



**Prospects for Stability in a Nuclear Subcontinent.** S. Rajagopal and Sridhar K. Chari (eds). National Institute of Advanced Studies, Indian Institute of Science Campus, Bangalore 560 012. 2003. 177 pp. Price not mentioned.

*'I can't see this country (India) rolling back its nuclear weapons programme and I think that realization has dawned right across the world.'* (p. 45)

– Jasjit Singh

*'But in terms of availability factors, we are somewhat around 86–87%. . . . It is in this context we should try to delink power and nuclear weapons. Now, I see a big opportunity from the US to participate in the Indian "Nuclear" power programme.'* (p. 44)

– S. Rajagopal

*'When you talk of political and technological changes, a lot depends on the political side, particularly when the world has military dictators . . . . And I was rather surprised how friendly you have become with some dictators, too.'* (p. 42)

– Raja Ramanna

*'And I think one of the great sources of instability in South Asia is the disconnect between the highly academic Indian approach to deterrence and the highly military approach of the Pakistanis. It is two different worlds and so asymmetrical that in a long crisis, it is not clear how that will play out.'* (p. 49)

– Lehman

Innumerable articles and books have been published since 1998 concerning the risks of a military confrontation between India and Pakistan and the so-called security–insecurity paradox. Stability in a nuclear Indo-Pak subcontinent is the subject matter of this compact Conference Report held at the National Institute of Advanced Studies (NIAS), Bangalore during 2–4 September 2002. The conference was supported by a grant of the United States

Institute of Peace, Washington DC. Fifteen key strategic thinkers [India (6), Russia (5), the US (2) and China (2)] participated in the round-table discussions. This 'project' was exploratory in nature in the aftermath of Indian and Pakistani nuclear tests (1998), Kargil war (1999), 11 September attacks in the US (2001), 13 December attack on Indian Parliament (2002), Indo-Pak summits at Lahore (1999) and Agra (2001), and countless cross-border terroristic attacks in Jammu and Kashmir.

In the light of eyeball-to-eyeball confrontation across the line of control in Jammu and Kashmir during 2002–03, the question of unstable conditions in the prevailing 'uneasy peace' environment has bothered peoples of the subcontinent as much as the political leaders in the subcontinent and others across the globe. 'The possibility of Indo-Pak conflict escalating into a nuclear level is a real one' in spite of India's no-first-use policy, occasionally spiked by statements of 'pre-emptive strikes' as reported in the media.

The book gives two summaries of the papers presented at the discussions, one in the 'Introduction' by S. Rajagopal and Sridhar K. Chari and another in the 'Conclusion'. The rest are papers by the participants and the transcripts of discussions.

The first article on 'Nonproliferation regimes and nuclear threat reduction' is by Victor N. Mikhailov who headed the Russian Ministry of Atomic Energy in 1994, after dismemberment of the Soviet Republic. He has been a 'participant' in nuclear cooperation with India, especially of the Kudankulam Nuclear Power Project. As with many of the other papers in this book, this article also has geopolitical undertones. He notes 'we ran up against the US opposition to this project (Kudankulam Nuclear Power Project). In an odd way America was confusing the civilian atom and a nation's desire to possess nuclear weapons; it is still doing the same' (p. 11). Further, he notes, placating Indian sensibilities perhaps, 'I would like to emphasize the positive example set by India in placing its NPPs under IAEA safeguards. Both Russia and the US should learn from this example' (p. 13). After reviewing the decade-long stages in the arrival of the current agreement on construction of the Kudankulam Nuclear Power Project, Mikhailov discusses various issues like 'civilian nuclear facilities

under IAEA safeguards', 'US double standards: Iran, North Korea', 'comparison of the military and nuclear doctrines of the US and Russia', etc. in various sub-sections. In the context of dealing with Iran or North Korea, he points out 'the US approach to international issues from the position of double standards (which) is developing further' (p. 17). He goes on to accuse the US on the ground that 'the United States obstinately continues to retain its nuclear weapons on the territories of non-nuclear weapon states – the NATO members. We consider that to be equal to transfer of indirect control over nuclear weapons to non-nuclear weapon states . . .' (p. 17). Towards the end of his paper, Mikhailov refers to the formation of a unipolar world, ostensibly by the US, which builds a modern 'empire' and manages it. There is hardly anything directly referring to stability of the nuclear subcontinent in this paper and perhaps that fits in with the strategy of ambivalent pronouncements of a seasoned politician.

Ronald F. Lehman II, Lawrence Livermore National Laboratory, USA opens his paper 'Nonproliferation regimes and South Asia: Is there a meeting point' by direct reference to concerns of instability in the subcontinent. Responsible restraint and convergence towards nuclear non-proliferation are advocated in the face of 'some historically contentious areas' (p. 31). He referred to a shift in the American policy (post 11 September) *vis-à-vis* its earlier policy 'to press the case for universal membership in global regimes to deal with general proliferation threats' (through which) they hoped for 'reduction in arms race, encouragement for stability and reduction of risk of unauthorized access to weapons of mass destruction (WMD)' (pp. 31–32). In the post 11 September scenario, policy shifts are 'to keep WMD out of hands of terrorists and preventing access to WMD by irresponsible groups or governments. A close second is reducing crises in regions in which WMD might become involved . . . there is reduced interest in engaging in sterile debate over longstanding differences during what is perceived as a period of great danger' (p. 32). It is clear that the Second Iraq war is a physical articulation of the second priority. Lehman goes on to state 'India would have to show great restraint in its own nuclear weapons programme and greater respect to the nuclear non-proliferation norms around which most

of the rest of the world is organized. India need not join NPT, but it must end its rhetorical war against it' (pp. 32–33).

Addressing the question of stability *per se*, Lehman states 'over the years, experts have concentrated on different aspects of stability: crisis stability, arms-race stability, geographical stability, domestic stability and such . . . . Just as force exchange ratios . . . do not determine whether there is peace, so economic disparities, domestic turmoil or broader global currents may play a major role in determining whether there is war' (p. 33). The subcontinent fits this aspect of discussion in the sense that it is not only WMD proliferation that can lead to instability; there are many engineered and natural causes other than WMD that can lead to instability. Lehman's paper directly addressed many issues pertinent to the theme of stability in the subcontinent: The three regimes of membership, which are sought universally, are that of nonproliferation treaty (NPT), the Biological Weapons Convention (BWC) and the Chemical Weapons Convention (CWC). Of the nearly 195 potential parties to these three regimes, '191 or 98% are party to at least one of these three treaties, 188 or 97% are party to the NPT, 147 or 76% have signed all the three nonproliferation treaties and 119 or 61% are already party to all three. Only three states are party to none' (p. 34). He identifies that 'aside from microstates, the primary non-parties to the BWC are former Soviet republics, several African states and a few countries in the Middle East. The significant non-parties to the CWC are primarily from the Middle East and North Africa. With the exception of Israel, the primary states associated with non-membership of the NPT are India and Pakistan' (p. 34).

Lehman points out that 'membership is not the same as compliance. Non-parties to the various non-proliferation regimes have shown some restraint even as some parties to the treaties have violated the terms of the treaties' (p. 34). And that 'from a technological point of view, controlling the spread of nuclear weapons has seemed easier than controlling the spread of chemical weapons (CW) or biological weapons (BW)' (p. 35). Lehman discusses the idea of convergence in the context of NPT. Under the treaty, the 'primary economic incentive provided to non-nuclear weapons states to join NPT is easy access to nuclear technology'. The penalty for not joining NPT is 'tightened supplier

guidelines, export controls and domestic legislative conditionality'. Lehman notes that 'the political guerilla war by India and Pakistan against NPT, even as they confront each other with growing nuclear arsenals, inhibits flexibility in nuclear co-operation' (p. 37).

Lehman refers to the old debates and urges one to go beyond them because 'co-operation and progress have been stymied by the old debates over deadlines, compensation for unequal technologies and knowledge, phases of reductions for NWS and measures such as export controls' (p. 39). Although the fissile material cut-off treaty seems to be going nowhere in Geneva, he notes that 'a freeze on production of unsafeguarded fissile material production would be an important step towards reducing nuclear arsenals' (p. 39). He suggests an *interim* regime among a small group of nations, principally the NWS plus the non-parties to the NPT!

To a pointed question from Roddam Narasimha, '(In the prevailing circumstances) suppose there were to be a discussion, an exploration of the possibility of future nuclear power stations, could that be done with foreign participation?' (p. 46), Lehman replies 'My own judgment is that an unrestricted nuclear weapons build-up in South Asia means no co-operation of any significance beyond where we are today . . . there is widespread belief in policy circles around the world that India and Pakistan were close to war and that nobody wants to put in money or investment into any place that could go up in smoke so quickly. And certainly not to contribute to nuclear efforts in those areas . . .' (p. 47).

The article by Narasimha, 'A threshold of strategic autonomy at least cost' goes into the past 60 years of 'nuclear strategy policy – if it existed but never been publicly stated' (pp. 52–53) from the days of Bhabha to the present day, spanning the regime of 12 Prime Ministers. The policy 'has always been the same, namely, one of seeking, preserving and protecting the country's strategic space and autonomy at the least possible cost' (p. 59). This article is an academic review, without directly addressing the problem of instability that may occur anytime in the subcontinent. With regard to NPT, Narasimha looks at some of the available options. According to him there are three options: (a) 'the (NPT's) 5-year reviews may well go on as usual, which are basically non-events ignoring India's reservations', (b)

'de-mating and de-targeting all nuclear weapons, a declaration of no-first-use by all NWS and constitution of an international "jury" that investigates all instances of nuclear compliance' and (c) 'richer non-nuclear countries make common course with some of the restless signatories of NPT and force revisions in the treaty' (p. 60). He points out that option 3 is 'most unlikely', option 2 is 'what I would personally like to see happen' and option 1 is 'what I suspect the world will most likely settle down to'. Some of the statements that are found in this paper would be pleasant to the ears of the establishment in Delhi.

Reacting to the paper by Narasimha, Lehman said 'The continuation of warfare by India against the NPT leaves no hope for progress and co-operation. . . . I don't think it is possible, with active hostility, to torpedo NPT' (p. 66). Countering this, Narasimha notes that his option (a) did not 'predicate open hostility to NPT from India . . . . I think that India will accept that the NPT is there and I hope that the rest of the world accepts that India is not there in the NPT. So are there ways where those are not the issues to be discussed?' (p. 66). Mikhailov harps back on how the US violates NPT by deploying nuclear materials on the territory of non-nuclear states.

In the paper on 'The role of nuclear doctrines and the state of the armed forces in South Asia', Vladimir E. Novikov, Director of Institute of Strategic Stability at Moscow, has analysed the available information on nuclear doctrines of China and India and a 'hypothetical' Pakistani nuclear doctrine. He notes that the 'deterrence' concept takes on different hues depending on the adversary whom one wishes to deter: 'I cannot imagine that India's nuclear forces are being created only for deterrence of Pakistan and I am practically sure that India's strategic nuclear forces in perspective are designed for deterrence of China' (p. 78). In answer to a question 'How big must India's nuclear forces be to cause irreparable damage to China?', which he poses to himself, he says 'I think in this case the strategic nuclear forces must be comparable to those of China' (p. 77). Earlier on, he had noted that 'China will try to reach a level of maximal deterrence towards the US and Russia' (p. 74). If Pakistan were to 'balance' its small size (1 : 4), population (1 : 7) and ground force (1 : 2) *vis-à-vis* India, his analysis leads to the conclusion

that 'Pakistan will have to "compensate" this disproportion by building up its nuclear potential, particularly by accelerating the production of nuclear materials for military use, continuously improving warheads, increasing the number of warheads' (p. 79). During the discussions that followed Novikov's presentation, Sun Xianghi of the Institute for Applied Physics and Computational Mathematics, Beijing, China refers to 'The only function of nuclear weapons is to deter nuclear attacks. It can also play a role in wars, to prevent major conventional wars among the bigger powers . . . . You can't use them in general or in low-level conflicts. So limited deterrence means some kind of deterrence of war fighting and combat. It is nonsense. It is not possible. We never take this kind of view seriously in China' (p. 84).

The paper 'Nuclear weapons, deterrence and stability in the international system: South Asian dynamics' by Sri-dhar K. Chari (NIAS) began with a definition of stability 'as absence of war or conflict, or the absence of crisis situations that might either lead to conflict or impede "normal" relations' or 'in broader terms, stability can be thought of as order' (p. 87) and proceeded to provide some theoretical constructs of models to look at strategic stability. This paper brought to the fore the underlying reasons for strain between India and Pakistan going back to even 1000 years. The only direct aspect of discussion relevant to stability in South Asia was a question posed by Raja Ramanna: 'Has the time come when we can say that armaments, nuclear or otherwise, will not be passed on to other countries secretly, which adds to the threat in South Asia? . . . . In South Asia, it is an important threat' (p. 104).

One can go on highlighting through a few quotes – if not summarizing – several interesting, overlapping issues raised and discussed at this round-table meeting. It is a good compendium of a cross-section of views of a few select strategic thinkers. NIAS and Rajagopal and Sri-dhar deserve appreciation for making this neat booklet available to the lay public. Notable by their absence are several other strategists – some who may hold counter views – especially from India and Pakistan. This reviewer would have liked to read a paper reflecting the views of Raja Ramanna, who spearheaded the nuclear programme in India in the seventies; he has had the privilege of a ring-

side view of the goings-on in the government and in the cabinet in his various capacities in the subsequent decades. Sad to say, this is sorely missing. As stated by Balakrishnan Rajagopal elsewhere, 'Ours has become the age of threats. India threatens Pakistan with a "limited war" and a complete nuclear annihilation if it uses nuclear weapons first. Pakistan openly threatens India with a "first strike" nuclear option if it as much as moves its forces one inch across the Line of Control'. There does not seem to be any discussion of such realities that may arise if further confrontational postures prevail in the subcontinent. Since the prospects of stability in the subcontinent are somewhat obscured, the strategists and other intellectuals would have to continue to gaze at the crystal ball and present the changing scenario as it unfolds. Of course, there is hope in that if yesterday's 'enemy no. 1' can become today's 'friend no. 1', one may witness new relations emerging in the fast geo-political dynamics in the subcontinent.

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The book under review is a collection of thirteen articles, each of which has been authored by eminent scientists in their respective branch of science. The central theme of the book is to provide an understanding of space environment, the way it is probed, and the way it has altered and revolutionized our thinking of human limitations. It must have been a challenge for the authors to present complex themes and ideas in a simple and concise manner that would interest even those

uninitiated in the subject. The book does, by and large, succeed in meeting the stated objective of providing the younger generation the awareness of the achievements and excitement of space science. However, space science is so all-encompassing that the topics covered are necessarily diverse, ranging from biology to astronomy and space platforms to material sciences and so on. Not many readers might be interested in all the contents, but anyone with even a casual acquaintance with science would find some exciting article in the book.

The book opens with a general introduction to the fascinating scientific frontier, with a brief historical perspective and a prelude to the detailed articles that follow. A bird's-eye view of the issues in space environment and the amazing opportunities it offers to different sciences succeed in arousing the curiosity of the reader.

The two sections dealing with space platforms give detailed account of different stages of technological advances, from simple balloons to deep-space probes. Some interesting examples, like how a group of college students conceived, designed and built payloads for sounding rockets or how the *Pathfinder's* walk-about on Martian surface was controlled from the earth, could be inspiring to young readers. Students would perhaps appreciate more schematics, diagrams and photographs and less of descriptive text.

There are so many astonishing aspects of our immediate surroundings, the atmosphere, that it is exciting to learn how nature has worked through billions of years to build this home, the planet earth for us. The 'Air around us' is a well-written, informative piece, although one wonders if the discussion occasionally goes beyond the theme of the book. At places, the contents are profound and inspiring, such as the 'Origin and evolution of the atmosphere', but some others appear mundane.

Remote sensing using space platforms is so much a contemporary development that the article 'Eye in the sky' can be a refresher study even to a practitioner in this area. This topic is often more appreciated than understood and this article, therefore, is good reading material for all. Remote sensing, both as a science and as a tool for resource management, is witnessing rapid advancements and what can be covered in a popular article is very limited. From this point of view, the