

India's Nuclear Doctrine and Its Emerging Nuclear Posture

India's draft nuclear doctrine, which was released on 17th August 1999, was very much in keeping with its philosophy of defensive defence (Full text of the doctrine is attached as appendix to the study).

It is intended in this chapter to examine India's emerging nuclear Posture in the backdrop of its stated nuclear doctrine. The implications of the doctrine are more important than the mere statement, for it is the implication that would shape the operational deployment and employment of India's nuclear weapons. The first question that arises is 'what does India's nuclear doctrine mean?' According to Ashley Tellis who has summed it up concisely "India's nuclear doctrine can be seen as a system of beliefs that both describes the utility of nuclear weapons to the state and identifies the manner in which these weapons will be deployed and used consistent with the purpose for which they have been acquired"¹ This statement has far reaching consequences in India's emerging nuclear posture.

Rather than to into the details of the nuclear doctrine, the full text of which is attached as annexure and is self-explanatory the key terms and their implications are given in the succeeding pages.

1. Ashley Tellis, 'India's Emerging Nuclear Posture' (Pittsburg: Rand, 2000) p. 260.

DRAFT NUCLEAR DOCTRINE

Key Terms and Implications:

KEY TERMS	IMPLICATIONS
1. 'Nuclear weapons remain instruments of national and collective Security' (Para 1.1 of Draft Doctrine)	Nuclear weapons are political instruments rather than military tools.
2. 'The fundamental purpose of Indian nuclear weapons is to deter the use and threat of use of nuclear weapons by any other state or entity against India' (Para 2.4 of Draft Doctrine)	Nuclear weapons are meant to be deployed and employed for deterrence and not for any other state or entity against India' war fighting.
3. 'India shall pursue a doctrine of minimum credible deterrence and a Policy of retaliation only'(Para 2.3 of Draft Doctrine)	The size of India's nuclear arsenal will be based on the 'minimalist' policy. 'India does not plan on huge arsenals or 'stock piling'. 'Retaliation only' phrase means no first use, details of which have been discussed in Chapter IV. Aspect of credibility is covered below.
4. 'Any nuclear attack on India and its forces shall result in punitive retaliation with nuclear weapons to inflict damage unacceptable to the aggressor' (Para 2.3 b of Draft Doctrine)	India's nuclear forces will be so organized and deployed to ensure its 'assured second strike capability'. Details of assured second strike capability are described in Chapter IV.

5. 'India's nuclear forces will be based on a triad ... ' (Para 3.1 of Draft Doctrine)	India proposes to go in for a SLBM (Submarine launched Ballistic Missile) capability as part to its operational on nuclear forces.
6. 'The doctrine envisages assured capability to shift from peacetime deployment to fully employable forces in the shortest possible time (Para 3.2 of Draft Doctrine)	India will shift from its present 'recessed deterrence' posture towards a robust and ready arsenal.
7. 'Nuclear weapons shall be tightly controlled and released for use at the highest political level' (Para 5.4 of Draft Doctrine)	Command and control of nuclear weapons is unlikely to devolve to the military. Induction of tactical nuclear weapons seems unlikely.
8. 'Space based and other assets shall be created to provide early warning communications, damage / detonation assessment'(Para 5.6 of Draft Doctrine)	India has no plans for creating an ABM (Anti Ballistic Missile) capability.

It is the translation of the above implications into operational deployment of India's nuclear weapons that is of concern primarily to Pakistan and then to China, US and the rest of the world in that order. India's emerging nuclear posture its development; operational deployment and employment of its nuclear weapons will be determined by three factors;

- Firstly, India's perception regarding what really deters i.e., Will 'recessed deterrence suffice or is there a requirement to go beyond ?' and if India is to go beyond recessed deterrence to minimum deterrence what is likely to be the type and size of its arsenal in a particular timeframe.

- ➔ Secondly, the economic aspect of creating a nuclear deterrent. While the triad concept with SLBMs offers the best in terms of credibility and survivability, can India afford it, when balanced with its developmental interests today? If the answer is 'No', what are India's options and which option is India likely to exercise?
- ➔ Thirdly, it is the aspect of 'acceptable risk and risk manipulation' by India that will define the size, delivery systems and state of readiness of its nuclear arsenals.

The above stated three variables impinge on each other and it is analysis of these three factors, which will eventually answer, the question as to whether "Does what is desirable match with what is possible". While it is possible to evaluate options and arrive at a conclusion, it is not possible to state that the conclusion arrived at is the 'correct' answer. However, the draft doctrine and its implications are a pointer to the direction of India's likely nuclear posture. Also a number of events post-Pokhran II explosions, including the low intensity conflict at Kargil have provided inputs as to the action and reaction of India after nuclearisation. This also is an indicator of its future posture. With this as the backdrop, the three variables are examined one by one in conjunction with India's draft doctrine to try and identify the following:

- ➔ Shape that India's nuclear posture is likely to take.
- ➔ Depending on the above is South Asia poised on the brink of an arms race?
- ➔ Is South Asia a nuclear flash point?

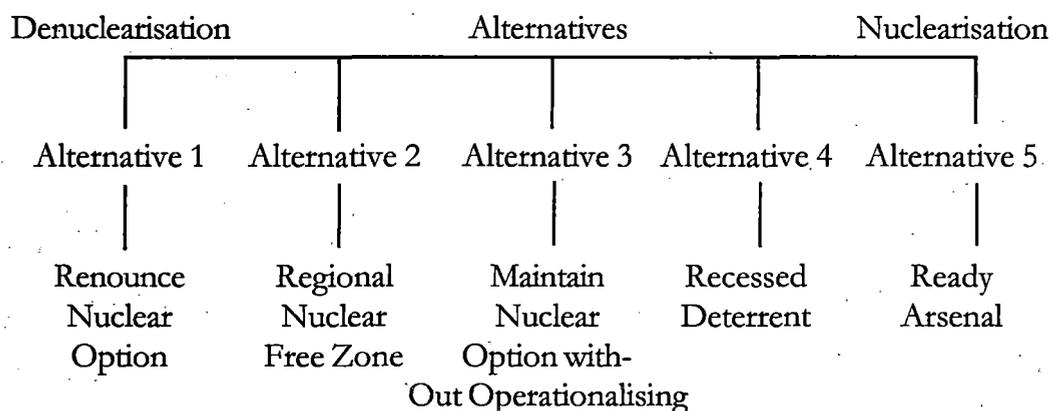
The First Factor: What really deters ?

There are two aspects to this question. The first aspect is the deterrence options available to nuclearised India. The second aspect is the size and operational readiness of the arsenal. Since the size of arsenal would depend on the option India is likely to adopt, two variants of the options as enunciated by Varun Sahni and Ashley Tellis are listed as under.

OPTIONS

Option 1	Option 2	Option 3
Non-weaponised	Minimal	Triad

(Source: 'Going Nuclear' by Varun Sahni in 'India and the Bomb' eds. D. Cortright And A. Mattoo, pp. 91-93).



(Source: Ashley Tellis, 'India's emerging nuclear posture', pp. 119).

Option 1 of Varun Sahni and Alternative 4 of Ashley Tellis are one and the same. The triad, which is Sahni's option 3, corresponds to Ready Arsenal, which is Tellis' Alternative 5. Alternatives 1, 2 and 3 spelt out by Tellis will have to be discarded without serious debate for obvious reasons. The choice for India now

lies between a recessed deterrent and a ready arsenal. Once it is established which of these two options India is likely to adopt the shape and size of the arsenal can be speculated upon.

Recessed deterrence Vs. Ready arsenal:

According to Late Gen. Sundarji a non-weaponized nuclear capability is certainly feasible for India, but the option is viable only if it is adopted in an event agreement with Pakistan.² Gen. Sundarji later while expanding on the theory of nuclear deterrence finally opts for minimal deterrence as the best option for India in his famous book on nuclear strategy, 'Blind men of Hindoostan'.

Air Cmdre Jasjit Singh on the aspect of recessed deterrence supports it and states, 'While minimum deterrence is the capability we would aim for within a limited time frame, the interim posture would also require a credible strategy and posture. Our interim needs could be met by a doctrine and strategy of recessed deterrence.'³

Both Sundarji's and Jasjit Singh's stand for a recessed deterrent has one major drawback. The China factor has not been taken into account. Any bilateral tie up for a recessed deterrence between India and Pakistan will hold no meaning, so long as China continues with its nuclear build up and a recessed deterrence posture without taking Chinese future nuclear arsenal into consideration will place India in a position of serious strategic vulnerability. The Indian nuclear doctrine that has spelt out a minimum deterrence also suggests India will move from its present

2. K. Sundarji, 'Indian Nuclear Doctrine – II', Indian Express, 26 Nov. 1994.

3. Jasjit Singh, 'A Nuclear Strategy for India', 'Nuclear India' (New Delhi: Knowledge World, 1998)

position of recessed deterrence towards weaponization. Ashley Tellis has also commented "The desire for minimum deterrence suggests that New Delhi is not satisfied with the alternative of a recessed deterrent as an end state".⁴

In the words of Rasgotra, former Indian Foreign Secretary, "What was the point of Pokhran II, of unveiling our nuclear muscle, if we are to now submit to the indignity of reversion to a non-nuclear weapon state status? There are bound to follow even stronger pressures on us to sign the NPT and to desist from testing, developing and deploying missiles, without which there can be no credible nuclear deterrent. Surely, all this is recipe for making India a nuclear eunuch".⁵

From the above argument it is clear that nuclear policy analysts' views, public opinion and security concerns dictate that India will definitely move beyond its present recessed deterrence towards minimal credible deterrence. The next step is to analyse in terms of numbers what 'minimal' could mean in probable size of India's nuclear arsenal.

Probable size of India's Nuclear Arsenal :

Since the number of weapons fielded would be subject to constant change depending on a number of factors, the probable size of India's arsenal by 2010 with the existing politico strategic scenario will be calculated. Again since there have been no official declarations by the government, a comparison of a number of serious studies on the subject and views of acknowledged experts will have to be taken into account to arrive at a reasonable figure.

4. Ashley Tellis, Ibid. p. 249.

5. Rasgotra, 'Making India a Nuclear Eunuch', The Pioneer, 01 Apr 1999.

Vijay Nair's Study:

The most comprehensive study of a triad nuclear capability for India is by Brig V K Nair.⁶ He suggests of force consisting of 132 nuclear warheads of four different yields: 1 megaton, 200-500 kilotons, 20-50 kilotons and 15 kilotons. The sea, air and land leg of the triad would be organized as under:

Sea leg:

Five SSBNs. Three for deterrence requirements against China, two on patrol, one in reserve and two against Pakistan; one in patrol and one reserve. Each of the SSBNs would carry 16 SLBMs and the entire SLBM inventory including reserves would consist of 80 missiles.

Land based system:

These would comprise of 12 Prithvi SRBMs and 36 Agni MRBMs, all aimed at counter force targets.

Air leg:

This would consist of combat aircraft already in the Indian inventory and would have an exclusively counter value role.

Gen. Sundarji's assessment:

"For minimum deterrence it can be said that in case of the adversary being a small country even up to 1 MT (megotonnage) say (50x20 kiloton weapons might do). Even for deterring a large country one is most unlikely to require more than 4 MT". After factoring in reliability parameters and possible losses

6. Nair, 'Nuclear India' (New Delhi:

Sundarji concluded that a low estimate of 90 weapons and upper estimate of 135 weapons would be reasonable".⁷

K. Subrahmanyam's assessment:

K. Subrahmanyam advocated an unclear force consisting of 60 standard 125-kiloton warheads. He suggested that 20 of these warheads could be mounted on aircraft combined with 20 Prithvi SRBMs and 20 Agni IRBMs. He makes no mention of the sea leg or the triad concept.⁸

Raja Menon's assessment :

Rear admiral Raja Menon's assessment is based on the triad concept.

Sea leg :

The SIMB force would consist of six nuclear submarines with twelve missiles per submarine. Raja Menon advocates MIRVing of the missiles to increase number of warheads reaching the target.

Land based :

Raja Menon argues for nuclear weapons based on IRBMs and ICBMs and 24 nuclear tipped cruise missiles.⁹

Bharat Karnad's assessment :

Karnad's has been the most outlandish assessment. He argues that India requires the ability to interdict 60 primary targets in China and Pakistan, there by

7. Sundarji, 'Blind Men of Hindoostan' (New Delhi: UBS, 1993), p. 67.

8. K. Subrahmanyam, 'Nuclear Force Design and Minimum Deterrence Strategy for India' (New Delhi: Viking, 1994). pp. 179-195. Lancer, 1992), pp. 171-172.

9. Raja Menon, 'A Nuclear Strategy for India', (New Delhi: Sage, 2000). pp.

necessitating a nuclear force of well over 300 weapons, most of which must be high yield thermo nuclear devices.¹⁰ The break down given by Karnad is as under

- 4x SSBNs with 12 SLBMs each.
- 25 ICBMs.
- 40 IRBMs.
- 70 Manual aircraft.
- 70 air to surface missiles.
- 25 atomic demolition munitions.

Air Commodore Jasjit Singh's assessment :

It is difficult to visualize an arsenal with anything more than a double digit quantum of warheads over the next few years and it may be prudent to even plan on the basis of a lower end figure of say 2 to 3 dozen nuclear warheads by the end of 10 to 15 years.¹¹

The common factor, which has been the basis for calculation for the size of the arsenal, has been the number of counter-force and counter value targets aimed at China and Pakistan. Except for Karnad who has gone in for and all horizons capability and Jasjit Singh who has not speculated beyond recessed deterrence, the other specialists have assumed that targeting a total of about 20 conurbations involving 20 to 25 nuclear engagements is what will be required for India to have a minimum credible deterrence.

10. Karnad, 'A Thermonuclear deterrent', p 146.

11. Jasjit Singh, Ibid, p 315

To quote Deepa M Oilapally “In the avid debate regarding the level of weaponisation two levels most often discussed are either in the low range of 60-130 weapons or in the high range of 300-400. The triadic survivable nuclear force mentioned in the draft doctrine suggests that the lowest numbers mentioned are likely to be surpassed. The issue now appears to have shifted to whether a low three digit number would be better than higher three digit number”¹².

Statements by India’s Prime Minister Vajpayee, national security advisor Brajesh Mishra and strategic analyst Jasjit Singh suggest that India would not seek more than a minimum but credible nuclear deterrent, as a minimum deterrence implies a defensive orientation for India’s nuclear forces and a commitment to avoid a nuclear arms race and even in the worst-case scenario¹³. Hence the maximum capability that India would ever need is of minimum deterrence and therefore there is no risk of an open-ended arms race in the subcontinent. This implies, firstly India would *settle for a modest arsenal of 150 nuclear weapons with small yields of about 20 kt and secondly, an arms race in the sub-continent can be virtually ruled out.*

Now that it has been concluded that India needs to move beyond recessed deterrence to a modest arsenal, the second factor of costs, which also impinges on it nuclear, posture is discussed.

The Second Factory: Economic Aspects :

Raja Chellaney has summed up India’s dilemma as,

“The glaring mismatch India has to tackle is between its economic capacity and security needs. Without economic power, India can have no security even with nuclear weapons”¹⁴.

12. Oilapally, ‘India’s Strategic Doctrine and Practice’, India’s Nuclear Security (New Delhi; Vistaar, 2000) p 79.

13. Ashley Tellis, *ibid*, p. 375

14. Raja Chellaney, ‘India’s Trial by Atom’, *Hindustan Times*, 4 Nov 1998

There have been two more coherent and plausible estimates of a weaponisation programme, both prepared by retired defence personnel. One was a broad-brush calculation made by the former Chief of Army Staff Gen. Sundarji and the other by Brig. Vijai K. Nair in 1992.

Gen. Sundarji's notion of a minimum deterrent was an arsenal of 150 bombs that could be delivered by aircraft and missiles. His cost estimate was a very affordable 2,760 crore rupees at 1996 prices. With the required aircraft already with the IAF, the only expenses to be incurred were the costs of the bombs and the missiles.

For an arsenal of roughly the same size, Brig. Nair in 1992 projected a total cost of Rs.6835 crore over a 10-year period. While Gen. Sundarji made no provision for C31 on the implausible ground that such costs are common to conventional force requirements and are not to be taken as incremental costs, Brig. Nair's estimate included about Rs.3, 500 crore for C31 testing and maintenance.

In the three months since the Pokhran tests a number of independent estimates have been made of the total costs of an Indian weaponisation programme. These range from Rs.5, 000 crore to Rs.20, 000 crore over the next decade. But none of them has any meaning since they have either been arrived at by inflating past estimates to present day prices or are the sum total of the cost of a list of components that has been arbitrarily drawn up without reference to any nuclear doctrine or to the likely composition of an Indian nuclear arsenal.

In 1985 a committee of senior defence personnel and representatives from defence and nuclear energy research establishments prepared an estimate of a weapons programme.

The group is supposed to have projected that a minimum deterrent comprising of aircraft, Agni and Prithvi missiles and a nuclear arsenal in the low three digit figures would come to Rs.7, 000 crore at 1985 prices.

Significantly this group does not appear to have included nuclear powered submarines in its plan for an Indian minimum deterrent nor did it make any provision for a C31 system. The estimate was also apparently drawn up in over just a fortnight.

In keeping with the earlier assessment of India's requirement of a second strike capability comprising of a triad delivery of 150 bombs, an accurate estimate of costs involved are presented in tabulated form with explanatory notes following later.

INVESTMENT COST OF NUCLEAR WEAPONISATION

	Rs. (in millions)
1. One reactor to produce plutonium	7,000
2. One missile production facility	5,000
3. Cost of a 150 bomb arsenal	6,000
4. Cost of missiles	40,250
55 <i>Prithvis</i>	3,850
30 <i>Agnis</i>	15,000

25 Agni-IIIs	15,000
16 Sagarikas	6,400
5. Cost of fitting one IAF squadron	600
6. Cost of 3 n-submarines	1,20,000
7. Cost of C31	35,250+
8. Cost of two satellites	20,000
9. Cost of radar, missiles etc. to protect airbases/launch sites	50,000
Total	2,80,000

{Source: C. Rammanohar Reddy, 'The Wages of Armageddon', 'Out of the Nuclear Shadow' (Delhi: Rainbow, 2001). pp. 147-153}

It is assumed that weaponisation will be carried out over a decade. All costs are at current prices. No account is taken of sunk costs since the attempt is only to estimate the future costs of nuclearisation.

Author's Note:

The cost estimates have been drawn from what little has been published and from discussions with nuclear analysts, security experts, former and serving defence personnel.

The amplification of the tabulated costs is given below:

Cost of plutonium:

At best, India's current stocks of weapons grade plutonium are likely to suffice for no more than 50 bombs. To equip an additional 100 warheads each of 15 to 20 KT, about 800 Kg. of plutonium has to be produced. Neither the power nor the research reactors can yield so much plutonium in a decade. Hence, a new

reactor is required. Of course, it will be a different matter if the Fissile Material Cut-off Treaty is negotiated over the next few years and India becomes a signatory.

Capital cost: Rs.700 crore.

Cost of a missile production facility:

A separate establishment has to be set up to produce the 120+ *Prithvis*, *Agnis*, *Agni-II*s and *Sagarikas*. Capital cost: Rs.500 crore.

Cost of bombs:

Estimates of a nuclear bomb of 15-20 KT vary from Rs.1 crore to Rs.15 crore. According to Mr. Stephen Schwartz of the Brookings Institution, a no-frills 15-20 KT bomb should cost between only \$1 million and \$2 million. On the assumption that the lower end of this estimate is a more realistic, one, and the cost per bomb will be Rs.4 crore.

Delivery systems – aircraft:

The IAF'S existing fleet of Mirage 2000s, Jaguars and Sukhoi 30s can be used for delivery. However, the aircrafts have to be specially fitted for carrying the nuclear bombs. It is assumed that one squadron of 24 aircraft will be equipped for a nuclear strike. The cost of equipping each aircraft is Rs.2 crore to 5 crore.

Delivery Systems-nuclear submarine:

The general view is that India needs five nuclear-powered submarines for its nuclear force. However, according to Admiral L. Ramdas, it will be impossible to build five submarines in a decade at best three can be built. But how does one treat the costs of these submarines? Brig. Nair, in his exercise, assumed that they

were in any case going to be acquired by the Navy, so there was no need to cost them for a nuclear program. This seems to be a UN realistic assumption. Hence, the cost of three submarines has been taken into account, with another two to be built later. The capital cost per submarine is Rs.4, 000 crore.

Delivery system-missiles:

If from an arsenal of 150 bombs one IAF squadron is equipped to carry out a nuclear strike that will leave 126 missiles to be tipped with warheads. A certain hypothetical mix of the missiles is assumed. The *Agni-II* was test fired in 1999 the *Sagarika* is under development. The present indication is that the *Sagarika* will be a 300-Km distance cruise and not a submarine – launched ballistic missile. Since *Agni-II* will be a longer-range version of the *Agni*, it has been assumed that it will cost about 20 percent less. Cost of each *Prithvi*: Rs.7 crore, cost of each *Agni*: Rs.50 crore, cost of each *Agni-II*: Rs.60 crore and cost of each *Sagarika*: Rs.40 crore.

The C31 systems:

The shape of a likely C31 system is not known nor is any information available about the cost of individual components. As a first approximation it is assumed that at the very least the expenditure will be of the magnitude suggested by Brig. Nair in 1992. After adjusting for inflation, this comes to about Rs.3, 525 crore. However, the actual expenditure will be higher since Brig. Nair assumed that much of the cost required for a reliable C31 system would be borne by the on going process of modernization of the defence forces.

One additional item that has been coasted here is that of two high-resolution satellites to track developments in China and Pakistan. This is a bare minimum. It is sometimes argued that such systems are meant to 'win' a nuclear war and are not required for an Indian second-strike capability. This may not be a tenable assumption since without any kind of monitoring or protection; the chances are that the Indian nuclear arsenal will almost be completely destroyed in the first strike itself. Hence, the cost of a C31 system: Rs.3, 525+ crore: the cost of two satellites: Rs1, 000 crore each.

Defence systems :

It has been argued that the process of modernization is in any case strengthening the radar and defence systems. Yet, it does not stand to reason that special defences for the nuclear force are unnecessary. Experts such as Lt. Gen. Raghavan argue that to safe guard the nuclear submarine fleet, 'we shall also need a small protective surface naval and aircraft carrier-based capability to ensure the survival of (the) submarines. 'No estimates are available of the costs of such a fleet. However, account here is taken of phased array radars and anti-missile batteries to protect four or five missile sites and air bases. Cost: Rs.5, 000 crores.

The total future costs of weaponisation come to Rs.28, 000+ crore at current prices. Going by current figures the annual costs will be equivalent to about 0.5% GDP for ten years running.

A brief look at India's developmental needs and the state of its economic infrastructure post Pokhran II will give an ideal of whether India will be able to afford its nuclear arsenal.

According to Prem Shankar Jha “Without cutting down drastically on its fiscal deficit needs India will no longer be able to finance its infrastructure development. Between 1989-90 and 1994-95 the share of public sector development expenditure in GDP fell from 22.1% to 15.7%, expenditure on defence dropped from 3.4% to 2.5% of GDP. The Government has transferred more than 8% of GDP from investment or defence into consumption. The brunt of former cuts has fallen on the infrastructure sector. In 1989 the country spent only 3.36% of GDP on education and culture for which India requires a minimum of 6% of GDP today. India spent a paltry 1.56% on housing, urban development, sanitation and water supply together; the requirement today is a minimum of 5 to 6% of GDP.”¹⁵

For India to simultaneously balance its developmental needs with its ability to develop great power capability by 2015, its economy will have to grow at a pace of 7% per annum. If India pursues, relentlessly, its policy of a triadic nuclear structure, Western Powers reluctance to support the country’s economic modernization may cause failure of sustained economic growth.

In the economic-nuclear equation India has three options presently:

- ➔ Option 1 Go ahead for a triad arsenal incorporating full fledged C4 I 2 systems and hope India’s economic progress will be as planned (growth rate of 7% per annum).

15 Prem Shankar Jha, ‘The Indian Economy’, India’s Nuclear Security (New Delhi; Vistaar, 2000).

- Option 2 In case of economic slowdown accepts a 'ragged' nuclear capability or 'ramshackle deterrence' rendering India nuclearly vulnerable.
- Option 3 Postpone the induction of the sea leg of the triad but ensure induction of quality C4 I 2 systems so that security concerns are not compromised. Substantial savings in cost would accrue, as the sea leg of the triad, is the most expensive.

The option that India would choose will in turn depend on the third factor, which is India's willingness to accept risks.

The Third Factor: Acceptance of Risk and Risk manipulation:

The extent up to which India is willing to accept risks is the third factor that will decide the shape and size of India's nuclear arsenal. The military diplomatic initiative is all about manipulating risk. Two excellent examples given by Raja Menon bring out the essence of risk manipulation.

"When the allies put 12000 soldiers into Berlin, they were not intended to stop the Russians militarily, but a Russian invasion of Berlin would have caused the death of 12000 allied soldiers, a risk which the allies challenged the Russians to take. Risk manipulation is over 2500 years old and goes back to the anecdote where Xenophon, the Greek General placed his 10000 strong army with their backs against a precipice when attacked by a marginally superior Persian force, a challenge Persians declined to accept".¹⁶

The recent response to Kargil and present mobilization of troops on its borders suggest that India is not totally averse to risk manipulation. But this is only

¹⁶ Raja Menon, Ibid. p.34.

To remove itself from being placed in a position of disadvantage rather than to use risk manipulation for active coercion.

The next and concluding chapter will summarise in brief, the conclusions arrived which have been arrived at. These conclusions have been based on analysis of the above three factors as well as the nuclear programmes of India and Pakistan. These factors would govern the shape and size of India's nuclear arsenal. It is this emerging nuclear posture, which will determine whether South Asia would move towards nuclear stability or away from it.