the second a demonstration explosion of a small nuclear weapon on its own soil, the third step would be the use of a few nuclear weapons on its own soil against Indian attacking forces. The fourth stage would be used against critical but purely military targets in India across the border from Pakistan. Probably in thinly populated areas in the desert or semi-desert, causing least collateral damage. This may prevent Indian retaliation against cities in Pakistan. Some weapon systems would be in reserve for the counter-value role. These weapons would be safe from Indian attack as some would be airborne while the ground based ones are mobile and could be moved around the country.

With some experience and the passage of time a degree of sophistication will certainly be introduced in Pakistan's nuclear doctrine of the first-use of nuclear weapons to provide the government more options in the use of nuclear weapons. This would also

avoid unessential collateral damage to cities and other population centers in both countries. The object would be to employ nuclear weapons if attacked yet cause the least civilian casualties and damage to infrastructure.

It must be appreciated that a nuclear device is not just another weapon with increased firepower. It is in fact a weapon of mass destruction and a whole new system, requiring new rules of command, control, communications, deployment and engagement. It is obvious that the control of this devastating weapon must rest firmly in the hands of the highest political authority in the country.

Although the decision to employ the nuclear option is that of the government. Yet it must be decided before hand as to when and to whom would the authority to use nuclear weapons be delegated in a crisis situation. India our potential enemy has numerical superiority in conventional forces and would have the advantage of initiative as an aggressor; time would therefore be of essence to the defender with numerical inferiority. Delegation of authority to use the nuclear option would therefore be essential. It may eventually be given to the commander of forces in the field under specified circumstances depending on the course and direction in which the battle unfolds to our eventual disadvantage.

Fast and secure communications is another essential factor in a nuclear environment. Communications from the Prime Minister and his security team through the shortest chain of command to the actual launch area of the nuclear weapon must be secure at all times.

As an ultimate precaution there must be presumed delegation of authority in cases where the seat of government has been wholly or partially destroyed and rendered ineffective by the enemy's nuclear strike. This would also be applicable when a higher military headquarters has been knocked out and ceases to function effectively, temporarily or permanently.

Intelligence gathering would gain added importance in a nuclear environment. It would be essential to have accurate, up to date and timely information about our potential

enemy's additional troop, aircraft and ship deployments and their likely intentions. His preparations for a nuclear first strike must be known at the earliest.

The government must decide before hand when and at what stage of a military conflict with India it would be forced to employ the nuclear option. The threshold must be clear and unambiguous. To use the modern Jargon, the bottom line needs to be clearly defined to avoid a miscalculation.

As far as cost of the nuclear weapons and their delivery system, it would depend on each country's perception and requirement of a minimum nuclear deterrent. According to Amit Gupta in the Indian Armed Forces Journal (September 1998), many analysts agree that India requires 100 to 150 nuclear weapons as a deterrent against China and Pakistan as a minimum. The estimated cost would be 714 million dollars a year for the next 10 years. In Pakistan a minimum deterrent could range between 30 to 50 nuclear weapons.

As Pakistan's military rulers have so often emphasized, Pakistan's rationale for its nuclear weapons is not only to deter the threat of India's nuclear weapons but also to counter India's conventional military superiority. Even during the short interludes when duly elected civilian Prime Ministers have ruled the country, Pakistan's foreign and military policies have been crafted in the army's General Headquarters (GHQ) at Rawalpindi, particularly the policies relating to India. Ever since the inception of its nuclear weapons programme in 1972, Pakistan's nuclear weapons have been in military custody and the country's civilian rulers have had no control over them. It is, therefore, no surprise that Pakistan has adopted a first use nuclear doctrine. Its military and political leaders have repeatedly stated that Pakistan would resort to the early use of nuclear weapons in a conventional conflict to prevent its comprehensive military defeat at India's hands and to ensure that its survival as a viable nation state is not threatened.

Pakistan's nuclear doctrine would, therefore, essentially revolve around the first strike option. In other words, we will use nuclear weapons if attacked by India even if the attack is with conventional weapons... Pakistan would use what Stephen Cohen calls an

"option enhancing" policy. This would entail a stage-by-stage approach in which the nuclear threat is increased at each step to deter India from attack. The first step could be a public or private warning, the second a demonstration explosion of a small nuclear weapon on its own soil, the third step would be the use of a few nuclear weapons on its own soil against Indian attacking forces. The fourth stage would be used against critical but purely military targets in India across the border from Pakistan - probably in thinly populated areas in the desert or semi-desert, causing least collateral damage... Some weapons would be in reserve for the counter value role.

Brigadier Saeed Ismat of the Pakistan Army also expresses similar views and propounds the first strike doctrine to checkmate an Indian offensive which almost all Pakistani defence analysts appear to believe will be aimed at dismembering Pakistan:[18]

There could be many scenarios (of Indian offensive strikes into Pakistan) but just to illustrate this point, let us visualize if an Indian military invasion came through the Rajasthan desert directed towards the Grand Trunk road near Rahimyar Khan, in a matter of days, India could cut off our north-south communication, divide and dislocate our military forces and divide the country in two. The capture of this critical space could act as a springboard to launch further man oeuvres of exploitation towards areas in depth. If they choose to limit their objectives, they could consolidate and retain these spaces. This action by itself can cause strategic division and isolation of our forces, leading to ultimate defeat and break up of the nation. In conjunction with (ground) offensives in other areas as well, they could prolong the war and go for our areas in depth. If Pakistan's strategy of "Riposte" or "Offensive Defence" were to fail, then the options would have foreclosed - except one! Pakistan would require a well-defined and declared strategy of using the ultimate choice of nuclear weapons aimed at the destruction of those military forces, which have intruded in its territory.

Pakistan's policy planners and military leaders have always gone out of their way to try to convince India that Pakistan's nuclear threshold is low. Quoting Abdul Sattar, Agha Shahi and Zulfiqar Ali Khan's jointly authored article in Dawn on October 5, 1999,

C. Uday Bhaskar has written: "The exigency under which Pakistan may use nuclear weapons is spelt out as: 'Although the precise contingencies in which Pakistan may use nuclear weapons have not been articulated or even defined by the government, the assumption has been that if the enemy launches a war and undertakes a piercing attack to occupy large territories or communications junctions, the weapon of last resort would have to be invoked." This may actually be rhetoric designed to deter India through a doctrine of irrationality rather than a carefully considered policy option that can be executed when the chips are down. If Pakistani military and political analysts think things through, they will be forced to conclude that while Pakistan may initiate a graduated nuclear response, as General Lodhi recommends, and achieve short-term tactical gains, India is likely to retaliate massively as per its declared nuclear doctrine of punitive retaliation and Pakistan would cease to exist as a viable nation state. It is a suicidal policy indeed for Pakistani defence planners and policy makers to glibly talk of initiating nuclear exchanges with India without having an escalation dominance capability and knowing fully well that their country would be wiped out from the map regardless of how much damage their nuclear weapons may cause to India.

Contrary to what most Indians say or want the world to believe, and most importantly, Pakistan's military planners would certainly have taken India's possible responses in case of a nuclear first strike by Pakistan. In doing so, two contingencies need to be emphasized:

1- Military sense dictates that for a Pakistani first strike to be effective, it has to be truly massive, and must ensure the destruction of almost all of India's counter-value targets and whatever counter-force targets that can be located and destroyed, so as to ensure that India would cease to be a viable nation-state. This would require Pakistan to enlarge its nuclear arsenal and enhance its delivery capability, keeping sufficient forces for a second strike against a retaliatory Indian strike.
2- India will retain enough forces for a second strike against Pakistan, which they envisage as to be able to destroy Pakistan as a viable nation-state.

This explains that in any event of nuclear war, no one side would be able to survive a first or a second or a third strike, and once the nuclear Rubicon is crossed, then both countries would rapidly scale the escalation ladder to nuclear annihilation or MAD. This essentially is the foundation of deterrence, which is in place, and is hoped to maintain peace in South Asia.

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Because of Pakistan's conventional inferiority, retention of the first-use option appears to be a deterrent against an Indian conventional attack. [6] Moreover, as Eric Arnett has suggested, Pakistan's conventional inferiority implies that the Indian Air Force could potentially erode most of Pakistani nuclear delivery capability in a conventional attack.[7] Given Pakistan's conventional inferiority and perceived vulnerability, the country's first-use doctrine is not surprising. Nor would it be surprising if Pakistan opted for a mobile and delegative command and control system. It is generally believed that the military is responsible for physical control of Pakistan's nuclear weapons program.

A proper command and control system must be based not only on the size of the force it controls, but also on the operational plan for that force.

OPERATIONAL REQUIREMENTS:

Indian and Pakistani descriptions of an ideal deterrent for South Asia have said that it should be credible, survivable, and non-provocative. These descriptions presume that such a deterrent will contribute to regional stability.

Therefore it has to be examined what India's and Pakistan's nuclear forces should look like if we treat these criteria as the requirements for a deterrent.

Credibility

South Asia's recent nuclear past of "recessed deterrence" or "non- weaponized deterrence" was (apparently) sufficient to give both countries reason to pause before considering military action. However, as the governments in India and Pakistan appear to be moving away from the "virtual" deterrence of the past toward an actual rather than a theoretical capability, we need to give some thought to what the term "credibility" really means now. In other words, what is it about these weapons that could make each state limit its military actions? Credibility in nuclear deterrence consists of two elements: a capability to deliver and explode nuclear weapons, and the belief by the other party that one has the will to do so. The underground tests confirmed the existing belief that both countries had a nuclear capability, but they only scratched the surface of what

the will or intent of each country was. Demonstrating intent, through some operational doctrine or description of how weapons would be used in war, is part of establishing a credible deterrent. An operational doctrine would logically begin by identifying a number of targets that would be attacked with the weapons available at the time a country decides to strike. Because the South Asian arsenals are much smaller than the superpower arsenals of the Cold War, the target lists and range of options cannot be as extensive as they were for the United States and the Soviet Union. However, there are large cities, industrial centers, and military bases within easy range of both sides' proposed and existing nuclear capable delivery systems, and while the range of options may not be of "superpower" extent, there are still important choices that each side can make about targeting priorities. Thus, while an employment strategy for South Asia need not be as complex as it was for the super- powers, neither does it need to be so limited that political authority is left only the option of total commitment or total capitulation.[8] To this end, it is expected of both countries to develop plans about how to execute preplanned strikes, and about how to ensure operational flexibility in target selection so that rigid preplanned target selection is not the only option. Such creation of target lists and employment doctrines will follow from efforts to ensure credibility.

Survivability

Survivability of nuclear weapons refers to the assurance that a country will have weapons left to retaliate if it is attacked first. While demonstrating credibility of intent demands an *employment* doctrine, establishing survivability demands a *deployment* doctrine, a plan about the way weapons are stored and readied for use in time of war. Obviously, if an enemy could figure out how to prevent those weapons from being used in time of war, the effect of the deterrent would be nullified. In order to keep the deterrent intact, therefore, weapons must be protected against the risk of preemption.

Moreover, the adversary must be convinced that preemption is not possible. There are two basic ways to protect any asset: active and passive defense. "Active" defense means destroying any attacking force before it can destroy its target, while passive

defense involves limiting the *effects* of an attack without actually stopping it. Given the current rudimentary air defense capability on both sides in South Asia, active defense is currently unlikely; a protection scheme based on passive measures is more likely to provide for robust defense. Because the Indian and Pakistani arsenals are still fairly limited in size, passive defense measures are most likely to complement the advantages of a small arsenal: hardening, dispersal, and mobility. Hardening is technically straightforward as a passive defense mea- sure. But a hardened facility is fixed and immovable, and is likely to attract attention to whatever is being held there. [9] Hardening may minimize the destructive effects of an attack, but it does little to actually prevent an attacker from locating a target; it may even have the perverse effect of encouraging a more ferocious attack, if the value of the target is high enough. Thus the more likely passive methods to ensure the survival of a relatively small arsenal might be those that make it most difficult for an attacker to pinpoint the heart of the other side's arsenal.

Two such methods are dispersal and concealment. Dispersal places weapons in a variety of locations rather than in one central location. Dispersal also capitalizes on the ease of moving mobile weapons from place to place, making it more difficult for an attacker to know where these weapons are and thus reducing the possibility that all weapons could be destroyed in a preemptive attack. Another way to protect weapons is to conceal them. If an attacker can't find his enemy's weapons, he can't attack and destroy them. To ensure that weapons remain hidden, states can employ multiple hiding places, or make the weapons mobile and continually move them around. In such a mobile configuration, weapons are both dispersed and concealed.

CONNECTIVITY

The way in which forces are deployed in turn affects a critical aspect of command and control: connectivity.[10]

Connectivity simply means the ability of a country's political leadership to maintain constant communications with their nuclear forces. This area of command and control includes the measures that may be taken to ensure that nuclear forces are always in a position to receive timely instructions from the institutions designated to authorize

alerting, launch, or recall of nuclear forces. The potential for connectivity failure raises issues of execution authority and pre-delegation—if leadership can't talk to the forces, how should those forces respond? How, then, do the measures taken to make the arsenal survivable affect the issue of connectivity? The first survivability choice described above was hardening. This option permits features like buried phone lines that provide the greatest chance of continued connectivity; for reasons stated above, however, it is an unlikely choice for both India and Pakistan. Mobility, which combines the benefits of dispersal with the benefits of concealment, is a more likely option. But by increasing their survivability in this manner, India and Pakistan will also increase the susceptibility of these forces to broken connectivity, since forces on the move are more difficult to talk to than forces at a fixed and known location. Thus, in trying to ensure survivability through mobility, a country trades one strategic problem for another. What, then, are the problems associated with degraded connectivity, and what are possible solutions?

The kinds of connectivity challenges a country faces depend on the delivery vehicles it deploys. Of three fundamental types of delivery vehicles—manned aircraft, land- based ballistic missiles, and sub- marine-launched missiles, protection from a conventional attack may be possible Land-based ballistic missiles, either fixed, or on mobile TELs (Transporter-Erector-Launcher) are the most likely to be used in South Asia. Aircraft, first, have several disadvantages as a delivery vehicle. An aircraft may be destroyed on the ground in a conventional or a nuclear attack or an airbase runway may by hardening shelters for airplanes, putting them under cover to hide them, or dispersing them to a number of bases to complicate the targeting problem for a potential attacker. Even so, aircraft have several weaknesses as a secure second-strike delivery vehicle. They may be vulnerable to both nuclear and conventional attacks, and because of their reliance on runways, may not be able to respond if the runway is destroyed. Moreover, connectivity with flying aircraft, through two-way radio communications, is not as assured as is landline communication with a fixed and hardened facility.

However, assuming surviving command posts and the absence of communications degradation from prior atmospheric nuclear blasts, connectivity with aircraft can be maintained with moderate effectiveness.

A mobile ballistic missile escapes some of the disadvantages of aircraft. Not tied to a runway, it may simply be moved and readied for launch miles away from its home base. Field deployment, however, presents a challenge to continued connectivity. At an established base, hardened landlines provide the assurance that national leaders can talk to their forces. But once these forces start deploying to other locations, where they can take advantage of concealment, established landlines become fewer, and continued connectivity becomes problematic.

Submarines, finally, have the built-in advantage of dispersal and concealment. But communication with submerged submarines is extremely difficult and this option virtually guarantees poor connectivity. Moreover, at least for the time being, completed development of a submarine and associated missiles is years away for both India and Pakistan. Thus, one of the vehicles likely to be used to launch a retaliatory strike is a ballistic missile, something that is also indicated by the recent emphasis both India and Pakistan have placed on developing functioning ballistic missile systems. Such a weapon system, if made mobile (unlike the first generation of missiles in the superpower rivalry), may be deployed to the field to take advantage of dispersal and concealment to ensure the survival of a retaliatory force.

COMMAND AND CONTROL: THE ACADEMIC DEBATE

In the wake of the 1998 nuclear tests, the debate between proliferation optimists and pessimists relates command and control issues to the "big picture" question of proliferation, that is, whether the spread of nuclear weapons is good or bad for stability. Proliferation pessimists argue that because emerging nuclear states have limited resources and experience with nuclear weapons, an adequate command and control system for dealing with them safely is unlikely to emerge. The dangers of inadequate command and

control translate into an increased danger of an unauthorized or accidental launch or detonation, leading to a potentially catastrophic nuclear exchange.[11]

The optimist response, as originally formulated by Kenneth Waltz, is that it is nonsense to predict that new nuclear powers will fail to develop adequate command and control since they have every incentive to avoid an unwanted nuclear exchange, they will develop systems to provide adequate control. At first glance, the publicly available record of what India and Pakistan have done since their nuclear tests seems to support the view of the proliferation optimists, and clearly leaders in both countries recognize that the control of these weapons is vitally important. In India, A.J.P. Abdul Kalam, head has given assurances that India has all the resources necessary to build an adequate command and control structure. Answering the charge that limited re-sources would lead to inadequate command and control, another Indian official responded that "elaborate" systems were unnecessary, since the bomb would always be under civilian control.

Assurances from Pakistani officials sounded the same note of confidence. Foreign Minister Sartaj Aziz said that Pakistan had developed an effective command and control system, and there was "no chance" of an accidental nuclear war with India.[12]

Army Chief of Staff Jehangir Karamat said that Pakistan had a "proper" command and control that addressed "technical" concerns. [13] These statements support the optimist prediction that leaders have every incentive to develop a safe and reliable system to deal with their nuclear weapons deployment modes. This leads to a variety of predictions about the nuclear command and control arrangements that are likely in emerging nuclear states. [14]

Pessimists further argue that the danger in a crisis, of some unforeseen circumstance or accident could contribute to the unintended launch or detonation of a nuclear weapon.. Second, pessimists predict that the close geographic proximity of these emerging nuclear states to their greatest rivals could, combined with inadequate early warning systems, lead to a hair-trigger response to an attack warning. Finally, pessimists

predict that states will concentrate their resources not on developing a safe and reliable command and control architecture, but on developing and refining the weapons themselves. The sum of these predictions is the big picture prediction made earlier, that command and control in emerging nuclear states will be in- adequate, and the danger of accidental or unauthorized launch will be high. The optimists counter with a different set of predictions, contending that the limitations of small nuclear arsenals are actually its operational strengths. First, a small nuclear arsenal allows for greater operational simplicity, avoiding the complex maze of procedures and options confronting the nuclear superpowers and thereby reducing the chances of an accident or mistake. Second, since arsenals would be small, the emphasis would be necessarily on a counter value rather than a counterforce strategy—with few weapons, neither side could afford to waste any on the extremely uncertain prospect of destroying the other side's retaliatory capability. With an emphasis on counter value targeting (and a clear communication of this strategy to the other side), neither has a "use them or lose them" incentive to strike early in a crisis. Finally, optimists predict that each side will be able to protect its nuclear force through the simple means of dispersal and concealment. A hidden retaliatory force is a secure one, optimists argue, and a secure second strike enhances stability.

These arguments had, until recently, little history against which to validate them, and relied heavily on theoretical assumptions. How- ever, the May 1998 nuclear tests by India and Pakistan have given us some empirical evidence against which to compare these theoretical accounts. Let us now look at events in South Asia over the past year and see how the actions of each country match the predictions of the two sides of this debate.

Several developments since the 1998 tests constitute important clues to the command and control structure in both countries. One of the most prominent events has been the development and testing of the Agni, Ghauri, and Shaheen ballistic missile systems. These specific missile systems have several characteristics that seem to support the contention that nuclear systems in India and Pakistan could be deployed and concealed to prevent their preemption. Pakistan's liquid- fueled Ghauri and solid fueled

Shaheen both feature mobile launchers, and it is reasonable to infer that Pakistan envisions deploying these systems in a mobile configuration.

India's most recent development program for its Agni ballistic missile has focused on up- grading the awkward combination of a solid first stage and liquid second stage to an all-solid fuel configuration, thus enhancing the prospects for making this missile mobile. This aspect of the missile development programs in both countries seems to point in the direction of dispersal and concealment. Other developments in South Asia, however, make it less certain that the optimist position is correct, and some disturbing features of these programs are cause for concern. The Indian navy has made a concerted attempt to get into the nuclear game: India has attempted to develop a submarine platform for launching nuclear missiles, and is working on development of the Sagarika, a cruise missile designed to be launched from a naval platform and capable of carrying a nuclear warhead. The program to develop a submarine as a platform for launching nuclear missiles has a number of possible implications. To begin with, an emphasis on developing new weapons, so soon after India declared itself a nuclear weapon state, suggests that emphasis in India re- mains on developing the weapons themselves rather than on developing the systems to make them safe and controllable. Secondly, the development of Prithvi, Agni, Sagarika, and a submarine launch platform may indicate that the arsenal in India will not be especially limited in size. Since one of the major assumptions of the optimist school is the belief that arsenals would remain small, this development, if continued, seriously weakens their case.

As has been argued throughout, clarification of employment doctrine is crucial to the command and control of nuclear forces, and doctrinal declarations since the nuclear tests are yet another cause for concern. India has openly stated a no- first-use policy, meaning that it would not be the first to use nuclear weapons in a crisis, or in an actual war with Pakistan. However, Pakistan has failed to give a similar pledge, raising the possibility that it would cross the nuclear threshold in a war against India. The most likely reason for Pakistan to retain a first-use option, as discussed earlier, is to deter India during a conventional conflict and to prevent India's numerically superior army from

invading. Pakistani doctrine thus permits the use of nuclear weapons against a massed Indian adversary, whose conventional might Pakistan cannot match.

While such a Pakistani doctrine is easy to understand, it is also easy to misunderstand. The predictions of the proliferation optimists are based on an assumption that new nuclear nations would develop a counter value rather than a counterforce doctrine, and would clearly articulate that strategy to the other side. Part of that articulation is a clear no-first-use policy, and the lack of that declaration weakens the stable relationship that optimists predict.

The next prediction comes from the pessimist school and deals with the dangers of pre-delegation of launch authority.

The idea behind pre-delegation is the recognition that if, in a national emergency, a potential adversary is able to isolate the country's political leadership, it can prevent damage to itself by striking the opponent's leadership, regardless of the status of the country's nuclear forces. To prevent its forces from becoming impotent in a decapitating strike, a country might therefore opt for pre-delegation. This authorization simply means that under a carefully defined set of circumstances, a lower echelon commander could respond with nuclear weapons on his own authority, even if there had been no specific orders from the legally constituted, higher authority. A commander assesses the situation inaccurately and, in the absence of but pre-delegation also introduces a risky element to control of nuclear forces. Authorizing lower echelon commanders to strike in certain circumstances without a positive order from the top dramatically increases the potential for mischief. Potential disasters include a "Dr. Strangelove" commander who can't wait to use the nukes under his control, or a circumstance in which contrary instructions from the top, starts an unwanted nuclear strike. To what extent is such a strategy likely to be implemented in South Asia? The answers differ, depending on whether the strategy is India's or Pakistan's. We begin with India. Because of the history of military exclusion from decisions on military national strategy in India, it is un-likely that pre-delegation would be readily given to even the highest military commanders.[15]

Thus, in a situation in which civilian leadership was isolated from communicating its decision to the military, the nuclear forces would be likely to "fail impotent," to use Feaver's "always/never" terminology. In other words, they would fail the "always" portion (always respond when you want them to) of the "always/never" standard. One may argue, as some scholars have done, that civil-military relations in India support a rather tight civilian, assertive control of the nuclear forces. One could also argue that for India to achieve a credible nuclear deterrent, the military must assert its expertise and come to the forefront of national security affairs. [16]

If leaders are not willing to pre-delegate, are they willing to accept the consequences of a system that is likely to fail impotent in a time of crisis? It is essential to point out that one of the least desirable strategic by- products of a nuclear strike, the isolation of nuclear forces from their leadership, could result not just from actual preemption but from the degraded communication capability that may result from the choice of a deployment strategy. Forces may be isolated not because leaders are killed, but simply because their removal from established and hardened command and control facilities degrades connectivity. In this case, the problem arises not from a pre- emptive decapitating strike that renders the nuclear forces incapable of responding—under such a circumstance, the legally constituted authority is a surviving one, and may even have a cogent decision to communicate. But, if the act of dispersal has removed the nuclear forces too far from the government authority that controls them, the result is as effective (or disastrous) as if the enemy had destroyed the executive mansion. If forces are dispersed, therefore, they are less attractive as targets but run the risk of being ineffective because political leaders cannot communicate with them. To prevent their forces from being ineffective, leaders may choose to accept the risks associated with pre-delegation. Thus, dispersed forces may be associated with delegative control and may thus be more likely to "fail deadly." Therefore, while such an arrangement may in-crease day-to-day deterrence, it may be detrimental to crisis stability and certainly more susceptible to accident.

PAKISTAN'S NUCLEAR COMMAND AND CONTROL

Nuclear Command Authority (NCA):

In April 1999 the Chief of Army Staff, General Pervez Musharraf, said the central command system to use nuclear and missile technology would be ready within one month. He said four broad components of the system are: i) the creation of a National Command Authority, ii) developmental control by a governing body, iii) Strategic Force C Command and iv) Secretariat for all these three commands.

However, in point of fact this new military command and control structure was not implemented at that time. The unwillingness of the civilian leadership to take the military leadership into confidence on nuclear weapons control matters is said to have figured in the October 1999 military coup by General Musharraf.

Following the overthrow of the civilian government, on 02 February 2000 the National Security Council approved the establishment of the National Command Authority (NCA) to control policy on nuclear weapons. The National Command Authority is responsible for policy formulation and will exercise employment and development control over all strategic nuclear forces and strategic organizations. It consists of an Employment Control Committee and a Development Control Committee, as well as the Strategic Plans Division which acts as its Secretariat.

- The Employment Control Committee is chaired by the head of the Government and includes the Ministers of Foreign Affairs, Defence, Interior, Chairman of Joint Chiefs of Staff Committee (CJCSC), Services Chiefs, Director-General of Strategic Plans Division (Secretary), technical advisers and others, as required by the Chairman, including Chairman of the Pakistan Atomic Energy Commission, the developer and custodian of the nuclear weapons themselves, the Kahuta Research Labs (KRL) and the National Development Complex (NDC)

- The Development Control Committee is also chaired by the head of Government and includes CJCSC (Deputy Chairman), Services Chiefs, Director-General of Strategic Plans Division and representatives of the strategic1organizations and, the scientific community. This Committee controls the development of strategic assets.

- The Strategic Plans Division, headed by a senior army officer, a serving Lt. General of the Pakistan Army, was established in the Joint Services Headquarters under the CJCSC to act as the Secretariat for the NCA and perform functions relating to planning, coordination, and establishment of a reliable command, control, communication, computers and intelligence network. Another three star Army General heads the Strategic Forces Command.[17]

Islamabad took another step in safeguarding its nuclear facilities in November 2000 when it placed all of Pakistan's 'strategic organizations' — including KRL, the NDC and the PAEC — under the control of the NCA. Pakistan has also established the Pakistan Nuclear Regulatory Authority (PNRA), which is meant to control the import-export or transfer of nuclear material and technology. One of the prime responsibilities of the PNRA is the enforcement of strict nuclear export controls. [18]

Pakistan's nuclear bombs have been declared by Gen. Musharraf to be in a "disassembled state", meaning probably that the fission core is kept separately from the non-nuclear (ignition) components. Nevertheless, according to General Kidwai of SPD, the bombs can be assembled "very quickly". The same General Kidwai stated that Pakistan has "ground and air capability for the delivery of nuclear weapons". This apparently means that airplanes and/or missiles can deliver bombs/warheads. Gen. Kidwai said explicitly that nuclear artillery is not part, at the moment, of the Pakistani nuclear programs.

According to the same Gen. Kidwai, there are now no such things as PALs (Permissive Action Links) to prevent unauthorized use of nuclear weapons In fact, the

emplacement of PALs would be needed only if the weapons themselves are assembled and, as a consequence, the emplacement of PALs could be interpreted as a sign that Pakistan is moving towards a quicker nuclear reaction capability. According to Foreign Minister Sattar there was the possibility that a group of Pakistani officials may visit the US to discuss issues concerning such issues as PALs and control of nuclear devices.[19]

There is some gray area here. PALs do not exist, but, at the same time, weapons can be assembled "very quickly" and so also the reaction in a situation of crisis can be relatively "very quick". This raises some important questions about the effective control of nuclear weapons in moments of crisis. This is an important area in which, according to us, international cooperation with nuclear and non-nuclear weapons states could be developed. The impression is that an offer of cooperation to technically improve security and safeguards of nuclear materials and nuclear weapons can be and probably will be positively considered by Pakistan, provided that some obvious conditions are met, such as the protection of classified data and the absence of intrusive activities.

General Kidwai stated further that the safe control of nuclear weapons is guaranteed by a "3-men rule", namely any procedure involving nuclear weapons requires the concurrent decision by 3 persons. This has been contrasted to the 2-men rule that apparently exists in various US nuclear operations. In the US though, multiple devices to prevent unauthorized use are ubiquitous and, most of them, quite sophisticated.

In February 2000, the Strategic Plan Division (SPD) has been established in order to improve the control of nuclear operations. As explained by Gen. Kidwai and Brig. Salik of SPD, the SPD itself acts as a secretariat for the National Command Authority (NCA) headed by the Head of the Government that deals with all aspects of Nuclear weapons. More precisely the NCA is a "military-political-scientific forum" assisting the Head of Government in all nuclear matters. Here follows a brief description of the structure of NCA.

The NCA is divided into two committees the Employment Control Committee (that supervises the employment policy and the possible actual use of nuclear weapons) whose Deputy-chair is the Minister of Foreign Affairs and the Development Control Committee that supervises the nuclear development program, whose Deputy Chair is the Chairman of the Joint Chiefs of Staff Committee (CJCSC). In both committees it is understood that the chairman is the Head of the Government. Besides the Chairman and the Deputy-chair, the members of the Employment Control Committee are: the Minister of Defence, the Minister of Interior, the CJCSC, the Services Chiefs and the Director of SPD who has the role of Secretary of the Committee. Other people can be invited according to specific needs. Besides the Chairman and the Deputy-chair, the members of the Development Control Committee are: the Services Chiefs, the Heads of concerned strategic organizations (such as the Scientists), the Director of SPD who has the role of Secretary of the Committee, the Services Strategic Forces (for the operational control).

As the names suggest the Development Control Committee deals specifically with the planning and development of nuclear forces, while the employment Control Committee deals with what can be defined broadly as "nuclear strategy" including targeting policy and the conduct of nuclear operations

Gen. Kidwai stated that practically all (99%) of the nuclear decisions pertain to the Head of Government and that no "delegation of authority concerning nuclear weapons is planned". After 1998, the management of nuclear weapons, with the establishment of NCA and SPD became a "transparent institutionalized capability". This has also the purpose of "reassuring the world that everything is under control".

Pakistan Army has also raised the Strategic Forces Command and constituted Rocket Regiments housing the Hatf, Ghauri and Shaheen SSMs.

INDIA'S NUCLEAR COMMAND AND CONTROL

On January 4, 2003 India publicly announced a formal nuclear command structure under civilian control. Which made public a set of political principles and administrative arrangements to manage her arsenal of atomic weapons? Although the broad outline of India's nuclear doctrine was already known, but the nature and chain of her command and control over the nuclear weapons had remained unclear. In fact, on August 17, 1999 an officially constituted advisory panel to the Indian National Security Council released draft of her nuclear doctrine. Only a formal Indian parliament's approval of that draft is awaited.

The Indian Government filled that gap by revealing that a two-layered structure called the Nuclear Command Authority (NCA). NCA would be responsible for deployment, control and safety of Indian nuclear weapon assets. In a statement issued after the Cabinet Committee on Security (CCS) meeting-attended by Prime Minister Atal Bihari Vajpayee, his deputy Lal Kishenchand Advani, Defence Minister George Fernandes and Foreign Minister-the government announced, any decision to launch a nuclear attack will be taken by the political leadership and executed through the nuclear command. Moreover, the CCS also approved arrangements for alternate chains of command for retaliation in all eventualities. The important details of the CCS announcement are the following:

- The NCA comprised:
  Political Council, and an Executive Council.

- The Political Council Chaired by the Prime Minister, Atal Bihari Vajpayee.
  Power: It is the sole body, which can authorize the use of nuclear weapons.

- The Executive Council Chaired by the National Security Adviser to the Prime Minister Brajesh Mishra.
  Responsibility: Provides inputs for decision-making by the NCA and executes the directives given to it by the Political Council.

- Commander-in-Chief of Strategic Forces Command: He is responsible for the administration of the nuclear forces. It's seemed that Air Marshal Teja Mohan Asthana — the commander of the Southern Air Command- would be the first chief of the Strategic Forces Command. It was also reported that besides those from the services, the Strategic Command would have a fair number of civilian staff, including experts from the Indian Nuclear Energy Commission and missile experts from the Defence Research and Development Organization. Significantly, the creation of the Strategic Forces Command had ended the tussle between General Headquarters Indian Army and Air Headquarters Indian Air Force for the control and command of Indian nuclear arsenal, till the writing of these lines. [20]

Less than a week after General Pervez Musharraf made the spine-chilling disclosure that he was all ready to unleash 'unconventional war' on India -- presumably with nuclear weapons -- had a single Indian soldier crossed the border during the recent 2001-2002, 10-months-long standoff, India's Cabinet Committee on Security had announced the formation of a Nuclear Command Authority. It also approved the appointment of a commander-in-chief of the Strategic Forces Command to manage nuclear forces.

Three elements of the NCA and the official 'nuclear doctrine' -- publicly summarized for the first time -- are significant.

First, like the 1999 'Draft' made by the National Security Advisory Board, this doctrine too emphasizes a 'credible minimum deterrent,' with which India will inflict 'massive' and 'unacceptable damage' upon any adversary which strikes it first. The scope and scale of the 'deterrent' is highly ambitious and open-ended.

Second, there is a further dilution of India's no-first-use commitment. New Delhi will now retaliate with nuclear weapons 'in the event of a major attack against India or Indian forces anywhere' -- an attack made not just with nuclear weapons, but with 'biological or chemical weapons' too. In this, India is emulating the US' December 2002 'National

Strategy to Combat Weapons of Mass Destruction:' massive nuclear retaliation killing thousands of non-combatant civilians, in response to chemical or biological weapons which usually kill on a smaller scale, e g hundreds of soldiers. This disproportion makes NFU's dilution especially obnoxious.

Third, a nuclear strike can only be authorized in India by the political leadership through the two-tier NCA. Only the NCA's Political Council, chaired by the prime minister, has such authority.

The Executive Council, chaired by the National Security Adviser, will provide 'inputs' for decision-making and execute the Political Council's directives. While this reiterates the well-known position a civilian finger can only pull that India's nuclear trigger, the new structure is actually meant to facilitate greater involvement of the military in nuclear decision-making. The Executive Council is likely to include armed forces personnel, who will tender advice on security threats. It is also reported that scientists and engineers entrusted with manufacturing nuclear weapons will share with the armed forces information about their exact capability and yield.

Civilian control is, of course, preferable to military control, which lacks a popular mandate. But it doesn't guarantee responsible decision-making. The Hiroshima and Nagasaki bombings, it bears recalling, were ordered by a democratic government.

India's Strategic Forces Command will place the nuclear warheads in the custody of the Department of Atomic Energy, the detonation assemblies with the Defence Research & Development Organization, and the delivery vehicles with the armed forces. This is the operative, material, part of the new decision. The rest --'strict controls on the nuclear- and missile-related exports' and commitment to a 'nuclear weapons-free world' -- is largely rhetorical.

Pakistan, for its part, has more than matched India. Its own Nuclear Command was established, in February 2000. Pakistan is believed by international experts to be more advanced than India in marrying nuclear warheads to missiles. Its doctrine permits a

nuclear first strike. There are several indications that Pakistan was at a high level of readiness to strike during the Kargil war and in the latest standoff with India.

However, India too had contingency plans for a nuclear strike. As India's just-retired army chief General S Padmanabhan said: 'We were absolutely ready to go to war. Our forces were well located...' He clarified that India had a full assessment of Pakistan's nuclear capability and was 'not deterred' by it: 'We were ready to cope with it.' This 'coping' could only have been a retaliatory nuclear strike. Pakistan has, of course, been irresponsible in making nuclear threats. But India too has been reckless -- and hypocritical as well as sanctimonious. The conservative *India Today* confirms that in January and end-May/early-June 2002 year, India drew up plans for a major conventional attack on Pakistan. It called these off under US pressure. [21]

Moreover, In the Indian case, for optimum utilization, nuclear assets will, in peacetime, be earmarked and allocated to SFC, its operational control vested with C-in-C SFC. While the single service will continue to administer the strategic nuclear assets, the exception would be in the case of the 333 Prithvi Missile Group (PMG) and the 334 PMG under raising. These together with the short range Agni I manned by Army Artillery Corp will become integral to SFC. Since the Mirage 2000, Jaguars and Su 30 MKI are all dual use fighters, even after being made nuclear capable these will remain on the orbit of IAF and be allotted to SFC as explained earlier. [22]

The third leg of the nuclear triad, naval platforms, is not operational yet. When the Russians lease the Akula Class nuclear submarines (it could be very soon now) or the indigenous Advanced Technology Vessel project is completed (in five to seven years) and sea-delivered nuclear weapon is available (two to three years) only then will the most credible component of nuclear capability become operational.

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CHAPTER 6

EMERGING WEAPON TECHNOLOGIES IN SOUTH ASIA AND THREATS TO REGIONAL STABILITY

Conventional and nuclear force postures are closely interlinked, as are conventional and nuclear Deterrence. The weapon carrying and launch platforms of all nuclear weapons are essentially conventional weapon systems, and these are the key to stability between two nuclear-armed adversaries, or non-nuclear powers. Strong conventional forces are imperative to keep the balance of power from shifting too much in favour of the enemy, along with keeping up a strong conventional deterrence in place, and more importantly, to keep the 'nuclear threshold' levels at a safe pedestal, and prevent them from falling dangerously low to a degree where the imminent use of nuclear weapons becomes inevitable, following the breakdown of conventional deterrence. It is in this context that the conventional forces postures that affect stability in South Asia, be studied in the context of India-Pakistan balance of power, and how developments in these are bound to affect the stability in the future.

The Indian Armed Forces have posed a multi dimensional threat to Pakistan's security and threaten to alter the strategic stability in South Asia with the induction of latest weapon technologies and integrating them into their existing order of battle. The Indian Defence budget touches the figure of US $ 17 billion and they have been spending US $ 1.5-2.0 billion annually for the past many years on acquiring state-of-the-art and highly sophisticated weapon systems that fall in the category of "force multipliers". One such system is the Israeli "Phalcon" Airborne Warning and Control System (AWACS), and the other is the Israeli ARROW Anti-Ballistic Missile (ABM) system, in addition to the Russian S-300 Anti-aircraft/missile systems. India has long cherished the dream of becoming a regional superpower and a force in the international system, and Indian

investments in the military sphere are a testimony in this regard. In order to understand the threat posed by these systems, it is necessary to acknowledge that South Asian security is based on the nuclear deterrent capabilities of India and Pakistan wherein India enjoys a conventional superiority. The theory of nuclear deterrence rests on the presumption that the use of nuclear weapons against any nuclear opponent will lead to Mutually Assured Destruction (MAD), thus keeping all nuclear belligerents in check. Furthermore, according to the cold war experience of the superpowers, in order for MAD to succeed, the strategic stability between two nuclear rivals must not be disturbed and anything that interferes or attempts to upset the balance will be destabilizing. The delivery platforms of nuclear weapons are always conventional weapon systems such as missiles and aircraft, and the Phalcon and the Arrow have the capability of affecting the balance by neutralizing Pakistan's strategic missiles and making the Pakistan Air Force's air attacks against Indian targets as suicidal. Pakistan will therefore have to take necessary steps to redress the balance and restore the strategic stability, thus further fuelling the arms race in the region. Introspection into these systems will lead us to an understanding of the magnitude of the threat, and why it will be necessary for Pakistan to correct the resulting imbalance.[1]

PHALCON AWACS

This is a theatre in which India has gained the upper hand with timely acquisitions. After some uncertainty, the Indian government and Israel signed a deal for the acquisition of the Phalcon AWACS system. The Phalcon, which was denied to China after US intervention, is an integrated phased array radar system consisting of airborne sensors, radar, electronic intelligence and communications intelligence that can provide complete coverage at long distances of almost 1000kms. The Indian military could control the air theater over Pakistan effectively using the Phalcon. The system detects launches of aircraft and missiles anywhere in enemy territory, and provides inputs to air commanders in real time, giving a strong edge in air battles and war strategy. The Phalcon probably increases by a magnitude India's air advantage over Pakistan, as it is a 'force multiplier'. The Phalcon systems could be operated from deep within India,

without exposing them to any threat while tracking aircraft and even naval vessels. With this enhanced air surveillance and interception capability the Indian Air Force (IAF) will have foreknowledge of the aerial and ground activity at PAF air bases and air defence installations. These AWACS can detect the number of aircraft flying in the air inside Pakistan, parked or taxing on the ground. They will know the location and deployment of Pakistani radars, missiles i.e. Surface to Air Missiles (SAMs), surface to surface missiles, Intermediate Range Ballistic Missiles (IRBMs) such as the Ghauri and Shaheen which form the backbone of Pakistan's nuclear deterrent capability, nuclear installations, military concentrations, armour and artillery deployments, oil depots, power houses, and vital infrastructure and especially Command, Control, Communications and Intelligence C3I) networks. The IAF AWACS could even monitor air and rail movements and the traffic on Pakistani highways.

The Israeli Phalcon AWACS will be mounted on the Russian Ilyushin-78 (Il-78) transport aircraft and will be in service shortly. The Il-78 has a top speed of 800 KPH, range of 7000 KM and endurance of four hours without refueling. With aerial refueling its endurance could exceed ten hours. The IAF is also acquiring aerial refueling tankers to enhance the range of its fighters and airborne radar platforms like the Phalcon. In conjunction with the IAF SU-30MKI, Mig-29, Mirage-2000, Jaguar fighter bombers, aerial refueling tankers, and ground based air defence radars, surface to air missile systems and anti-aircraft guns, the Indian military will be in a position to establish air superiority in the early phases of any armed conflict. The PAF fighters will be vulnerable to surprise attack even within own air space and the IAF will be able to neutralize the PAF's air defence and support to the ground forces.

INDIA'S WAR DOCTRINE OF 'COLD START'-The implications for Pakistan and China:

It appears that India wants to take the dream of the father of India's missile program Dr. Abdul Kalam, formerly head of the Integrated Guided Missile Development Programme (IGMDP), now India's President to new dimensions. Its new war doctrine,

aptly named Cold Start was "unveiled" to the public by India's Army Chief Gen N.C. Vij on 04 March 2004 while inaugurating a two-day seminar on 'Army 2020: shape and size and structure and general doctrine for emerging challenges'. As reported by The Indian Express of 5th March 2004, he said, "With warfare scenario undergoing dramatic changes, the Indian Army has drafted a new war doctrine which would be finalized soon after it is circulated within the service as well as incorporating suggestions from the defence think tanks.

For reasons of security, the Indian Army Chief General N C Vij did not go public with the details of the new doctrine but the central idea revolves around replacing the age-old concept of mobilization of forces and Strike Corps spearheading the attack. The salient features of the new war doctrine, which calls for rewriting the war-book, are:

- Changed world doesn't allow massing of troops, invites diplomatic intervention
- Out go Strike Corps spearheading attack. Eight integrated battle groups to lead thrust into enemy territory
- Aim for 'total destruction of objective' but spare enemy's strategic potential to avoid nuclear response
- Focus on precision capability and hard impact since massive air, land campaigns not possible

According to The Indian Express of 06 March 2004's report titled: 'No eyeball to eyeball any more in new war doctrine', by Shishir Gupta, more details are provided: "While many in the forces may take credit for this doctrine, the then Western Army Commander Lt General Vijay Oberoi was one of the first to root for this strategy. Present Army Vice Chief Lt General Shantano Choudhary has refined the concept keeping in mind the existing nuclear environment. Gen Oberoi, who retired as Army Vice Chief in 2002, presently heads an Army think tank called CLAWS. This doctrine, debated at the last tri-Services military commanders conference, will be on the agenda again during the commanders' conference.

The new doctrine does not believe in dividing the forces into defensive or attack formations. India's three Strike Corps - Mathura-based I Corps, Ambala-based II Corps and Bhopal-based XXI Corps - will be there only for training purposes.

The war will be fought through eight battle groups with integrated elements from the IAF and Navy. Backed by tank regiments, heavy artillery, missile regiments and the air force, the battle groups will go for limited but lethal destruction on enemy territory. The Navy with its carrier-based fighters will have the key role of supporting the battle groups. Ships will also launch missiles like the Russian Klub. The idea is to destroy, not to hold or capture territory.

"This concept was first war-gamed during Exercise Vijay Chakra in the Thar Desert by Gen Oberoi in 2001 and synergized between the three forces during Exercise Brahmastra later that year. Still being war-gamed, a part of it was on view at Exercise Divya Astra in Pokharan this week. This strategy was fine-tuned once the threat of nuclear war dawned on the security establishment. Gen Choudhary did commander of the Jalandhar-based XI Corps, and his counterparts in IAF and Navy it then. Measuring the force application during war time, they took into account the nuclear threshold of the adversary."

'Divya Astra' (divine weapon) was organized at the Mahajan Firing Ranges (Rajasthan), on March 1, 2004 by the Indian Army and Air Force as a massive firepower demonstration of the new long-distance multiple weapon firing ranges from a variety of weapon systems, comprising: tank columns, infantry combat vehicles, MI-35 attack helicopters, MiG-21 and MiG-23 jet fighters. Some of the systems demonstrated included the Russian Krasnopol precision-guided ammunition fired from the 155-mm Bofors guns. Krasnopol is guided onto the target by a laser designator operated by an observer close to the target. The GRAD BM 21 multi-barrel rocket launchers consisting of 40 tubes with 122-mm rockets displayed their lethality. The Army also unveiled its long-range reconnaissance and observation system, integrated observation equipment and radars.

The Israeli-made Searcher UAV also demonstrated its capabilities by taking high-resolution pictures of "enemy activity" from very high altitude.

The timing of this "disclosure" of India's new war doctrine is of interest. Why have India's top military commanders returned to their drawing board to work on this new war doctrine: the 'Cold Start' strategy while a peace process between India and Pakistan is underway? What is the implication of announcing that hard strikes can be launched without massing of troops? Is it only to conceal their aggressive designs from an unsuspecting enemy and deny him the flexibility of response or to stealthily achieve the odious aim of belligerence before the watchful international opinion plays its role in thwarting the iniquitous plan?

India has been trying to rationalize the change in its war strategy through its defence analysts and think tanks ever since its troops withdrawal (read capitulation) after nearly a yearlong mobilization along Pakistan's international boundary following the December 13, 2001 (stage-managed) attack on the Indian Parliament.

In an exclusive interview to The Hindu, the former Chief of the Army Staff, General S. Padmanabhan, has thrown new light on the reasons for the failure of Operation Parakram; the massive build-up ordered in the wake of the December 13, 2001, terrorist attack on Parliament House. He was responding to criticism that a slow mobilization of the troops 'gifted' Pakistan time to prepare its defences - and eventually meant that the Operation had to be called off. Gen. Padmanabhan argues that significant military gains could have been achieved in January 2002, had politicians made the decision to go to war. These objectives, he says, could have included 'degradation of the other force, and perhaps the capture of disputed territory in Jammu and Kashmir. They were more achievable in January, less achievable in February, and even less achievable in March. By then, the balance of forces had gradually changed.'

"Critics of Gen. Padmanabhan's management of Operation Parakram have argued that air strikes against terror training camps could have been carried out within days of the

December 13 outrage. The Army, in turn, said that it needed time to prepare for the escalatory consequences of such attacks. Pakistan, Army planners believed, had an interest in taking the conflict towards a nuclear flash point as soon as possible. The Army believed the best prospects of avoiding such a situation was having forces in place that could rapidly secure war objectives. [2]

According to Gen. Padmanabhan, the kinds of limited strikes some were pushing for would have been 'totally futile'. 'If you really want to punish someone for something very terrible he has done,' he said, 'you smash him. You destroy his weapons and capture his territory.' 'War is a serious business,' he continues, 'and you don't go just like that. When December 13 happened, my strike formations were at peace locations. At that point, I did not have the capability to mobilize large forces to go across.'

Part of the problem with the cold start doctrine appears to have been India's defence-oriented military doctrine, which assigns most formations to hold ground against enemy attack.Offensive roles are largely assigned to three strike formations; the Mathura- based 1 Corps, the Ambala-based 2 Corps and the Bhopal-based 21 Corps. Unlike these strike formations, most other Corps can at best carry out very limited offensive tasks. India, Gen. Padmanabhan's remarks suggest, could have ended up starting a war from which it would have gained very little, and that too at great cost.

Doctrinal baggage, he accepts, crippled India's early options in 2002. 'You could certainly question why we are so dependent on our strike formations,' he said, 'and why my holding Corps don't have the capability to do the same tasks from a cold start. This is something I have worked on while in office. Perhaps, in time, it will be our military doctrine.' Gen. Padmanabhan's new book, 'The Writing on the Wall - India Checkmates America 2017," among other things, describes a fictional war in which India retakes the Haji Pir pass in Azad Kashmir.

Efforts are now under way to rectify some of these problems in doctrine identified in the course of Operation Parakram. The present Army Chief, Gen. Nirmal C. Vij, has pushed through an ambitious modernization of India's ground forces. New weapons systems are now being introduced which will allow each Corps a limited offensive capability of its own, reducing dependence on the strike formations. India's Special Forces are also being re-equipped to improve their ability to operate behind enemy lines for considerable lengths of time, and could play a key role in a future war."

The answer to this multi-pronged attack of brow beating and maliciously maligning, lies in India's ambitions of becoming a superpower and a full-fledged member of the UN Security Council so that it can continue its hegemonic designs undeterred.

Pakistan's being declared as the newest member of the elite club of 'Most non-NATO Ally' has caused chagrin in the minds of the Indian Defence planners as well as its External Affairs specialists.

This new war doctrine is deeply flawed. Indian war planners come up with these one-sided war doctrines now and then to boost their morale. The fact is Operation Parakram was never intended to start a war - just to pressurize Pakistan. Pakistan called India's bluff and the Indian Army - after losing more than 1500 soldiers to landmines went back to the barracks.

As with other Indian war doctrines, Cold Start assumes and presumes too much. For one thing, preparing 8 battle groups is going to take some logistics. India doesn't have too many cantonments along its border with Pakistan. If Cold Start aims to hit across the border at 8 points, then Indians would have a difficult time to hide 6 battle groups from Gujrat right up to Bikaner, which is mostly barren desert. So the element of surprise is gone. This is one great advantage of the Thar Desert to Pakistan. Since it is scarcely populated and there is very little cover - it is easy to keep track of Indian army movements.

Secondly, Strike Corps don't usually move as a single unit. A Strike Corps is sub-divided into different battle groups anyway - at least this is a how it is done in Pakistan - so what's new? India has three strike corps that will spearhead the attack on Pakistan. Even otherwise, each Strike Corps will bifurcate or trifurcate into 2 or 3 battle groups. So 8 battle groups would be the conventional way of moving forward. The only question is whether they will attack simultaneously or not, which would hardly go unnoticed by the Pakistan Army.

It would be prudent for the defence planners of Pakistan not to be cowed down by India's new war doctrine and its buying spree of weapons, delivery systems, jet trainers, Phalcon Radar, aircraft carriers, its missile tests and neither be lulled into a false sense of security by its being declared most non-Nato ally and to take India's peace overtures with a pinch of salt and not let their guard down. After all the Indian President himself provides the clue in his poem quoted in the beginning of this article; India's burning desire of creating a "new order, an order of strength and thundering of fire."

INDIA'S NEW NAVAL DOCTRINE

The Indian Navy has published its first-ever maritime doctrine that lays down a road map for development of the country's sea power in the new millennium. Significantly, the 148-page report, which comes weeks after the Indian Army released its new doctrine, moves away from earlier concepts of coastal protection and instead adopts new concepts of power-projection and littoral warfare to support land forces in operating in enemy territory. While several maritime strategies have been published by Naval headquarters earlier, this is the first time that an Indian Maritime Doctrine has been published and clearly spells out the need for a navy that is capable of conducting operations far from its shores. The doctrine also notes developments in the immediate neighbourhood in the context of India's maritime plans. The Chinese Navy, it says, "has acquired decommissioned aircraft carriers from Australia and Russia to study their construction details and evolve an indigenous design for a carrier by 2015". The Chinese

Navy will now move from being a coastal navy to "an ocean-going one" and has plans to configure its force levels around "two carrier groups".

In its focus on Pakistan, it points out that Islamabad has contracted a $ 1 billion deal with France for Agosta 90B submarines, makes a note of its non-NATO ally status and projects a "quantum increase in its naval capability". In addition to the long-established threat on the Western Seaboard, the Indian Navy underlines the strategic requirement to look East as well. The Singapore Navy, it says, has already acquired submarines and two Malaysian ones are under construction in European shipyards, while Thailand and Myanmar are negotiating to induct them too. Power projection, the doctrine says, can take a number of forms such as "combatant evacuation, amphibious operations, maritime air support, strikes ashore and land attack".

With India having signed a contract with Russia to acquire the 44,000-tonne aircraft carrier Admiral Gorshkov, with its complement of MiG-29K aircraft, the doctrine points out the need for a Carrier Battle Group as an instrument of sea control as well as sea denial. The doctrine moves away from earlier strategies where the Navy was inward looking and now even looks at developing capabilities to deal with "conflict with an extra-regional power" and "protecting Persons of Indian Origin and Indian interests abroad". The document also talks of military missions, including providing "conventional and strategic nuclear deterrence against regional states", as well as diplomatic missions to "enable the Government to use the Navy as an effective instrument of foreign policy". [3]

As India's economic weight in the international system has begun to improve over the last decade and a half and New Delhi enjoys productive relations with all the major powers, many opportunities in the Indian Ocean region and beyond are opening up to the Navy. Although it ranks among the top 10 naval forces of the world today, the Indian Navy has been adrift when it came to defining credible goals for itself. Its thinking about power and purpose has been influenced to varying degrees by its origins in the British Navy, its cooperation with the Russian Navy and the imposing model of the American Navy.

After being torn between these competing impulses for decades, the Navy is finally defining a mission for itself that is in tune with India's new potentials on the world stage. To be effective, however, the Navy needs to avoid a number of old pitfalls.

One is to posit India's naval options as a choice between defence of coastal interests and power projection. Besides defending the interests in its immediate neighbourhood, the Navy will increasingly be called upon to operate at longer distances and in contingencies far away from its shores.

The idea of power projection has often been combined in the past with the slogan that the Indian Ocean "belongs" to Indian Navy, and has shaped Indian maritime thinking accordingly whereby the Indian navy sees the Indian Ocean as "India's Lake", and seeks to control the seas from the Straight of Malacca to the Persian Gulf. The Naval version of the Prithvi missiles, the acquisition, production and test firings of the "Brahmos" anti-ship cruise missile with stand-off range, installation of "Barak" anti-missile ship borne systems from Israel, in addition to India's acquisition of the Admiral Gorshkov aircraft carrier from Russia, and seen in the context of India's Nuclear Doctrine wherein the Navy is assigned a major 'second-strike' capability, are manifestations of India's quest for naval supremacy and dominance in the entire Indian Ocean region, so as to use it as a potent instrument of 'power projection' and foreign policy, especially vis-à-vis its neighbours.

The growth of Indian conventional military capabilities has resulted in an asymmetry in the regional conventional military balance. Compounding the danger of this imbalance are the recently acquired nuclear capabilities of India and Pakistan. Thus, India's development and procurement programs have the potential to further destabilize India-Pakistan relations.

The nature and implications of the conventional military imbalance between India and Pakistan is discussed below that seriously threatens Pakistan's security.

Reduction of the conventional military threat will diminish the chances of escalation up to and across the nuclear threshold, avoiding an outcome with devastating consequences for not only the region but also the entire international community.

CONVENTIONAL MILITARY IMBALANCE

To understand the scale of the growing conventional military imbalance in South Asia, three major facets of both states' defense forces need to be examined: personnel strength, weapons systems and force posture. Furthermore, such a comparison must be nuanced by an evaluation not only of existing capabilities, but also of projected procurements and advances in military technologies.

Personnel Strength

The strength of India's active duty troops is 1,100,000 while Pakistan's is 550,000, a ratio of 2:1. India maintains a reserve of 800,000 (300,000 first-line reserves within five years full-time service; 500,000 committed until the age of fifty) while Pakistan has a reserve of 500,000 (committed to age forty-five for other ranks and fifty for officers), a ratio of 1.6:1. These numbers do not include the second line forces of either side: 1,089,700 for India and 294,000 for Pakistan, a ratio of 3.7:1. Thus, the total number of land forces available to India and Pakistan in case of a war is 2,989,700 and 1,344,000 respectively, a ratio of 2.22:1.

The Indian Navy has 53,000 personnel including 5,000 of the Naval Air Arm and 2,000 of the Marine Commando Force. These numbers indicate the sizable nature of the Indian Navy and its further plans to expand and induct new technologies and weapon systems as will be discussed later. In contrast, the Pakistan Navy is a modest force of 25,000 including 1,200 marines and 2,000 Maritime Security Agency personnel. This brings the ratio of the two navies to 2:1.

The Indian Air Force is the world's fourth largest; consisting of 145,000 personnel. The Pakistan Air Force is a smaller tactical air force of 45,000. Thus, the ratio

in strength of the two air forces is 3.22:1. The Indian Air Force poses an even greater threat than the numbers suggest because of the advanced capabilities of its combat aircraft and its active induction program.

Weapons Systems

While the strength ratio in terms of military personnel may not seem overwhelmingly in India's favor, the gap is considerably widened by the technological ascendancy of India's weapon systems. A comparison of some of the critical weapons systems is given in the following sections.

Related to land forces, the Indian armor has a clear advantage with a ratio of 1.73:1, approximately half composed of T-72 and T-90 tanks. In contrast, Pakistan's armored formations only have a small component of T-80UD and a few Al-Khalid tanks. In mechanized infantry, India has a considerable upper hand since its mechanized infantry consists of armored infantry fighting vehicles that are more advanced than the armored personnel carriers on which Pakistan's mechanized infantry is based. The Indian army enjoys numerical superiority in artillery with a ratio of around 4:1, better ranges of the 105 mm Indian Field Gun (a 105 mm IFG has a range of 17,200.meters), and multi-rocket launchers which have ranges from 11,000 – 40,000 meters depending on the type being used. The Pakistan Army enjoys qualitative superiority in Self-Propelled Artillery systems, which are of U.S. origin, and until recently enjoyed an edge by possessing Weapon Locating Radars, which the Indian Army has only recently acquired.

The Indian Navy possesses "a substantial naval advantage (5:1)." Like the other two arms of the Indian Armed Forces, the Indian Air Force is far superior to the Pakistan Air Force. The overall size of the Indian Air Force is six times larger than that of Pakistan's. Pakistan's front line aircraft, the F-16, would likely be unable to match India's most advanced combat aircraft, as they are few in number and have been hampered by a lack of spare parts. However, the Pakistan Air Force has embarked on an

ambitious self-reliance programme and has successfully flight tested the Super-7 multi-role jet fighter with China, along with upgrading its existing fleet of fighters

Military Posture

The third element in evaluating the conventional military imbalance is the posture of the three components of the armed forces taking into account their existing conventional capabilities.

Having demonstrated India's military strength and technological prowess vis-à-vis. Pakistan, this we will now discuss the peacetime deployment of the Indian armed forces.

The Indian Army is structured around five regional commands comprising of 12 corps.12

Out of these 12 corps, nine are either deployed along the Line of Control (LoC) or against Pakistan. These nine corps also include the three strike corps built around armored divisions and the RAPID divisions. The remaining three corps as part of the Eastern Command are deployed at Siliguri (West Bengal), Dimapur (Nagaland) and Tezpur (Assam).

The Indian Navy has three main Commands: Western (headquarters at Bombay), Southern (headquarters at Cochin), and Eastern (headquarters at Vishabhapatnam). Besides these, it also has a Far Eastern Sub Command with headquarters at Port Blair and the Naval Aviation with headquarters at Goa. The locations of the bases suggest that the Indian Navy's area of concentration is the western coast. The Indian Navy is operationally divided into two fleets:

The Indian Army corps include 3 armored divisions, 4 RAPID divisions, 18 infantry divisions, 9 mountain divisions, 1 artillery division, 15 independent brigades, 4 air defence brigades and 3 engineer brigades.

Reports suggest that the Western Fleet has around the same number of vessels as the Eastern Fleet if not more.

The Indian Air Force is organized into five Commands: Northern, Central, Southern, Southwestern, and Eastern. It has around 72 bases across India. The concentration of the bases in the west and northwest under the Central, Western, and Southwestern Command indicates that over two-thirds of the Indian Air Force is positioned near Pakistan. The allocation of air force wings and squadrons to these bases along with the bulk of India's most modern aircraft, the Su-30 MK, Su-30 MKI, Mirage 2000, Jaguar, MiG 29, and MiG 27, point to the strategic advantage these bases provide from an Indian perspective.

Given Pakistan's geophysical vulnerability with the proximity of major cities such as Lahore and lines of communication to the international border, the strength and technological superiority of the Indian armed forces pose a serious threat to Pakistan in the event of a conventional war. Furthermore, India's ability to move forces from the Eastern and Southern Commands to the western front within two weeks time and concentrate all three elements of the armed forces at the point of application against Pakistan further accentuates the conventional military imbalance in India's favor. The mobility of India's armed forces has been facilitated by the recent Sino-Indian rapprochement and desire to resolve the border dispute on the northeastern front. Thus, India is now more capable than ever of mustering sufficient numbers of its conventional military forces near Pakistan for offensive operations, jeopardizing Pakistan's security and integrity.

According to President Musharraf, "the conventional balance in South Asia is extremely important to maintain peace in the region;" nevertheless, based on India's defence acquisitions and developmental programs coupled with its currently held weapons systems such as laser guided bombs, the existing imbalance of conventional forces in South Asia does not seem to be improving in the near future.33 Instead, the

scales are heavily tipped in India's favor, and it seeks to consolidate a clear pre-emptive strike capability over Pakistan.

Implications for Military Adventurism and Nuclear Postures in South Asia

The net effect of significant Indian development and procurement programs and minimal Pakistani efforts has drastically altered the military balance in India's favor. As a consequence, New Delhi is likely to be more dismissive of Pakistan's minimum nuclear deterrent. Such an attitude would increase the possibility of military adventurism and rigidify India's approach to resolving the Kashmir issue. The likelihood of future crises over Kashmir would therefore remain high. Consequently, in any future crisis, Pakistan's nuclear posture would continue to rely on the option of first use to maintain deterrent credibility. The first-use posture would be insufficient, however. Due to the growing disparity in both sides' conventional capabilities, the credibility of Pakistan's deterrent would be impaired, as India would have greater capability to destroy Pakistan's nuclear assets before they are launched or engage their targets. Consequently, Pakistan may be forced to re-evaluate the size of its nuclear arsenal.

Furthermore, a growing imbalance in conventional capability is likely to accelerate escalation and impair efforts at escalation control. The escalation ladder in a nuclear crisis as understood in the West would not be applicable in South Asia due to the unpredictable and undefined nature of Pakistan's red lines and the significant conventional imbalance. Thus, while it is imperative to talk of Nuclear Risk Reduction Centers and nuclear escalation control measures in South Asia, it is also necessary for the international community to assist India and Pakistan to reduce conventional military threats that are linked to nuclear deterrence postures.

STRATEGIC AIR DEFENCES IN A NUCLEAR SOUTH ASIA

The most horrifying aspect of nuclear warfare is the prospect of civilian targets being bombarded with nuclear or thermonuclear weapons. This is also the ultimate

guarantor of deterrence as neither side would want to lose large numbers of its civilian population and its industrial base to nuclear attack. The effects of nuclear strikes against counter value targets in South Asia have to be assessed differently to the effects in the event of a nuclear war between the Soviet Union and NATO at the height of the Cold War. First of all, the weapons available to South Asian countries are of a smaller yield compared to the megaton monstrosities possessed by the big five nuclear powers. Pakistan in particular has access to weapons limited to the 15-50 kiloton range. India has the capacity to manufacture both thermonuclear and boosted-fission weapons, but these seem to be earmarked more for use in the event of hostilities with China.

While the weapons are smaller, the conditions existing in South Asian metropolises ensure that any nuclear attack will cause devastating casualties. The cities are crowded, buildings are of poor materials and fire-fighting facilities are inadequate even in peacetime. Moreover, medical facilities for treating cases of radiation burns etc. are limited - especially in the case of Pakistan. Any nuclear attack on a civilian target depends on the ability of the attacking force to penetrate the strategic air defences that are deployed around the principal target areas in South Asia. India's delivery systems, manned aircraft and missiles, are capable of hitting any target in Pakistan. Pakistan's systems are not yet able to reciprocate as they can only cover a limited area, this however, is likely to change in the near future because of the deployment of the Ghauri IRBM with its 1500km range.

Now we seek to explore the strategic air defences deployed by India and Pakistan and examine their ability to cope with the nuclear strike forces ranged against them. Before analyzing the impact of nuclear weapons on South Asian urban centres, a few assumptions have been made regarding the size and composition of the nuclear forces ranged against civilian targets. Pakistan is unlikely to possess more than (30) 20-50 kiloton atomic weapons at present. In India's case, a minimum of 85 such weapons is a reasonable estimate. Any boosted-fission or experimental thermonuclear weapons in India's possession are assumed to be earmarked for possible use against China. For the purposes of this article the following assumptions are made regarding the nuclear capable strike forces available:

PAKISTAN

30 x 20-50 kT weapons

40 x F-16 fighter-bombers

140 x Mirage III/V - 685km

140 x Nanchang A-5 attack aircraft

50 x M-11 missiles - payload of 500kg & 300km range.

6-12 x Ghauri IRBM

INDIA

85-100 x 20-200 kT weapons

110 x Jaguars (in 4 full-strength squadrons)

200 x MiG-27 (in 8 full-strength squadrons)

70 x MiG-23 (in three full-strength squadrons)

75 x Prithvi SSM (Payload of 500-1000 kgs. & range of 150-350km)

5-20 x 'Agni' IRBM

These are the forces likely to be available to either country in the event of war. However, it does not mean that all these forces will be earmarked for a nuclear strike. India, in particular will reserve a sizeable proportion of its forces for use against China.

Air Defences

Any nuclear strategy based around attacking civilian targets, either in a first strike or in retaliation, has to have a reasonably good chance of reaching their targets safely. To this end it is imperative to examine the air defenses protecting key strategic military and civilian targets in the Indian subcontinent. Both India and Pakistan have advanced air defense ground environment systems. These link a large number of air defense radars of varying origins into an effective air defense network. This network coordinates the

responses of powerful fighter-interceptor units and, in the case of India, a large number of surface-to-air missile squadrons. India and Pakistan face very different problems regarding air defense. India has the enormous problem of contending with its vast land area while Pakistan has to deal with its lack of depth.

Both nations face financial constraints, although this has not prevented them from acquiring sophisticated air defence equipment. In addition, both India and Pakistan have to contend with the increasing sophistication of the attacking force available to both sides. In recent times, India has embarked on a two-fold approach. Its nuclear strike forces have been dramatically upgraded with the 'Prithvi' missile and upgrades to the Jaguar and MiG-27 fleets. In addition, Indian air defences are being expanded and re-equipped with weapons and sensors that would render an attack by either Pakistani missiles or aircraft an extremely risky proposition. Pakistan, on the other hand, has been unable to procure modern surface-to-air missiles in any meaningful numbers and lacks an effective defence against either 'Prithvi' or, to a certain extent, Indian aircraft. This is a remarkable fact given the size of the potential Indian nuclear strike force.

Strategic Air Defences in India

India, with its vast airspace, maintains an advanced Air Defence Ground Environment System. This system, along with the civilian Air Traffic Control, is responsible for the detection, identification and, if necessary, the interception of aircraft in Indian airspace. The Air Defence network is also in the process of being upgraded to cater for ballistic missile threats. Before examining the system in detail, a quick overview is in order. India's air defence network is essentially divided into two parts - the Air Defence Ground Environment System and the Base Air Defence Zones. These two components are closely linked and share information relating to air defence tasks. The Air Defence Ground Environment System consists of an array of radars along the Western and Northern Borders as well as a network of mobile systems in the North East and South of the country.

The ADGES network is responsible for overall airspace management and detection of intruders. The ADGES also controls and coordinates the air defences for

large area targets. The Base Air Defence Zones, as the name implies, are tasked with the defence of high value targets - air bases, nuclear installations and key military installations. The BADZ is a scaled down ADGES network, limited to an arc of 100km. The BADZ is a far more concentrated air defence environment than the ADGES and provides the only gap-free air defence cover in most sectors. In addition to these networks, India is now establishing an anti-tactical ballistic missile screen - with new radars and weapons. It is not clear whether this will be incorporated into the BADZs or whether it will comprise a separate network. This ATBM screen is slowly taking shape and news of its structure is still awaited.

The Indian Air Defence Ground Environment System employs a three-tier detection network. While this system is currently in the process of a major modernization program, the basic structure of the ADGES network will remain unchanged. The first layer, rather surprisingly, consists of Mobile Observation Posts. These remain among the most reliable of the early-warning mechanisms available to the Indian Air Force.

India's air defences currently rely on a mix of MiG-21/-23/-29 and Mirage 2000 interceptors and thirty-eight squadrons of surface-to-air missiles. The SAM units comprise 30 squadrons of SA-3b Pechoras and 8 squadrons of SA-8b OSA-AKM systems and are deployed to protect key air bases as well as some major military/industrial centres. Though the SAMs are old, they have been updated periodically and, when operating as part of the BADZ, are deployed in such a manner as to minimize their shortcomings. In addition, a large number of L-40/70 radar directed 40mm anti-aircraft guns and man-portable Igla-1M SAMs are deployed to provide a 'last-ditch' tier of 'hard-kill' defences. It should be pointed out, however, that this system is geared up to the defence of point targets and not for overall area defence. It also lacks a viable capability against ballistic missiles. With this in mind, the Indian Air Force has begun a massive modernization of its strategic air defences.

The first signs that India was modernizing its air defences came when a massive order was placed for Sukhoi Su-30 combat aircraft. These aircraft, the first batch of which has now been delivered, are primarily long-range interceptors, capable of

intercepting targets at ranges exceeding 120km. When this is added to the fact that India's ongoing MiG-21bis upgrade program is primarily aimed at enhancing the aircraft's air defence capabilities and India's program for an AEW aircraft has been resurrected after many years in the doldrums, it can be seen that India's fighter defences are about to be dramatically enhanced. India's interceptors are equipped with a mix of French and Russian air-to-air missiles. All aircraft are cleared to launch R-60 (AA-8) and Magic R-550 short-range missiles while the MiG-29, Su-30 and Mirage-2000 are cleared to launch R-73 (AA-11), R-27 (AA-10) as well as Matra Super 530D systems. India has also ordered R-77 (AA-12) missiles for its upgraded MiG-21bis and Su-30 aircraft and there is every likelihood that the R-77 will be fitted to the MiG-29s as well. To these dedicated fighter defences must be added India's tactical strike aircraft - all of which routinely carry air-to-air missiles. The Jaguars, MiG-27s and MiG-23BNs can fire a mix of R-60 and R-550 short-range air-to-air missiles. Owing to the large number of these aircraft at the disposal of the IAF, it is impossible for their air defence potential to be ignored.

Further to these developments, news began leaking out about the deployment from 1998 onwards of an Anti-tactical Ballistic Missile screen. This system is to comprise the Russian S-300V ATBM (SA-12) and India's own 'Akash' missile, which has a considerable ATBM capability. In March 1997, the Indian press confirmed these reports, stating that one S-300V squadron was being purchased, with more to come in the future. These would provide a comprehensive defence against ballistic missiles as well as manned aircraft coming in from either Pakistan or China. These ATBMs may not be able to intercept all incoming missiles but they would provide an additional layer of defence. This ATBM screen is unlikely to be fully operational for close to 10 years. As can be seen, these systems will provide India with an extremely potent defence against both Pakistani and Chinese ballistic missiles and manned aircraft carrying nuclear weapons.

In the case of Pakistan, the problem is further compounded by the fact that any aircraft attempting to avoid these defences by going over the Arabian Sea, will be detected and engaged by the fighters and SAMs of India's powerful Western Fleet. In fact, if they attempt a low-level penetration run against BARC or Mumbai, which would be a risky venture without external fuel, they would come within range of even India's

coastal patrol forces which are equipped with 40mm anti-aircraft guns and man-portable SAMs. Would Pakistan risk its aircraft against targets deep in India when the probability of intercept increases the further away from Pakistan the target lies? Therefore, India's strategic air defences severely restrict the number and types of targets that would be potentially vulnerable to Pakistani attack. Moreover, when India's air defence modernization is complete, and the Indian government seems to be committed to this, the prospect of any Pakistani aircraft getting through is remote. Ballistic missiles may have a better chance of succeeding, even with an Indian ATBM screen, but their ranges are severely limited. Massively enhanced Indian defences are challenging the old adage of nuclear deterrence -(one will always get through) -. This could, in theory at any rate, seriously upset the Pakistani nuclear deterrence strategy. The Indian acquisition of the Israeli PHALCON AWACS System will act as a force multiplier for Indian air defences.

Strategic Air Defences in Pakistan

Pakistan's Air Defence Command was formed in 1975 - over a decade before India's. It is based at Chaklala air force base near Rawalpindi and exercises control, surveillance and coordination over all Pakistani airspace. The ADC HQ is based in bunkers 5 to 10 metres below ground and has four rows of consoles with 20-25 men operating them. All units - aircraft, airbases and AAA units - are represented on screens. In fact, the ADC HQ set-up is regarded as being one of the most modern in existence. Subordinate to the ADC HQ are four Sector Operations Centres, which in turn control seven Control & Reporting Centres (CRCs). The four sector headquarters are located at Quetta, Sargodha, Karachi and Peshawar. As in the case of India, Pakistan has a comprehensive radar network, which can also accept data from the civilian air traffic control radar. The radar network was established from 1976 onwards as part of Project Crystal, which aimed to give Pakistan a modern air defence network. Pakistan operates a bewildering variety of radars from varying sources. The most modern units are six TPS-43G 3-D long range radars. These are supplemented by some older American, Chinese and British long range radars.

As regards low-level radars, in 1979-80, as the first stage of Project Crystal, Pakistan purchased 45 mobile pulse-Doppler radars from Siemens of Germany. These systems are of the MPDR 45/E type and are controlled by 6 CRCs. These are extremely capable radars and significantly enhance Pakistan's ability to detect low-level Indian intruders. However, since most of Pakistan's major targets are located so close to the Indian border, there is very little time available for the defenders to react. This problem will remain with Pakistan for the foreseeable future. Despite this investment in radars, one major gap remains - along the Indian border from Sialkot to Suleimanke where major targets are located. Pakistan had hoped to bridge this gap, and solve a few other low level detection problems with the purchase of E-2C Hawkeye AEW aircraft, but this order failed to materialize.

Pakistan's air defences are centered on three squadrons of F-16A/B aircraft, backed up by large numbers of Chinese F-7s and French Mirage III/Vs. These aircraft, while reasonably effective, are handicapped by a lack of long range air-to-air missiles and, in the case of the F-7, Mirage fleets, the lack of truly modern radars. Pakistan had hoped to obtain up to 40 Mirage 2000-5 aircraft from France, but the deal has not yet materialized, and may have been cancelled outright. Pakistan has successfully upgraded its Mirage and F-7 aircraft with new Italian Grifo-7 long-range radars, and is about to induct the much-needed Beyond Visual Range air-to-air missiles. The Mirage upgrade package called ROSE or Retrofit of Strike Element has substantially enhanced the PAF's attack capabilities. These will provide Pakistan's air defence assets with a major leap in overall capability and would pose some problems for an Indian attacking force. At the very least, India would have to provide a heavy escort to its strike aircraft.

Pakistan's SAM defences are also peculiarly thin - comprising only 6-8 squadrons of Crotale mobile SAMS and 1 squadron of HQ-2Js (Chinese versions of the SA-2). These are backed up by a very large number of flak regiments (up to 43) operated by the air force and the regular army as well as 2000 guns in AAA units held by reserve formations. These regiments largely operate Chinese made anti-aircraft guns of calibers ranging from 12.7mm to 37mm in addition to 200 modern radar guided 35mm Oerlikon

guns along with radar guided RBS-70 SAMs. While these provide some defence against aircraft, they are of no use against missiles. What is even more surprising is the lack of Pakistani investment in SAMs. It is possible that this is because of the relatively high running costs of SAM units and the desire to obtain as many manned aircraft as possible. This, of course, has the result that Pakistan has no defence of any kind against Indian ballistic missiles.

Compared to India's array of SAMs and fighters, Pakistan's air defences, while well coordinated, are not very sophisticated. Pakistan is further handicapped by the fact that it cannot yet develop or deploy any defence against ballistic missiles. Neither Russia nor the United States will sell ATBMs to Pakistan and China has only a few batteries of SA-10s. As the Indian Air Forces obtains more and better ECM, the ability of Pakistan's air defences to stop a determined Indian air assault for more than a few days must be questionable at best. If ballistic missiles are brought into the equation, Pakistan's position is even worse. What is even more alarming from the Pakistani point of view is that any Indian nuclear strike would probably be preceded by a massive effort aimed at destroying the Pakistani air defence network. As India's conventional air doctrine involves heavy effort against Pakistan's air force, after a few days, the Pakistani air defence network could lose much of its cohesion. But Pakistan has gained some breathing space as it has secured a deal in 2004, for Swedish SAAB ERIEYE AWACS systems.

Implications of Air Defences on Nuclear Strike Patterns

In view of the details of the air defences provided above, what conclusions can be drawn about the nuclear strike options available to India and Pakistan? The first thing has to be that the 'sneak attack' scenario of one or two Pakistani F-16s penetrating Indian air defences and bombing New Delhi, while favoured by Indian journalists and alarmist analysts, is complete nonsense. Any nuclear strike by manned aircraft would have to be quite large - perhaps 20+ aircraft. The bombers would have to be protected by escort fighters and electronic countermeasures support aircraft. Given that Pakistan has only 40 F-16s and that these aircraft form the core of Pakistani air defences, it is highly unlikely that more than a few of them would be spared for each strike. The rest of the aircraft

would comprise Mirages and, possibly Chinese made F-7s & A-5s. Moreover, the minute the Indian air defences detect a formation of Pakistani aircraft heading for a major city, they may well view this as a nuclear strike. This raises the question as to whether India's own nuclear forces will be on a 'Launch on Warning' or 'Launch through Attack' alert level.

India's manned aircraft face a similar problem. Although there are more of them, and Pakistan's air defences are not particularly dense, Pakistani interceptors operating under the excellent direction of the Air Defence Command, may well be able to swamp a small Indian raid by sheer weight of numbers. So any Indian nuclear strike would also have to include 20+ aircraft per strike. In addition, it is possible for India to mount very heavy air defence suppression raids, this would warn Pakistan of a possible nuclear strike and once again the issue of 'Launch on Warning' or 'Launch through Attack' comes to the fore. The only truly effective delivery systems available to either side are their ballistic missiles. While India is developing an ATBM screen, this will not guarantee the interception of all ballistic missiles. Pakistan, on the other hand, has no defences against India's ballistic missiles. This means, however, that targets only within a 300km radius can be realistically attacked until the 'Ghauri' is fully operational. Anything beyond that is very risky for the strike aircraft involved. However, should India's ATBM screen develop more quickly than the decade or so suggested in the text, it is possible that the credibility of Pakistan's entire nuclear deterrent may well be called into question. [4]

Tactical Nuclear Weapons and South Asia[5]

Tactical or battlefield nuclear targets are normally those that are either located within the tactical battle area (TBA) or have a direct bearing on it. Besides the enemy's forces, tactical targets include his military infrastructure such as important bridges and choke points on the transportation systems, airbases and communications centres. Tactical military nuclear targets would include the following:

1- Locations of headquarters and adjacent communications centres.

2- Bridgeheads established by a 'break-in' force on a defensive obstacle system to facilitate a 'break out'.

3- Leading 'combat groups' forming the spearheads of an 'operational manoeuvre group' (OMG) or an Indian or Pakistani Strike Corps/ Formation.

4- Defense fortifications and nodal/strong points, to facilitate a breakthrough.

5- Mechanized forces—deployed for defence, assaulting, laying off in harbour or being transported to the TBA.

6- Surface-to-surface missiles (SSMs) and rocket artillery positions.

7- Self-propelled and towed medium artillery regimental gun areas.

8- Logistics support areas (LSAs).

The use of tactical nuclear weapons can be a rational option only if it does not finally lead to irrational, more destructive levels of warfare.

However, there is an undeniably close link between nuclear weapons and a nation's conventional military capabilities. If a nation's conventional capability is relatively low vis-à-vis a nuclear armed adversary, that nation is likely to adopt a 'first use' strategy to thwart a conventional military offensive that may threaten to undermine its territorial integrity and lead to its break up. This is the situation that Pakistan finds itself in at present. In such a case, the nuclear weapons to be used or threatened to be used would be 'tactical' nuclear weapons against India's mechanized forces inside Pakistani territory. While India may or may not have any intentions of launching a major conventional offensive into Pakistan, given India's conventional superiority (no matter how slender the edge may be), Pakistan has based its national security strategy on the first use of nuclear weapons to prevent its comprehensive military defeat like in 1971 and, consequently, its disintegration as a nation. It is for this reason that Pakistan finds it difficult to accept India's offer of a bilateral no-first-use treaty as a confidence building measure.

In the Indo-Pak context, according to Pakistan's nuclear doctrine and in the view of Indian advocates of tactical nuclear weapons, that when pushed to the wall, Pakistan would not hesitate to use nuclear weapons against India's mechanized forces inside Pakistani territory as the 'opprobrium quotient', as General Sundarji called it, would be low since the use of nuclear weapons could be justified as a defensive measure of the last resort.

According to the Indian army doctrine published recently by the Army Training Command (ARTRAC), "the Indian Army believes in fighting the war in enemy territory. If forced into a war, the aim of our offensive(s) would be to apply a sledgehammer blow to the enemy. The Indian Army's concept of waging war is to ensure a decisive victory and to ensure that conflict termination places us at an advantageous position." In a future Indo-Pak war in the plains, should India pursue a pro-active strategy and launch an offensive with one or more Strike Corps across the international boundary, supported massively by the IAF, India's mechanized spearheads are likely to achieve major operational level gains in three to five days and strategic gains soon thereafter. Pakistan may then be forced to commit its strategic reserves, that is, either or both the Army Reserves North (ARN) (I Strike Corps) and South (ARS) (II Strike Corps) and risk their destruction in detail or exercise its nuclear option.

It is widely believed that Pakistan is likely to resort to the early use of nuclear weapons, especially when it can justify their use as a defensive measure of the last resort on its own soil against invading Indian mechanized forces. If this logic is accepted, India's conventional superiority against Pakistan will stand negated and the Indian military leadership will either have to run the risk of accepting the consequences of a nuclear strike from Pakistan or plan to launch only tactical level limited offensives with shallow objectives so as to avoid crossing Pakistan's perceived nuclear threshold. The safety provided by India's doctrine of 'no-first-use' of nuclear weapons would further embolden Pakistan to seek tactical advantage.

The Indian army would be left with the option to plan to seize a long though narrow strip of Pakistani territory virtually all along the front without ringing Pakistan's

nuclear alarm bells by launching a number of limited, shallow objective offensives. Indian analysts argue that the only sensible option may perhaps be to call Pakistan's nuclear bluff and plan to launch Strike Corps operations to achieve strategic gains in as early a time frame as is militarily possible. This approach will need to be combined with a declaratory policy that a nuclear strike against Indian soldiers, even if they are deep inside Pakistani territory, will constitute the use of nuclear weapons against India and will invite massive counter value and counter force punitive retaliation against Pakistan. General Sundarji wrote in 1992 that, "If the damage suffered by Indian forces (due to a Pakistani nuclear strike) is substantial, national and troop morale would demand at least a quid pro quo response. There might even be a demand in some quarters for a quid pro quo plus response."

Even if Pakistan still persists with its stated policy of launching nuclear strikes on Indian forces inside Pakistan and India decides to reciprocate in kind with nuclear strikes on Pakistani forces rather than an all out decapitating strike, escalation control will be extremely difficult to manage. There would be a near certainty of the nuclear exchanges eventually graduating to massive strikes. Hence, flexible response would not be a practicable option. Indian analysts believe that there is only one viable response to a Pakistani nuclear first strike, whether on Indian cities or military forces, whether inside Pakistan or not, and that is massive punitive retaliation with the full force of India's nuclear capability. Only such a policy would lead to adequate deterrence. Furthermore, Indian analysts argue that if such a contingency is made integral to India's nuclear force posture and doctrine, Pakistan will be forced to abandon the option of using tactical nuclear weapons to checkmate an Indian offensive, knowing fully well that a massive Indian nuclear counter-value and counter-force response will mean the end of Pakistan as a viable nation-state.

The use of tactical nuclear weapons by India is also unlikely because it already enjoys conventional superiority, but if India chooses to use tactical nuclear weapons unilaterally or in response to a Pakistani tactical nuclear strike, it will inevitably lead to counter-force and counter-value strikes by Pakistan, thus rapidly transforming the situation into an all out nuclear war. However, given Pakistan's doctrine of "first-use" of

nuclear weapons, the employment of tactical nuclear weapons will be a certainty in case it chooses to employ them in a situation where any of the situations arise that warrants the employment of nuclear weapons, as per Pakistan's nuclear doctrine. General Pervez Musharraf had clearly announced during the massive Indian mobilization (Operation Parakam) on Pakistan's borders and in the wake of imminent threats of Indian attack that "Pakistan would respond to any Indian incursion across the Line of Control in Kashmir or the International Border, with full force". The use of "full force" almost certainly meant the employment of every military option available to Pakistan in case of Indian attack, which would certainly have included tactical nuclear weapons.

Indian analysts are divided on whether India needs tactical nuclear weapons. Brahma Chellaney justifies the use of tactical nuclear weapons and his arguments are worth repeating:

Some Indian analysts have arbitrarily judged tactical weapons as immoral and dangerous, and sought only mass killer strategic weapons for their country.

"Without tactical weapons, a failed deterrent situation could uncontrollably spark counter-city attacks, wreaking limitless destruction. After failing to deter an adversary from committing aggression, efforts have to shift to force him to halt aggression. Such intra-war deterrence or compellence can succeed if responses are judiciously modulated to allow for only a stage-by-stage escalation, with opponent's civilian population held hostage but not under attack to nations that have disputed frontiers—such as India, Israel, China and Pakistan—and to Russia, tactical nukes cannot but be an integral component of defence (India's deterrent force) has to be structurally and doctrinally established in a manner to allow for possible bargains to be struck at any step of the escalation ladder."

The main weakness of this argument is that if the Pakistani ruling elite, dominated as it is by the military establishment, believes that India would not respond with counter-value and counter-force strikes to a tactical nuclear strike on its armed forces in the field, it would be tempted to launch such a strike during the early stages of a conventional conflict. However, other Indian analysts are not convinced by this logic as they believe that the Pakistanis are as rational as any other nuclear power and will not lightly risk the

destruction of their country by starting a nuclear war. Pravin Sawhney writes: "Pakistan knows a nuclear counter-strike would be devastating to its existence. Considering Pakistan's nuclear policy, weaponisation options and (that) command and control of nuclear assets are likely to be the sole responsibility of the General Headquarters; the chances of a war escalating to nuclear level would be a professional, conservative and well thought through decision. A pre-emptive nuclear strike or an early employment of nuclear weapons in a conventional war is ruled out." Bharat Karnad is of the view that, "In the South Asian context, any use of nuclear weapons is tactical use, which the Indian Government has wisely foresworn." He quotes and agrees with a policy statement made by Defence Minister George Fernandes that, "Indian nuclear weapons are for strategic deterrence, not for tactical use," and writes that not nuclearising the Prithvi makes ample military sense.

In Kapil Kak's view, "India's self-imposed compulsions of strategic restraint rule out employment of tactical nuclear weapons." He cites the difficulties of retaining centralization of decision-making in tactical nuclear warfare and gives the example of a Corps Commander "in a distressing operational situation, with possibly no contact with higher authorities, (who) may be tempted to employ whatever weapons he possesses," and quotes Henry Kissinger to state that the danger comes "not so much through the action of the 'mad major of the horror stories of accidental war' as through the best judgment of a hard pressed officer in the confusion of combat."

If nuclear weapons are to be employed as battlefield weapons, in a tit-for-tat manner as recommended by some analysts, not only will the authority to order their firing have to be delegated to commanders at the theatre and the operational level at some stage of the war but, depending on the means of delivery, control over completely ready nuclear warheads will also have to be handed over to the subordinate commanders in charge of the firing platforms in the TBA. This will naturally increase the risk of accidental and inadvertent employment of nuclear weapons. It is a risk that is best avoided.

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CHAPTER 7

MISSILE STABILTY AND THEATER MISSILE DEFENSE IN SOUTH ASIA

The missile competition in South Asia is on the verge of a new and dangerous phase that threatens to disrupt the delicate strategic balance of the subcontinent. India and Pakistan already have stockpiles of ballistic missiles, along with associated launchers and trained personnel necessary to deploy them at short notice. India plans to acquire a theater missile defense (TMD) system, based on Russian, Israeli, and indigenous technology and equipment. [1] Pakistani defense officials have acknowledged that Pakistan would find such a development threatening and could respond by increasing its nuclear and missile capabilities.

INDIA'S QUEST FOR A MISSILE DEFENSE

India's recent interest in missile defenses appears to be driven primarily by Pakistan's acquisition of M-11 ballistic missiles from China in the early 1990s. Samir Sen, a former director of India's Defense Research and Development Organization (DRDO) believes that the value of an Indian TMD system is that it "will effectively neutralize Pakistan's missile capabilities."[2] India has apparently been pursuing two methods to obtain an anti-missile capability: creating an indigenous system and buying the capability off-the-shelf.

Be-ginning in late 1993 or early 1994, DRDO began developing an improved version of the Indian-designed Akash (Space) system— a low-to-medium altitude surface-to-air missile (SAM)—to enable it to engage ballistic missiles.3

The first, less advanced *Akash* anti-aircraft unit with its Rajendra phased array radar was expected to enter service in 1997. The Rajendra radar can reportedly track up to 64 targets at a range of 50 kilometers. The stated goal of the eventual upgrade project is to be able to intercept missiles with ranges up to 2,000 kilometers. Given the difficulties the United States has experienced developing the Theater High Altitude Area Defense (THAAD), which is supposed to be able to engage missiles with ranges up to 3,500 kilometers, this goal is perhaps unrealistic. But the move could also be motivated by India's desire to develop a defense against the 1,800 kilometer-range DF-21s thought to be deployed in southwestern China.[4] India had also shown an interest in Israeli technology applicable to missile defense, particularly the Arrow ATBM and Phalcon airborne early warning (AEW) aircraft. [5] Former head of the U.S. Central Intelligence Agency (CIA) James Woolsey has stated: "Israel probably hopes to export [the] Arrow system or its associated technologies." India also is developing an AEW platform equipped with phased array radar technology, similar to that used by Phalcon, to cue its ATBM system. Due to America's significant technical and financial involvement in the Arrow program, however, its approval would be necessary for any legal exports of that system. (But there are apparently no similar restrictions on Phalcon.) While it is highly unlikely that the United States would permit Israel to export the Arrow to India, given long-standing U.S. concerns about India's missile program and its desire to prevent a missile race in South Asia, recent press reports indicate that India may be trying to acquire Arrow technology from Israel covertly—in order to provide the *Akash* with an ATBM capability. In 1993, the U.S. General Accounting Office (GAO) criticized American government agencies for not properly safeguarding technology and equipment transferred to Israel as part of the Arrow program, raising the specter of unauthorized transfers. A year earlier, Israel had been accused of providing sensitive Patriot ATBM technology to China without authorization. Although the State Department cleared Israel of these charges, the Pentagon did not. Then-Secretary of Defense Richard Cheney reportedly believed that the Israeli government was responsible for the illicit technology transfer. India's other option for obtaining an ATBM is to buy the missiles themselves, rather than trying to acquire the technology to make them. Negotiations between India

and Russia have been underway since 1995 on the acquisition of an advanced air defense system with ATBM capability, some of which India has already acquired and integrated in its Air Defence Network, namely either the S-300PMU-1 or the S-300V.[6]

The Almaz design bureau's S-300PMU-1 is a highly mobile SAM system that has been upgraded to give it an intercept capability against tactical ballistic missiles with ranges of over 300 kilometers. The Antey bureau's S-300V was the world's first operational, dedicated ATBM system. The S-300V actually is comprised of two different missiles, the dedicated anti-missile 9M82 (NATO code-name: SA-12b Giant), and the dual-role 9M83 (NATO code-name: SA-12a Gladiator). The entire system, which is also mobile, can intercept ballistic missiles with ranges of up to 1,000 kilometers. The S-300V has reportedly shot down over 60 tactical ballistic missiles with ranges of up to 600 kilometers during tests and has demonstrated a single-shot kill probability of 40-70 percent.[7]

STRATEGIC IMPLICATIONS OF AN INDIAN TMD SYSTEM

India's acquisition of a sophisticated air defense system with anti-missile capabilities could erode Pakistan's confidence in both of its main nuclear delivery systems, the Ghauri and Shaheen series ballistic missiles and U.S.-supplied F-16 aircraft and Mirage-V aircraft, to such a degree that it would no longer believe its nuclear capability provided a credible deterrent against India. Currently, the Indian and Pakistani nuclear deterrents are understood to include non-deployed, nuclear-capable missiles, a number of unassembled nuclear weapons, and a capability to build additional nuclear weapons quickly.

The leaders of India and Pakistan probably assume that the other side has the capability to deliver a nuclear strike against their country, although both countries have chosen to keep this capability "in the basement." Thus, India and Pakistan seem to have established a fragile, but workable, form of mutual "non-weaponized" deterrence. However, India's acquisition of an ATBM could destabilize this nuclear balance by depriving Pakistan of an assured strike capability. Pakistani leaders may fear that during a

crisis they would be vulnerable to a disarming first strike by India, which would then rely on its missile defenses to intercept any Pakistani missiles not destroyed on the ground. This concern could drive Pakistan to adopt a "use it or lose it" strategy, calling for the early use of its nuclear forces in the event of a conflict in order to penetrate India's defenses. Islamabad may also worry that India's defensive systems would be able to neutralize a nuclear strike by Pakistan, thus allowing India to engage in a conventional war without fear of nuclear retaliation from Pakistan. Given the large imbalance of conventional forces between India and Pakistan, the out-come of such a conflict is not really in doubt. In the past, Pakistan has reacted quite sharply to perceived threats from India. In 1990, Pakistan reportedly armed its F-16s with nuclear bombs.[8] As of today, all Indian cities with populations greater than 500,000 are within the range of Pakistan's missiles. Pakistan's ability to saturate India's missile defenses cannot be quantified at this time because it is dependent on the number of launchers it has acquired from China and developed indigenously for the Ghauri and Shaheen missiles, as well as on Pakistan's capacity to coordinate multiple, simultaneous launches under combat conditions from dispersed sites. The S-300PMU-1 and S-300V batteries are each able to engage up to six targets at once with two missiles apiece.[9]

By using different missiles to provide upper and lower tier protection, an S-300V battery can also conduct multiple engagements against incoming missiles. Instead of buying the required number of systems to protect all of its major cities from the largest possible Pakistani salvo, India apparently plans on complementing the S-300s purchased directly from Russia with models produced under license, plus its indigenous *Akash* system. The high mobility of the S-300 systems would also permit India to economize by buying fewer than required and then moving them around to prevent Pakistan from knowing which sites are undefended. In addition, India could use unmanned aerial vehicles, either indigenous ones or those purchased from Israel, to monitor Pakistan's missile force and shift its defenses accordingly.

POSSIBLE PAKISTANI RESPONSES

Pakistan's options would be either to match India's defenses with similar systems or to build up its offensive forces to overwhelm India's defenses. Pakistan's short-term prospects for either building or buying a similar defensive system are slim. Despite reports to the contrary, Pakistan's ability to produce its own TMD system is extremely limited. To date, Pakistan has only succeeded in producing short-range, man-portable SAMs based on Chinese designs. Pakistan's prospects for buying a missile defense capability in the near-term are poor because the United States and Russia, the only two countries that currently deploy ATBM systems, are either unwilling or unable to supply Pakistan with such a capability. The long-term prospects of acquiring a Chinese missile defense from system are better since China, which has a history of supplying Pakistan with missile technology, is believed to be working on its own ATBM capability. One missile analyst has noted that, with assistance from China, countries like Pakistan "might acquire missiles or the technologies to develop their own ATBM systems in the next five to ten years." Unable to match India's defensive systems, Pakistan's initial response would probably be to increase the number of nuclear weapons and delivery systems available at short notice in order to restore its deterrent capability.

ARROW ATBM and Pakistan

Along with the Phalcon AWACS, India has also been negotiating the purchase of the Arrow ABM system. The Arrow is one of the most advanced anti-tactical ballistic missile defence systems in the world. The system is based on high altitude interceptor-like Arrow, which has a range of reaching a 30 miles height at nine times the speed of sound, making it possible for hostile missiles to be intercepted high enough so that any weapons of mass destruction they carry will not be dispersed at lower altitudes, thereby reducing the radiation fallout. This technique also allows time for a second Arrow missile to be fired, if it is determined that the first had not intercepted the missile. Since 1990, Arrow-I had been tested approximately nine times. It is not clear if the complete Arrow ABM system has been inducted, with both India and Israel keeping the purchases and

deployment of weapons systems out of the public eye. The US had raised objections to the deal, citing the Missile Technology Control Regime restrictions that limit the sale of missile systems above the range of 300kms, while the Israelis say that it is a purely defensive system and is built with indigenous technology and therefore not subject to US export controls. It is now known that at least one component of the Arrow ABM system, "the Green pine radar" has been handed over to India.

The Indian ABM assets, actual and projected, impact upon Pakistan's missile capabilities in a variety of ways. First and foremost is the undermining of its present deterrent capabilities. The Indian ground radars (Green Pine) would have the capability to pick up the deployment of Pakistan's missile assets at a range of 300 km of Pakistani territory and thus provide surveillance over the entire territory of Pakistan. An over-confidence in the deterrent value of the Indian missile shield can prompt her to consider launching a pre-emptive, decapitating strike, even with conventional weapons. India possesses a comprehensive surveillance system based on long range radar systems, Remotely Piloted Vehicles, UAVs and satellites. For Pakistan, it would mean two things: an Indian ability to effectively disrupt and jam Pakistan's command and control systems and delivery vehicles (missiles). This could possibly result in further military adventurism by India.

The mainstay of Pakistan's first strike and deterrent capability is based on two inter-linked systems. One is the Hatf and Shaheen series with a range of 80-600 kms and 700-2500 kms, respectively. The Indian ARROW, S-300 and Akash ABM systems could intercept these. The second is the Ghauri series of intermediate range ballistic missiles having a range of 1500-3000 kms. These can be intercepted by the S-300 series of the Indian ABM systems.

Pakistan will have to resort to acquiring and developing its own Anti-missile defences, perhaps with the aid of China which will also be affected with the Indian induction of the above mentioned systems. The Government of Pakistan has officially stated that it will not ignore any destabilizing developments that should further tilt the balance of power in India's favour. Pakistan will be forced to deploy more missiles, add

penetration aids and decoys to its missiles, Alternatively, in order to overwhelm the Indian defences, Pakistan could keep its nuclear warheads on a hair trigger alert, but this could cause accidental war. Heavy investments in air defences, acquisition of latest fighter-bombers like the Mirage-2000-9, and areas like Electronic Warfare (EW) and jamming will have to be made. Pakistan cannot allow its strategic missiles forces and the PAF to suffer degradation or neutralization by the Indian systems as these form the cornerstone of Pakistan's nuclear deterrent capability on which the security of the country is based in the face of a belligerent India. Pakistan will also be forced to go for a massive first strike as the only option in categorical terms and adopt it as its nuclear doctrine in the place of its present ambiguous nuclear doctrine till it develops a sea-based nuclear deterrence comprising of nuclear missiles based on submarines or hardened underground silos housing its missiles, which will all entail huge costs for both India and Pakistan.

Pakistan is left with no choice but to take these developments into consideration and plan accordingly for its long-term security requirements. India has displayed an insatiable appetite for accumulating latest weapons systems in large numbers over the years and Pakistan must not be held hostage by any hawkish Indian government armed to the teeth.

Future wars will be wholly dependent on high technology weapon platforms, and the past conflicts in the Gulf have shown that there is no substitute to a technologically and qualitatively superior defence force for any country to maintain its sovereignty, independence, and to protect its vital territorial, economic and political interests in the region. The lesson of history is that weakness invites aggression, and investments in technology, military and civilian, are absolutely necessary for any country's survival, progress and prosperity in the coming decades. A weak defence can lead us to the fate that befell oil-rich Kuwait in 1990. Moreover, for the protection of our economic and political interests, Pakistan will have to recognize the threats to its security and deal with them within its available resources.

NUCLEAR OPTIONS

As part of a longer-term nuclear build-up, the Pakistan Atomic Energy Commission has begun operation of its 40 to 50 megawatt plutonium production reactor at Khushab, as of 1999.[10]

Since less plutonium than uranium is needed for nuclear weapons, plutonium is better suited for compact missile warheads. Once Pakistan begins operating the reactor, approximately 10 to 14 kilograms of plutonium could be produced each year, enough for two to three bombs.[11] This will be in addition to the existing stock of fissile material consisting of Highly Enriched Uranium.

MISSILE OPTIONS

India's acquisition of a sophisticated air defense system with anti-missile capabilities, such as the S-300PMU-1 or S-300V, will further reduce Pakistan's ability to deliver a nuclear weapon by aircraft and for the first time threaten Pakistan's ability to strike targets with missiles. Pakistan's air force is currently outnumbered and outgunned by India. In addition, India has begun an air force and air defense modernization program that includes the purchase and license production of Russian-made Su-30MKI fighter-bombers and the Tunguska low-altitude air defense system. At the same time, Pakistan is barred from obtaining any additional advanced fighters from the United States. Moreover, its planned acquisition of French Mirage 2000 fighters has been held up by financial and political problems. According to the Pentagon, Pakistan's missile programs "are driven by a desire to augment limited offensive air capabilities against India (which holds a nearly 3:1 advantage in combat aircraft) and to field a more effective delivery system."[12]

Therefore, without a credible aerial delivery capability, Pakistan will have to rely mainly on ballistic missiles to overwhelm India's defenses. Pakistan's leaders may feel

compelled during a crisis to disperse the stored missiles or deploy them in the field in order to reduce their vulnerability to a first-strike. This move would enhance the survivability of its current missile arsenal, but would not improve Pakistan's ability to penetrate India's missile defenses. For that objective, Pakistan would have to acquire and produce additional missiles to saturate India's defenses. Pakistan may acquire the FT-2000 SAM system from China, in response to India's acquisition of the PHALCON from Israel. The FT-2000 SAM system is known as the "AWACS KILLER".

If Pakistan were to take any of these actions—enriching uranium to weapons-grade, increasing its nuclear weapons stockpile, conducting a nuclear test, producing more plutonium from its Khushab reactor, deploying the M-11 or Ghauri and Shaheen series missiles, or building additional missiles—it is likely that India would reciprocate in a similar manner, if only for domestic political reasons. India has already deployed the *Prithvi*, with the 333 Prithvi Regiment if the Indian Army, and the *Agni* still enjoys considerable support in India. Once India and Pakistan have embarked on an overt nuclear and missile arms race, it could be difficult to slow down or stop. An example of the potential for this type of spiraling escalation was demonstrated in early 1996. After reports emerged about India's nuclear test preparations in December 1995, John Deutch, then-head of the CIA, stated: "We are concerned India is considering the possibility of a nuclear test. We have judged that if India should test, Pakistan would follow." [13]

Shortly after Deutch's statement, Pakistan's efforts to ready its own test site became public, and Foreign Minister Assef Ahmad Ali boasted: "If India wants to prove its man-hood by conducting a nuclear test than we have the capability to prove our manhood."[14]

Pakistan certainly did respond to India's nuclear tests in May 1998 with tests of its own to redress the strategic balance in the region.

MISSILE RELATED STABILITY FACTORS IN SOUTH ASIA

India and Pakistan have created sizeable ballistic missile forces and are continuing to develop and enlarge them. These forces can be both stabilizing (e.g., providing a survivable force for deterrence) and destabilizing (e.g., creating strategic asymmetries).

In parallel with their nuclear programs, India and Pakistan both established ballistic missile programs. Both countries now have militarily significant missile forces and continue to develop and expand them. The pairing of missiles with nuclear warheads can be both stabilizing (e.g., providing a survivable force for deterrence) and destabilizing (e.g., creating strategic asymmetries). It is the readiness postures, doctrine, the command/control structures, the types and numbers of weapons, delivery vehicles, and defenses available that determine the overall effect on stability.

Missiles and nuclear weapons are not going to go away from South Asia in the foreseeable future. Their presence must thus be managed in a way that does not add to their destabilizing features while preserving the elements of deterrence. Thus, restraint is necessary to reduce the risks resulting from the India-Pakistan missile competition.

Missiles are displayed prominently in national parades and flight tests are timed for political purposes in addition to the technical requirements. These actions are aimed at impressing multiple audiences: the adversary is expected to be deterred, the domestic audience – that views missiles as symbols of pride and prestige – is placated with messages of resolve, and outside powers are induced to focus on the region and possibly intervene and diffuse crises.

FACTORS AFFECTING MISSILE STABILITY: [15]

Absence of Timely Intelligence

Missile movement is a potential source of escalation. The command system requires timely and accurate information. At present, the capacity to collect this information is limited. India and Pakistan rely on remotely piloted vehicles (RPVs), human and electronic intelligence. In the absence of comprehensive and accurate intelligence, there is a significant chance that an adversary will misread passive dispersal and initiate its own deployment as a result. During a crisis, India and Pakistan could enter into a spiral of escalation. One side could interpret the defensive moves by the other as threatening. Steps taken to counter the perceived threat would be matched in turn by the other, resulting in further escalation. During a condition of heightened tensions, the intelligence organizations in both countries will likely have a tendency to report the first indications of activity even if not confirmed.

The Dilemma of Control.

Wide and flexible dispersal is within the capability of both countries, but if exercised, it will underscore the problem of control. Dispersal of missiles during a crisis is understandable within the context of preserving survivability. The foremost dilemma facing the command authority will be retaining centralized control. Assertive negative control is desirable for stability but will undermine the effectiveness of the missile system to rapidly respond if required. Pre delegation, on the other hand, will increase the risk of inadvertence. The command system will thus be under extreme stress if dispersal or deployment ever takes place. The principal decision-making problem is how to make an optimum trade-off between battle effectiveness and safety. The evolving national command systems will have to find an answer to this problem, which was not easily solved in the Cold war.

Harsh Geophysical Conditions.

Both countries have sufficient territorial space and variety of terrain for dispersal and concealment. However, the road network is not well developed in both countries. Conditions for mobility are harsh and compounded by generally hostile weather. Physical security must be maintained. There are multiple modes for missile deployment each having its own unique problems of safety in movement. The variety of missiles available may further compound the safety issues of mating them with the warhead – both conventional and nuclear.

Time of Flight

Ballistic missiles are the fastest means to deliver a warhead to a target at long range. In a matter of a few minutes, a missile can travel hundreds of kilometers. In the South Asian context, missile flight times will generally be under ten minutes. Since geography is fixed, flight times only change as the targets and launch points change. There is some potential for relatively long-range missiles to be used against short-range targets by flying in a depressed trajectory mode and decrease the typical time of flight by 2 or 3 minutes. Such use of long-range missiles assumes the country is willing to reduce a long-range missile's survivability by moving it close to its target, and to forgo the use of a scarce military asset against distant strategic targets. Because geography and the physics of flight are fixed, the effect of flight time is neutral. Flight time will always be short and the use of a technique like depressed flight trajectory makes a relatively small difference. The fact that flight times are short does, however, encourage a defending country to contemplate a more ready response posture that could include plans for a counter-launch under attack, or a preemptive attack on indication of an impending missile attack.

Range

Short-range missiles are much simpler to develop and cheaper to build than missiles of medium or intercontinental range. A long-range missile requires more powerful engines; a stronger, lighter structure; a more precise guidance system; and more

protection against aerodynamic heating than does a short-range missile. Mere extrapolation of short-range rocket technologies is not sufficient. The ranges of Indian and Pakistani missiles are currently sufficient to cover all the significant high value targets of each country (approximately 1500 – 2500 km). The ranges are also sufficient that each country can be assured of a wide enough dispersal of its missiles to make them secure against a preemptive strike. Future developments, therefore, will probably focus on payload, accuracy, and development of naval platforms. In the Indian and Pakistani dyad, therefore, increasing range has medium positive effect on stability. What is not clear, however, is whether further increases in range will cause instability. India may seek to increase the range of its missiles to be able to strike deeper into China. This may cause China to focus greater attention on India's missile forces, and target them more aggressively. This may lead to greater numbers of Indian missiles, with a corresponding cascading effect on Pakistan's missile forces.

Pre-launch Survivability

Missiles can be made difficult to destroy before launch. The US and the Soviet Union protected their ICBMs by installing them in hardened underground silos or by deploying them as submarine-launched ballistic missiles (SLBMs). Other options include basing them in caves or tunnels. Transporter-erector-launchers (TELs) can be used for all but the largest missiles and constitute small, hard-to-find, mobile targets. The most common basing option for regional ballistic missile forces is the TEL or Transported-Erector-Laucher. TELs are cheaper than fixed silos and, as was shown in the 1991 Gulf War, quite survivable. Liquid-fuel mobile systems typically require larger support convoys and preparation time, which increase their vulnerability to detection and counter-attack. Both India and Pakistan have road-mobile launchers and India has built rail-mobile launchers for its Agni missiles. Overall deterrence is maintained even if the opponent's weapons have a high probability of finding and destroying any single launcher in the dispersed force. The probability of destroying a large proportion of the total number of launchers in all but very small force sizes is quite small.

Therefore we can say that deployed Indian and Pakistani missile forces are survivable. Consequently, neither is likely to be tempted to conduct a preemptive strike that will disable its enemy. Nor is either country likely to feel that it must launch its own forces on first indications of attack because it fears losing them. Therefore, crisis stability appears to be well established between India and Pakistan with each having a sufficient number of missiles to prevent an adversary from destroying them all (or even from destroying a sufficient number so the attacker's own damage would be lessened). Thus increased pre-launch survivability strongly increases stability.

Accuracy

Circular error probable (CEP), the most common statistical measure of missile accuracy, is the radius of a circle within which 50 percent of the missiles aimed at the center of the circle will strike. Missiles currently in the stockpiles of regional powers typically have CEPs in the range of 300 to 1000 m. Thus, warheads with relatively large effects radii, such as WMD, are needed to achieve a significant probability of destroying a target. Missiles with low accuracy armed with conventional weapons have limited utility. They can, however, can be used as terror weapons to demoralize civilian populations as Iraq did in its war with Iran during in the 1980s.

Advances in guidance technology, including the use of the Global Positioning System (GPS), may reduce CEPs to less than 100 m. Should this occur, the effectiveness of conventional warheads against unhardened tactical military targets (e.g., supply dumps) would be greatly increased. Lower yield nuclear weapons (with less collateral damage) 30 might also be contemplated. Increasing accuracy, therefore, creates new target options for a medium destabilizing effect.

Autonomy after Launch

Once launched, missiles are fully autonomous and cannot be recalled or diverted. The lack of control once a missile is launched means that the reliability of the command and control system is crucial. In contrast, there are cases of manned aircraft being recalled or diverted to other targets in flight. During periods of tension, an unauthorized

or accidental launch might precipitate a conflict. Such a launch is quite unlikely however. The combination of autonomy with the potential for an accidental or unauthorized launch has a weak negative effect on stability.

Response Time

Given that missile flight times are always short, warning times are less, due to the time required for sensors to detect and identify an attacking missile. Response times are further reduced by the delay in communicating information to decision makers, assessing information, making decisions, and finally giving orders on how to respond. A strategic response might be to adopt a launch-on-warning posture. Missiles can be kept in various stages of readiness. They may be kept ready for firing within minutes, although continual maintenance must be performed. The risk with this strategy is that a country may respond prematurely as a result of not having time to fully assess the warning information received. During the Cold War, a number of incidents involved accidents and misinterpretations related to nuclear weapons and delivery systems. India has declared a policy of assured yet delayed response modeled on China's approach. Pakistan's policy is more ambiguous but probably similar. Both strategies probably reflect the nations' relatively rudimentary command and control systems. Given missile flight times, decreasing response times to the level where it makes a difference would require a massive restructuring of command and control systems. It may not be technically feasible to achieve this goal. The requirement for the highest reliability would place extreme stress on the systems. Furthermore, the deployment strategy for missiles would have to be completely restructured resulting in a continuing armed and ready-to-launch status with commensurate requirements for reliability and safety. Consequently, a launch-on-warning strategy would be destabilizing.

Ambiguity about the Type of Warhead

Government statements frequently describe a missile system as "nuclear-capable." This has resulted in the perception that ballistic missiles in the inventories of India and Pakistan have both conventional and nuclear warheads. Even if this is not the reality, the assumption on the receiving end will likely be that "any missile launched

against it must be carrying a nuclear warhead." Aircraft have been used in a conventional role on South Asian battlefields historically while ballistic missiles have never been used in any role.

Thus aircraft, even if capable of carrying a nuclear warhead (such as a Jaguar or F-16), do not carry the same danger of misperception once detected. Ambiguity regarding the nature of the warhead is exacerbated by the operational requirement for opaqueness regarding the number and location of missiles. Short-range, conventionally armed ballistic missiles could quite conceivably be used within the context of a limited war doctrine. A dual nuclear-conventional capable system is therefore quite destabilizing because the opposing command systems will likely have little reliable information about its mission or nature of its warhead. Therefore, ambiguity about the type of a missile warhead strongly decreases stability.

India's acquisition of missile defenses could upset the delicate nuclear balance that now exists in South Asia. Instead of both sides maintaining a non-weaponized, largely untested, and non-deployed nuclear capability, South Asia could see the emergence of two hostile countries armed with nuclear-tipped missiles deployed on a hair-trigger alert.

India and Pakistan seem to practice a unique form of deterrence, relying on non-deployed nuclear weapons and ballistic missiles. However, the stability of this mutually deterrent relationship could be threatened by the unilateral introduction of missile defenses, just as such systems threatened to destabilize superpower relations during the 1980s and still antagonize U.S.-Russian relations to-day. The primary goal of the United States should al-ways be to prevent the spread of nuclear weapons and ballistic missiles, but, in instances where that policy fails, such as South Asia, the United States must prevent the introduction of missile defenses into the region. Once that line has been crossed, the ability of the international community to achieve significant reductions in the nuclear or missile arsenals of the opposing sides will be severely constrained.

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CONCLUSION

India and Pakistan have been locked in a perpetual cycle of hostility for over 50 years. They have fought three full-scale wars, in 1948, 65, 71 and the latest in 1999, the last one under the nuclear umbrella. India had embarked on its nuclear programme right after independence in 1948, and the weapon programme got impetus after its defeat at the hands of the Chinese in 1962 war. Pakistan's nuclear weapon's programme was initiated at the Multan Conference of 1972, right after the dismemberment of its Eastern wing in the wake of its defeat in the 1971 war with India. Thus Pakistan's motives for nuclearization were entirely based on a search for security, as compared to India, who had begun to understand the power of the atom in its search for a regional power and security to a lesser extent, since it did not face any real threat from any of its neighbours.

India exploded its first nuclear device in 1974, at Pokhran, calling it a "Peaceful nuclear explosion", where as Pakistan had achieved nuclear capability by 1983, when the PAEC conducted the first successful cold tests. Thus, both countries had embarked on the path of 'nuclear ambiguity' while they continued to upgrade their nuclear arsenals, and continued to acquire sophisticated conventional weapon systems and developed their own missile programmes as a means of nuclear delivery.

Till the nuclear tests of 1998, India and Pakistan had faced each other in tense crises, such as the one in 1987 and 1990 that had a clear nuclear dimension, and had exposed the dangers and vulnerabilities of both countries. An ambiguous stability regime had been put in place over the decades, and only after the 1998 tests and especially after the limited war fought in Kargil in 1999 did both countries transform their doctrinal and policy postures into clearly defined nuclear doctrines and elaborate command and control systems.

The nuclearization of South Asia is an established and irreversible fact now, wherein the "stability-instability paradox" is a permanent feature for both India and Pakistan. The history of nuclear deterrence has validated the thesis that the presence of nuclear weapons has prevented the outbreak of all-out conventional war in the region, despite an ongoing conventional and nuclear arms race in South Asia.

Despite having deterrence fully into place for many years now, in an existential form before 1998, and in a overt weaponized form since then, the spectre of a limited conventional conflict, under the nuclear umbrella has been transformed into reality at Kargil in 1999, and very nearly in the year long Indian mobilization of forces on the Pakistan's borders in a failed attempt at coercive diplomacy. However, limited conflicts and sub-conventional wars, or artillery duels and massive troop mobilizations all along the border between India and Pakistan did not escalate into full-scale war, as both countries' leaders knew the dangers inherent in escalation leading to nuclear war and annihilation. Another persistent feature of nuclear crises in the region has been the timely

intervention of American diplomacy since the mid-1980s to defuse crises that have the potential of spiralling out of control.

Having established overt nuclear status, India and Pakistan were faced with developing adequate nuclear command and control systems along with nuclear doctrines and associated war-fighting doctrines and force postures. These efforts have materialized only recently.

Despite these positive developments, it is necessary to recognize the dangers that still loom large over the region's stability. The imbalance in conventional forces continues to grow with the Indian armed forces spending billions of dollars every year to acquire sophisticated weapon systems, in addition to force multipliers, which are much more than what India requires for having a minimum nuclear deterrence capability. Pakistan has been investing in conventional weapons at a much slower pace, since it cannot match India in resources or numbers, but it's minimum deterrence capability is on the way of being adversely affected and partly compromised due to the widening conventional military imbalance in the region. This will inevitably have a negative effect on the nuclear stability in the region, as India and Pakistan will continue to upgrade their nuclear stockpiles, and develop large numbers of missile forces. Coupled with the doctrinal changes and new concepts being introduced in the Indian military thinking, the military modernization and acquisition of anti-missile and early warning systems will enhance India's belief that it can fight a limited war against Pakistan and hope to neutralize Pakistan's conventional and nuclear deterrent. Pakistan will be forced to take

appropriate measures to ensure that its conventional and nuclear deterrence is not jeopardized and will continue to enhance its nuclear and missile programme.

The way forward towards enhancing stability in the region is to develop a composite political and military risk reduction and confidence building mechanism to resolve existing disputes, such as Kashmir, which are a source of tension and conflict, and to agree on mutual arms reduction. A nuclear hotline between India and Pakistan is a step in the right direction.

In order to increase stability, the existing command and control systems and mechanism have to be updated over time, and they are vital for the prevention of an accidental nuclear war, or a miscalculation on either country's part, given the history of mistrust between India and Pakistan and the geographical proximity and warning time problems. To this end, an elaborate early warning system must be put in place to ensure that no unauthorized or accidental nuclear exchange takes place.

Any conventional conflict, even at a sub-conventional or limited level has the inherent potential of escalating into a full-scale war with chances of nuclear escalation. The doctrinal war fighting and nuclear weapon employment techniques are another important element of stability in the region. They have to be clearly understood and explained by both countries, and any ambiguities on either side are likely to lead to miscalculation of the other's intentions.

The key to crisis stability in the region lies in a strong Pakistan, which will inhibit India from employing its massive military force in the pursuit of its hegemonic ambitions. A strong conventional deterrence capability and an enhanced nuclear capability is essential for maintaining the balance of power with India and to prevent the other side from assuming that a limited or full scale military action will not be met with an equal response. Moreover, India is likely to translate its massive military and economic modernization into coercing its neighbours, especially Pakistan to accept its version of a stable south Asia. There can be no imposed peace in the region, nor is there any military solution to the disputes in south Asia. For diplomacy and confidence building measures to succeed, it is necessary that they be backed up by sufficient and credible deterrence capability in Pakistan so that they are durable and are not seen as a sign of weakness. Denuclearisation is an idealist's dream, for it will not happen in the coming decades. Thus the road to a stable south Asia lies in establishing nuclear stability in the region and not to allow the deterrence value of nuclear weapons from eroding due to new developments in weapon systems on either side, or in the minds of the decision makers themselves. This inevitably leads to the conclusion that conventional and nuclear deterrence postures are interlinked , and the asymmetry and conventional military balance in the region must not be allowed to fall excessively in either country's favour.

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