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Pokharan-I

Personal Recollections



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POKHARAN-I: PERSONAL RECOLLECTIONS

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INTRODUCTION

It is conventional to believe that India's nuclear tests on May 11 and 13, 1998 were an epochal event that propelled it into the ranks of the nuclear weapon states. But it is argued here that India entered the ranks of this hallowed group fully a quarter century earlier on May 18, 1974 with its 'peaceful nuclear explosion' in the deserts of the Pokharan firing range. Different facets of this episode are of interest. How was this decision taken? What were its implications—political, economic and strategic, and were these taken into account? What are its technical parameters? What are the conclusions possible from this episode? These questions are considered below.

I THE CRITICAL DECISION(S)

The IR literature informs that nations have gone nuclear either to ensure their security or to gain prestige. Thus, reasons of security motivated the United States, Soviet Union and China to acquire nuclear weapons, whereas prestige considerations are believed to have informed the United Kingdom and France. The decision by India to conduct Pokharan-I was more complex, and cannot be compartmentalized into this simple binary motivational pattern. Its origins are traceable to India's traumatic defeat in the Sino-Indian border conflict in October-November 1962, which was closely followed by China conducting its first nuclear test on 15 October 1964, and China's ambiguous warning conveyed to New Delhi during the 1965 India-Pakistan war. These events posited a Chinese

nuclear threat on India's security horizon, requiring a credible response. The tale of India's nuclear quest thereafter has been competently described in several accounts.¹ What is relevant to the present narrative is that, immediately after the Chinese test and an alarm being raised in Parliament, the Government of India sanctioned a Subterranean Nuclear Explosion Project (SNEP), which authorized the Atomic Energy Commission (AEC) to conduct research into nuclear explosive technology "upto a point when, once the go-ahead signal was given, it would take three months to have an explosion."²

It is popularly believed that the sudden deaths of the principal actors—Prime Minister Lal Bahadur Shastri and Chairman AEC Homi Bhabha—led to this project being abandoned, when India could have proceeded ahead to explode a nuclear device, but this seriously overstates the case.³ The technical dimension should be given more weight—importantly that the 40 MW CIRUS reactor, which was the only credible source of plutonium available at that time, was not being

¹ Some major works in this regard are George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation*, (New Delhi: Oxford University Press, 1999); Ashley J. Tellis, *India's Emerging Nuclear Posture: Between Recessed Deterrence and Ready Arsenal*, (Santa Monica, CA: RAND Corporation, 2001); and Bharat Karnad, *Nuclear Weapons & Indian Security: The Realist Foundations of Security*, (New Delhi: Macmillan, 2002).

² Ashok Kapur, *India's Nuclear Option: Atomic Diplomacy and Decision-making* (New York: Praeger Publishers, 1971), p. 194.

³ *Ibid.*

worked at reduced irradiation levels to optimize the production of fissile material, while the plutonium reprocessing plant in Trombay, required to separate the fissile plutonium from the spent fuel, was still at the commissioning trials stage. On the political front, it is dubious whether the weak and unconfident Indira Gandhi, who came to power after Shastri's untimely demise, would have proceeded with the SNEP and conducted a nuclear test. The successful prosecution of the Bangladesh War in 1971 invested her with an unrivalled authority thereafter to proceed in this direction. However, it is unlikely that theoretical work on the SNEP stopped at any stage; there is no evidence to either support or dispute this conclusion.

These are speculative questions. But, the decision to conduct the nuclear test was taken around mid-1971, and had a strong nexus with national security. Consider India's threat scenario at that time. Pakistan's military crackdown in East Bengal in March-April 1971 resulted in a massive refugee outflow into the neighbouring states of India; simultaneously, an American- Sino-Pak axis evolved that consolidated after Kissinger's 'secret' flight to Peking from Pakistan in July 1971. Finally, the incursion of the Seventh Fleet into the Bay of Bengal during the India-Pakistan war in 1971 was a transparent exercise in gunboat diplomacy with nuclear weapons to intimidate the Indian forces moving towards Dacca. The security impetus to the decision to test a nuclear device is apparent.

But, why did this enterprise continue after 1971 with Pakistan comprehensively defeated, the emergence of Bangladesh, and China and the United States suffering acute discomfiture. The most plausible explanation is that the program continued on its own momentum since it was not halted. En route, the zero-energy Purnima reactor became critical on 18 May 1972. It

was an important requirement for manufacturing the PNE, since it permitted the basic data to be generated regarding neutron multiplication factors, effectiveness of reflectors, critical mass assembly and so on that were essential to fabricate the Pokharan device.⁴

By mid-1973 it became necessary to discover a suitable test site, essentially a deep boring. The nuclear test had to be conducted underground since India had joined the Partial Test Ban Treaty in 1963, which prohibited "any nuclear weapon test explosion or any other nuclear explosion" being conducted in the atmosphere, including outer space, or under water, including territorial waters or high seas. Only the under ground medium was thus available for conducting nuclear tests, until such time as "the conclusion of a Treaty resulting in the permanent banning of all nuclear test explosions."⁵ Locating a suitable test site was not easy since it involved both geological and political factors. An important consideration was the absence of underground water, which could get polluted; besides the explosion should not prove hazardous to the neighbouring population. Ultimately, the Pokharan site was chosen due to the desert terrain, paucity of settled villages, and availability of an Army firing range to ensure security. An Army Engineer regiment was deployed to undertake the boring, construct the buildings required to assemble the device, lay a rail track to carry the device to the shaft and lower the device into it.⁶ Steps were then taken to

⁴ Science Today, September 1974, p. 12.

⁵ Text of the Treaty may be seen in Arms Control and Disarmament Agreements: Tests and Histories of the Negotiations, (Washington: U.S Government Printing Press, 1996), pp. 29-30.

⁶ Lt. Gen. (retd) V.K. Singh, "Times of Trial" in Maj. Gen. (retd) Ian Cardozo, The Indian Army: A Brief History, (New Delhi: United Services Institution of India, 2005), p. 128.

move the plutonium device to the prepared test site.

It should be emphasized that all these preparations were made in absolute secrecy, which is quite remarkable given the leaky nature of the Indian bureaucratic system. All discussions relating to the nuclear test were confined to a very few individuals in the relevant organizations. Nothing was confirmed or even committed to writing—an experience carried over from a similar modality that proved efficacious during the 1971 conflict. Raja Ramanna notes in his autobiography that this small group included P.N.Haksar, the former Principal Secretary to the PM; P.N.Dhar, the incumbent Principal Secretary; Dr. Nag Chaudhary, Scientific Adviser to the Defence Minister; H.N.Sethna, the then Chairman of the Atomic Energy Commission and himself.⁷ A series of meetings were held to deliberate on the economic and political implications of the nuclear test. The final meeting was presided over by Indira Gandhi, which was expected to be a mere formality. But, as described by Raja Ramanna: “...the final meeting on Pokharan was one which involved heated discussion. P.N. Dhar was vehemently opposed to the explosion as he felt it would damage our economy, Haksar took the view that the time was not ripe and gave his reasons; my own view was that it was now impossible to postpone the date given the expense, time and the critical stage the experiment had reached. Fortunately for my team Mrs. Gandhi decreed that the experiment should be carried out on schedule for the simple reason that India required such a demonstration.”⁸

Did domestic political enter these calculations? Were these the “simple

⁷ Raja Ramanna, *Years of Pilgrimage: An Autobiography*, (New Delhi: Viking, 1991), p. 89.

⁸ *Ibid.*

reason” why India had to demonstrate a nuclear capability? Consider the internal situation at that time. A serious drought in 1973 and 1974 had caused great economic distress and social unrest in the country. The J.P. movement had started in Gujarat and was channelling the growing disenchantment with New Delhi—India’s success in the 1971 war had become a dim memory in public memory. At this critical juncture a railway strike was called by George Fernandes in early 1974. It was taken very seriously. Intelligence reports revealed a diabolical plan had been formulated by the union leaders to bring economic activity in the country to a standstill. How? The plan was to disrupt coal movements in the Asansol-Mughalsarai-Bhilai triangle that fed the major steel plants; this would lead to the blast furnaces cooling down and their fireclay lining getting cracked. Replacing the lining would require at least six months, and the consequential effect on steel production and the general economy can very well be imagined. This was the backdrop for the “ruthless suppression” of the railway strike, the arrest of George Fernandes, his chief lieutenants and trade union leaders, leading to a predictable howl in the media that democracy was being suppressed, a police raj had been unleashed and so on.

The domestic situation was definitely the most important consideration for the nuclear test being proceeded with in the absence of a plausible security rationale. That is signally failed to divert attention or gain anything more than fleeting recognition for the technological ability displayed is another matter—it bears recollection that the Emergency was imposed by Indira Gandhi, again for personal reasons, scarcely a year later in June 1975. Writing nearer the event, I had opined that, “...no single causative factor or motivation was underlying the Pokharan test; these were diverse and evolved over a period of around three years. Probably

security threats, bureaucratic/scientific pressures and prestige entered the decision-making process, but in different measures at various points in time.”⁹ There are no grounds for altering that conclusion.

Before discussing the serious effects of the PNE in retarding India’s atomic energy program, the story how secrecy was ensured in the Ministry of Defense is worth retailing. Sometime in September 1973 a file was given to me for issuing the sanction allowing Army Headquarters to deploy an engineer regiment in Pokharan to assist DRDO in undertaking some project. This was brought under the rubric of “aid-to-civil” duties, which includes the Services providing equipment and personnel to the civil government for undertaking ‘developmental’ work. This was routine bureaucratic activity in the MOD, except for two unusual circumstances—the file had no security classification, and the activity was code-named “Dry Enterprise.” Anyway, no great thought was given to these unusual circumstances as the file traversed the Ministry of Defence and Ministry of Defence (Finance) in a leisurely manner, and was duly returned with the sanction to the DRDO. After the Pokharan explosion it dawned on all concerned that the sanction issued pertained to that event. Thereafter, the file was given a very high classification with access being restricted on a strict “need to know” basis. Somebody in DRDO obviously knew how secrecy should be maintained in MOD—do not classify the really secret files!

⁹ P.R.Chari, “ India’s Nuclear Choices: Some Perspectives,” in M.S.Rajan and Shivaji Ganguly (eds), *Great Power Relations, World Order and the Third World*, Essays in Memory of Sisir Gupta, (New Delhi: Vikas Publishing House, 1981), p. 361.

II POKHARAN I’S TECHNICAL PARAMETERS

Was the Pokharan nuclear test a ‘peaceful’ enterprise? It would be recollected that, immediately after the five nuclear tests were conducted in May 1998 (Pokharan-II), their nature and yields were authoritatively informed.¹⁰ No such candour marked the PNE, and the information about its technical parameters came to light over the years. The device was exploded at a depth of 107 meters in a L-shaped shaft, and the plutonium core weighed 10 kilograms¹¹; atypically, the core of a nuclear weapon using plutonium weighs between 3 and 8 kilograms, depending on the design skills available. The yield of the PNE device became a matter of huge controversy. In a technical paper presented to the IAEA technical committee in January 1975, Raja Ramanna and Chidambaram estimated the yield to be 12 kilotons, similar to the Hiroshima bomb.¹² But, serious doubts soon emerged about this stated claim, with yields as low as 2 kilotons being suggested. Radiochemical analysis of the molten mass would have clarified the issue; apparently, this was conducted, but the results have not been made public, leading to speculation that the AEC was suppressing this information as it cast serious doubts on the efficacy of the PNE. The controversy about yields is significant for another reason. It was largely based on seismological analysis, and this data was used to calibrate the yield of the nuclear devices exploded in May 1998. Therefore, exaggerations in the Pokharan-I data could

¹⁰ Cf. “ Joint Statement by the Department of Atomic Energy and Defense Research and Development Organization.”

¹¹ Based on personal interviews.

¹² Cited in George Perkovich, *India’s Nuclear Bomb: The Impact on Global Proliferation*, (New Delhi: Oxford University Press, 2000), p. 181.

have affected the yield analysis of the later Pokharan-II tests.

Apart from the yield, the weight of the total nuclear device is of equal importance for mating it with a suitable delivery system. It was noted above that the Army Engineers deployed to prepare the test site had to “lay the rail track to carry the device to the shaft,” suggesting that it was heavy and unwieldy. Apparently, it weighed 1.4 tons¹³, clearly unsuitable for missile delivery, and difficultly deliverable by a bomber aircraft. In the overall, it must be conceded that the PNE device was not suited to be a nuclear weapon. Its significance derived from the fact that India had unequivocally demonstrated that it possessed a workable design for making nuclear devices, which could serve either peaceful or military purposes. Further, the implosion architecture could be improved upon to develop more efficient nuclear devices for military purposes. These conclusions were reached by Zulfikar Ali Bhutto, then Prime Minister of Pakistan, in his reply to Indira Gandhi’s letter immediately after the PNE assuring him that it had no military or political intent. Bhutto said, “It is well established that the testing of a nuclear device is no different from the detonation of a nuclear weapon. Given this indisputable fact, how is it possible for our fears to be assuaged by mere assurances which may in any case be ignored in subsequent years?”¹⁴ Bhutto’s logic is irrefutable, since the argument is also made by India’s military that the acquisition of capabilities is of the essence in making national security calculations, since intentions can always change with the passage of time.

¹³ Lt. Gen. (ret'd) V.K.Singh, “Times of Trial,” p. 128.

¹⁴ “The Prime Minister of Pakistan, Z.A.Bhutto’s Reply,” 5 June 1974, reproduced in Pakistan Horizon, vol. XXVII, no 3, pp.198-200.

Was Pokharan-I then a PNE? India had taken advantage of the terminology used in Article V of the Non-Proliferation Treaty, which envisages that “under appropriate international observation and through appropriate international procedures, potential benefits from any peaceful applications of nuclear explosions will be made available to non-nuclear-weapon States Party to the Treaty...” Both the United States and the Soviet Union had investigated the use of nuclear explosions for undertaking developmental tasks like excavating tanks, building canals and so on. Their experiments lent plausibility to the Indian claim that Pokharan-I could have a peaceful intent, never mind the deep scepticism with which it was greeted worldwide. Within India, however, Pokharan-I generated wild enthusiasm and pride at its displaying a unique technological capacity. There was no doubt in the country that India had now joined the ranks of the elite nuclear weapon states on 18 May 1974. A personal anecdote is worth mentioning here.

On the evening of 18 May, 1974 there was a large wedding reception in South Avenue, attended by, among others, the Chogyal of Sikkim. Everyone was walking ten feet tall, and nobody had the slightest doubt that India had now become a nuclear weapon state. Everybody I met in that reception thought the PNE appellation was only a euphemism to deflect the world’s consternation and envy. Speaking to the press immediately after the event Indira Gandhi declared, “Well, there is nothing to get excited about this explosion. It is the result of a normal research and study by our scientists and we are firmly committed to the peaceful uses of nuclear energy.”¹⁵ That blasé, tongue-firmly-in-cheek statement, set the tone for later official justifications claiming that Pokharan-I

¹⁵ Lewis M. Simons, “India Explodes A- Device: Cites ‘Peaceful Use,’ ” Washington Post, 19 May, 1974.

was, indeed, a peaceful nuclear explosion as envisioned in the Non-Proliferation Treaty.

Two further elaborations were proffered.

First, that India had not infringed any international or bilateral agreement in conducting the test. India was not a signatory to the Nuclear Non-Proliferation Treaty which prohibits non-nuclear weapon states (meaning all states other than the Nuclear Five) from conducting nuclear tests or acquiring nuclear weapons. The plutonium used by India to manufacture the nuclear device came from CIRUS, a 40 MW research reactor provided by Canada, that went critical in 1960, and was under India's autonomous control. Some correspondence with Canada on not considering nuclear tests as peaceful nuclear activities had not reached any conclusion, which was glossed over by New Delhi. The plutonium used in the PNE was separated in the Trombay reprocessing plant that had been established by indigenous efforts in 1964.

The second assertion was that India had made no secret of its intention to conduct PNEs. Indira Gandhi had, in fact, informed a Parliament Consultative Committee in 1971 that India would experiment with nuclear explosions for engineering purposes. She again informed Parliament in 1972 that: "The Atomic Energy Commission is studying conditions under which peaceful nuclear explosions carried out underground could be of economic benefit to India without causing environmental hazards."¹⁶ It is another matter that the United States had expressly informed India that the heavy water which it had supplied for use in the CIRUS reactor envisaged that it could only be used for peaceful purposes. The quibble utilized by India was that PNEs were a

¹⁶ Lok Sabha Debates, Fifth Series, Vol. XX, No. 3, November 15, 1972, col. 125.

recognized peaceful activity; hence India had not infringed any agreement by using the heavy water supplied for CIRUS to manufacture the Pokharan device.

III THE POLITICAL AND TECHNOLOGICAL FALLOUT

It was anticipated that India's PNE would draw criticism and adverse reaction, but its virulence came as a great surprise. The statements issued by Western nations, except for France, were uniformly critical and condemnatory, and led to the drying up of international finance and technical assistance. This was not too surprising. Contrary to expectations, however, there was little support from the non-aligned and developing countries. China chose to remain conspicuously silent. The general lines of criticism were that:

First, India had breached the spirit, if not the exact language, of the agreements and solemn assurances it has given to supplier countries, that had provided nuclear technology for its atomic energy program, by using their assistance to derive the fissile materials for the Pokharan test. A further line of criticism was that a poor Third World country like India was wasting its resources on irrelevant and questionable activities, while neglecting its more urgent duties towards its suffering population.

Secondly, ridiculing the whole concept of 'peaceful' nuclear explosions as illusory, suggesting that India was using this subterfuge to camouflage its undercover military program. In truth, India's failure, thereafter, to conduct further 'peaceful' nuclear tests, or to undertake any experimental work focusing on the development possibilities of such tests only heightened this criticism.¹⁷

¹⁷ For a discussion on the American reactions to the Pokharan test are fairly representative of the general Western position see, Brahma Chellaney,

A clamour then built up that India should be chastised for breaching the international norms prohibiting nuclear tests by non-nuclear weapon states. Actions speak louder than words, and the sanctions modality was seized upon by the international community, which was aware that India's nuclear energy program was still immature and dependent on external suppliers. The punitive actions taken included:

Firstly, Canadian assistance for the heavy water reactors under construction in Kota was immediately suspended. India's especial vulnerability at that time was the shortage of heavy water, essential for the natural uranium fuelled CIRUS reactors in India's program, since its four heavy water plants were still at various stages of construction. Ultimately, the Soviet Union agreed to provide the heavy water and other assistance required for bringing the Kota atomic power plants on stream, but under stringent conditions viz. the reactors would be placed under perpetual safeguards, and downstream facilities that used any of its by-products, like plutonium, would also come under safeguards for the duration when such by-products were in process—the so-termed “right of pursuit.”

Secondly, French assistance for the Experimental Fast Breeder Reactor in Kalpakkam was also placed in jeopardy. It had agreed earlier to supply highly enriched uranium, essential for starting the breeding process, as also provide technological assistance for establishing the reactor. A price dispute was raised at this juncture by France to delay these supplies and cripple the breeder program.

Thirdly, the United States reneged on its contractual obligations to supply low

enriched uranium fuel for operating the Tarapur reactors, supplied by Ms. Westinghouse, that were under international safeguards. The specious American argument was that its newly legislated Nuclear Non-Proliferation Act (1978) did not allow uranium fuel supplies to be continued unless India accepted ‘full-scope safeguards’. In other words, India should place its entire nuclear program—civil and military--under safeguards to receive further supplies of nuclear materials, technology and equipment. India's contention was that the United States should adhere by its contractual obligations under the Indo-US Tarapur Agreement, which had the status of an international Treaty, which could not be superseded by a local or municipal legislation like the Nuclear Non-Proliferation Act under the Vienna Convention on the Law of Treaties.¹⁸ This issue led to considerable acrimony between the two countries, but was ultimately resolved by first France and later China being persuaded by the United States to supply the uranium fuel to India on commercial terms.

Fourthly, the efforts made by India to procure supplies of materials and equipment from other foreign suppliers achieved little success with their growing cartelization. The Zangger Committee--a group of twenty countries committed to gating the transfer of sensitive nuclear technology—took immediate steps to tighten its regulations. Later, the Nuclear Suppliers Group was established to constrain and restrict the transfer of nuclear technology to countries that had neither entered the Non-Proliferation Treaty nor accepted “full-scope” safeguards to bring their entire nuclear program under IAEA inspections. The

Nuclear Proliferation: The US-Indian Conflict, (New Delhi: Orient Longman, 1993), p. 37-46.

¹⁸ The legal aspects of the Tarapur Agreement are discussed in P.R.Chari, “An Indian Reaction to U.S. Nonproliferation Policy” in *International Security*, vol 3, no. 2, Fall 1978, pp. 57-61.

Nuclear Suppliers Group now consists of over 40 countries and its prohibitions have adversely affected India's nuclear program over the years. Despite the conclusion of the Indo-US nuclear deal, India is still not able to procure uranium enrichment and plutonium reprocessing technology due to the proliferation potential of these technologies, which is expressly prohibited.

It became clear after the general disapprobation expressed by the world community, and the tightening of export restrictions and imposition of sanctions, that India's atomic energy program would be seriously affected. Brave declarations made thereafter by the AEC that the sanctions imposed were a challenge, and that they would spur the indigenization process, leading to nuclear autonomy, were huge overstatements. The political establishment also made defiant statements that India's PNE violated no national or international undertaking, and that opposition to the PNE only highlighted the 'nuclear apartheid' embedded in the Non-Proliferation Treaty. It would be recollected, however, that two of the advantages claimed by the NDA government for entering the Indo-US nuclear deal were that it released India from its 'nuclear pariah' status by enabling nuclear and high technology to be secured from abroad. That status, and India's subjection to the nuclear constraints and restraints regime was a sequel to the 1998 nuclear tests, but is traceable to the Pokharan PNE in May 1974.

It is clear in hindsight that the inability of India to conduct more nuclear tests after 1974 and until 1998 embodied its post-PNE dilemma: it was still dependent, even while highlighting its desire for autonomy and autarky, on accessing high technology from abroad, seeking external markets and procuring international finance. In truth, all decisions relating to the PNE had been taken in high secrecy by a small group of

advisers to the Prime Minister, and ultimately by Indira Gandhi, without the benefit of any larger analysis of its implications. It was evident that India had not calculated the political and economic costs of the PNE in any realistic manner before undertaking that venture. No effort had been made to assess its implications for India's external relations or how sanctions would impinge on India's atomic energy program. When these adverse developments occurred, there was no credible strategy in place that was available for pursuit.

The setback to India's atomic energy program has become painfully evident over the years. Despite the Sarabhai Profile (1970) setting out a goal for generating 10,000 MWs of electricity by 1980, that target remains unaccomplished four decades later. What was not appreciated then, and is accurate even now, is that the quest for nuclear autonomy derives from the general technological state of the economy, which includes access to raw materials, availability of relevant educational and research facilities, technical and entrepreneurial capabilities, financial strength and so on. The proof of India's constraints is evident; atomic energy constitutes less than 3 % of India's total power generation, despite the fact that the AEC is a favoured institution, and has always been in the charge of the Prime Minister. Claims now being made that India would produce 20,000 MWs of atomic power by 2020 and 50,000 MWs by 2050 are truly chimerical on technological, environmental and financial considerations.

The strategic implications of the Pokharan test manifested with Pakistan accelerating its nuclear quest, which was initiated by Bhutto in early 1972, soon after becoming Prime Minister in reaction to Pakistan's traumatic defeat in the Bangladesh war. No different from India's reaction after its defeat in the Sino-Indian border conflict of

1962. Bhutto had earlier sought to acquire a plutonium reprocessing plant in 1965 when he was briefly a Minister in President Ayub's cabinet. That effort did not succeed, but his proposal to acquire a separation plant ahead of any atomic energy program was significant. But, then again, India had established its own reprocessing plant in 1964 with only the safeguarded Tarapur reactors available. The 40 MW CIRUS was a research reactor, and not a production reactor. Clearly Bhutto's efforts in 1965 were designed to counter a future nuclear India. Pakistan's intentions became clearer in end-1973 when its secret negotiations to acquire a plutonium reprocessing plant from France came to light. Following the PNE, however, Pakistan redoubled its efforts to derive its nuclear option, and began exploring both the plutonium and uranium routes, overtly and covertly, to acquire the fissile materials required for making nuclear weapons. The efforts of Dr. A. Q. Khan to pursue Pakistan's nuclear quest by clandestine means has been detailed in several competent accounts.

Before coming to conclusions another personal reminiscence is worth retailing. In April-May 1978 I had visited the United States on a lecture tour that included some major east coast universities and think tanks—Brookings, Columbia, Program for Science and International Affairs in Cambridge (now Belfer Centre), Tufts, and Cornell. The high point of that lecture tour was a Pugwash conference in Toronto. I had made notes to discuss the totality of India's strategic problems, but found little interest in anything beyond the Pokharan test, and the likelihood of India becoming a nuclear weapon state. The audience was almost uniformly hostile, and the belief was rife that India had defied the international norms against nuclear testing, and was now being 'clever'. Pierre Trudeau addressed a dinner meeting, and took time off to castigate

India. I learnt later that Canada was especially bitter against India, since the PNE had led to a tightening of international prohibitions against the export of CANDU-type heavy water moderated and natural uranium fuelled atomic reactors that Canada had developed, since they are efficient plutonium producers. This led to a virtual collapse of the Canadian nuclear reactor industry, much unemployment, and economic distress, especially in the Ontario province. India was held directly responsible for this situation by 'misusing' the CIRUS reactor supplied to it, leading to these prohibitions; hence the venomous hostility. A sidelight of this lecture tour was being contacted by two Israeli scientists who hinted that India might wish to cooperate with Israel if it wished to proceed ahead with its nuclear option.

IV SOME CONCLUSIONS

Without being in the least facetious it can be said that we are still too close to the Pokharan-I event to analyze its total implications. Indubitably, this event set India firmly on the path of deriving its military nuclear option and becoming a nuclear weapon state; why this did not happen earlier than May 1998 is something that can be inconclusively debated. But the all-important question whether Pokharan-I and, more generally, India's acquisition of nuclear capabilities, has added to or detracted from its national security, remains an arguable proposition. The establishment of a nuclear deterrent state in South Asia in May 1998 after Pakistan, too, exploded its nuclear devices ensures that major conventional conflicts like 1965 and 1971 may not occur again. But this has not prevented Kargil or Mumbai from occurring or Pakistan's hostility entering subterranean channels via proxy war, cross-border insurgency and terrorism,

leading to a steady toll of lives and damage to property in India under the rubric of nuclear deterrence. So the jury is still out on whether the nuclearization of South Asia, which began with Pokharan-I, has stabilized or destabilized the region.

But several tentative conclusions are possible:

Firstly, the role of serendipity in Indian decision-making, or the art of travelling hopefully in the expectation of reaching beneficial and agreeable results, must be appreciated. The decision to conduct the nuclear test was initiated in end-1964/beginning-1965, but went into abeyance, and was resurrected in mid-1971. It was designed to meet a serious threat to India's security, but continued after that threat had abated for reasons of bureaucratic momentum, and was finally conducted for personal and domestic considerations. No overall vision was operating; this event proceeded from the political requirements of the here-and-now.

Secondly, the reluctance to admit that India's actions are guided, like other nations, by its enlightened self-interests is a strangely Indian contradiction. Thus, the military implications of Pokharan-I were strenuously downplayed by designating it a 'peaceful nuclear explosion,' which carried little conviction around the world. Matters were made worse by Raja Ramanna's confession in the early nineties that an atomic explosion is an atomic explosion, and its intent made no difference to its technological dimensions. That statement provides the epitaph to the 'peaceful' nature of the Pokharan-I nuclear test, but strengthens the impression abroad that India is given to prevarication and speaking from both ends of the mouth. It would be recollected here that India's flight-test of its first Agni medium-range missile was termed a 'technology demonstrator'.

Thirdly, the Pokharan-I PNE made clear, as later history confirmed, that Indira Gandhi was apt to conflate her personal interests with national interests, and personal security with national security. This, too, is apparent from the narration above of how the final decision was taken to proceed with the Pokharan-I test. No great thought was invested in this decision, and ultimately a calculation of her personal interests guided the decision, inviting the prohibitions that still bedevil India's atomic energy program. Her later decisions to impose the Emergency (1975) and to arm and train Tamil militants (1983) are further examples of this propensity to pursue her personal interests in the guise of large principles and objectives that her panegyrists have glossed over.

Finally, it is believed that the present strains in the nuclear non-proliferation regime have been caused by the relentless pursuit of their nuclear option by some non-nuclear weapon states party to the NPT. Iran is well on the way to deriving its nuclear option. North Korea must be deemed to be a nuclear weapon state (de facto if not de jure), after it conducted two nuclear tests. Dr. A.Q.Khan's 'nuclear Walmart', operated with the connivance of Pakistan's military, has weakened the international nuclear regime, and created uncertainty about which other state and non-actor actors now possess the relevant nuclear technology. However, the decade of the seventies is significant in the history of the nuclear age for its several contradictory developments. Thus, Taiwan and South Korea abjured their nuclear options in the mid-seventies largely under American pressure, South Africa conducted an atmospheric test in 1976, Israel is known to have moved its nuclear missiles into the Sinai desert during the Arab-Israeli (Yom Kippur) war in 1973, and a nuclear alert was sounded by the United States during that war. The conduct of India's PNE in May 1974 added to these strains on the international

nuclear regime, and greatly it. India's revisionary role was further strengthened by the 1998 tests that led to the nuclearization of South Asia. These issues need underlining with the next NPT Review Conference coming up in 2010.