

NUCLEAR ISSUES FOR PAKISTAN AND INDIA - MYTHS AND REALITIES

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The famous 18th century physicist, Blaise Pascal, had an argument for why we must believe in God. Should God exist, he argued, the penalty for not believing in Him is eternal damnation to the fires of Hell. But suppose that it turns out He does not actually exist. Then the believer will have suffered but a light penalty - some restrictions on his food and drink, abstinence in conduct, and a few inconveniences. Therefore, on balance, it is far better to believe than not.

This sort of logic has often translated into belief in nuclear deterrence in India and Pakistan. Not having nuclear weapons with which to deter the enemy, the believer argues, amounts to dropping one's defences and inviting annihilation - an invitation to Hell itself. Having one, on the other hand, may cost a little bit and involve a few inconveniences. But that scarcely matters since survival is at stake.

The strong emotions generated by the nuclear issue have precluded a genuine debate - either public or even at the higher echelons of government - on a matter which is both complex and of vital importance. Instead nuclear hawks, both in India and Pakistan, have long held centre-stage with their questionable belief that a "balance of terror" is in the best interests of both countries. Consequently, there abound a plethora of myths and false perceptions, none of which are seriously challenged. In this essay I shall seek to explore, as a Pakistani, a number of critical issues which must be squarely faced by this nuclearized subcontinent.

First, how much security does a nuclear capability really buy? Some in Pakistan believe that it has already proved its worth during May 1990, the "Cuban Missile Crisis" of the subcontinent. But, given the significance of the event, the lack of commentary on it is astonishing; little attempt has been made to understand its wide-ranging implications.

Second, how justifiable is it to link national pride with the Bomb? In the international arena, big boxers must supposedly be able to pack big punches - kilotons and megatons worth. Power, prestige, and politics have thus become intertwined in the consciousness of many, and this has been reinforced by repeated statements by politicians and others in both countries. But one should question how reasonable such a linkage is, and how much pride can be justifiably associated with the strictly technical achievement of nuclear capability.

Third, one is often confronted with the argument that nuclear weapons on the subcontinent are a reality. Therefore, goes this argument, for both nations it is better to accept

this and go overt rather than remain covert. The benefits of the position are frequently extolled. But what are the costs?

Fourth, if South Asia is indeed irreversibly nuclearized, then one must deal with the possibility that nuclear war can occur not only by the will of one or both parties, but also through chance and accident. What are the possible mechanisms by which this could happen? In this context, one must also ask how a South Asian nuclear deterrence might be different from the US-USSR one.

Fifth, what are Pakistan's nuclear choices? Caught between a rock and a hard place, Pakistan will eventually have to make agonizingly difficult decisions on its nuclear programme. As global pressure mounts for it to denuclearize, Pakistan's policy of deliberate ambiguity - which had served it so well politically and diplomatically in the past - is coming under greater stress. Therefore, new options need to be explored.

Sixth, and finally, is the all-important question - what can be done to avoid nuclear conflagration in South Asia, whether by design or by accident? This is no longer an issue for the future and cannot await resolution of the fundamental disputes between the two countries. Therefore, what is needed is an India-Pakistan dialogue on nuclear issues and a set of possibly workable measures which could alleviate the dangers. What could these measures be?

UNDERSTANDING MAY 1990

Many Pakistani believers of nuclearization cite May 1990 as the nation's first exercise of its nuclear muscle, and offer it as proof of its power to deter. The truth of the matter of secondary importance; perceptions are more important here and the facts may never really become known. Enshrined as an article of faith is that it was Pakistan's threat of using nuclear devastation which had stopped Indian aggression dead in its tracks.

How exactly the nuclear threat was communicated to India is not entirely clear. Local and foreign commentators have versions which differ in detail somewhat. But the lore in Pakistan goes like this:

Troops had been massed on both sides of the border following heightened tension over Kashmir. Robert Gates, the national security assistant to President Bush, rushed to Islamabad to defuse the crisis. He met President Ghulam Ishaq Khan and General Aslam Beg, one of whom said that "we are desperate enough to blow India to smithereens". Subsequently, American satellites picked up a heavily armed convoy of trucks moving out of Kahuta towards Chaklala airport, where F-16's with nuclear capable bomb-racks stood ready on the tarmac¹. The

¹ In his essay "On The Nuclear Edge" (The New Yorker, Pg 56, March 29, 1993), Seymour M.Hersh makes the claim that US intelligence had picked up the news that General Beg had authorized technicians at Kahuta to put together nuclear weapons. Subsequently US satellites picked up a convoy of trucks coming out of a remotely located nuclear storage site in Balochistan, and moving towards the nearby airforce base.

information was conveyed to the Indians and, after seeing that the contemplated invasion would be too costly, they backed off.

This version² of May 1990 has been staunchly denied by General Beg, now retired, an aspirant for high political office, and an outspoken advocate of the Bomb. In an interview³ almost three years after the crisis, he denied that Pakistan had a usable nuclear device at that time. Therefore it could not have been poised to use it against India. Moreover, in his opinion, such readiness was unnecessary because Pakistan had not been faced by a critical or desperate situation. Further, "there was a solid fear of massive retaliation from India as they have a stockpile of more than a dozen warheads", he said.

General Beg could well be telling the truth and May 1990 could have been a nuclear non-event. Indeed, some senior officials in Pakistan and India believe that the crisis was hyped up and that, in fact, there was no imminent danger of nuclear conflict. In that case, the only losers are those Pakistani journalists and political commentators who had raucously cheered a false victory. But suppose that that's not the way it really was. What if Pakistan, sensing an Indian attack, had indeed communicated a nuclear threat in May 1990? What if the Gates and trucks-out-of-Kahuta (or Chagai) story is actually true?

If correct, there are at least four profound implications of this:

First, it would have revealed weaponization. The official line taken by both India and Pakistan is that they have developed the technical capability of producing nuclear weapons. This means that enough fissile material, other components, and technical know-how exists. However, both countries claim that, **by choice**, they have refrained from constructing actual weapons. But if weaponization had indeed been disclosed to Gates, then Pakistan surely laid itself open to application of the Pressler Amendment against it. This Amendment specifically refers to the possession of a nuclear weapon - not just the capability of being able to produce one. It was already in effect at the time of the crisis. Therefore, if Pakistan had indeed succeeded in convincing the Americans that it possessed a workable nuclear weapon then, by the same token, it must also have persuaded them to apply Pressler strictly. In having choked off the major source of its weapons supplies, it is far from clear whether Pakistan's alleged action was to its security benefit.

Second, and much more ominously, there now exists some possibility that the next Indo-Pak war will not go through the phase of a conventional war. **Hitherto the general assumption has been that if hostilities commence, they shall do so in a controlled way and conventional weapons will be used. Unsheathing the nuclear sword would then either cause the war to**

² The soon to be published book "Critical Mass" by William E. Burrows and Robert Windrem contains a dramatized account of the May 1990 confrontation. the remote nuclear storage site in Balochistan is identified as Chagai, and it is claimed that Pakistan possesses an implosion design for its nuclear weapons which as tested by the Chinese in the mid-sixties.

³ General Mirza Aslam Beg, interviewed by Ikramullah, Dec 3, 1992, The News, Islamabad.

stop, or only gradually escalate into a nuclear one. But, if Pakistani nuclear hawks are correct in saying that Pakistan suddenly brandished the Bomb in May 1990 before a single shot had been fired, then the next war may begin and end with a horrific nuclear exchange which would destroy tens of millions of lives in both countries. In such a war India could suffer major damage to some of its population centres and key installations like dams and nuclear power stations. But Pakistan, which is physically smaller and faces a much bigger nuclear adversary, would be entirely devastated.

Third, May 1990, if true, opens up the appalling possibility of some Third World leaders playing with the nuclear button, even when their countries existence is not mortally threatened. This would serve to reinforce existing fears and prejudices against Third World nuclear powers in the international community. A trigger-happy nuclear nation, as General Beg correctly pointed out in his interview, is certain to be viewed as irresponsible. This situation is certainly not made any better by the statements of certain fundamentalists in Pakistani politics who have invoked concepts of "*jihad*" and "*shahadat*" in the context of nuclear weapons.

Fourth, it is important to understand that Pakistan's future security may have been seriously compromised if indeed it had chosen to exercise the nuclear threat once. The nuclear sword is double edged. On the one hand, the terror it inspires can deter a potential attack. But, on the other hand, this very fear can inspire a preemptive attack aimed at destroying the opponent, or at least his nuclear weapons, before they can be used. In a situation of extreme tension, there is bound to be much uncertainty and mistrust of the adversary's intentions. In all probability quick decisions, based upon incomplete information, will have to be taken. Past behaviour of the adversary is likely to play an important role.

Given that Pakistan is the smaller and weaker of the two nations, it is very unlikely that it would initiate a conventional attack on India. The Indians certainly understand that. They know that Pakistan would keep open a nuclear option so as to deal with a situation in which Pakistan's armed forces are being overrun by Indian military might. Thus, this would be a weapon of last resort. On the other hand, the Indians also understand that Pakistan, because it feels insecure and threatened, may resort to desperate acts. To preempt such an act, a first strike would then be in the cards. Therefore, May 1990, if true, could be used as an argument to justify an attack.

Does Nuclear Deterrence Work?

Even if one accepts provisionally that it was Pakistan's nuclear weapons which had foiled an Indian invasion in May 1990, it is still purely a matter of faith - and hence outside the realm of scientific investigation - that the chances of successful long-term defence of a state are enhanced by its possession of a nuclear deterrent.

The most quoted argument in favour of enhanced long-term defence is that of Europe after W.W.II. For example, defence analyst Edward Luttwak⁴ claims that "we have lived since 1945 without another world war precisely because rational minds extracted a durable peace from

⁴Edward N.Luttwak, "Of Bombs And Men", p82, Commentary, August 1983.

the terror of nuclear weapons". It is impossible to verify or disprove such claims. There are other possible explanations for the non-occurrence of war too: the memory of the immense destruction in W.W.II, the absence of a territorial conflict between the US and USSR, and the relative timidity of Soviet ideology. While nuclear deterrence may have contributed to stability, the case is not iron-clad.

Nonetheless, it is entirely plausible that nuclear rivals are less likely to go to war against each other. Assuming both sides make rational decisions, the onset of hostilities is likely to be delayed, or they may not take place at all. The "balance of terror" argument does have a certain amount of validity, even in a situation of nuclear asymmetry such as exists between India and Pakistan.

On the other hand there is no guarantee that even in the presence of a nuclear deterrent, conventional war will not take place. The Argentine-Britain war over the Falklands is one example. Britain had sufficient military advantage so that it did not need to threaten its rival with nuclear attack. But in general, emotional responses of leaders cannot be predicted with any degree of certainty if a major crisis should occur. If war does commence between countries with a long tradition of enmity and mistrust, the course of future events cannot be predicted with any degree of confidence and it is certainly possible to have a conventional war escalate into nuclear exchanges.

The Iran-Iraq war provides one example where nuclear deterrence would have failed had it become available to the adversaries during the course of a conflict. This war was a no-holds-barred conflict. Every type of weapon in the opponent's arsenals was used. Each side knew it would receive a response in kind, but was undeterred. In the War of Cities, population centres were devastated by long range missiles. A missile arriving on Teheran led to a missile departing for Baghdad. Both populations experienced the horror of chemical warfare. Would they have been spared the horror of nuclear warfare?

The ability of rivals to deter each other presupposes rational behaviour. Again, there is an available example where this assumption was not fulfilled: Saddam's Scud attacks on Israel were launched with the full knowledge that Israel could make Iraq a radioactive wasteland in a matter of hours. There was no military or strategic logic to these attacks; these were potentially suicidal acts motivated by desperation and fury. For the people of Iraq it was extremely fortunate that Saddam's missiles missed their mark or were intercepted before they could inflict real damage on Israel.

BOMBS FOR PRESTIGE?

Why do some nation states seek nuclear weapons? The standard reply is that they feel their security is at risk. But this is obviously not the whole answer; the quest for power and prestige may be very important, perhaps even paramount. France and India provide two clear examples where nuclear weapons have been pursued primarily out of hunger for political power

rather than for national security. Other countries too, including Pakistan, yearn for these instruments of mass destruction because they supposedly endow their possessors with true power.

Nuclear weapons, in a sense, are viewed by several Third World countries as a sequel to modernization; they come with "growing up", so to speak. The Indian case is perhaps the clearest demonstration of this. Nuclear weapons, with their surrounding mystique and awesome power to destroy, are glittery objects symbolizing the mastery of advanced technology. National chauvinism finds a rallying point: build the Bomb! The Bomb means Power.

The United Nations has done little to dispel this perverse view - all five permanent members of the Security Council are nuclear weapon powers. This implies a tacit admission that nations which command the power of mass annihilation are more important than those which do not. But the UN is way behind the times. Fortunately, the values of past decades are rapidly changing. The end of the US-Soviet confrontation has created the dramatic new possibility of a world with far fewer nuclear weapons. Today, bomb worship is no longer the rage. There are excellent reasons for this.

One reason is that designing nuclear weapons has become old hat. Unquestionably the first atomic bomb was an exceedingly brilliant, if terrible, achievement by the world's finest physicists. It required the creation of wholly new physical concepts, based on a then very newly acquired understanding of the atomic nucleus. The ensuing technological effort, the Manhattan Project, was quite unparalleled in the history of mankind for its complexity and difficulty. Thereafter the ability of a country to make nuclear bombs became synonymous with its technical prowess, and hence its strength.

Today, the design of atomic weapons, while still non-trivial, is vastly simpler than it was. Basic information is freely available in technical libraries throughout the world. The theory of chain-reacting systems, data on critical masses, equations for neutron transport, the assembly-disassembly phase of an exploding device, and so on, are published. Also available are technical treatments of compression, achievement of "criticality", initiation of chain reactions, build up of kinetic energy, and the final phases of the explosion as the pieces start to move apart. Advanced textbooks and monographs contain a staggering amount of detail which can enable reasonably competent scientists and engineers to come up with "quick and dirty" designs for nuclear explosives. Benefiting from various declassified documents in the US, the general reader, as well as the nuclear weapon specialist, can now see cut-away drawings of weapons, photographs, and even once-classified test data. The Iraqis, it is now known, made direct use of the Manhattan Project data in their programme.

Nevertheless, not everyone or any nation can build its own bombs so easily. The biggest technical obstacle is the difficulty of obtaining high grade fissile materials, uranium-235 or plutonium. Plutonium is available only as a reactor by-product, and uranium-235 occurs naturally only in a heavily diluted form. These bomb materials are presently unavailable in the international market, even though covert sales of ex-Soviet made weapons-grade materials have

been alleged. A nation which wants bombs almost certainly has to produce these materials itself. But the march of time has made this immensely simpler.

A variety of techniques are available today for the production of fissile materials for bombs. India has chosen the reprocessing route because it has a large number of civilian reactors whose spent fuel can be used for extracting plutonium. Pakistan has opted for centrifuge technology. Iraq had an extensive calutron program based on an electromagnetic separation method, which is still in the process of being destroyed. Still more modern and effective methods are now available, and isotope separation by lasers is just around the corner.

None of these are trivially acquired or developed. Even today, substantial amounts of resources and engineering ingenuity are required to make any of these methods actually work. But it would be folly and ignorance to think of nuclear weapons development as being at the cutting edge of science or technology. One indication of this is that nuclear weapon designers in major US defense laboratories, like Lawrence Livermore, are finding it difficult these days to get jobs in industry or universities after being laid off. In those highly competitive environments, these scientists are no longer considered as belonging to the ranks of top quality scientists. The undeniable fact is that the technology of nuclear bombs belong to the 1940's, and the furious pace of science makes that ancient history.

That bomb making is easier today than ever is evident. Presently more than a dozen Third World countries with quite marginal technological infrastructures, and which have no standing in the world of high science, can develop the rudiments of a nuclear weapons program. No scientific genius is needed; good engineering competence, dedication and hard work will suffice. The principal requirements are a sufficient degree of motivation and adequate funds. Pakistan has proved this point extremely well.

Threatened by the Indian nuclear explosion of 1974, and fearing attack from a much stronger and aggressive neighbour, Pakistan set about its own programme. By heavily concentrating its limited scientific energies Pakistan was able to build up a fairly sophisticated nuclear establishment which is disproportionately big relative to other areas of scientific endeavour in the country. This is not a bad achievement for a country with a per-capita GNP of \$400 per year, which has 74% of its people illiterate, and which offers an educational system competing for being the poorest in quality anywhere in the world.

But whatever their security benefits or liabilities may be for Pakistan or other countries, the fact is that **in the present world nuclear weapons have irretrievably lost their old political clout and have been stripped of much of their mystique. With further passage of time, they will inevitably come to be viewed much as chemical and biological weapons are seen today - nasty and brutish means of mass annihilation, not as technical marvels.**

Proof of the impending delinkage of international prestige from nuclear capability becomes evident upon examining the pecking order of nations today. Compare non-nuclear Japan with its giant neighbour, nuclear China. Which of the two exercises greater power in world affairs? Which is respected and courted more by other nations? And which offers a higher quality

of life and opportunities to its citizens? Within Europe, one can similarly compare nuclear Britain with non-nuclear Germany.

No one doubts the ability of Japan, or other non-nuclear industrialized countries, to develop a full-fledged nuclear arsenal in a very short period of time if they should so desire. Unlike the crude, unreliable, and bulky weapons which countries like India and Pakistan are capable of developing, these would be slick, hi-tech, state-of-the-art marvels. But such weapons would add not one iota to the well-being of these countries. On the contrary, they would lose some degree of their prosperity and in exchange get a whole range of dilemmas which would serve to make them much less secure.

Nevertheless, old ways of thinking die hard. Many on the subcontinent continue to adhere to the Bomb as endowing respectability and status. On India the message of the dawn of a new age has been lost, and it is pursuing nuclearization for prestige with unabated vigour. Indian militarism is on the rise and is being fueled by the political culture in Delhi based on an alliance between the Congress elites, the bureaucracy, the military establishment, and a rising national bourgeoisie. The rise of rabid Hindu chauvinism, most recently demonstrated in Ayodhya, has led to a pathological obsession with achieving great power status. Following rapid military expansion after 1978, India now looks to nuclear weapons for projecting its military might far beyond its borders.

While India may succeed in setting itself up as a fearsome regional power, this will not make it the great power it aspires to be. Great powers, after all, are not so easily made. The masses of India, for whom the Indian elite seem to feel little concern, have drowned the country in a sea of ignorance and poverty. Religious, ethnic, and tribal conflicts exact their dreadful toll and the blackest forms of human misery stalk this land. No hope exists for the abandoned pavement dwellers of Indian cities, whose number runs into tens of millions, or for their generations to come. Bombs are indeed a curious way to seek greatness.

The pride factor exists in Pakistan too, although to a somewhat lesser extent. There is a strong belief that the Bomb would elevate Pakistan's image among Muslim countries. Some cherish the fond hope that if Pakistan explicitly demonstrates its nuclear capability through a test explosion, oil money will pour into the country. But there is not the slightest reason to believe, nuclear capability or no nuclear capability, that Pakistan will thereby become less disadvantaged in its relations to Arab countries. Pakistani workers in Saudi Arabia and the Gulf States will continue to receive shoddy treatment and be looked down upon. Pakistan's political leaders will continue to humbly make pilgrimages, as they do now, and supplicate Arab sheikhs for aid.

THE OVERT-COVERT DEBATE

"Let India and Pakistan both become nuclear weapon states openly and without reservations. They are both mature nations which need no counseling on their international responsibilities and conduct"⁵.

These lines could equally well have been written by an Indian or a Pakistani. Therefore it is necessary to volunteer the information that, in fact, they are from a published essay by retired Pakistani general K.M.Arif. But they could just as easily have been the thoughts of his counterpart in India, retired general K.S.Sunderji, or of a thousand others. There is indeed a curious meeting of minds⁶, quite independent of the side to which they belong, between nuclear hawks committed to the "balance of terror" argument.

General Arif's argument requires that the Pakistani government shed its position of "calculated ambiguity" and, instead, openly declare possession of nuclear weapons. In part this comes from alarm at the aggressive pace of Indian militarization, particularly the continuing development of the Agni missile. And, in part, it comes from anger at the United States which has chosen to severely penalize Pakistan while effectively acquiescing to a much bigger Indian nuclear weapons programme.

The pressure from nuclear hawks like Generals Arif and Beg to overtly nuclearize must be resisted, as it has been in the past, even though Pakistan's anxiety and anger have genuine cause. Rational conduct requires that the consequences of this action be clearly thought out. This is critically important because such a decision may be essentially irreversible. Once a country goes nuclear, to pull back may be impossible.

Of the damages that Pakistan would suffer, the certain loss of economic and military aid from the West and Japan is a relatively small matter, even though it has received the most attention. Much more serious, but never openly discussed, are the consequences for Pakistan's national security.

It is therefore crucial to examine critically the five main arguments offered by those who advocate that Pakistan declare it possesses a nuclear deterrent and suggest that, if needed, adequate proof be provided by, say, a test explosion. First, they argue, declaring the Bomb is unlikely to have any major effect because the Indians are likely to have cheated anyway and most probably already possess nuclear weapons. Second, our declaration of nuclearization will lead to a freezing of the status quo through the existence of a credible and **stable** mutual deterrent. Third, even a few Pakistani bombs can constitute a "minimal deterrence" which will cause

⁵ K.M.Arif in *The Globe* p13, Islamabad, March, 1990.

⁶One particularly bloody-minded hawk is Indian defence analyst K.S.Subrahmanyam who says "Even the failure of deterrence will cause vast, but still finite damage, considering the kind of arsenal the two sides are likely to have for a long time to come, with the advantage being in favour of India if India were to exercise its option (to arm with nuclear weapons). It will not mean nuclear winter, rapid escalation involving the use of hundreds of warheads and loss of control over the war. It will be analogous to the situation between the superpowers in the early fifties. That situation will still be preferable to one of India remaining non-nuclear, facing the threat of humiliation, defeat and disintegration". From "Critical Mass", op cit.

military competition to vanish. Fourth, the cost of a credible nuclear deterrent is affordable. Fifth, a nuclear deterrent will allow Pakistan to make up for the superiority of Indian conventional forces.

These arguments are apparently logical and carry force. But they must be weighed against even stronger counter arguments.

First, the current need to keep nuclear activities covert imposes very severe constraints on weapons development, the size of arsenals, and means of delivery. This has meant that the **pace** of nuclearization, both Indian and Pakistani, has been slower than it would otherwise be. This factor should not be dismissed, particularly in so far as it rules out full-scale atomic testing. Keeping bomb development covert means that only "zero yield" and non-nuclear testing is possible. These tests, while crucial, are not sufficient if one wishes to develop fission weapons which are physically small, have high yield, and are reliable.

No nuclear testing is a far more important factor for India than for Pakistan, as is evident from the bitter rantings of Indian hawks at their government's doublespeak on the nuclear issue. On the one hand, it makes the mating of nuclear warheads to the *Prithvi* and *Agni* ballistic missiles difficult and perhaps impossible. This is because missiles require a fairly miniaturized warhead which must also be able to sustain huge accelerations. On the other hand, it also makes very difficult India's successful development of the far more complicated hydrogen fusion bomb or the miniaturized tritium "boosted" bomb.

There is little doubt that India's huge nuclear establishment is awaiting a Pakistani move. The Bulletin Of The Atomic Scientists, quoting a 1985 German intelligence document, writes that the Bhabha Atomic Research Agency's job was to be sure that "within two months of a Pakistani nuclear test, the second Indian nuclear test should be carried out. Such an Indian test should simultaneously be used for the development of a fusion explosion"⁷.

Second, declaration of overt nuclear status by one country, which will be responded to almost instantly by the other, is likely to have consequences which nuclear hawks have religiously avoided discussing. The reason for this is that although a plausible argument can be made that mutual nuclearization will serve as a deterrent, there are only mere statements of belief available that such a deterrent would be **stable**.

To make the discussion precise, one could define a deterrent system as stable if it incorporates sufficient checks and balances to prevent a nuclear war on the basis of false or inadequate information, accident, or unauthorized command. Stability is crucial as nuclear deterrence cannot tolerate a single failure or mistake. The issue of false information is an exceptionally serious one. In the US-USSR deterrence system, a massive system of early warning systems, both space and ground based, was needed to detect missile launches. In spite of a relatively long flight time of 20-25 minutes, the systems remained severely strained and is authoritatively known to have generated false messages of attack. The existence of redundant and multiple safeguards prevented accidental war, but the margin was not comfortable.

⁷Bulletin of the Atomic Scientists, p20, June, 1989.

Indian-Pakistani deterrence will not enjoy the luxuries of the US-USSR case. With contiguous borders, a flight time of 5-7 minutes, and no space-based early warning systems available, much less data will be available to make reasoned judgments. Hence the temptation would be to adopt a **LoW**, Launch On Warning, strategy.

In this scenario, the mere assumption that a nuclear attack is imminent would precipitate a preemptive attack. Pakistan would probably be forced to opt for this hair-trigger strategy as it has no capacity to absorb an Indian first-strike and be able to respond. Second-strike capability, while perhaps possible for India, is out of the question for Pakistan. Hence it would have only one chance to strike at the Indians - and the choice between value and counterforce targets would certainly be in favour of the former. But knowing this would make the Indians nervous. Since crisis misperceptions have a way of feeding and enlarging themselves, mutual nervousness may cause one or the other adversary to strike first for no good reason.

Third, the assumption underlying "minimal deterrence" is highly suspect. The assumption essentially is that the game ends once a country has made a few fission bombs and declared them. Security being assured, one can then go on vacation. Consequently, "minimal deterrence" assumes there is no constant drive towards bigger or more effective weapon systems, or any need to talk about second-strike capability - the ability to strike the enemy after absorbing the damage sustained in the initial nuclear attack.

The superpower experience, however, provides the antithesis to this argument. From the day that the first fission bomb was tested in 1945 by the US, the story has been one of constant escalation. In rapid succession there followed the jet bomber, fusion bomb, nuclear artillery, ICBM, SLBM, supersonic bomber, MIRVed warheads, and so on. Each new development, almost invariably pioneered by the US, was followed a few years later by the Soviets until, in 1991, the Soviet Union collapsed from sheer exhaustion.

This example is not enough to discourage hardened hawks like General Sunderji, or like-minded Pakistanis. In the course of a lengthy thesis⁸, he approvingly quotes Bernard Brodie as saying that "Weapons that do not have to fight their like do not become useless because of the advent of newer and superior types"⁹.

This makes little sense in the nuclear context. Even a nuclear deterrent, comprising a handful of bombs, will require continuously dealing with the enemy's new counter-measures, upgrading the means of delivery, developing ever more sophisticated surveillance systems, and modernizing the nuclear command and control system. Whereas initially there may be a fair chance of penetrating enemy defences, in later stages the nuclear arsenal will have to be greatly increased in size and made more sophisticated to compensate for diminishing penetration factors.

⁸ K.S.Sundarji in "Strategy In The Age Of Nuclear Deterrence And Its Application To Developing Countries", 21 June, 1984, unpublished.

⁹ Bernard Brodie, "War and Politics", p231, New York, Macmillan.

Therefore, what may start out as "minimal" is likely to become anything but that with the passage of a few years.

There is a curious line of argument which ought to be mentioned here. It goes like this: nuclear escalation will not, as it did in the US-USSR case, occur on the subcontinent because South Asians have a special psyche - they are not greedy and will be satisfied once they achieve a simple deterrent. This hopelessly naive belief, which defies military logic, is based on an inverted form of racism - that we are somehow different and better than the rest of the world.

Fourth is the issue of costs. There is a line of reasoning that if India or Pakistan go overtly nuclear, then they would be able to cut defence spending and concentrate on social priorities. The logic of this relies on the fact that atomic weapons do give "more bang for the buck". The US Atomic Energy Commission, in the 1960's, published a cost of only \$460,000 for a largish bomb of 100KT. This works out to only one quarter of one cent per pound, whereas chemical explosives cost more than 25 cents per pound.

The catch, of course, is that this figure is just the manufacturing cost and ignores the billions put into setting up the huge infrastructure needed for research and development of nuclear weapons. No figures are available for Pakistan, but Iraq has reportedly spent 5-10 billion dollars in its efforts to produce nuclear weapons. India, because of its large civilian nuclear programme, is able to hide a good fraction of its weapons development costs. Nonetheless some rough estimates have been hazarded by certain Indian defence analysts.

Bhabani Sen Gupta, for example, writes "If the first generation nuclear deterrent we talked about would cost less than 4% (Rs 5000 crores) of a year's GNP in 1981 terms, the second generation of improved deterrent would cost a little under 8% of the 1991 GNP. This is affordable"¹⁰. What constitutes "affordable" can be endlessly debated. But the Indian government apparently cannot provide the most minimal needs to the street-dwellers of Bombay and Calcutta, a quarter of the total city population. Resources diverted away from the social sector feed an increasingly voracious military-industrial complex.

Fifth, to expect that nuclear weapons can credibly substitute for conventional weapons, once their existence has been openly declared, is unwarranted by facts. It is difficult to imagine that there would be any reduction of spending on conventional arms, or a reduction of the size of our military. The Pakistani and Indian militaries are both heavily involved in matters of internal security, and in border skirmishes which require visible demonstration of military might.

Certainly, the European experience provides a clear example of a massive nuclear force possessed by both sides, but which had to be backed up with a huge amount of airpower, seapower, armour, and infantry. The fact is that conventional arms were considered quite indispensable because they are credible by virtue of having a much smaller area of destruction.

¹⁰ Bhabani Sen Gupta, quoted in Sunderji op cit.

If they should convert the presently vague and existentialist nuclear threat into something palpable and poised for use, India and Pakistan would be irreversibly driven by the force of logic and circumstances into a situation whose gravity nuclear hawks either do not realize, or do not wish to discuss.

To conclude: **if Pakistan were to lead India in declaring the Bomb, its security would be vitally damaged and it would be rendered vulnerable to any and every kind of attack. But Pakistan's subsequent insecurity will not work to India's advantage; a nuclear Pakistan will surely pose a grave threat to it. Therefore India should stop trying to push Pakistan over the brink even if it sees some temporary advantage in doing so.**

On the other hand, if India declares nuclearization first, Pakistan would be inevitably dragged into responding to the extent that it can. It would have to make the best out of a bad situation. But whichever government takes the first step will be justly reviled by the world for having put a billion people under the nuclear sword and, in the process, making both its adversary and itself more insecure than ever before.

NUCLEAR WAR - BY ACCIDENT

"Neither India nor Pakistan wanted to go to war but we could have easily gone to war". General Zia-ul-Haq's remark, made soon after the crisis precipitated by India's Brass Tacks exercises along the Pakistani border in 1986, shows that an unwanted or accidental war between the two countries is not outside the realm of possibilities. That such a war could perhaps lead to a catastrophic nuclear exchange is a fearsome thought.

Fortunately, at the present time this may be fairly improbable. Although India and Pakistan have repeatedly stated that they have the capability to build nuclear weapons, both countries also insist that they have refrained from weaponization. Except for a small but vociferous lobby calling for bombs to be immediately deployed, most people appear to be quite satisfied that their country's capability is sufficient to deter the other side without an explicit demonstration. Therefore, if indeed neither country has readily operational weapons, then these may be relatively safe times.

But it also possible either or both countries have already secretly stockpiled nuclear weapons. Or that at some time in the future a declaration of weaponization by one state will be made, followed by a similar declaration by the other. An unwanted nuclear war then becomes a possibility.

How could accidental war occur? The most likely setting for a nuclear holocaust is the pre-existence of some crisis, perhaps arising out of the Kashmir dispute. Assuming that Pakistan and India are both nuclear armed states, they will be constantly watching and monitoring each others activities. At a time when tensions are particularly high, each side will live in fear of a decapitating nuclear strike which could wipe out military or governmental centres of power.

Thus, to attack before being attacked becomes dangerously tempting. In such a situation, fear and misperceptions about the adversaries intentions could precipitate an unwanted confrontation.

Clearly, this is a situation which has been encountered before. The US and USSR had had an eyeball to eyeball confrontation for the major part of the Cold War. In this nuclear competition, billions of dollars had been spent on acquiring the most sophisticated forms of intelligence gathering by satellites, aircraft, ships, and submarines. The data from these were analyzed using computers equipped with artificial intelligence programs. This enabled both sides to know each others level of readiness for combat. If such an elaborate command and control system had not existed, a doomsday nuclear confrontation may well have occurred out of fear or suspicion.

For India and Pakistan this has clear implications. It would be folly to weaponize without developing an adequate command and control system which would remain stable even under the extreme demands of a crisis. Moreover, this system should be protected so as to survive even a nuclear blast in the vicinity; i.e. be protected against the electromagnetic pulse which accompanies a nuclear blast and destroys all normal telecommunications. Without this either country would be like a blind and deaf giant twirling a nuclear truncheon, a threat to one's own self as much as to the other.

But then many worrying questions arise: would India or Pakistan be willing, or be able, to invest massively into command and control? Even though the requirements for India or Pakistan are relatively less demanding than for the US or former USSR because of fewer weapons, they are also more challenging in some ways. For example, missile flight times for sub-continental trajectories are only 5-8 minutes as compared to 20-30 minutes for intercontinental ones. In this time a decision will have to be taken whether the alarm is genuine, and whether the missiles are to presumed as nuclear armed. In the absence of accurate information, the only alternative is the dangerously unstable LoW (Launch On Warning) policy. Nuclear hawks have refused to squarely face up to the fundamentally important problem of C3I. General Sundarji, for example, baldly asserts that a sophisticated C3I is unnecessary and a high degree of availability and reliability are not needed because the adversary would retain a second-strike capability which cannot be wiped out¹¹. General Aslam Beg, in a seminar talk provocatively entitled "*Who will push the button? Command and control of our nuclear arsenal*", had only banalities to offer: "it is the popular will vested in legislature, which shall be the final presser of the button, but that eventuality will never come", he said.¹²

A second kind of danger comes from the possibility of unauthorized use of a instructions, sabotage, or ideological hatred of the enemy, a small group of individuals nuclear weapon by a pilot or field commander. Either through misunderstanding of could deliberately initiate nuclear

¹¹ K.S.Sundarji in "Changing military equations in Asia: the relevance of nuclear weapons", Center for the Advanced Study of India, University of Pennsylvania, October 3-6, 1993.

¹² The News, Feb 18, 1994, Islamabad.

war. Again, the chances for this would be much higher in a preexisting state of tensions, military exercises, or during a conventional war.

There are other possibilities which could initiate an accidental Indo-Pak nuclear war - disenfranchised sub-national groups within either country may somehow acquire access to a nuclear device, or a nuclear detonation could occur in the crash of an aircraft on one's own soil, and so on. Explosive dumps have often blown up for unexplained causes; one such explosion had rained death and devastation on the cities of Rawalpindi and Islamabad a few years ago. The explosion of a nuclear device would be immeasurably more serious than the blowing up of ordinary ammunition. The natural assumption would be that the device belonged to the other side. Even if the device actually belonged to one's own side, a government fearful of public reaction may not want to admit it. Depending on the circumstances, the demand could be for retaliation, not investigation. Two principal hazards, which so far have not even been mentioned in public discussions, are (1) unsafe bombs, and, (2) problems arising from ballistic missile proliferation.

Unsafe Bombs: An unsafeguarded nuclear weapon can, in principle, be detonated by an unauthorized individual or by several kinds of accident. Given the drastic implications of this act, it is worth understanding the tremendous amount of energy and effort that have gone into construction of what are called Permissive Action Links (PALs), the elaborate electronic and mechanical safety catches installed on US and Soviet nuclear weapons. While no weapon can ever be totally safeguarded against misuse or sabotage, PALs certainly have made them safer.

Before 1958, US nuclear weapons were unprotected against unauthorized use. Only two special keys had to be inserted into a bomb to ready it for use. Soon it was realized that this was extremely unsafe and, in the 1960's, a massive effort was launched to ensure that a bomb would never explode to produce a fireball and mushroom cloud unless authentic instructions for detonation were received from the highest authority. This was the beginning of PAL technology.

Modern PAL's installed on nuclear devices are impressive. The latest among them can detect if the device has been stolen and moved to an authorized place, and even sense efforts at sabotage. They feature combination locks which count the number of tries made, and make the device permanently inoperable by destroying critical parts if the tries are in excess of some prefixed number. Some PALs are "environmentally sensitive" and will not permit a bomb to explode unless it experiences accelerations in the right amount, and so on.

An additional benefit of PALs is that they can increase the degree of civilian control over nuclear weapons. Presuming that the ultimate launch authority in India or Pakistan is the elected government and not the military, no nuclear weapon can be activated unless a secret code has been received from the president or prime minister. This power of veto may be vitally important in preventing a holocaust. However, a glance at the history of US PALs shows that a military does not easily agree to civilian controls in such matters.

One can, therefore, make the case that if the existence of assembled nuclear weapons has been established without doubt, then the principles underlying PAL's should be made available to

both India and Pakistan by the US. Of course, the mechanisms are very weapon-specific. But the general principles could be sufficiently general so that they do not reveal any new tricks of how to make better weapons while allowing for the possibility of making the existing ones safer.

Safer bombs will also require new kinds of high explosives. In view of the catastrophic consequences of nuclear weapon accidents, in recent years there has been much discussion of the so-called "One Point Safety". This term refers to the condition that the bomb's nuclear fuel is not ignited even if the surrounding explosive at any one point is detonated. During the last decade it was realized that, in the event of fire or ordinary explosion, there is a fair chance that a nuclear weapon could undergo nuclear detonation even if it had not been readied for use. This could happen, for example, if a bomber were to crash on one's own territory.

To prevent this kind of catastrophe new types of conventional explosives, called Insensitive High Explosives (IHEs), have been devised. "One Point Safety" is assured by using IHEs. Again, this is the result of very intensive research and development, and one could make the same argument as with PAL's that these be made available to both countries.

The best PAL and the best guarantee of "One Point Safety" is, of course, a disassembled nuclear weapon. If India and Pakistan refrain from assembling bombs, there will be no need for these complicated measures. But if bombs are assembled then several critical questions will arise. Would either country be willing, or be able, to invest in the tremendous amount of research needed to make its bombs safe for itself? Or, since there would be total secrecy in such matters, would there be a strong temptation to cut corners?

Ballistic Missile Induced Instabilities: With flight times of the order of a few minutes, and with virtually no prospect of an effective defence against them, intermediate range ballistic missiles (IRBM's) are the singlemost destabilizing element in the India-Pakistan confrontation. Carried on mobile launchers, and with little preparation time needed by solid fueled boosters, missiles can carry out a sneak attack much more easily than manned aircraft. India has a sophisticated IRBM programme, comprising of development of the 1500-2500 km range *Agni* and the 150-350 km range *Prithvi*. The latter has been repeatedly tested, widely publicized on Indian state television, and plans are away for its deployment by the end of 1994. Pakistan has sought to counter this development principally through import of the Chinese M-11 missile, which is the rough counterpart of the *Prithvi*. It's indigenously developed missiles are as yet in a relatively primitive stage.

Although the accuracy of the guidance system of the *Prithvi* and M-11 is a secret, in all probability these missiles are inaccurate to at least several hundred yards. This means that their utility, when armed with conventional warheads, would not be for precision attack on military targets but, instead, to attack cities and population centres. They are, therefore, weapons of terror.

A still more ominous possibility is the use of IRBM's as delivery vehicles for nuclear warheads, for which accuracy is not critical. India or Pakistan have presumably not yet developed the technology of mating warheads to missiles, but this could be just a matter of time. Because a

nuclear armed missile cannot be distinguished externally from a conventionally armed one, the deployment of any missile could be viewed with great alarm by the other side.

The highly destabilizing effect of IRBMs cannot be offset by, for example, requiring that they be moved away from within range of the adversary's cities. The problem is that they could be quietly moved back for a sneak attack. Further, with the long-range Agni, every point in Pakistan - and much beyond - falls within its range. The conclusion which follows is the obvious one: there must be a regional accord involving China, India, and Pakistan which serves to cap IRBM deployments and hopefully to reverse it.

OPTIONS FOR PAKISTAN

Pakistan's nuclearization continues to be driven by the need to match the relentless pace of India's militarization, conventional even more than nuclear, and derives support from the domestic political environment. But, on the other hand, stronger brakes are being applied by an international community increasingly more hostile to nuclear weapons in general, and fearful of a South Asian conflagration. Furthermore, it is becoming increasingly clear that Pakistan's fairly limited technological capability sets a limit in how far it can match India. A rational assessment of Pakistan's nuclear choices must be based on a consideration of these four factors:

Indian Militarization: the speed of this has been repeatedly underscored by repeated tests of the Prithvi missile and the announcement of India's intent to deploy the missile in 1994. In 1989, with the successful launch of the Agni missile, India joined an exclusive club hitherto dominated by the world's five technological and military giants - the US, USSR, France, China, and Israel. India's armaments production industry is the largest in the Third World in terms of product diversity, research and development, and value and volume of production. It has matured since 1970 into a producer of diverse equipment and weapons especially aircraft and ships, and now intermediate range ballistic missiles. It's defence outlay for 1994 is 20% larger in real terms from the previous year's.

India's ability to rapidly produce nuclear weapons in large numbers is not doubted by anyone. But it awaits an opportune time for this and so far it has maintained a yes-and-no nuclear posture. Articulating India's desire for big power status, Bhabhani Sen Gupta states that "If India goes nuclear - it may be in the 1990's - it will do so as a credible nuclear power befitting its self-image and its international and regional power. That will be only when India has developed a respectable satellite launching capability, acquired the capability of launching IRBM's and of building sophisticated warheads and carriers as well as surveillance systems"¹³. He concludes that India will not join the "junior club of small nuclear powers" but will wait to crash directly into big time.

Domestic Politics in Pakistan also pushes the nation towards nuclearization. Since 1988, the nuclear issue has been used as a stick by both the incumbent governments and the opposition

¹³ Bhabhani Sen Gupta, quoted in DAWN, p11, 2 July, 1991, Karachi.

to beat each other with. Each has sought to establish its patriotic credentials by accusing the other of trying to damage Pakistan's security shield by seeking accommodation on the nuclear issue. Although India's growing military might is a source of genuine worry, it has been used as a justification for reckless military expenditure, which stands at least 36% of the current budget, and neglect of important social priorities. Both the challenge of Indian militarization and popular domestic sentiment for the Bomb drive Pakistan along the nuclear road. But formidable obstacles lie ahead.

Global Pressures to denuclearize, particularly from the US, continue to mount. No longer a frontline proxy warrior against communism, Pakistan has been virtually abandoned by its decades old ally. For all the brave talk about self-reliance, the fact remains that the cutoff of military supplies as a consequence of the Pressler Amendment has gravely weakened Pakistan's ability to defend itself. A good fraction of the Navy will soon be no more as ships leased from the US are returned. In spite of having paid the US for them, Pakistan will not receive further supplies of its most advanced fighter, the F-16.

It is not, however, the US alone which has taken a firm stand on proliferation but Japan and Western European countries as well. The fact is that proliferation has become a bad word almost everywhere. Since the fall of the Soviet Union, there has been a major move globally towards denuclearization and nuclear deemphasis. US and Russian nuclear arsenals will soon come down to one eighth of the sizes they had at the peak of the Cold War. Further, four proliferant states - Argentina, Brazil, North Korea, and South Africa - have formally renounced nuclear arms and have agreed to full-scope safeguards..

But in diametric opposition to these global trends, three states stand out as veritable bastions of nuclear proliferation - Israel, India, and Pakistan. The penalties, however, are least for the strongest and greatest for the weakest. Pakistan, being far more susceptible to external pressure because of the dependent nature of its economic and military relationships, has suffered much more than India.

Limited Technological Capability also sets fundamental constraints on Pakistan's efforts to match Indian advances in hi-tech weaponry. While Pakistan, like India, is capable of making nuclear weapons, these would probably be few in number, crude in design and manufacture, of rather large size, and uncertain reliability. Explosive yield boosting, miniaturization, PALs, and other sophistications are ruled out for Pakistan.

Much more importantly, Pakistan is not in a position to match India's development of IRBM technology or contest it in the field of satellite surveillance. These elements will be decisively important for all future military strategies, including those relying on nuclear weapons as a last resort. Thus, while a full-fledged nuclear race would be bad for both countries, Pakistan would stand to lose far more. It is therefore in Pakistan's interest to go out of its way to prevent such a race from occurring.

Given this fairly grim situation, the question is: what course of action maximizes Pakistan's security? Go overtly nuclear? Maintain nuclear ambiguity as far as possible? Or go the way of Argentina and Brazil?

The first - a declaration that Pakistan possesses a nuclear deterrent - would be the ultimate folly. It would be like manna from heaven for the Indian defence establishment and hawks of the Subrahmanyam type. This delight is for obvious reasons: after a Pakistani declaration it would be a no holds barred game where India enjoys all the advantages. Released from all constraints, India could immediately weaponize and develop thermonuclear and artillery bombs, accelerate its IRBM and space satellite programmes, start work on submarine launched missiles, develop nuclear command centres, and aim for second strike capability. Meanwhile its rival, while still a threat because of the few crude weapons in its possession, would be screwed to the wall by an angry world and threatened by internal collapse as it seeks to raise defence expenditure.

The third route - which amounts to unilateral nuclear disarmament by Pakistan - is both impractical and unwise at a stage where India shows no signs that it would reciprocate the action. While it would be in the interests of both India and Pakistan to renounce these instruments of mass annihilation, it is also true that Pakistani proposals for a Nuclear Weapons Free Zone, and a five nation conference, have met scornful rejection by India which has accused Pakistan of "propaganda ploys" and playing to the world gallery.

This leaves only the second option; continuation of Pakistan's policy of deliberate nuclear ambiguity in the form of "Yes we have it, no we don't". But what worked in the 1980's is not working so well in the 1990's. The real question is: what will? To answer this it is important to understand that Pakistan has, in diplomatic terms, played the nuclear game with great astuteness. But it must learn to play still better. Its proposals for a regional solution have put India in a spot. New Delhi has been unable to dispel the impression that it is merely stone-walling and resisting every reasonable Pakistani move.

Pakistan must once again seize the diplomatic initiative, which has been so important to it. But it can do so only if it is perceived by the international community as being sincere in working towards nuclear accommodation with India. Therefore, it will be necessary for Pakistan to take some form of meaningful unilateral action. This action could, for example, be a declaration that it will freeze the production of enriched uranium for a period of 18 months and will not conduct a nuclear test in this period. If India responds positively during this period, the freeze will be extended. Otherwise it would reserve the right to revert to its former position.

Together with this initiative, Pakistan could work to assuage concerns that it seeks to export nuclear weapons technology to other countries in the region. By agreeing to the inspection of all nuclear exports, and pledging not to transfer nuclear weapons related information, it would show itself as a responsible country genuinely concerned with limiting the spread of nuclear weapons. Pakistan's security interests would not be harmed by these declarations.

What could the possible outcomes of such a move be? If India responds by cutting off plutonium production, then this would be an important victory for peace in South Asia. This could lead towards more effective steps for denuclearization. But more likely than not, this will not happen. India's imperatives for nuclearization go beyond the need to match Pakistan; it dreams of grander things. Some slowing down of its nuclear programme may be all that might occur.

The real bonus of the move, however, would be reaped in diplomatic and political terms. Pakistan's initiative would have clearly demonstrated its desire to halt a nuclear race on the subcontinent, even at some cost to itself. There is reason to believe that Pakistan may, in fact, be effectively implementing all the items above without declaring that it is doing so. But, by not openly acknowledging this, it forgoes most of the benefits which would accrue from it. The economic, political, and military pressures on it would be substantially lessened. India, on the other hand, would stand out as rejectionist, or be forced to the bargaining table.

It is important to assess the costs, military and diplomatic, inveighing against the proposed initiative. The obvious objection is that freezing enriched uranium production for a time as long as 18 months will affect Pakistan's nuclear defense capability in relation to India's, especially since India has a much bigger stock of fissile materials. But, in fact, given existing stockpiles, the nuclear asymmetry would not be greatly enhanced beyond what it is at present. Further, at least at the present time, both nations use the veiled threat of nuclear weapons to deter each other. This relies on some diffuse meaning of "nuclear capability"; real numbers are presently **not** the major issue.

Another objection could be that any unilateral initiative by Pakistan would give the impression of weakness. But, one might ask: is sticking to one's old position really a sign of strength? Or is it just a reaction at being cornered? The cards are now stacked against Pakistan; it is up to the shrewdness of its policy planners to make the best of a bad situation.

THE SECOND BEST OPTION - BUILD CONFIDENCE

It is a canonical truth that peace can only come about if the cause of conflict is removed. In the Indo-Pak context this mandates some kind of resolution of the Kashmir dispute which takes into account the wishes of the people of Kashmir as well as the legitimate security interests of India and Pakistan. Today this seems a distant prospect. Closer seems the chance of yet another confrontation, more disastrous than any of the last two major ones. The urgency of the situation demands that one ask what partial measures, as distinct from a comprehensive peace settlement, might serve to inhibit war.

At a minimum, preventing a crisis in Pak-India relations from possibly escalating into a nuclear war requires that both countries soberly consider establishment of regular contacts at the highest level to deal with nuclear issues. What is needed is an institutionalized basis for exchanging and communicating information with the intent to reassure each other that a military attack is not about to begin, or that an ongoing conflict is about to be escalated to a higher

dimension. Since the need for this would be greatest in times of crisis, such contacts should not be made conditional to whatever state of relations exist. Pakistan and India don't have to be friends to talk. But to talk may be critically important for mutual survival. This was something that the US and USSR had recognized when they signed the "Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War" at a time of continuous confrontation and competition.

There is much that needs to be discussed in such high-level meetings. First, there may be routine military activities - such as troop or aircraft movements during exercises or missile testing - which could be misinterpreted by the other side as a preparation for attack. For example, in 1986 the requisition of a large number of rail cars by the Indian Army to support their exercise had sent alarm bells ringing in Pakistan because the last time this had been done on a similar scale was in 1971. Meetings between the militaries could allay false suspicions.

Second, such meetings would be vitally important for establishing a truly operational "nuclear hot-line" between Islamabad and Delhi, perhaps on the pattern of the Washington-Kremlin one. This should be exclusively reserved for use in times of a potential nuclear crisis. Although the basic idea would probably be acceptable to both sides, there are an enormous number of details to be worked out. How, for example, should the identity of individuals using the hot-line be authenticated? What technical means should be adopted to ensure that the hotline never fails functioning? What protocols need to be established so that the line is used only for forestalling nuclear action and not to transmit threats? How may the psychological impediments to use of the hot-line - such as the fear of appearing fearful or nervous - be dealt with?

Third, procedures for dealing with nuclear accidents, an unexplained nuclear explosion, or thefts of nuclear materials could be discussed. For example, the reported theft of some kilograms of highly enriched uranium from the Bhabha Atomic Research Centre, if correct, is of grave concern to both countries.

Perhaps the greatest obstacle to bilateral nuclear contacts is the myth that nuclear secrecy enhances security. But, in actual fact, it is nuclear transparency which is crucial for survival. The reason for this is clear: unreasonable secrecy leads to suspicion, and suspicion can lead to unpredictable or paranoid reactions by the adversary. Therefore, it is to both countries mutual benefit to permit the other a "peek" into its secrets. Thus, the exchange between India and Pakistan of updated lists of nuclear installations is to be welcomed. But this does not go far enough. Much more is needed.