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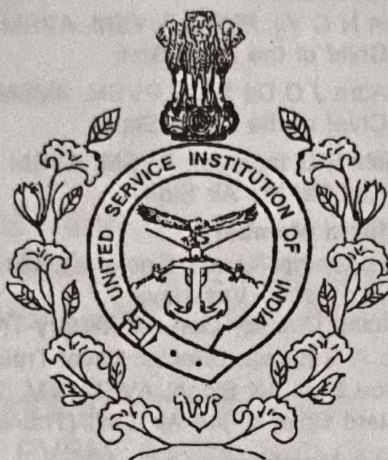
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EULOGY
MAJOR GENERAL SAMIR C SINHA, PVSM



1926-2002

Maj Gen S C Sinha was born in a wealthy family of landlords from Mymensingh (now Bangla Desh) on 28 January 1926. He was sent to boarding school at Bishops Wescotts Namkum (Ranchi) at the age of six. Subsequently from 1937 to 1942 he studied at the Royal Indian Military College, Dehra Dun.

In March 1943 he joined the Officers Training School Belgaum and in December 1944 was commissioned in 15 MARATHA LI which he served till June 1945 when he volunteered for Parachute duties. He completed his Parachute Basic Course in September 1945 at Chaklala and joined the 1st Battalion of the Indian Parachute Regiment. He joined 2 PARA (MARATHA) in January 1947. In April 1948 he was wounded in Jhangar while commanding a company.

From 1952 to 1954 he served with 2 ASSAM till he proceeded on the Defence Services Staff College Course in 1954-55. On completion of the course he was posted as DAA and QMG 50 (Independent) Parachute Brigade where he subsequently became the Brigade Major.

In 1960 he joined 2 PARA (MARATHA) as 2 IC and was with the Battalion in operations in Goa (OP VIJAY). In 1963 he raised 6 PARA. He was selected for and attended the Command and General Staff College at Fort Leavenworth USA in 1964. In June 1965 he moved as GSO 1 Military Operations Directorate at Army Headquarters from where he moved in 1967 as GSO 1 of '20 Mountain Division.' In 1967, he took over as Commander 82 Mountain Brigade. He subsequently commanded 51 (Independent) Parachute Brigade and 47 Infantry Brigade. In 1970 he was Director Combat Development at Army Headquarters. During the 1971 War he was attached to Headquarters Eastern Command as Deputy Director Civil Administration for Bangla Desh. From June 1972 to June 1974 he was GOC 19 Infantry Division and from July 1974 to October 1975 Chief of Staff HQ Northern Command. During 1975-76 he served as Commandant Indian Military Academy, Dehradun. In November 1976 he took over as Director Military Training (DMT) at the Army Headquarters. From 1979 to 1981 he served as Chief of Staff Central Command. In 1981 he took over as Inspector General Special Security Forces where he stayed till 1984 when he finally retired after 40 years of dedicated service. For his distinguished service of an exceptional order with the Indian Army he was awarded the Param Vishist Sewa Medal.

He was Director, United Service Institution of India (USI) from 24 November 1987 to 30 June 1996. His association with the USI goes back to 1947 when he became a life member of the Institution. As DMT he was Chairman of the USI Executive Committee from January 1977 to June 1979, and an elected member of the USI Council for a number of years.

Remembering Major General S C Sinha

Major General L S Lehl, PVSM, VrC (Retd)

The sudden demise of Major General Samir C Sinha PVSM on 26 January 2002 came as a sad shock to his numerous friends and comrades. Born on 28 January 1926, an alumnus of the RIMC, Dehra Dun, he was commissioned on 10 December 1944 in 15 MARATHA LI. In January 1947, he joined 2 (PARA) MARATHA at Multan. During 1947-48 J&K Operations he showed pluck and verve during the Battles of Naushera and Jhangar. When his Commanding Officer, Lt Col Rawind Singh MC was wounded, Sinha as the IO accompanying him, evacuated him to safety under heavy LMG and MMG fire. During March 1948, when both the assault Company Commanders were killed in the first attempt to secure Pir Thil Naka, he was sent forward by his CO, Lt Col H S Virk DSO, to pull the companies back. Not caring for his personal safety, he moved forward into the narrow valley to join the pinned down troops, braving sniper, LMG and MMG fire from the enemy on the hill feature in front. His appearance amongst the extended front of the two companies motivated the troops to engage the enemy with their weapons while artillery and mortar fires kept the enemy heads down till dusk. In the descending darkness, Sinha organised an orderly withdrawal of the forward troops along with the dead and wounded.

In April 1948, he was wounded while commanding a company in Jhangar and was soon back in the Battalion. Brigadier Usman, the hero of Naushera and Jhangar pulled him on his staff and it fell to his lot to carry the mortally wounded Usman into his bunker under observed artillery shelling.

During the 1965 Indo-Pak War he played a pivotal role as the oldest member in the Military Operations Directorate. He raised 6 PARA and commanded 47 and 82 Brigades in addition to 51 (Independent) Parachute Brigade in Sugar Sector. In 1971, he was moved as Director Civil Affairs, Bangla Desh at Headquarters Eastern Command Calcutta from the instructional staff of the Infantry School, Mhow. With his usual gusto he created a joint Indo-Bangla Desh organisation with maximum participation of the Bangla Desh civil and Police officials, which facilitated smooth functioning of the administration and an early rehabilitation of nearly ten million refugees.

Major General Sinha held many prestigious command and staff appointments. He commanded 19 Infantry Division and was Commandant IMA, Dehra Dun, Director Military Training, DG Special Security Forces (SSF), Chief of Staff Northern and Central Command and Colonel Commandant of the Parachute Regiment. On retirement he took over as Director USI where he gave shape to Colonel Pyara Lal's vision of the USI. After shifting it to its new complex, he succeeded in winning for it a place of pride and primacy amongst the Defence institutes at the national and international levels.

Major General Sinha had strong loyalties to the RIMC, para regiment and the USI amongst others and he maintained a lively association with these till the end. He was ever ready to help his comrades, Army widows, ex-Servicemen in distress, the wounded and the sick irrespective of rank. His heart and soul were in whatever he did. He will be remembered with respect and affection by his numerous friends and comrades who came in contact with him.

EDITORIAL

The highlights of events at the USI during the quarter January-March 2002 were two important seminars on UN Peacekeeping Operations hosted by the USI Centre for United Nations Peacekeeping (CUNPK). The India-UK bilateral Seminar was held on 07-08 February 2002 which saw extensive dialogue between the UK delegation and their Indian interlocutors on contemporary issues related to UN Peacekeeping. The ASEAN Regional Forum (ARF) Peacekeeping Seminar on "Best Practices and Lessons Learnt" was organised as part of ARF Confidence Building Measures on 20-21 March 2002 which was attended by 70 foreign delegates in addition to the Indian delegation of seven members. Representatives from 22 ARF member states participated in the Seminar. Wide ranging issues on UN peacekeeping-challenges and prospects, case studies on missions, the role of regional organisations, humanitarian dimensions, training and deployment practices and new approaches were discussed at length. Major General Timothy Ford, Military Adviser to the UN, visited the USI CUNPK and was briefed on its activities.

Contemporary politics is witness to a large number of unprecedented violent and brutal conflicts. A majority of these are internal in nature incapacitating states from performing their normal governmental functions. Wars have been with us since civilisation emerged. In February 2002 Lieutenant General Satish Nambiar, PVSM, AVSM, VrC (Retd), Director USI attended the 38th Munich Conference on Security Policy in Geneva. He gave a talk at the USI on 06 March 2002 to a rapt audience covering the salient features of the Munich Conference, which was attended by many important State leaders and representatives. The emphasis was on according high priority to security to ensure smooth developmental process. The lead article in this issue of the Journal is an extract of this talk. The Director has detailed the areas of concern for the global community as enumerated at the Conference by the State representatives. The Conference seemed set to ready the world for a long haul for the war against terrorism. The phenomenon of terrorism was referred to in one case as the 'Third World War'. Concern according to the Director was also expressed with regard to the terrorist's access to Weapons of Mass Destruction (WMD) and financial backing. According to the Director, "there were some strident voices calling for NATO to take over the operations in

Afghanistan under a NATO Command structure. NATO needs to be a power player and part of the war on terrorism". The expansion of NATO was also discussed. The Chinese representative's observations are worth noting. He stated that the stability of Pakistan was fundamental to deal with the evolving situation in Afghanistan; that the Chinese foreign and Defence policies were peaceful in nature; that the cooperation with Russia was pivotal in dealing with Central Asia and the scope of operations against terrorism must not be arbitrarily enlarged. Pakistan's representative Abdul Sattar devoted most of his address to India-bashing. President Musharraf of Pakistan, the Director informed the audience, had come in for a lot of praise for his post 11 September handling of the situation vis a vis Afghanistan.

The history of human societies has been revealed in many different ways. In an article titled "Dialogue Among Civilisations: The Role of Force", Professor Matin Zuberi has stated that civilisational clashes have occurred periodically with both negative and positive outcome. Such clashes according to the author cannot be treated as the state of relations between them. A point to note is that civilisations do not control states; states control civilisations. The outcome of the conflicts between states undoubtedly have consequences for the future of civilisations represented by the states involved. Modern science too exemplifies the international character of civilisations. There is a confluence of interests of the Jewish, the Christian and the Muslim in the field of geography and history. The Islamic world has been witness to stagnation of the Islamic civilisation, says the author. There have been frantic efforts to catch up or adopt the Western technologies by the Chinese, the Japanese and the Asian countries, sometimes even without the supporting civilian, political, administrative and technological structures which has resulted in nightmares. The author cautions against grafting a particular aspect of technology without mastering the relevant ingredients, which sustain it. Each nation wanted to be the master of their own destiny by sometimes even transplanting Western ideas and instruments of strength. It was the victory of the Japanese over the Chinese that elevated the former in the comity of nations, points out Prof Zuberi. Some British writers have categorised humanity into three categories - civilised, barbarous and savage. Technology's rapid pace has made the world interdependent and geographical boundaries diffused. It has also created new sources of instability. Terrorism is a facet of this instability.

Reflections on the 38th Munich Conference on Security Policy held at Munich from 01 to 03 February 2002

Lieutenant General Satish Nambiar, PVSM, AVSM, VrC (Retd)

General

The 38th Munich Conference on Security Policy was held at the Hotel Bayerischer Hof, Munich, from 01 to 03 February 2002. Due to apprehension of possible demonstrations and violence by so-called anti-war groups, security at the conference was quite unprecedented with about 3500 policemen and security personnel deployed around the Hotel. The Conference, however went off well and without any incident.

Participation

The Conference drew participation from 43 countries that were represented by some very senior ministers, other politicians, military officers and administrators. These were from North America and Europe, from Russia and some other countries of the former Soviet Union like Georgia, Ukraine and the Baltic states, as also from selected countries of Asia like China, India, Japan, Singapore, and this year from Pakistan. Also attending this year were Foreign/Defence ministers from some of the Central Asian Republics. All in all, the numbers were quite overwhelming, but the organisers seemed to derive considerable satisfaction from this.

The Programme

The conference commenced on the evening of 01 February 2002 with a reception by the Mayor of the City of Munich, Christian

Lieutenant General Satish Nambiar, PVSM, AVSM, VrC is the former Deputy Chief of the Army Staff. He was the first Force Commander and Head of Mission of the United Nations Forces in the former Yugoslavia. Currently, he is the Director of the USI.

This is the text of the Talk delivered by Lt Gen Nambiar on 06 March 2002 at the USI.

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Ude. At the opening session on 02 February 2002, Horst Teltschik the Chairman of the Conference welcomed all the participants. His remarks were followed by the Keynote Address delivered by the Minister President of the Free State of Bavaria, Edmund Stoiber, who is apparently the opposition candidate for the post of Chancellor against Bernard Schroeder. The morning session covered the global impact of International Terrorism. The lead speakers at this session were Paul Wolfowitz, Deputy Secretary of Defence, USA, Wang Yi, Deputy Minister of Foreign Affairs, People's Republic of China, Brajesh Mishra, Principal Secretary to the Prime Minister and National Security Adviser, Republic of India, John McCain, US Senator from Arizona, Abdul Sattar, Foreign Minister, Islamic Republic of Pakistan, Alexander Downer, Foreign Minister, Australia, and Lee Hsien Loong, Deputy Prime Minister and Minister of Finance, Republic of Singapore. The afternoon session on 02 February 2002 dealt with the European impact of international terrorism, the lead speakers being Angela Merkel, Chairwoman, Christian Democratic Union of Germany, Federico Trillo-Figueroa Martinez-Conde, Minister of Defence, Kingdom of Spain, and Antonio Martino, Minister of Defence, Italian Republic. The late afternoon session that day dealt with "Central Asia: Regional Stability or Disorder". The lead speakers were Talbak Nazarov, Minister of Foreign Affairs, Republic of Tajikistan, Muratbek Imanaliev Minister for Foreign Affairs, Kyrgyz Republic and Irakli Menagarishvili, Minister of Foreign Affairs, Georgia. The final session on the morning of 03 February 2002 dealt with "Global Security: New Challenges, New Strategies". The lead speakers were Lord George Robertson, Secretary General, NATO, Sergei B Ivanov Minister of Defence, Russian Federation, Rudolf Scharping, Minister of Defence, Federal Republic of Germany, Joseph Lieberman, US Senator from Connecticut, Volodymyr Shkidchenko, Minister of Defence, Ukraine and Antanas Valionis, Minister of Foreign Affairs, Republic of Lithuania.

The Opening Session

At the opening session it was stressed that since freedom is vulnerable, security needs a very high priority in the scheme of things in Europe so that development in other fields is not affected.

Financial sacrifices may, therefore, be necessary. The USA is making these sacrifices. An appropriate strategy should be evolved to give greater priority to the setting up of a Rapid Reaction Force for Europe. Europe needs the USA but must be prepared to carry the main burden in areas like the Balkans.

Terrorism

The sessions on terrorism were comprehensive and wide-ranging. The phenomenon of terrorism was referred to in one case, as the "Third World War". There was general condemnation of terrorist attacks, tempered with suggestions that the responses need to be not only military but also non-military. It was also recognised that the war on terrorism would be a long haul. Though the focus was primarily on the 'Al Qaeeda in Afghanistan, references were made to the 'State of the Union' message of President Bush wherein Iraq, Iran and North Korea had been mentioned. There were of course some reservations expressed in regard to classifying these countries as an 'axis of evil'. Whereas some calls were made to define international terrorism, there was total consensus that nothing can justify terrorist attacks against innocent civilians. There was also unanimity that in dealing with this menace the international community needed to ensure coordinated action. In this context, besides the aspect of sharing of intelligence, apprehending known and suspected terrorists and their supporters, and taking military action, concerted international action to freeze their access to finances was considered to be a top priority. Concerns about the capacity of terrorist organisations to gain access to weapons of mass destruction were expressed by a number of speakers. There was again a degree of unanimity that this danger must be addressed without delay.

While there was general unanimity that what was being prosecuted was not a war against Islam, there was a suggestion that what we are witnessing is a "civil war within the Islamic world", and that the rest of us had been caught in the crossfire. Mention was made of the need to mobilise the support of the Muslim world while recognising that only 23 per cent of that section were in fact democratic. It was interesting that the inadequate posture of Saudi

Arabia in condemning the phenomenon was the subject of some comment. There was reference to the fact that 40,000 Saudis had over-stayed visas in the USA, suggesting that procedures in the USA were not effective. Turkey was mentioned as a frontline state in the battle against terrorism. An opinion was expressed that small minorities at the fringes of society in many nations were in fact responsible for the spread of the virus. It was also generally accepted that the theory that it was the poor and deprived that initiated such activity was untenable. The known perpetrators and their accomplices were in fact individuals from the educated and relatively well off sections of society. It was no surprise that they used the poor and deprived elements of society of various nations emerging from the "madrassas" to provide the "ground forces". The fact that South East Asia may well be a breeding ground for terrorism or a refuge for terrorists was made by the Australian Foreign Minister.

The representatives of the USA were unanimous in expressing the view that they would pursue the war on terrorism relentlessly and with vigour. It was quite clear that the generally prevalent perception of American reservations about casualties to military personnel was invalid in context of the fact that the terrorists had attacked the USA on its mainland. The response required a war against an "enemy", and was hence being dealt with internally in a non-partisan manner. It was also quite clear from the statements of the American delegation that their presence in Afghanistan and adjoining states like Pakistan and the Central Asian Republics would continue for quite some time. There was a new American internationalism, with a clearly unified and purposeful readiness to go it alone if required. This was particularly revealed in the strong exception taken by members of the US delegation to a suggestion that a UN mandate was necessary in order to respond to terrorism.

Representatives of the Central Asian Republics were unanimous in drawing attention to the fact that the menace of terrorism had been ignored for far too long. They stressed that the situation in Afghanistan would continue to impact on the region for quite some time yet. They also acknowledged that the US presence

was of strategic importance, though some reservations were expressed about the establishment of the US bases in the region. However, this appeared to be more for effect.

NATO

It was quite evident that while there was unreserved condemnation of the terrorist attacks of 11 September 2001, there were considerable reservations in Europe at what was perceived as American unilateralism in dealing with the situation. It necessitated assurances from the American delegation that President Bush's State of the Union address did not indicate lack of interest in Europe or NATO. That it was the American view that a flexible coalition for dealing with the situation could well include elements of NATO and countries of Europe. Not without significance was the fact that Lord Robertson, the Secretary General of NATO, found it necessary to make the point that it would be unrealistic that the USA would operate from the air and expect the Europeans to "fight in the mud". It is a matter of some interest that during discussions there were some strident voices calling for NATO to take over the operations in Afghanistan under a NATO command structure. This was a reflection of the mood that NATO needs to be a power player and part of the war on terrorism, and that Europe needs to do more as a player on the international arena. There were some brief references to the rapid reaction capability that Europe was trying to build up, that also drew some oblique suggestions that the European Security Defence Policy initiative should not be a bureaucratic exercise that does not have military muscle. Many European interlocutors and a number from the USA stressed that the inadequacy of resource allocations for security had resulted in a large technological gap between the USA and Europe. While this resulted in calls for the countries of Europe to remedy the situation, there were also appeals to the USA to assist in the modernisation process. It was, however, generally accepted that the gap appeared unbridgeable at the moment.

The expansion of NATO was a recurring theme throughout the Conference; with all the representatives from countries aspiring for membership (Eastern Europe and the Baltic States) making a strong pitch at every available occasion. A clear indication was,

however, conveyed by some of the speakers that NATO was not a club for social membership, and that aspirants had to be able to measure up to certain standards of capability and be able to fulfil responsibilities.

Russia

It was quite evident that despite all the politically and diplomatically correct references to Russia, there was discomfort among many Europeans and representatives from the components of the former Soviet Union in dealing with that country. Particularly articulated was the concern at the manner in which the Russian government was dealing with Chechnya and the dangers that emerge from inadequate control over stocks of weapons of mass destruction. The Russian Defence Minister, Sergei Ivanov delivered a forceful and articulate presentation, which was, however, received with considerable scepticism by many of the delegates; reinforcing the observation made earlier.

China

No significant references were made in regard to China in context of the discussions that took place at the Conference. In his presentation the Chinese representative made four major points. The stability of Pakistan was fundamental to efforts for dealing with the evolving situation in Afghanistan. The peaceful nature of Chinese foreign policy and the defensive nature of Chinese military policy were stressed. That cooperation with Russia and the Central Asian Republics had helped in dealing with the situation in Central Asia. And that the scope of operations against terrorism must not be arbitrarily enlarged; a reference no doubt to the US intentions to act against Iraq.

Pakistan

There was absolutely unqualified and repeated commendation of Pakistan's role in dealing with the situation post 11 September. General Musharraf came in for great praise from everyone who referred to him; and there were many. The representative from Singapore stated that "the international community was lucky to

have a person of General Musharraf's courage and determination at the helm of affairs in Pakistan at that time". In his presentation, Abdul Sattar made a few general points. He spoke of the need to address the root causes that foster terrorism and the need to demolish the trade in narcotics. He referred to the scenes of happiness at the fall of the Taliban to suggest that there was opposition to that regime. He also referred to the need to neutralise those preachers who propagate wrong values in society and the need for the international community to have a correct understanding for cooperation with the Muslim world. Inevitably and as always, most of his address was devoted to "India bashing". His reference to the demolition of the structure at Ayodhya in December 1992 was to draw comparison with the demolition of the statues of the Buddha at Bamiyan by the Taliban, adding that it had led to the loss of 2000 lives. Another rather outlandish reference was to quote the example of Shaheed Bhagat Singh to illustrate a point he made that some groups looked upon as terrorists could be viewed as freedom fighters by others. He drew attention to what he called 'state excesses' by India in Jammu and Kashmir and how the people of the State were denied self-determination. He made much of Pakistan's offer of talks with India, the tensions on the sub-continent due to deployment of armed forces on the borders and the missile test carried out by India. He further reiterated Pakistan's call for deployment of United Nations military observers on the Line of Control.

On the Sidelines

Discussions on the sidelines of the conference revealed some interesting details. An ambassador who was till recently in Pakistan had no hesitation in stating that Musharraf is the best thing that has happened for Pakistan. That he is genuine in doing what he can for Pakistan and that he is undoubtedly in control. The Ambassador mentioned that during his farewell call, Abdul Sattar had shown him the draft of what was drawn up at Agra for agreement between Prime Minister Vajpayee and General Musharraf. He stated with some feeling that he could not imagine why the Indian side did not find it possible to accept. When our reservations on the contents and the manner in which the whole process had been attempted

were explained, he did not appear fully convinced. Even so, when it was put to him bluntly in context of his apparent knowledge of the situation on the sub-continent, he finally did concede that Jammu and Kashmir by itself does not resolve matters between India and Pakistan. He did, however, express the view that a start needs to be made with that issue.

Discussions on Afghanistan drew the observation that whereas the Taliban had been initially welcome to the people of Afghanistan, they were soon disillusioned, except for a small minority of the hard core supporters. There was little doubt that the current situation was very fragile and fluid. Local leaders in the various regions continue to exercise considerable influence and power; power that they will be unwilling to surrender to the regime in Kabul. The opinion was expressed that the International Assistance Force cannot deploy beyond the immediate area of Kabul because the numbers required would be too large. If the groups in the outlying areas were willing to conform to the terms of the Agreement, no deployment was required; and if they were not willing, deployment would result in conflict. It was stressed that Western countries do not have the capacity for prolonged deployment. During some recent visits to Afghanistan, some otherwise proud elders in Afghanistan apparently conceded that a UN protectorate status was probably best for Afghanistan for the present; but this was unlikely to be accepted as a concept. On Osama bin Laden, a view was expressed that 70 per cent chances were that he was dead; if he is alive, the chances are that he is in Peshawar or Karachi. The Taliban elements would have reverted to the villages in the countryside; the problems they may cause are due to the weapons they possess. On Al Qaeda, the feeling was that some elements may be hiding in the Pashtun areas of Afghanistan and Pakistan, paying for their security through their apparently unlimited supply of finances. The possibility that some may well have got away to other countries through Peshawar and Karachi cannot be discounted.

Dialogue Among Civilisations : The Role of Force

Professor Matin Zuberi

Whatever happens we have got
The Maxim Gun, and they have not.

"You are not so ignorant of our affairs", wrote Pope Pius II in 1460 to the conqueror of Constantinople Mohammad II, "that you do not know the power of the Christian people—of Spain so steadfast, Gaul so warlike, Germany so populous, Britain so strong, Poland so daring, Hungary so active, and Italy so rich, high-spirited and experienced in the art of war."

Civilisations constitute enduring landmarks. They borrow, compete, coalesce, and engage in long-term conflict — all at the same time. They are liable to erosion when the special constellation of circumstances that contributed to their flowering passes away. Commerce and force have traditionally played the role of bringing civilisations in contact and in conflict. Commerce distributes goods far and wide, thereby bringing about changes in material life. Historically, clashes of leading civilisations have occurred at the edges of their zones; but more often people at those edges have also created fruitful exchanges between them. Such clashes cannot be made the basis of relations between states.

Since civilisations do not share institutions, one has to look for key institutions elsewhere. These are predominantly in the realm of political formations. Thus, though civilisations may share important cultural traditions and beliefs, they do not constitute a framework for international security. States bring together military power, economic wealth, and cultural resources. As Fouad Ajami

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has crisply observed, "civilizations do not control states, states control civilizations." The technologies that underlie both economic prosperity and military prowess are organised at the level of individual countries and states, not civilisation. States drive the processes of modernisation and industrialisation. States control armies, not civilisations. And consequently, it is states that produce wealth or conduct wars, not civilizations.

International relations focus on more urgent, and somewhat less grand matters of national interests—oil, trade, territory, and so on. The outcome of conflicts between states undoubtedly have consequences for the future of civilisations represented by the states involved; but it does not help in understanding the nature of conflict between states to subsume them under the grandiose formula of a 'clash of civilizations.'

The history of modern science exemplifies its international character. When the ancient world broke into fragments, the Arabs became the inheritors of Greek philosophy. The House of Wisdom in Baghdad, founded by Caliph al-Ma'mun, provided a unique blend of cultures that resulted in a stream of translations of Greek scientific and philosophical works as well as commentaries and original treatises. The Arabs had borrowed Indian numerals. The first mathematical work in Europe was published in 1212 A.D. by Leonardo Fibonacci who had been brought up in Algeria, spoke Arabic fluently and had studied Islamic science. He wanted to teach the Europeans how to calculate 'the way Indians do.' Other scholars were transplanting Sanskrit trigonometry and then Franciscan friars at Merton College, Oxford, picked up the thread. Of the six modern trigonometric functions, five are essentially Arabic in origin, and the sixth reached the Arabs from India. An impressive example of an Islamic astronomer was Muhammad al-Battani whom Copernicus mentions no fewer than 23 times in his treatise 'On the Revolutions of the Heavenly Spheres.'

By the middle of the 14th century, says Lynn White Jr., 'Europe had garnered the mathematics of all Eurasia and was seizing leadership.' Joseph Needham has argued that 'the science of Asia has a dividing line running north and south through Bactra

and the opening of the Persian Gulf and that 'the scientific thought of Arabic civilisation forms in a very real sense a unity with European science.' And, according to Idda Bozeman, 'no one could have identified Christendom with the West and Islam with the East in the tenth century A. D.' The confluence of Jewish, Christian and Muslim interests is especially evident in the fields of geography and history. The works of Al-Khindi, Al-Farabi, and Avicenna reached Europe through translations. St. Thomas Aquinas was influenced by Islamic writings on jihad in formulating his doctrine of 'just war.'

The library of Cordoba in 600 A.D. contained 600,000 manuscripts; the library of the King of France even in 1300 A.D. had no more than 400. Avicenna's description of the library of the Sultan of Bukhara, each room piled with books on a single subject—language and poetry, law, logic, medicine, and so on — with a catalogue helping scholars to get a general view of the subject, had no counterpart in Europe until the end of the Middle Ages. 'When Dante placed the Islamic philosophers Avicenna and Averros, and the Islamic warrior Saladin in Limbo', says RW Southern, 'as the only moderns among the sages and heroes of antiquity, he was acknowledging a debt of Christendom to Islam which went far beyond anything he could have expressed in words.'

By a curious coincidence, however, the general decline in creative learning in the Islamic world occurred precisely when intellectual ferment was transforming Europe. From 13th Century onward civilisational dialogues lost their earlier vitality. By the 16th Century the Europeans had acquired a sense of superiority over the rest of the world. There were many causes of intellectual stagnation within the Islamic civilisation. Grunebaum, for instance, explains that whatever major contribution Muslim scholars made to natural sciences, they had 'no root in the fundamental needs and aspirations of their civilization.' They worked against the 'apprehensive scepticism of the orthodox' and, therefore, the pursuit of natural sciences and philosophy tended to be confined to small esoteric circles. Spiritual self-sufficiency later impeded the flow of knowledge once the balance of achievement had shifted to Europe. The Muslim's world, it was rightly observed, was at rest, and he

was at rest within it; what to outsiders struck as decadence, was to him repose in the bosom of eternal truth.

Since the great geographical explorations of the 15th and 16th Centuries the European civilisation has been in collision course with the rest of the world. Science, technology, commerce, and war interlaced with each other in a mutually reinforcing manner and transformed Europe whose impact is felt in ever-widening circles round the globe. The history of colonialism is the history of economic competition and incessant warfare. The European states system was hammered out on the anvil of war and the international system of states created by it became a global structure of economic and military competition and conflict. The balance of power within nations, between nations, and between civilisations was transformed.

When an aggressive Europe forced the Celestial Empire out of her complacent stagnation into a world of competing nation-states and imperialist rivalries, the mandarins got worried about this sudden transformation of China's position in the world. One of them asked the question: 'why are they small and yet strong? Why are we large and yet weak?' His answer was simple: 'What we then have to learn from the barbarians is only one thing, solid ships and effective guns.' There were others who went deeper than this. They pointed out that the natural sciences were the foundation of Western strength. Li Hung-chang, the elder statesman of China during the late 19th Century, observed: 'Everything in China's civil and military systems is far superior to the West. Only in firearms it is absolutely impossible to catch up with them.' He did notice, however, that the Japanese had bought 'the machines for making machines.'

This created a new dilemma for China. If the Chinese acquired military power, the Japanese would side with them; but if China failed in this endeavour, Li correctly predicted, 'then the Japanese will imitate the Westerners and will share the Westerners sources of profit.' There was another source of anxiety for Li that symbolised the inherent weakness of the Manchu rulers. China's rebellious bands were still roaming around, and if in some nook of the mountains 'there are worthless rogues who learn the western method under cover' what would happen to the old-fashioned

imperial armed forces? 'Whenever I think of this', he added, 'I cannot but be startled with fear and sadly emit a long sigh.' Li, therefore, became the promoter of naval and military reforms in China. Western weapons and military training techniques were bought and borrowed. Arsenals were established and naval shipyards sprang up in different parts of China.

These frantic efforts to borrow Western military technology without the supporting civilian, political, administrative and technological structures resulted in a logistic nightmare. Military reform, instead of leading to centralisation of armed forces, led to erosion of Manchu imperial authority. When China faced the challenge of Japan in 1894, the Japanese Admiral wrote an insolent letter to his Chinese counterpart advising him to surrender even before the Japanese attack began: 'I address myself to you from motives of genuine friendship, and I pray you to appreciate them... A country with a history running back thousands of years, and territories stretching tens of thousands of miles, the oldest empire in the world, can it be an easy task to accomplish for such a country a work of restoration, replacing its foundations on a permanently solid basis? A single pillar cannot prevent the fall of a great edifice. Is there any latitude for choice between the impossible and the disadvantageous? I believe your wisest course is to come to Japan and wait there until the fortunes of your country are again in the ascendant, and until the time arrives when your services will be again needed.' This is one of the most extraordinary epistles in military history. Here we have a former cultural protegee of China arrogantly delivering a lecture to the bewildered Chinese.

By the end of the Century the Manchu emperor was afraid that his country was 'about to sink in the earth... about to burst like an egg, about to be divided up, about to modify, about to be torn in shreds.' The great tide of history had brought the proud Middle Kingdom, the centre of the world, to such a pass. Rousseau, commenting on the Manchu conquest of China, had rightly observed: 'If neither the ability of its Ministers nor the alleged wisdom of its laws nor even the numberless multitude of its inhabitants have been able to protect this realm against subjection by ignorant and rude barbarians, of what service have been all its wise men?'

Even during the centuries of exclusion from the rest of the world, the Japanese had shrewdly kept a small window open for keeping a watch on developments abroad. This window was an artificial island called Deshima, constructed near Nagasaki in 1640, where the Dutch were allowed to retain a precarious foothold throughout the seclusion period. The island measured only 82 paces in width and 236 in main length and the Dutch were subjected to many indignities. They were required to submit annual reports about the latest happenings in the world.

The Japanese took up the challenge of Western technology in the late 19th Century and transformed their social order, to the extent necessary, to enable them to be masters of their own destiny. They learned Western techniques, military administration, political and financial arrangements and the general organisation of Western societies, so that the entire technical complex could be transplanted to Japan. Victory over China elevated the status of Japan in the comity of nations. The bewildered Japanese delegate attending the Hague Peace Conference of 1899 said to his Western counterpart: 'We show ourselves at least your equals in scientific butchery and at once we are admitted to your council table as civilised men!'

In a classic example of the projection of Darwinian ideas into political calculations, British Prime Minister Lord Salisbury declared in his sombre 'Dying Nations Speech' of May 1898 that in the dying nations 'disorganisation and decay are advancing almost as fast as concentration and increasing power are advancing in the living nations.' He added, for good measure that 'the living nations will gradually encroach on the territory of the dying ... Of course, it is not to be supposed that any one nation of the living nations will be allowed to have the profitable monopoly of curing or cutting up these unfortunate patients, and the controversy is as to who shall have the privilege of doing so, and in what measure he shall do it.' Britain would not be allowed to be at a disadvantage in any arrangement; it would, however, 'not be jealous if desolation and sterility are removed by the aggrandizement of a rival in regions to which our arms cannot extend.'

James Lorimer, Regius Professor of Public Law and of the

Law of Nature and Nations in England divided humanity, in the late 1890s, into three concentric zones – that of civilised humanity, that of barbarous humanity, and that of savage humanity, corresponding to three stages of recognition – plenary political recognition, partial political recognition, and natural or mere human recognition respectively. The zone of savage humanity covered all those peoples who were neither part of the Western civilisation nor independent non-Western states.

The military implications of fighting against savages were brought out frankly by a British delegate to the Hague Conference of 1899. 'The civilized soldier when shot' he explained, 'recognises that he is wounded and knows that the sooner he is attended to the sooner he will recover. He lies down on his stretcher and is taken off the field to his ambulance, where he is dressed or bandaged by his doctor.... Your fanatical barbarians similarly wounded, continues to rush on spear or sword in hand; and before you had time to represent to him that his conduct is in flagrant violation of the understanding relative to the proper course for the wounded man to follow - he may have cut off your head.'

Asian countries, with the exception of Japan, made haphazard attempts to incorporate Western military technology and training into societies that were still pre-modern. Technology is deeply embedded in the economic, social, political, and cultural foundations of a society; attempts to graft a particular aspect of technology, without mastering the relevant non-material and material ingredients which supported it, were doomed to failure. These futile endeavours to acquire the artifacts without the art naturally ended in human, and material waste.

Arnold Toynbee has put the matter in a nutshell: '... the secret of the West's superiority to the rest of the world in the art of war from the 17th century onward is not to be found in Western weapons, drill, and military training. It is not even to be found in the civilian technology that supplies the military equipment. It cannot be understood without taking into account the whole mind and soul of the Western society of the day; and the truth is that the Western art of war has always been one of the facets of the Western way of life.'

The mobilising force in the colonial world has been nationalism. Mass mobilisation did not follow any uniform pattern. The Indian national liberation movement, under the leadership of Mahatma Gandhi, followed the path of non-violence. Other subjected people evolved their own pathways to liberation. The first major nationalist guerrilla war in Asia resulted from the American occupation of the Philippines. The nationalists led by Don Emilio Aguinaldo were able to mobilise a force of more than 40,000 rebels, who tied down considerably larger American forces with modern weapons. The suppression of the rebellion cost some 4,200 American dead, 2,800 wounded, and the dollar cost came to about 600 million. On the other side, 16,000 rebels were killed and their corpses counted by the Americans, and about 100,000 noncombatants died from hunger and disease. The American forces resorted to various kinds of atrocities, which were investigated by a committee headed by Senator Lodge; the testimony of the committee came to 3,000 printed pages.

It was on this occasion that the bard of Empire, Rudyard Kipling, asked the Americans to

Take up the white man's burden--
Send forth the best ye breed--
Go bind your sons to exile
To serve your captives' need;
To wait in heavy harness,
On fluttering folk and wild--
Your new-caught sullen peoples
Half devil half child.

The contemporary international system of states, from its inception, has had the 'European core and a non-European penumbra.' European diplomatic practice conformed to this dual character of the international system. The treaties of Cateau-Cambresis signed in April 1559 marked a watershed in European diplomacy. According to a verbal arrangement, a line was drawn along the meridian of the Azores and the tropic of Cancer, to the west and south of which resort to arms was permissible. This was the origin of the 'amity lines' which divided the 'zone of peace' from the 'zone of war.'

The 'amity lines' reappeared in the contemporary era. The United States proclaimed a new kind of line through the Monroe Doctrine that continues to have contemporary relevance. 'Chronic wrong doing, or an impotence which results in a general loosening of the ties of civilised society, may in America, as elsewhere, ultimately require intervention by some civilised nation'; this lofty language' of the Roosevelt Corollary to the Doctrine, is, in words of Martin Wight, 'a secularised adaptation of the lofty language of the Canonists.'

'There are certain regions of the world', declared British Foreign Secretary Sir Austen Chamberlain in a Note of 19 May 1928 to the American Ambassador to Britain 'the welfare and integrity of which constitute a special and vital interest for our peace and safety' and that Britain would accept treaty commitments upon the distinct understanding that they did not 'prejudice freedom of action in this respect.' This was a British version of the Monroe Doctrine. During discussions on outlawing aerial bombing at the League of Nations Disarmament Conference in the 1930s Anthony Eden declared that his country could not subscribe to such a ban because from time to time the Royal Air Force had to bomb the 'mud huts' of the unruly tribes of the northwest frontier of the British Indian Empire.

The tide of nationalism, however, swept the entire colonial world. The willingness to suffer for the cause of liberty was eloquently articulated by Ho Chi Minh who told his opponents:

"You will tire of killing us before we tire of being killed by you!"

The Cold War period had as its most distinguishing feature peace in the industrialised world and conflict elsewhere. The Nuclear Revolution that represents the culmination of three centuries of modern science ensured the longest period of peace in Europe since the collapse of the Holy Roman Empire. An American historian even suggested that the Bomb deserved the Nobel peace prize! The developing world, however, was the arena of more than 150 instances of armed conflict.

The tectonic plates of national power have now begun to shift

under the impact of science-based technological innovation process. Technology has a paradoxical impact on world order. It integrates a larger conglomeration of states; at the same time, it also promotes and accentuates national rivalries instead of softening them. As Samuel Huntington put it, the primary objective of arms control now is 'to prevent the development by non-Western societies of military capabilities that could threaten Western interests.' This is done through 'treaties, economic pressure and controls on transfer of arms and weapons technologies.' Nuclear weapons are viewed as 'the keystone of the arch of freedom from war.' In an echo of the Roosevelt Corollary, President Gerald Ford warned on 28 October 1976 that "nuclear wrongdoing" would be considered "an intolerable violation of acceptable behaviour, which would set in motion strong and immediate countermeasures." An expanding web of technology control regimes has been established to stem the flow of nuclear, missile, and dual-use technologies.

Defence technologies have recently been shaped largely by the precision revolution. Information now is not only instantaneous but also copious beyond belief. Decision-makers have to cope with this veritable flood of information. One result of computerised command and control systems is to convert tactical into strategic problems. President Johnson personally selected each day's bombing targets in Vietnam and by the end of the day received detailed reports of the results. It was claimed that anything that crawled on the surface of Vietnam could be monitored. An electronic battlefield seemed to be almost within reach, a battlefield where nothing could move without being detected. And the precision revolution ensured that whatever was located could almost certainly be destroyed. An American B-52 pilot, operating from an air force base in Thailand, dramatically articulated the dissociation of war from violence:

'It sure is a funny way to fight a war. I mean, I have yet to even see Vietnam or Laos. I get up in the morning, have breakfast and fly off. And man, I don't see anything - just clouds, sky and sun.

I get the coordinates on the map, drop my load, and I'm back in time for beer and lunch in the base restaurant complete

with air conditioning. After a nap, I usually spend the afternoon swimming.'

The new conventional firepower rivalling the havoc of nuclear weapons was displayed during the Gulf War. Precision-guided munitions controlled by digital command and control systems, whose main characteristic is to mate the coordinates of force and target, advanced surveillance technologies, fast computers, and sophisticated information networks have altered the calculus of conventional warfare. During the Second World War 2,500 bombs were needed to hit a single target. Roughly 50 bombs were sufficient for the same purpose in the Vietnam War. Only one laser-guided bomb could destroy a target in the Gulf War. Satellites provided data on location and movement of military targets. For the first time in military history, the centre of gravity of military operations was located outside the earth's atmosphere; space capabilities were integrated into mission-planning and execution processes.

The rapid pace of technological innovation in an increasingly interdependent world has created new sources of instability. Terrorism has become a global phenomenon. Geographic boundaries are becoming less meaningful as improved remote sensing allows major powers to 'see' anything going on within another country's borders. Moreover, the autonomy to make decisions within those borders – on issues like trade barriers, energy policy or pollution standards – is seriously curtailed. Economic boundaries no longer correspond to political borders when markets span the globe. More than one trillion dollars circulate through the world's foreign exchange markets. On the day of the stock market crash in 1987, over half a billion shares were traded. During one day in 1997, over 1.2 billion shares were traded on the New York Stock Exchange. Markets are no longer geographical locations; they have been reduced to information networks connected by dots on a screen transmitted from anywhere in the world.

Martin von Creveld has, therefore, argued that since the State's functions – from waging war to providing internal security and welfare services – are on the wane, the State itself is inevitably

declining; its functions are increasingly taken over by new non-territorial and non-sovereign actors and networks. The fact remains, however, that the only economic sector to have become truly global is the money market, with finance capital able to move freely across frontiers. Most economies, however, remain largely national, and almost all multinational corporations are firmly anchored in their home bases.

Technology has, therefore, not made the nation-state redundant. Despite its imperfections, the nation-state is still the only mechanism through which human beings order their societies and conduct international affairs. In the developing countries, especially, it is the necessary instrument for the development and expansion of liberties, social justice and national unity. It is also their negotiating unit for the attainment of a more egalitarian world order.

World history since 1500 thus has been a record of the race between the West's growing power to molest the rest of the world and the desperate efforts of its victims to find an escape route from this fate, either by clinging on to their civilizational inheritance or to appropriate aspects of Western civilisation. Consequently, the world is undergoing a process of change more profound, and far-reaching than any that has occurred since the medieval world broke up in ruins. The consequently shifting balance of power between civilisations, states, and classes, involving changes so vast, in a time span so compressed, and with adjustments so convulsive, is bound to have elements of turmoil and apparent disorder. This is a world of deepening grievances in which the combined wealth of 475 billionaires exceeds the income of the poorest half of mankind. Robert Kaplan has depicted this bifurcated world in lurid colours: "Part of the world is inhabited by Hegel's and Fukuyama's Last Man, healthy, well-fed, and pampered by technology. The other, larger part is inhabited by Hobbes's First Man, and condemned to a life that is poor, brutish and short."

The first world debate in modern history between religious representatives from East and West in which four groups took part was staged by the Great Khan on 30 May 1254 in the now extinct

declining; its functions are increasingly taken over by new non-territorial and non-sovereign actors and networks. The fact remains, however, that the only economic sector to have become truly global is the money market, with finance capital able to move freely across frontiers. Most economies, however, remain largely national, and almost all multinational corporations are firmly anchored in their home bases.

Technology has, therefore, not made the nation-state redundant. Despite its imperfections, the nation-state is still the only mechanism through which human beings order their societies and conduct international affairs. In the developing countries, especially, it is the necessary instrument for the development and expansion of liberties, social justice and national unity. It is also their negotiating unit for the attainment of a more egalitarian world order.

World history since 1500 thus has been a record of the race between the West's growing power to molest the rest of the world and the desperate efforts of its victims to find an escape route from this fate, either by clinging on to their civilizational inheritance or to appropriate aspects of Western civilisation. Consequently, the world is undergoing a process of change more profound, and far-reaching than any that has occurred since the medieval world broke up in ruins. The consequently shifting balance of power between civilisations, states, and classes, involving changes so vast, in a time span so compressed, and with adjustments so convulsive, is bound to have elements of turmoil and apparent disorder. This is a world of deepening grievances in which the combined wealth of 475 billionaires exceeds the income of the poorest half of mankind. Robert Kaplan has depicted this bifurcated world in lurid colours: "Part of the world is inhabited by Hegel's and Fukuyama's Last Man, healthy, well-fed, and pampered by technology. The other, larger part is inhabited by Hobbes's First Man, and condemned to a life that is poor, brutish and short."

The first world debate in modern history between religious representatives from East and West in which four groups took part was staged by the Great Khan on 30 May 1254 in the now extinct

town of Karakorum in Mongolia. Flemish Franciscan William of Rubroek faced representatives of Nestorian Christians, Muslims, and Buddhists. Unfortunately we do not have the names of Nestorian, Buddhist and Muslim participants in this extraordinary dialogue; we only have William's diary to rely upon. William, well versed in the art of conducting a religious dialogue, dissuaded his restless Nestorian colleagues from quoting scriptures. 'If you recite one Scripture our enemies will reply with another', he warned them. When the Nestorians wanted to take on the Muslims he pointed out that as Christians and Muslims agreed on the basic issue of the nature and existence of God, they could start as allies against the Buddhists. In a dispute with the Muslims, however, the Christians would be without allies.

On a procedural issue, when the Buddhists suggested a discussion on how the world came into existence and on life after death as a starting point for the debate, William cautioned that this might not be a good beginning. He proposed that they should initially focus on God, about which the Buddhists differed from the other colleagues. The Arbiters appointed by the Great Khan agreed; and for the rest of the day they debated versions of monotheism and polytheism. The Nestorians were still itching for a bout with the Muslims, who declined to respond saying "We concede that your law is true and that the Gospel is true; we have no wish to dispute with you."

The account bequeathed by William of Robroek presents the narrator as an expert in the art of conducting an intellectual argument, the Nestorians as impatient debaters and the Muslims as potential intellectual friends. William, however, does not say much about the subtle arguments that the Buddhists, no doubt, must have presented. What is of contemporary interest is the setting and organisation of the dialogue, the good temper and dialectical skill of the participants and the attempt to reach out to adversaries without harping on contentious issues.

Pakistan - Iran Relations in the Aftermath of 11 September 2001

Major General Ashok Joshi (Retd)

Relations between nations are governed by factors visible and occult. A common political ideology, sharing of vision for the common good of the people, religious and cultural identity, and reasons of economy, can be cited as some of the factors which sculpture international relations. Inter-state relations, thus, do not remain static but change with the iridescent political or economic situations- sometimes dramatically. This is to be observed in the post 11 September 2001 actions of Pakistan. Pakistan has forsaken Taliban whom it had helped in its meteoric rise at one point of time. In his present scheme of things Taliban's obduracy does not suit Pakistan's perceived national interests ensuing in President Musharraf issuing a bold warning to Taliban's Mullah Omar and offering to become a frontline state of the USA. It would be cynical and unwise to conclude that *realpolitik* alone dictates relations between two states. Equally, it would be foolish to ignore such a recorded proof from history which doubtless will affect Pakistan-Iran relations.

Geo-political Realities of the Middle East Region

The immediate environment of Iran is the political geography of Middle East with the Persian Gulf as its sub-region. Iran has regulated its defence policy to conform to the existing realities. The problems relating to the geographical realities are as under :-

- (a) Strategic interdependence of the sub-regions of the Middle East, such as the Persian Gulf, North Africa etc., rule out the possibility of separate security mechanisms.
- (b) Domestic, political or economic concerns prevent unilateral measures within the region. These very structural vulnerabilities motivate regional players to follow up with alliances. This is typically true of the Arab nations.

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(c) The Middle East is an extremely militarised region throughout the globe and arms export to this area is substantial.

(d) The region's alliances are unstable and liable to change. This causes instability in the region and elevates opportunism.

(e) The alliances in the Middle East are essentially bilateral and not multilateral in content particularly in the Persian Gulf sub-region. The member states of the Persian Gulf Cooperation Council (PGCC) have stressed joining defence and security treaties with the USA, the Britain and France to guarantee security.

(f) Political dialogue among opposing states is an exception rather than a rule.

The Middle East is a troubled region as regards the security scenario. The conditions in Iran are even more complicated than the other Middle East nations. This is so because :-

(a) Ever since the Islamic Revolution of 1979, Iran has had ideologically based tension, clashes and hostility with the (former) Soviet Union and the USA. This has posed various challenges to Iran.

(b) The governments of Egypt, Algeria and Tunisia have accused Iran of deliberately assisting militant Islamic movements and political organisations which initiate violence and terrorist activities. Iran, however, insists on exporting its Islamic Revolution to the Arab and other Muslim countries.

(c) Iran, unlike many other countries of the Middle East, has not become a state party to any security or military treaty with powers outside the region, hence safeguarding its security lies on its own shoulders.

(d) The Iran-Iraq War (1980-88) has made many Iranians believe in self reliance. Modernisation of Iranian Armed Forces is thus a legitimate requirement though many consider it to be a threat to the Middle East.

Security Needs of Iran

Notwithstanding the US and Israel propaganda against Iran's military programme the fact is that Iran has not launched a military attack on any nation in the last 150 years. On the contrary, Iran has been invaded by Allied Forces in World War I and II despite having officially announced its neutrality. Iran's lack of interest in territorial expansion in its immediate neighbourhood has not varied, but Iraq and the UAE claim certain portions of Iran as their own. It, therefore, follows that Iran basically seeks to establish a balance of military power vis-a-vis its rivals, specially Iraq. To this end, on 6 October 2001, Iran has concluded 600 million worth of arms deal with Russia.

The most probable danger threatening Iran today as emphasised in its national defence policy is a planned attack by Iraq eventually leading to an extended dispute over Shatt-al- Arab. The aggravation of Iran-UAE dispute over the sovereignty of the three islands - Lesser Tunb, Greater Tunb and Abu Musa is of extreme importance. It could well lead to a US intervention. Another important factor is the perceived threat from Israel. It is clear that should the Iranian nuclear reactor at Bushehr get completed Israel may attempt its destruction. Iran, therefore, has to think of a strategy to counter this threat. So long as Saddam remains in power, specially since many of the original problems remain, a threat from Iraq appears plausible.

It is in this background that in the Iranian perception, a policy of deterrence, as it were, appears a better option than a large scale conventional war. Hence there is an emphasis on modernising the mechanised forces, and training the Air Force and the Navy in defensive operations to protect their oil installations against attacks. The Navy is being modernised to protect itself against Iraqi attack and protect oil rigs which were shelled during the Iran-Iraq War. The three islands dispute remains despite Iran's repeated calls for a peaceful and bilateral settlement. According to Iran the dispute remains unsolved mainly because of US provocation and in order to justify American presence in the Persian Gulf, and to portray Iran as a major threat to the weaker nations of the region. After Khatami came to power in 1997, the tension over the three islands

has decreased but it would be premature to say that the crisis is over. In the Iranian perception or paranoia, the aggressors would be the member states of Persian Gulf Cooperation Council because they have American backing. Since Persian Gulf states are surrounded by water, war would be very laborious. Thus, even though a threat from the US, the UAE and the Persian Gulf states is considered a low priority, Iran's defence policy takes note of it.

In 1981, Israel had destroyed Iraqi nuclear reactor at Osirak. This swift and successful blitzkrieg haunts a majority of the Muslim nations. Israel has signed a treaty with Turkey which allows it to take advantage of their air bases, which makes Israel come closer to the Iranian borders. Iran is making all out efforts to improve its air defence capability against air raids by the Israeli Air Force. After testing its Shahab-3 missiles in July 2000, Iran is breathing somewhat easier as these missiles can threaten Israel's mainland directly. On the other hand, Israel's efforts with Turkey and Azerbaijan have borne fruit to cause security concerns in Iran as regards its Northern and North-Western borders.

Central Asian Republics and Iran

With the birth of independent Islamic countries that were once a part of the former Soviet Union, Iran has been able to strengthen its ties with these countries and extend its influence as a part of a larger operation to build up its regional and international position. These nations represent large markets for Iran. These nations also possess sophisticated conventional and nuclear weapons which are important for modernising the Iranian military machine. There are unconfirmed reports that Iran has managed to obtain ten nuclear warheads from Kazakhstan in return for oil and hard currency. This is at variance with a CIA estimate that Iran will acquire nuclear capability by 2005-2007. Iran has sought to strike a balance between Central Asia and Afghanistan on one side and the Arab world on the other. The Iranian strategy of filling the vacuum in Central Asia and the Caucasus has concentrated since 1992 on the bloc of nations overlooking the Caspian Sea. This block includes Pakistan, Turkey and Iran as well as the Central Asian States less Kazakhstan. Notwithstanding the efforts by Iran, Turkey has made greater gains. The radical religious pattern of Iran (despite

'moderate' Khatami) has strict rituals which differ from the cultural heritage. This makes the Islamic secular 'Ataturk' pattern more acceptable to these republics. Turkish is the predominant language in this region and all the Islamic republics, with the exception of Azerbaijan, are Sunni all of which makes the Turkish pattern more appealing. Iran continues to make efforts to ensure that Caspian Sea remains the 'Sea of Peace'. If equitable sharing is accepted, Iran will get 20 per cent share of the oil there. Equally vital is the pipeline for export of crude oil through Turkmenistan and Iran as also the gas pipeline through Pakistan to India. In sum, there are huge commercial interests. Pakistan does not have direct access to the Central Asian Republics and that is another reason for it to desire a government in Afghanistan which is favourably inclined to Pakistan's interests.

Impact of International Events on Iran's Psyche

The serious challenges and competition existing over the ownership of oil reserves in the Caspian Sea, have led to certain problems for Iran. Earlier, in 1979, consequent to the capture of the US Embassy in Tehran by students, Iran suffered sanctions imposed on it by numerous nations. The Iranian student representative, Ebtekar's, proclamation that they were at war with the USA and that America is dominated by 'Zionists' is indicative of the mindset. It is astonishing that Iran convinced itself of absence of freedom of press in the USA, while in Iran the ruling clerics closed dozens of Iranian newspapers. Under the ruthless directives of Ayatollah Khomeini, thousands of moderates who had dared criticise the Government or dared to express support for the West were ferreted out and their imprisonment or execution ordered summarily. Iran's efforts to "export" Islamic revolution have resulted in thousands of deaths in Algeria. The only minorities recognised in Iran are the Zoroastrians, Jews and the Christians – who are permitted to practise their religion " within limits of the law "as per Article 13 of the Constitution. The Bahai's are an outlawed Islamic sect and are not allowed to practice their religion. In 1980, the Iranian Government passed orders to the effect which excluded Bahai's from University education and civil service. For the past 20 years, Iran has scrupulously avoided mentioning its involvement in any terrorist activity that had resulted in the death of the

Americans, though its support of the terrorist organisations including Hamas, training camps of terrorist outfits, etc is well known. Many Islamic countries that are more fundamentalist than Iran, such as Saudi Arabia, have looked at the Shi'ite revolution in Iran as a threat to their Sunni establishment.

Political Establishments in Iran and Pakistan

While to the uninitiated the political infrastructure in Iran would appear to be meeting with the people's aspirations, in truth it is just the opposite. The electorate selects the Parliament (majlis) and the President. State organs like Cabinet, Armed Forces, Head of Judiciary, Supreme National Council. Guardian Council and Assembly of Experts exist. However, it is the Supreme Leader, established by Ayatollah Khomeini who holds absolute power. The Supreme Leader stands at the top of Iran's political power structure. He appoints the head of judiciary, clergy members on the powerful Council of Guardians, commanders of the armed forces, head of TV and Radio and Friday prayer leaders. Incidentally, he also confirms the President's election. The Supreme Leader himself is chosen by an Assembly of Experts comprised of clerics. There has been some tension between the office of the Supreme Leader and the office of the President. This reflects the deeper tensions between the orthodoxy and the democratic aspirations of the Iranians who chose Mohammad Khatami in 1997 and re-elected him in the new millennium. The challenge before President Khatami is to arrive at a synergy between the ethical and moral codes of Islam with the modern institutions of democracy. Khatami has been a part of the establishment for decades and that explains why he has been able to speak his mind and take action that is unthinkable in an Islamic country. He has closed the Salman Rushdie issue and restrained the bloodletting by Iranian Intelligence of the intellectuals; yet he was astute enough not to confront either Khomeini or Khamenei. Khatami has expressed admiration for the Americans, and called for cultural exchanges between the two nations. Khatami has shown a breadth of vision not commonly associated with Islamic political leaders when he wrote "backwardness of religion lay in ascribing sanctity and eternity to the limited and incomplete interpretation by humans and giving

priority over rationality and realistic appraisal." At another place he has said " a dogmatic believer ... who wants to return to Islamic civilisation ... we must alert such people that their views are anachronistic. " Yet in the current crisis in Afghanistan, when the world's majority desire surrender of Osama Bin Laden and other Al Qaeda members, Khatami has remained silent. He has quietly acquiesced with the Supreme Leader, neither approving of military action against Taliban nor permitting use of Iran's air space and bases. The war between Northern Alliance and Taliban and the current imbroglio involving a superpower with the attendant refugee problems have made Iran's eastern border insecure. Earlier, Iran had exercised remarkable restraint when Taliban had killed Iranian diplomats in Afghanistan. In the event, Iran has preferred to remain neutral in the fight against terrorism, at least for the present. Iran's main concern is to block any attempt to revive Pashtuni political supremacy while ensuring the participation of its Tajik and Hazara allies. In the past, Pakistan and Taliban had systematically reduced, and then eliminated, the influence of *Hizb-i-Wahadat* and Hazaras as both are Shia.

Pakistan is truly a one man show. There is no pretence of any democratic order. It is dictatorship – plain and simple. True to its core values, the ruling elite in Pakistan has always been ardent practitioner of realpolitik - they survive by turning a crisis in to an opportunity. It is on record that Taliban owes its growth and existence to Pakistan. Pakistan has also raised terrorist groups on its soil and has openly supported such organisations through their ISI (Inter Services Intelligence). Yet, after 11 September 2001 terrorist strike on the US, President Pervez Musharraf abandoned Taliban and adopted the mantle of a frontline state of a democratic super power. This is the same Musharraf who after usurping the office and the title of Chief Executive, had scotched the order of ousted Prime Minister Nawaz Sharif taken in consonance with the CIA to target Osama Bin Laden! Musharraf enjoys two major advantages over Khatami. The first is that being a dictator he enjoys full authority – he has dismissed the ISI Chief and superceded two senior Generals who were reportedly against the US action of 7 October 2001 and, the second, is that he seems to lack conscience. Musharraf wants to ensure a government in Kabul

which remains favourable to Pakistan. He remains openly hostile to Northern Alliance but was also willing to embrace King Zahir Shah entirely forgetting Pakistan's earlier opposition to the King. Iran has shown somewhat greater astuteness by not showing her hand and by castigating the USA for attacking Taliban. This is of significance as the 56-member Organisation of Islamic Conference, in its meeting on 9-10 October 2001, in Doha, Qatar, have unanimously condemned the terrorist attacks on the USA and yet have expressed the hope that America will not attack any other Muslim nation. It is interesting to note that Iran supports Northern Alliance which is representative of all Afghan people less Pashtuns. Pakistan would not like a preponderance of Shias in the new Afghan government. Afghanistan will continue to be a bone of contention between Iran and Pakistan.

Economic Relations between Pakistan and Iran

Ever since the establishment of diplomatic relations in 1947 between the two nations, Pakistan has left no stone unturned to cultivate Iran. Pakistan's trade with Iran stands at \$11.480 million exports and \$130.277 million imports. A study from 1996-97 onwards indicates that Pakistan's imports are far in excess of their exports and the balance of trade remains tilted in favour of Iran. Further, the bilateral trade had shown a steep downward trend in 1998-99. This has, however, shown an upswing the very next year. Possibly this is a result of VIP visits, and efforts of the ECO, D-8 and the Pakistan-Iran Joint Economic Commission (JEC). Pakistan is keen to give trade a boost and its major exports to Iran include rice, yarn, synthetic fibres, paper and paperboard. Its imports from Iran are petroleum and petroleum products, fruits, vegetables, ores and concentrates of iron and steel and raw cotton. Pakistan would like Iran to import wheat, surgical goods, sports goods and toys to help reduce trade gap. During his visit to Iran in December 1999, President Musharraf had conveyed to President Khatami, Pakistan's willingness to progress Iran-India gas pipeline project. The proposal envisages laying of 2670 km (on land) pipeline with a capacity of 3260 (MMCFD) at a capital cost of \$ 5 billion. The reason for Pakistan's willingness is because the project envisages 1000 MMCFD gas delivery to Pakistan.

Pakistan's Game Plan - Leadership for the Muslim World

Unlike Iran, which has more than a thousand years of history and culture, Pakistan is a fledgling nation in a state of confusion and turmoil. Ever since its birth in 1947, Pakistani people have not had leaders of stature with the result that its people have not known democracy. Run by the military, Pakistan has suffered right from its inception with a sense of inadequacy and paranoia as its policies are Indo-centric. Actions speak louder than words. Pakistan has attacked India in 1948, 1965, 1971 and in 1999, unfortunately with a singular lack of success and with disastrous results to its economy. In fact, as a result of its oppressive policies, Pakistan lost its Eastern wing. Pakistan has not forgotten its decisive defeat at the hands of the Indian Armed Forces in 1971 and has, therefore, helped the terrorist groups of Afghanistan and its North West Frontier Province to perpetrate unspeakable atrocities on the hapless people of Jammu and Kashmir. A quick change artist, Musharraf terms plunder of Jammu and Kashmir by rapacious groups like Jaish-e-Muhammad and Lashkar-e-Tayyeba as a war of independence; something that has not fooled anyone. Even the USA is now beginning to recognise these outfits as terrorist groups.

Pakistan has been attempting to woo Islamic countries of the Middle East notably Iran. President Musharraf has visited Iran in 1999 and 2000. It is interesting, however, that President Khatami has not reciprocated the visits by the Chief Executive of Pakistan. Pakistan has tried to explain to the Iranians at various levels, why Pakistan and Iran should coalesce their forces. In this its paranoia with India has come handy. In its perception the development of Agni 2 missile, GSLV and ICBM with attendant suggestion of SLBM system in the Indian nuclear doctrine is aimed at South Asian geopolitical milieu inclusive of Iran! It is Pakistan's narrow minded belief that nations are identifying multiple levels of congruent interests and thence grouping together. The rationale for Pakistan and Iran to get together is that Iran is an ideal strategic ally, given the lack of spatial depth of Pakistan. In fact Pakistan sees China, Afghanistan and Iran as the key to covering Pakistan's flanks. Since Iran is moving towards a pro-active security policy in the

Gulf region which may be hastened with the ongoing Afghanistan crisis, Pakistan can provide military linkage with the Gulf countries and Saudi Arabia. Further, it can provide the basic structural framework for a strategic relationship. Pakistan feels that such an alliance will reduce the Gulf region's dependence on the West given Pakistan's capabilities and potential. The most important point in Pakistan's perception, however, is that there is a growing alliance between NATO and non-Muslim, non-European states and that the US and the EU perceive a threat from a resurgent Islam. The example of a secular Turkey is cited which cannot gain admittance in EU as it is a Muslim nation. While Huntington's theory may or may not be accepted by the Islamic nations, even before the terrorist attacks on America some Muslim intellectuals of Pakistan believed that the antagonism between Muslim world and the West will grow. Many Muslim intellectuals seriously believe that "gradually the West is building up a psychosis in its policies towards Islam ... very similar to what Hitler did towards Jews" and unless the Muslim World is prepared, it will be overwhelmed by this anti-Islamic onslaught from the West. Notwithstanding Pakistan's attempt to propagate such outlandish theories, and despite Islamic fundamentalists in Iran itself, Khatami is likely to thwart any return to religious bigotry.

In Pakistan's thought process the US and the EU are firmly with Israel and a new relationship is being evolved with India. Pakistan is propagating that Indian hegemony threatens even West Asia! It is most unlikely that Iran will fall for such ridiculous thinking. It is not easy to assess just where Iran will position itself in this war against terrorism. Pakistan would like Indo-Iran relations to deteriorate and was doing its best in that direction till the US attack on Afghanistan brought out the clash of Pakistan-Iran interests regarding the future government of Afghanistan. Iran has deep misgivings about Pakistan's role in Afghanistan. Partly, this is a result of sectarian influences and partly due to genuine divergence of interests in Afghanistan. Iran has always sought a greater participation of Shias and Persian speaking Afghans in post-communist governments. Pakistan sees it otherwise as the pre-Soviet invasion period, Pashtun speaking and Sunni groups made up the Afghan government. Pakistan believes that Iran would

like to see Afghanistan remain destabilised in order to exploit economic advantages in Central Asia which otherwise might flow to Afghanistan and Pakistan. In the Kargil War, Pakistan chose a Shia dominant area (Kargil) for its attack which was not liked by Iran. Pakistan has attempted to disown any responsibility for the sectarian violence on its soil where members of the Shia community have been systematically targeted. In fact, Pakistan has attempted to term these internecine blood-baths as proxy wars and has suggested a dialogue between Iran, Pakistan and Saudi Arabia.

Pakistan would like to suggest to the Islamic World – specifically to Iran, Saudi Arabia and the Gulf States – multiple levels of linkages. A programme, in Pakistan's perception, could be considered along the following lines :

- Islamic ethos.
- Cultural and historical ties.
- Common economic interests.
- Concept of Islamic Bomb and Pakistan's nuclear capability.
- Growing military potential of Iran.
- Iran's energy resources and Pakistan's manpower potential.

There is a commonality of problems in Iran and in Pakistan. There is widespread corruption in their respective government institutions. There is a monopoly of major industries in Iran, held by a semi-private foundation under the authority of the Supreme Leader, Ayatollah Khamenei. Both countries are unable to ensure complete security for private or foreign investments. All this points to a lethargic recovery.

The American war against terrorism, declared by President Bush and approved by the G-8 nations, would last predictably a long time even after the curtain comes down on the war in Afghanistan. Already there are signs that clerics and misguided dictators of the Muslim World are calling the faithful to harbour, aid

and abet terrorists; and some of them would continue to do so. In the foreseeable future, President Khatami will continue to toe the line of the clerics. It would require a dispassionate examination by all democratic nations of their polity, systems, policies and people to eliminate the scourge of terrorism. The fundamentalist will no doubt try to find ways and means to survive this onslaught. If the Muslim card is played well by Pakistan, Iran-Pakistan relations may improve although the Shia-Sunni divide and realpolitik seem to indicate otherwise and Iran is likely to see through the game plan of Pakistan. Already, on 12 October 2001, the Pakistani Embassy in Tehran has been attacked by the hardline Iranian demonstrators. For Pakistan and for President Musharraf it is a struggle for survival. After all, running with the fox and hunting with the hounds is never a recipe for good health.

It appears that Pakistan's cup of woe is overflowing. The pulverising air attacks by USA have literally broken the back of Taliban which include Pakistanis, Chechens and Arabs. It is not to General Musharraf's liking that the USA is helping Northern Alliance to seize key cities including Kabul. The Conference in Bonn has progressed with four warring factions making conciliatory noises; after all the donor nations pledge of a multi-billion dollar aid to Afghanistan is contingent to a stable government in Kabul. The Interim Council and an Administrative arrangement has been set up. The situation is fluid and India must continue to help rebuild Afghanistan and forge economic and cultural alliances with Iran. While the latter has quietly ensured Shia presence in Bonn, Pakistan has been left smarting and has no choice but to accept what the Afghans decide regarding its future. General Musharraf is likely to give his undivided attention now to Jammu and Kashmir. India needs to anticipate the winds of change and take suitable proactive measures.

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Use of Chemical and Biological Weapons by Terrorists

Squadron Leader Rahul Monga

Introduction

With proliferation in Chemical and Biological Weapons (CBW), the possibility of use of CBW by terrorists on unsuspecting civil and military targets poses a serious problem. These weapons have the capability to cause fatalities and injuries on personnel on a large scale.

There is such a broad selection of CBW exhibiting such diverse characteristics that the very nature of these substances makes them suitable for terrorist use. There are many advantages for terrorists to use CBW, and the disadvantages that do exist seem quite small. In general it seems that CBW may soon become a key component in the terrorist arsenal. If this threat is left unchecked, the world's population may soon live under a dark cloud of constant fear; the fear that any crazy person, terrorist, or activist group has the potential to commit random acts of brutal mass murder at low cost and low risk to themselves.

The aim of this paper is to examine the issue of chemical and biological weapons, likelihood of their use by terrorists and suggest some solutions for reducing threat levels and increasing public awareness and safety. The following aspects will be covered:

- (a) Working definitions.
- (b) Classification of Chemical Weapons (CW).
- (c) Classification of Biological Weapons (CBW).
- (d) Some examples of terrorist use of CBW.

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- (e) Advantages of use of CBW to terrorists.
- (f) Disadvantages of use of CBW.
- (g) Tactics of acquisition and dissemination.
- (h) Suggested solutions.
- (i) The Future.

WORKING DEFINITIONS

Chemical Agents. All substances employed for their toxic effects on humans, animals, and plants. This definition excludes chemicals employed in warfare such as high explosives, smoke and incendiaries (e.g., napalm, magnesium and white phosphorous), which exert their primary effects through physical force, fire, air deprivation or reduced visibility.

Biological Agents. Those agents that depend for their effects on multiplication within the target organism, and are intended for use in war to cause disease or death in humans, animals or plants. This excludes toxins elaborated by some microbes (e.g., botulinal toxin and staphylococcal enterotoxin) when they are performed outside the target organism.

Lethal Agent. An agent which is intended to cause death when humans are exposed to concentrations well within the capability of delivery for military or terrorist purposes. In lower doses, such agents can cause severe and sustained disability.

Incapacitating Agent. An agent which is intended to cause temporary disease or to induce temporary mental or physical disability, the duration of which greatly exceeds the period of exposure.

Harassing Agent. An agent capable of causing a rapid disablement that lasts a little longer than the period of exposure.

Casualties. Deaths or disabilities.

- (e) Advantages of use of CBW to terrorists.
- (f) Disadvantages of use of CBW.
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- (h) Suggested solutions.
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CLASSIFICATION OF CHEMICAL WEAPONS

Chemical agents are inorganic substances used in warfare to attack the organs of the human body in such a way that they prevent those organs from functioning normally. The results are usually disabling to various degrees or fatal. The broad spectrum of chemical agents capable of causing damage to living organisms often makes discussion of such compounds difficult. This paper shall be limited to substances affecting humans only. There are three major categories under which chemical agents may be classified.

Lethal Agents

A variety of tissue irritants and systemic poisons have been developed into lethal chemical agents. Generally speaking, they include *Choking* agents, *Blister* agents, *Blood* agents, *Nerve* agents and lethal *toxins*.

(a) **Choking Agents.** Choking agents were the agents most used during World War I, but have lost much of their usefulness since the advent of the nerve agents. These agents injure unprotected men chiefly in the respiratory tract. These substances are intended to cause death and offer their greatest advantage to terrorists by being easily obtained. Phosgene or CG, a choking agent, is a common industrial chemical with a moderate lethal dose.

(b) **Blister Agents.** Blister agents are intended to cause incapacitation rather than death. They affect the eyes and lungs and blister the skin. These agents were used extensively during World War I, and their use by a terrorist group depends largely on the group's objectives and moral standing. Obviously, if the intention of a chemical attack is to injure many people and overload medical facilities while causing as few deaths as possible, then a blister agent such as *lewisite* or *mustard gas* may be the best choice.

(c) **Blood Agents.** Cyanide based compounds are the main components of blood agents. *Hydrogen cyanide* (AC) is a

blood agent that has a lethal dose slightly higher than that of phosgene, but is less effective due to its rapid rate of evaporation. These compounds are not really suited for use on large numbers of people, so their primary role would most likely be in assassinations.

(d) **Nerve Agents.** The newest trend in chemical weapons has been the nerve agents. German scientists developed the original nerve agents during the 1930s and the Nazi military then developed commercial insecticides into chemical weapons. Since then, these agents – *sarin*, *tabun*, *soman*, and others have been the main stockpiles of chemical weapons. In general they are thousands of times more lethal than blister, choking, and blood agents. These chemicals are the most useful to terrorists because of the small quantity needed to inflict a substantial amount of damage. A moderately competent organic chemist can synthesise VX and *sarin*, the most toxic of the nerve agents, with limited laboratory facilities.

(e) **Toxins.** Toxins are naturally occurring toxic proteins of high molecular weight. Some of them are extremely poisonous. Important is the *botulinal* toxin, which is one of the most poisonous toxic substances known. It can be extracted on a fairly large scale in bacteriological laboratories from the bacteria *Clostridium Botulinum*. Another toxin, *ricin*, is potentially available on a large-scale as a by-product of castor beans processing.

Incapacitating Agents

These agents could be used by terrorists to create panic, confusion and shock in the target population. Lethality will be minimal, but these can be used to instill fear and can be used for purposes such as blackmail and harassment.

(a) **Bacteriological Enterotoxins and Related Substances.** Many bacteriological toxins can produce acutely incapacitating effects at sub lethal doses. Typical effects of this type are pyrexia (abnormal temperature and pulse) and diarrhoea. *Staphylococcal enterotoxin* is one example.

(b) **Psychochemicals.** Several potent psychotropic drugs are potential incapacitating agents. They cause behavioural disturbances and some may also cause physical incapacitation. *LSD* and agent *BZ* are some known psychochemicals.

Harassing Agents

Harassing agents are short-term incapacitating agents. They are sensory irritants and cause lachrymation, vomiting and pain. Some of these are often used by the police for riot control e.g., *CS* more commonly known as tear gas. These could also be used by terrorists in crowded areas for shock effect.

CLASSIFICATION OF BIOLOGICAL WEAPONS

A large variety of microorganisms can be used as biological agents. Many of these agents can be produced and used as weapons with relatively simple techniques. They can be classified on the basis of the causative microbes and resulting infections. The various types of infections are:

- (a) **Viral Infections.** Such as yellow fever, tick-borne encephalitis, Japanese encephalitis, Dengue, Rift Valley fever, influenza and smallpox.
- (b) **Rickettsial Infections.** Such as typhus, Q fever, Rocky Mountain spotted fever.
- (c) **Bacterial Infections.** Such as plague, anthrax, tularemia, brucellosis, typhoid.
- (d) **Fungal Infections.** Such as coccidioidomycosis.

SOME EXAMPLES OF TERRORIST USE

In 1978, a Palestinian group injected cyanide into citrus fruit exported from Israel. In the Philippines, Huk guerrillas poisoned pineapples that were due to be exported. In both these instances, the rapid response of the authorities and the discovery of the poisoned fruits thwarted the terrorists.¹

In 1994 and 1995 there were two instances of the use of *sarin* against the civilian population by terrorists. The first was in Matsumoto, a mountainous town in central Japan. Seven people died. There were two hundred casualties, who suffered symptoms of organo-phosphorous poisoning. In the second instance, on the morning of 20 March 1995, there was a poison gas attack on commuters travelling in five trains on the Tokyo underground railway system. Seven people were killed and 122 injured seriously of which five died later on. Around 5,500 people had to seek medical attention. The attack also created widespread panic and disruption when threats of further attack followed.²

In an incident in April 1997, which raised fears of BW terrorism in the USA, a package with a broken petri dish and a note indicating that the petri dish contained *anthrax* and *plague* was left outside the Washington headquarters of a Jewish organisation B'nai B'rith. Tests proved negative for a variety of biological agents. During the incident over 100 people were trapped inside the building for over eight hours, an event which highlighted the inadequacies of existing emergency measures against CBW terrorism.³ A few other reported instances are given below.

(a) In the February 1993 bomb attack on the World Trade Centre in New York, five people were killed and 1,000 people injured. The judge in the subsequent trial indicated that the bombers might have put sodium cyanide in the bomb but that it vapourised in the blast.

(b) In May 1995 a man in Ohio was arrested for attempting to purchase *bubonic plague* cultures through mail.

(c) An Arkansas farmer was arrested for possession of 130 g of *ricin*, which could have killed thousands of people, in December 1995. He was later found hanging in his jail cell.

(d) The German police confiscated a coded diskette with information on how to produce mustard gas from a neo-Nazi group in February 1996.

(e) The US FBI has reportedly found chemical and biological

agents in possession of several individuals and revolutionary groups. Some examples are :

- (i) *Cyanide* held by the Revolutionary Action Movement in 1967 and the Covenant Sword in the Arm of the Lord in 1985.
- (ii) Cultures of *typhoid* bacteria held by the Order of the Rising Sun, which was planning to contaminate US water supplies in 1972.
- (iii) *Nerve* agent on a potential assassin who was planning to kill the US President in Washington in 1974.
- (f) In 1984, the Parisian police found a culture of *clostridium botulinum* growing in a safe house of the Bader Meinhof gang.
- (g) In 1991, German authorities foiled a plot by neo-Nazis to pump *hydrogen cyanide* into a synagogue.⁴
- (h) In 1984, the Rajneesh cult was accused of poisoning some 750 people by contaminating salad bars with *salmonella* in restaurants near Antelope, Oregon, to influence the outcome of local elections.
- (j) In 1987, a federal grand jury indicted 14 white supremacists for plotting to poison water reservoirs in Chicago, Illinois and Washington DC with cyanide.
- (k) In 1987, the Confederate Hammer Skins reportedly planned to place *cyanide* crystals in the air conditioning unit of a Jewish synagogue in Dallas.⁵
- (l) In 1978, *ricin* was used for the purpose of assassination in the killing of the Bulgarian exile, Georgi Markov.⁶

ADVANTAGES OF USE OF CBW TO TERRORISTS

Chemical Weapons

The use of chemical agents offers many advantages to the terrorists who use them. Many of these advantages are unique, or in other words exhibit qualities which conventional weapons

lack. The other advantage is the severity of the effects of chemical weapons. These advantages include the limited capability of anti-terrorist groups for detecting such weapons, the low cost and low technology required to develop chemical weapons, their extremely frightening image and the overall efficiency of such weapons.

One of the difficulties that have long plagued chemical warfare defence also lends difficulty to counter-terrorist capabilities. This is the lack of effective detectors. Very few chemical warfare agents can be reliably detected when in use. And these substances are virtually impossible to detect when stored in a closed container. This lack of available detection technology makes chemical warfare agents ideal to transport and conceal.

CW have long been considered "the poor man's atomic bomb" due to their relative low cost and ease of manufacture. For a large-scale operation against a civilian population, casualties might cost \$2,000 per square kilometre with conventional weapons, \$800 with nuclear weapons, \$600 with nerve-gas weapons and \$1 with biological weapons. The argument that chemical weapons are too difficult for most terrorists to manufacture has been discredited by many studies and reports. Covert laboratory scale production by trained chemists can be readily accomplished, as the processes are available in open literature. These factors make chemical weapons attainable not only to well-funded terrorist groups but also to any disgruntled person or lunatic.

One of the aspects which makes chemical weapons such an appropriate weapon for a terrorist is their highly terrifying nature. Ever since the first use of chemical weapons, civilians and soldiers alike have criticised them. They have been considered unconventional, uncivilised, and even gruesome. These adjectives have also been employed often when describing terrorists. In general, terrorists thrive off the shock factor of their activities and chemical warfare exhibits a high degree of shock factor. Therefore, the use of chemical weapons may "enhance" the image of a terrorist group. In the recent past, the public has become sensitised to the conventional methods of terrorists. Terrorists, therefore, may take recourse to these weapons to take control of a situation which, they may feel, is slipping out of their hands.

The final advantage offered by CW is their enormous ability to inflict casualties. These weapons are extremely cost effective and many times weight effective than conventional explosive weapons and are ideal area weapons. The overall efficiency of chemical warfare agents, combined with all of the previously mentioned advantages, makes a frighteningly inexpensive, undetectable, and efficient weapon.

Biological Weapons

Biological weapons are more potent on a weight to weight basis than chemical weapons. Terrorists may be attracted by the prospect of using smaller and less costly amounts of biological agents to inflict a larger number of casualties over a larger area. The downwind hazard area of biological weapons is much more than that of chemical weapons*. The fact that these agents are even more difficult to detect than chemical agents (as of now, they can be successfully detected only in laboratories) make them ideal for sabotage and widespread indiscriminate contamination. Furthermore, as biological agents multiply, they can cause epidemics. Another factor favouring biological agents is the time lag between release of the agent and the onset of effects, which will enable the terrorists to make a getaway.

DISADVANTAGES OF USE OF CBW TO TERRORISTS

As with all methods of terrorism, there are disadvantages to the use of CBW. In the past, terrorists have normally preferred low-tech weapons and other equipment. This is because of affordability, ease of acquisition, proven reliability and little requirement of specialist training. CBW do not fall in this category of low-tech weapons. They are not that cheap, are more difficult to acquire and have unpredictable and uncertain consequences. Furthermore, they might not fit in with the tactical plans of a terrorist group, which may call for a swift, bloody and dramatic explosion or some such happening.

*The downwind hazard distance for a typical chemical agent is of the order of a few kilometres, whereas it is of the order of hundreds of kilometres for a biological agent in favourable and comparable meteorological conditions.

CBW are also liable to prove counterproductive for a subversive group, by stiffening the resolve of the adversary government and by alienating friends or neutrals. Regardless of the nature of terrorist action, some type of retaliation can be expected from the victimised group. The severity of that group's reaction depends on several factors. The first factor to consider is who the group is. Also, the method of the attack will contribute to a victim's response. In general, the more horrible an attack, the more severe the retaliation is likely to be or seem to be.

Not only must a terrorist group consider the political factor associated with the employment of CBW, but there are also a few technical problems to overcome. The most obvious of these technical difficulties is the method of obtaining the necessary agents. Once a terrorist group has decided to use CBW and has obtained them, the final obstacle is to effectively use them without causing harm to themselves.

TACTICS OF ACQUISITION AND DISSEMINATION

Acquisition

The first method to acquire CBW would be to manufacture them. Small groups or individuals frequently manufacture a variety of narcotic substances secretly. These people easily overcome difficulties similar to those encountered in the manufacture of chemical weapons. So the answer to the question of whether or not the development of chemical weapons is within a terrorist's ability is yes. Raw material for the production of biological agents can also be obtained readily. Cultures of biological agents can be found in research laboratories and can be stolen or acquired for notional research purposes. Once the cultures have been obtained, production will not be difficult for trained personnel with experience in microbiology. Thus crude biological weapons are within the reach of many dissident groups worldwide.

Another way for terrorist groups to get CBW would be to purchase them. They can either be purchased from an illegal source, sympathetic country, or deadly industrial chemicals can be legally

purchased and employed in a chemical attack. The media and public have overlooked the serious threat of chemical weapons being sold, largely due to the overpowering fear of the sale of nuclear material or devices. There is definitely a threat of this type of sale, but if this is not the route, there are always terrorist groups that have connections with nations sympathetic to their cause who may have better access to such weapons.

Illegal purchase is not the only way terrorists could acquire a chemical agent with dangerous properties. Many industrial chemicals are closely related to chemical weapons; in fact several industrial chemicals were even employed as chemical weapons during World War I. Chlorine and phosgene were both used extensively by the Germans, British, and French during that war. Although these substances are far less lethal than nerve agents, they are quite common and have many legitimate industrial applications. Even more frightening is an entire class of industrial chemicals of a highly toxic nature. These are the *organophosphates*; in fact this is also the class of chemical to which *sarin* (GB) and *VX* belong. These chemicals are commonly used as insecticides and include parathion, an insecticide notorious for the threat it poses to those who use it. The lethal doses for the industrial chemicals of this class are in general ten to fifty times higher than those of the military agents; however they are still very dangerous. As one may realise, many of these industrial agents are well suited for use as a weapon, and their legitimate uses make it particularly difficult to regulate sales. So, in general, chemical compounds suitable for use as a weapon are abundant and easily available, regardless of the method used to acquire them.

Dissemination

After having decided to use CBW and acquired the necessary agents, the final obstacle is to effectively use them without causing harm to themselves. Effective dissemination is crucial, as it will prove difficult to disperse a bulk supply of a chemical agent over the target. It is estimated that around one ton of agent is required to effectively contaminate one square mile of the target.⁷ Terrorists could still mount attacks within enclosed spaces like conference halls, hotels or offices.

In the Japanese incident, plastic bags containing the agent were punctured and the resulting evaporation was the method of dissemination. This is a primitive method and more effective methods like aerosol generators and timed devices are easily available and can be bought off the shelf or even produced in-house. Production will pose little trouble to most of the terrorist groups at their current technology level. In this age of increasing education and booming technology, it is easier to find the necessary technical and mechanical assistance for any project, legal or otherwise.

SUGGESTED SOLUTIONS

With the threats becoming real, one needs to consider what could be done to counter this danger. To start with, counter-terrorist organisations must continue with their information gathering and observations of terrorist organisations. The first specific step is that precursor chemicals or potential CBW must be better regulated. Then response capabilities must be increased and improved to deal with chemical attacks, which should include an improvement in chemical detection capabilities. And finally, the public must be better informed on the subject of chemical attacks, and in specific "what to do in an emergency."

Restricting chemicals used to make chemical warfare agents may be the least effective method of preventing terrorists from using CBW. This merely increases the costs for a group to obtain their weapons. It does, however, reduce the chances of a "casual" terrorist using them. The casual terrorist may not be willing to go through the difficulties of obtaining CBW due to time considerations or a loss in motivation. Another way restrictions would help reduce this threat is through the methods outlined in the Chemical Weapons Convention. This prevents the development or sale of CW by any of the signatory nations, and thus reduces the number of sources from which terrorists can acquire their weapons.

An improvement in preparedness for attacks and the organisation of a special team of experts for response would be more successful than simply a restriction on CBW. Many

emergency agencies (like police, fire departments, and hospitals) are not adequately supplied and trained to deal with CBW attacks, especially on a large scale. An increase in instructions on how to identify the signs of a CBW attack and deal with those affected may make quite a difference. Even more important would be the development of a government response team specifically trained to deal with large CBW attacks to improve the response capability drastically. This team would be composed of experts in the field of CBW, the effects of those weapons and decontamination of people and equipment. Along with this skilled response team, there need to be increased detection capabilities. The increase in a counter-terrorist group's capability of detecting CBW has the obvious advantage of preventing an attack before it happens. This should clearly be a priority.

Increased public knowledge is probably the best defence or response to the new CBW threat. The ideal case would be a public knowledge campaign to teach people what the threats are and how to identify the signs of a CBW attack. Education can be on the managerial level. Large corporations, schools, and buildings alike may designate a group of people to become educated in what to do in the event of such an emergency. This group could in turn instruct the masses of people in an emergency. Likely targets of CBW attacks could also instruct their personnel and post signs regarding the response to such an emergency. For instance, if subway workers in the March 1995 incident had been able to identify that CBW attack more quickly, their lives as well as the lives of others may have been saved. This increase in awareness would most likely contribute greatly to a reduction of CBW casualties.

THE FUTURE

Now that the world has progressed so far that mass destruction is within reach of a far greater percentage of the population, the likelihood of an incident involving weapons of mass destruction, particularly CBW, is much greater. The future holds many developments in store for the civilised world; when it comes to terrorists and CBW threat is real and deadly. Many things are

taking place. The first concerns CBW alone – the development of binary weapons.* The next group concerns the nature of terrorism. This includes the increase of terrorist activity, the crackdown by anti-terrorist forces on traditional methods, and decrease in reluctance of a terrorist group to use CBW.

Another factor that will contribute to the terrorist use of CBW is the spread of CBW capability to countries which may have connections with terrorists and can be considered possible sources of CBW for terrorists. Although the Chemical Weapons Convention (CWC) has reduced the scope for proliferation of chemical agents and has made it illegal to develop and stockpile CW, the amount of chemical agent necessary for a terrorist operation would be extremely difficult to detect. It can even be justified by claiming it as research material.

The world has seen an increase in terrorist incidents. With increase in terrorism, the diversity of terrorist attacks are likely to increase. CBW are more likely to be acquired by terrorist groups.

Along with the increase in terrorism, there has been a significant increase in anti-terrorism activity and capabilities. As police and government authorities world-wide become better prepared to handle terrorist activities, and more anti-terrorist technology is developed, the traditional methods terrorists are accustomed to become less likely to succeed. With most of anti-terrorist developments focusing on preventing hijackings and bombings, the difficulty encountered by terrorists attempting to use these techniques has increased. Among the alternates are CBW with all the advantages they offer.

Lastly, and most important of all, there has been a breach in the invisible barrier which has kept terrorists from using CBW in

*A chemical weapon in which the agent is stored as two precursor chemicals which only need to be combined to form the final lethal product. This reduces the risk that a terrorist must face in the storage and transport of weapons; it also reduces the threat of accidental exposure upon dispersal of the agent. If the chemical device is engineered correctly, with some sort of time delay, the terrorist could be long gone even before the lethal agent is made.

the past. This barrier was composed of fear and uncertainty. Terrorists were afraid of the consequences of such a weapon and the danger to themselves, and they were uncertain of the success of such an attack. Now, after the *sarin* attack in Japan in March 1995, it is obvious how effective a small amount of chemical agent is at tying down a subway system, injuring many people, and enraging people all over the world. This essentially opened the door to a whole new form of terrorism. The only thing now keeping terrorists from using CBW is their lack of knowledge. Once they realise that the production of these weapons is well within the scope of their operations, there will be very little left to stop them.

Notes

1. *The Washington Post*, 27 August 1984.
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5. R Purver, *CB Terrorism: The Threat According To Open Literature* (Canadian Security Intelligence Service, 1995).
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Emerging Trends in Multilateral Export Control Arrangements: Implications for India¹

Seema Gahlaut

Introduction

The events of 11 September 2001 were followed by anthrax scares around the world and unconfirmed reports that Osama Bin Laden's sympathisers might have acquired access to materials and technology relevant for building weapons of mass destruction. One of the results of these speculations has been a renewed focus on the future of the nonproliferation regime in general and of multilateral efforts to control diffusion of sensitive technology in particular.

Most of today's multilateral institutions were created at the end of the Second World War, and have hitherto operated on relatively simple distinctions: democracies versus Communist states, developed versus developing states, open versus closed economic systems, weapons versus non-weapons technology, and an international system based on state versus state relations. Globalization and the end of the Cold War have blurred almost all of these neat distinctions and challenged the political, economic, and security concepts and institutions based on them. Multilateral Export Control Arrangements² (henceforth MECA), viz., the Nuclear Suppliers' Group (NSG), Australia Group (AG), Missile Technology Control Regime (MTCR), and the Wassenaar Arrangement (WA) were also based on similar assumptions, and, therefore, face similar challenges.

MECA were designed to curb the diffusion of Weapons of Mass Destruction (WMD) and related technologies to "countries of

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concern." In theory, the definition of "concern" included several apparently objective criteria, such as the non-membership of the Nuclear non-Proliferation Treaty (NPT), sponsorship of terrorism, communist polities, and command economies. In practice, however, the bottom-line was whether or not the country was friendly to the Western alliance.

With or without the shadow of the war against terrorism, the problems and prospects of these arrangements are likely to have significant impact on India's relations with them. These, in turn, might affect India's access to dual use advanced technologies and the success of its own promising sectors like information technology (IT), biotechnology, nuclear energy, space and ocean technology, and pharmaceuticals.

This paper is divided into five sections. Section I provides an overview of changes in the external and internal environment for the multilateral export control arrangements. Section II discusses the impact of these changes on the functioning of these arrangements. Section III explores some of the broad solutions being offered. Section IV identifies some specific issues around which a broad consensus is emerging. The concluding section discusses the implications for India and offers some recommendations.

THE CHANGING ENVIRONMENT

The external environment of technology controls has changed since the 1990s in two important ways. First, the end of the Cold War has brought down barriers between the East and the West, and is widely seen as a manifestation of the "triumph of liberal capitalism." Technology suppliers now see the rest of the world as a market at best and as a competitor at worst, rather than as a friend or foe in national security terms. Second, globalization and the IT revolution now enable movement of goods, services, people, and technologies across boundaries, at an ever-faster pace. This is posing a strong challenge to concepts such as state, sovereignty, and distances. In James Rosenau's terms, the IT revolution has enabled actors and institutions to think in terms of "distant proximities."

The internal environment for technology controls, on the other hand, has changed even more significantly. The balance of power is shifting away from governments, 'the traditional representatives of national security communities, who now find it difficult to limit market access of firms based on non-market rationale. There are several reasons for this. First, the state has become just *one of the many* actors involved in the creation, application, and dissemination of advanced technology. Firms with international supplier, product, and investment bases are responsible for more than half the world's industrial output.³ Their R&D and production targets are fulfilled by a number of subsidiaries and/or sub-contractors located in different parts of the world. Secondly, national governments are no longer either *the monopoly or the predominant* buyers of defense-related technologies. They are increasingly relying on commercial-off-the-shelf (COTS) technologies to make their Defense acquisitions cost-effective and efficient. They can, therefore, no longer set the R&D, production, and sales agenda for firms specialising in advanced technologies. Finally, hi-tech firms require markets to stay competitive and generate resources for investing in cutting-edge Defense and non-Defense R&D. For instance, in areas such as IT, the rate of technological obsolescence is so high it makes fast-paced global marketing an imperative for survival. Similarly, excess Defense industrial capacity and decreasing Defense budgets in the developed countries have made developing countries more attractive to suppliers of advanced munitions and weapons platforms.

CHALLENGES TO FUNCTIONING

Simply put, the multilateral arrangements appear to have lost their *raison d'être*. The threat from proliferation is no longer clearly definable while the costs of imposing controls are clearly visible to the concerned actors. The variations in interpretation and implementation of rules among members has increased rather than lessened despite years of coordination and cooperation. There are several reasons for this.

First, there is no consensus among the MECA members (i.e. the suppliers) as to the target countries and the target technologies.

The older, neater and unambiguous identification of particular state(s) as a threat is no longer possible because few states now turn away from the liberal economic order or officially condone military aggression either for territorial expansion or for economic benefit. Moreover, the United States no longer has the exclusive power to define what constitutes either threat or security for the entire membership.

Second, the US demands from the MECA and the US regulations are much stricter than those of the other members. Consequently, the US industry has become more vociferous in complaining about its decreasing competitiveness. For instance, most of the emerging technologies have merely been added to the already extensive US control lists, without a systematic assessment of the capacities of problem states to configure them into threatening capabilities. The American industry also recommends that controllability of these technologies is also a factor that the government should consider before adding them to control lists. Finally, the ever-growing lists are even beginning to obstruct transatlantic joint ventures. Many experts believe this might affect the interoperability of NATO forces.

Third, the economic interests of member states no longer overlap as much as they did during the Cold War. Russia and the former Soviet Union (FSU) are now part of the membership, while China, India, and Iran are important trading partners for Russia and several European members. Regulations categorising controlled technologies and prohibited markets, therefore, appear more ambiguous to members. Both the European partners of the United States and the former Communist states increasingly see US strictness as unreasonable, and as a means of maintaining US technological lead.

Fourth, except for the NSG, where information on transactions is shared among members beforehand, there is a lack of institutional transparency within the MECA. This, in part, reflects the changing balance of power and interests among the core members. In the discussions regarding the establishment of WA - the replacement of COCOM - there was little interest in duplicating COCOM-rules. Moreover, the US officials often decry that unlike the COCOM, the

current arrangements (MTCR, AG and WA) do not allow veto of questionable exports by fellow members but only include the "no undercut" rule. However, given the current criticisms of the US unilateralism, they recognise the growing possibility that the US exports to certain countries may be challenged as well.

Fifth, although the arrangements include provisions for revision and updating of lists and rules, in practice they have been somewhat inflexible and thus not able to adapt to changing environment. Industry standards and practices in the hi-tech sector have changed rapidly, reflecting the imperatives for consolidation and integration across national borders through mergers, acquisitions, joint ventures and strategic partnerships. The levelling effect of skill revolution and technology diffusion has induced industry to organise its functions in networks rather than hierarchy. Intra-firm and intra-industry intelligence gathering and information sharing have become the prime requisites for rapid innovation. On the other side, government regulations on export of goods, technologies, and skilled personnel, whether unilateral or multilateral, have lagged far behind. This is mostly because the bureaucratic regulators are either unable to comprehend the inter-linkages between emerging technologies or incapable of building a sustainable consensus around the new regulatory needs.

Sixth, the detection of violations is becoming more difficult and punishment even more so, for both technical and political reasons. The rapid growth and diffusion of dual-use technology makes it more difficult to pinpoint the source of "proliferation." It also weakens the arguments for controlling low-end technologies, or technologies that have clear commercial uses, or technologies that can be easily adapted to weapons-purposes. On the political side, the old paradigm of the United States being more equal than the others is no longer acceptable to many members. Increasingly, European partners resent the extra-territorial reach of the US technology regulations because it hampers their ability to expand into newer markets in Asia and elsewhere. Identifying and punishing violations is becoming difficult because it might increase the risk of "open revolt" and perhaps "exit" from the agreement itself. In a period of

high uncertainty and low risk, most members appear to prefer "less compliance" over "no compliance."

Finally, the new members of the MECA, including former Warsaw Pact members (East Europe, Russia and the states of the former Soviet Union) have very limited institutional capacity and resources to implement domestic compliance.

TWO CATEGORIES OF PROPOSED SOLUTIONS⁴

Policy level solutions recommend frank re-examination of the purpose of the arrangements, the role of the US unilateralism, the demands of the new members (non-Western), and the policy regarding non-members. Process level solutions, recommend means to make the arrangements more transparent, robust, clear about violations, and the consequent punishments, and socialisation of new members into the norms of nonproliferation.

EMERGING CONSENSUS

Consensus has emerged on the following issues :

- (a) Retain higher fences around fewer technologies,⁵ such that normal commerce can proceed in non-fenced technologies.
- (b) Give primacy to monitoring and verification rather than denial in export licensing. Ensure effective monitoring through the use of electronic tags, sensors, and National Technical Means, and clearer end-user and post-shipment verification agreements with importing states. Finally, more attention ought to be paid to tracking financial networks behind transactions involving brokerage and warehousing firms.
- (c) Increase information sharing between members on issues such as export requests, suspected proliferation, export control violations and punishment.
- (d) Focus on intangible technology transfers, which should include both: transfer through intangible means (phone, fax,

email) and transfer of know-how and know-why (technical solutions to operational problems in exported technology, substitute and alternate configurations of technology and components etc).⁶

(e) Develop government-industry partnership in enforcing technology controls because governments should see the industry not as a problem but as a crucial partner in providing input on problems, limits and possibilities of controls on specific technologies⁷. Experts recommend that governments should allow industry to adopt a self-reporting and audit model. This would mean that good compliance record would entitle an exporter to preferential treatment in licensing.

IMPLICATIONS FOR INDIA

India's relationship with these arrangements has been negative. It has been a target of technology denials by these arrangements, and has been a vocal critic of their opaque, cartel-like operation. At the same time, India has maintained a strict export controls system and has a better record at controlling technology diffusion than most core MECA members. In the 1990s, as India embarked on its economic liberalisation programme, it has re-oriented its goals from import-substitution to export-led growth. The result has been the growing need to allow private sector participation, both domestic and foreign, in technology generation and more complex regulations governing the growing export capabilities. Integration with the global economy has induced Indian policies to become harmonised with international regulatory regimes, including, ironically, the MECA. Although still a target and not a member, India's policies are becoming increasingly consonant with MECA regulations.

In general, a balanced assessment of the technology control arrangements leads to the following conclusions:

(a) *Despite their problems, these arrangements will prove to be like the state - not quite wither away.* For all their unhappiness with the US hegemony, in the end, the advanced industrial

states will continue to sustain the MECA for three reasons. First, the Europeans have always seen multilateralism as a means to control both the growing technological capability of non-allied states on the European periphery as well as the US propensity toward unilateralism and isolationism. Second, much like the issue of the US National Missile Defence, Europeans are likely to use the MECA as a means to negotiate higher levels of technology-transfers and technology co-development with the United States. Finally, despite recent efforts by industry and academia, most US policymakers are unable to accept the reality that technological innovations are increasingly taking place outside the Western alliance. The "controlling" mindset is likely to move the United States towards some compromises with the fellow-suppliers, in return for continued adherence to the MECA.

(b) *Some rapprochement between India and the MECA may be necessary, if only because it is in India's national interests to regulate the sales and transfers of dual-use technologies such that unfriendly states and entities do not acquire them directly or indirectly.* Besides, the supplier states are legitimately concerned about the possible end-uses and re-exports of any technology that they might supply to India. Formalising Indian commitment to regulate both indigenous and imported technology sets such concerns at rest. Harmonisation of control lists with lists of the European Union (EU) will be a good step in this direction, as will continued dialogue with the United States (and other EU members).

(c) *Adherence to some of the MECA rather than membership is probably a better idea for now.* Suspicions, misgivings, and concerns about impact of rapprochement should be expected from both sides until the experience of working together assuages some of these.

(d) *Emerging issues of discussion that are likely to occupy centre-stage in India's dialogue with the MECA include areas*

where India is becoming a supplier, i.e. intangible technology transfers and deemed exports. Government-industry relationship that reflects the changing role of the state in hi-tech sector will be yet another issue. Information sharing, both among concerned branches within the Indian government, and with some concerned members of the MECA is going to become increasingly important for better policy coordination.

Conclusion

To realise any of the possibilities outlined above, pro-active thinking is required in India about the shape of things to come. For instance, Indian officials and experts need to conduct a systematic review of the implications of the following trends for effective Indian export controls:

- (a) Opening up of n-energy sector to private sector (domestic and foreign).
- (b) Greater role for the private sector and educational and technical institutions in technology-generation or product development.
- (c) Beginning of the second-phase of IT development in India (software design, customised solutions, systems integration rather than data-entry and customer services).
- (d) Increasing need for E-commerce regulation and use of encryption technologies.

Keeping in mind the fact that India has proved to be a painful learning experience to most of the nonproliferation regime, it will be useful for the Government of India to work with NGOs to change the mindset of MECA members about India's own concerns about horizontal proliferation. More information about Indian export control system and its effectiveness, as well as dialogue on implementation problems, if any, would provide the much-needed common ground to multilateral discussions on India's nonproliferation credentials. All of this will go a long way towards moving India from "sensitive"

to "normal" country category in nonproliferation forums around the world.

Notes

¹ This paper is based on a presentation by the author at the USI in January 2001. Subsequent research for this paper was done under the multi-year project, *Global Evaluation of Export Control Systems*, at the Center for International Trade and Security. The project is supported by a generous grant from the Carnegie Corporation of New York.

² The use of the term "arrangements" rather than the more popular "regime" follows the common scholarly distinction and aims to capture the informal, non-treaty-based character of these agreements. These characteristics are further reiterated in their limited membership, limited scope, and disputed legitimacy as legal international instruments.

³ Final Report of the Defense Science Board Task Force on Globalization and Security, Office of the Under Secretary of Defense for Acquisition and Technology, Washington, DC, December 1999; pp. 5.

⁴ Two articles, one by Harald Mueller and another by Michael Beek, in the *Nonproliferation Review*, (Summer 2000), are good examples of these two categories of solutions respectively.

⁵ *International Conference on Export Controls: Report of Proceedings*, St. Hugh's College, Oxford, England, September 28-30, 1999 [US Department of Commerce, Bureau of Export Administration).

⁶ See, for instance, articles on intangible technology controls in *The Monitor: Nonproliferation, Demilitarization, and Arms Control*, Summer 2000. Available at http://www.uga.edu/cits/publications/monitor_su_2000.pdf

⁷ See, for instance, Dr John J. Hamre, "Establishing An Effective, Modern Framework For Export Controls," testimony before the Committee on Banking, Housing and Urban Affairs, United States Senate, 14 February 2001.

Exploitation of Space for Military Purposes : An Indian Experience

Part-II

Brigadier A K Lal

THE INDIAN EXPERIENCE

To get a perception of India's requirement towards space militarisation, it becomes imperative to see threat perceptions from Pakistan and China.

Pakistan

Pakistan's space secrets are as true as the fact that their nuclear programme had also commenced from 1984 onwards. Pakistan's continuous desire for parity with India has made them stretch their reach. In actual fact, their new desire for flight to the moon would have many economic and scientific constraints. Nevertheless, it is overcoming them by a secret plan, which involves collaboration with China and Pan Islamic Countries. This should be a warning signal to India. Some salient points of the envisaged Pakistan Space Blue Print are covered below.

- (a) Pakistan failed to launch a satellite early in the year 2000, as originally planned, due to a row between Kazakhstan and Russia over the Baikonur Space Centre coupled with dysfunctionality of the Russian 3M, Badr-B satellite.
- (b) There exists a plan for an 'Inter-Islamic Network' on Space Sciences and Technology to operationalise low earth orbit (LEO), small satellites with a view to dominate the air space west of India. If possible, they will try to establish space

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domination over the Indian Subcontinent by 2020 in conjunction with neighbours.

(c) The phenomenon of a 1000 year war against India would also take shape in space by 2020. Pakistan is, therefore, very intelligently offsetting its economic constraints by allying with China and other Muslim countries. This is a countermeasure that Pakistan has taken, lest India allies with Israel or the USA.

(d) Dr Majeed, who is the Chairman of Pakistan Space and Upper Atmosphere Research Commission (SUPARCO) has revealed that even the Missile Technology Control Regime (MTCR) has not been able to curtail their programme. Iran-Pakistan satellite connection is yet another startler for India, in spite of the Pakistan-Iran tensions on the Afghanistan imbroglio. Besides Iran, China, South Korea, Indonesia and Mongolia are all involved in the 'Big League Space Joint Ventures'. The multi-laterality of these space projects is the real challenge to India which has even failed to re-structure its higher reference management in the post-Kargil scenario.

In the case for Pakistan, SUPARCO along with Space Research Council (SRC) are responsible for all of its space activities. Over and above this, the Military interface (in violation of the 1967 Outer Space Treaty) is being secretly provided with Chinese assistance. Recently, 10 top scientists visited Pakistan on 'Secret Mission Space'. Their effort is to militarize Badr-B for reconnaissance and surveillance and thus assist Pakistan in building a sound C⁴I² system for a credible nuclear deterrence by 2005. It is also confirmed that Pakistan had contracted with an American firm (ISC Technologies) at a reported cost of \$ 200 - 300 millions, as far back as 1986, during the period of India's 'Operation Brass-Tacks'. This firm has since then helped in developing the launcher capabilities.

The military potential of such satellites depends on optical resolution, spectrum, orbital features, sun-angle, return time, etc. Pakistan's effort is to build a resolution of one metre, as

characteristics of weapon system, damage assessment and even order of battle would become readable. (Therefore, the belief that India is more advanced than Pakistan in space related technologies may be a myth).

India needs to be alert to the fact that it is only a question of time when Pakistan will surprise India on this front too. Pakistan is on the verge of obtaining the "Eye Glass", "Improved SPOT" and venture capability, which would read Indian military dispositions accurately and allow precision strikes on Indian Forces. It will be like taking 'potshots on sitting ducks'. The Indian strike corps would thus become irrelevant, making India lose the conventional edge.

China : Space Capabilities

Only some salient aspects are being covered. China is already recognised as a 'Space Power'. According to the Guang Zhou newspaper, China had also developed technology for manned space flight and hopes to send an unmmanned capsule by 2005. It was also working on a space-shop following around 2005 and space shuttle programme like that of the USA. They are also developing a new series of "carrier rockets - Long March 5s". These rockets will have the capacity to carry 20 tonnes, enough 'to cater for demands of carriage of spacecraft. Over and above this, is the perceived threat of a China-Pakistan space nexus akin to the history of nuclearisation of South Asia.

Indian Space Programme

As far as the Indian experience goes, it has no alternative but to build big and fast. The chronology of space development, which has occurred in India is as tabulated in background information so appended.

In India, the current status of research of military application in space is minimal. However, at the global level, overtly the P-5 has no official document outlining the Space Doctrine like the existing Nuclear Doctrine. In fact, America and Russia may be having an

unwritten or even classified doctrine for application in military strategy and a futuristic blue print. The emerging global multi-polarity would escalate tensions in the space arena now. As regards India, the Kargil conflict has established a national intelligence failure and the ineptitude of military application of newer technologies. Strategy for space-based assets thus becomes the cornerstone to national security in a future scenario. Therefore, evolution and analysis of space warfare and its impact on existing national and military strategy becomes an urgent requirement. Presently, we lack the vision for the fructification of a common nuclear and space doctrine to give India a strategic integrated deterrence as a macro force multiplier of a 'state-of-the-art' national security strategy.

There are seven countries in the space race – America, Russia, China, Japan, France, India and Britain, with another three on the periphery-Indonesia, Pakistan and Australia. India is already emerging as a bulwark of global and Asian stability. Therefore, its role in South Asia is unquestionable. By its combined military space technology, India would be able to control the regional conflicts including domination of the Indian Ocean, which is tomorrow's conduit of oil power. Thus the creation of a joint space-military infrastructure now, would definitely enable regional power projection at least by 2015-2020 period. The necessity of conceptualisation and integration at tactical levels thus becomes necessary. A series of satellites are to be launched upto 2005. Military interface has to be ensured with all these satellites (at present ISRO has four spacecraft which give the Indian National Satellite System seventy transponders in space). Further, with India's capability enhancing to two metre resolution, integration with military would become a dire necessity.

A cost effective analysis of building satellite capabilities in India vis-a-vis developing conventional military capability needs to be carried out so as to come to definitive figures. The involvement of the three Services and the ISRO would become necessary in such a cost analysis. However, by probability and perceptions, the calculations could be on the following lines. Satellite Surveillance,

PGMC (directed through satellites), Low Earth Orbit (LEO), laser platforms and navigational capabilities should allow approximately one third reduction of physical deployment. This should reduce the number of Divisions deployed, thus, cutting down Defence revenue expenditure. This saving can be recycled towards satellite development (costing between Rs. 200 to 400 crores each). The physical role of troops can be performed by just a few satellites and also ensure a cost saving of Rs 600 - 800 crores. In fact, in future the cost of maintenance of troops would only increase and that of launching and maintaining satellites would decrease due to cost effective technologies. A similar matrix can be drawn for the Air Force and the Navy. The Air Force would get the desired AWACS capability automatically, other than guidance and navigation during deep penetration or interdiction strikes. As regards the Navy, the increasing presence of China in the Indian Ocean would be negated by space domination over the Indian Ocean ranging from the Gulf to the Straits of Malacca without recourse to heavy patrolling duties. Further, in due course, various space related conventions are likely to fall in place akin to the Maritime Zones, giving exclusive rights of space to nations under them. In totality, therefore, space militarisation for self defence, even in a regional context, would become a better option to strengthen military capabilities and stability in South Asia. A space wargame matrix model could be developed with the aim of assessing the efficacy and reduction that can be brought in conventional troops levels. This would be Defence modernisation in its true sense.

Therefore, India's announcement of reaching the moon by 2005 has to be seen against the backdrop of technological breakthroughs and collaborations of other space faring countries including China and Pakistan. It becomes imperative for India to create a military blueprint for the next twenty years to face the challenges in these "New Frontiers". A 'Space Cell' needs to be created in respective Services Headquarters, as the nodal agencies, for interface. These cells could also be tasked to evolve futuristic doctrines which could be tested, experimented and validated for a future scenario.

Conclusion

Until the Gulf War in 1991, the potentialities of 'Space War' were never truly rated. For their part, rated airmen were quintessential operators with an ingrained fingertip feel for the practical uses of air power. General Mormon of the USAF has summarised the future trends thus : "An integrated air and space programme that combines total battlefield awareness and knowledge with rapid and dependable communications to get information to the decision maker or shooter fully integrated with highly capable, survivable aircraft and a fleet of unmanned aerial vehicles, both in the precision munitions, is the wave of the future."

In the case of emerging countries other than America and Russia, which can launch satellites, there is a case to redesign and refashion their Defense strategy, which should have 'space-military technology' as an important ingredient. Thus, there is a case to do more research on the future potential of space warfare. Its impact on the military command and organisational paradigm needs to be researched. New doctrines for land, air and sea forces should be evolved, based on integrated and synthesised military operations. In India's context, it is a millennium opportunity to do a quantum leap in 'state of the art' space defence technology and its strategic application on a vast geographic area of the Indian subcontinent, as part of a 'National Security Strategy'. The key issue, therefore, is the relevance of space military capabilities in the Indian scenario having outstretched borders on land and sea. This aspect requires a fresh look, so that national security is strengthened, against the backdrop of an emerging 'High Tech' Battlefield milieu, where space would be the new 'High Ground'.

BACKGROUND DETAILS

Military Strategy

Minor Tactics and Tactics. These definitions are explained with live historical examples related to military warfare. This definition implies fragmentation of military action to achieve a tactical objective. For instance, capture of Tololing in Kargil, involved aggressive patrolling, use of direct firing weapons and multi-directional attack. The two former aspects mean execution of minor tactics to achieve an overall tactical aim. This becomes a part of training and drill, more by practice and validated policy. The art of minor tactics involves field craft, guile, agility and momentum. The conglomeration a series of successful minor tactics culminates in the achievement Tololing or Tiger Hill, which in total perspective would further the overall aim of evicting the enemy earliest. Similarly, in Space minor tactics would involve command missions by individual spacemen to raid a hostile spaceship with the help of 'space scooters'. In totality an offensive tactics of raid and space patrolling would give domination in a particular orbital plane. Therefore, domination of various orbital planes would become an important tactic.

(a) **Minimum Battlefield Transparency Deterrence (MBTD).** Yet another facet, which would undergo a change, are the forms of nuclear warfighting like minimum deterrence, which would get inter-linked with MBTD.

(b) **Counter-Satellite Targeting.** This would start drawing linkages with counter-force, quasi-strategic and counter-city targeting. An additional term of counter-cosmos targeting cannot be ruled out, although its application would more depend on an outer 'out of space' threat from some other planet or universe on the lines of the famous film 'Aliens'.

(c) **Strategy and Grand Strategy.** 'War has its own language, but not its own logic to be the single most important idea in all strategy'. Strategy is the summation of a successful

number of tactical objectives and effect at the operation level. The outcome of good strategy is almost felt immediately in achieving the military objective. In Kosovo, the strategy to execute 'Air Land Battle Doctrine' and soften the objective with precision guided munitions paid handsome dividends. It also served the grand strategy to expand Eastwards and nudge into Russian interest. Kosovo was a grand strategy to invest Russia from the West as well as to prepare military machinery to operate 'Out of Region'. In space parlance, it would imply strategy to launch ABMs, would be considered a part of the grand strategy of a missile shield in the first phase of a conflict followed by an offensive posture of firing lasers from space to ground and link up with rapid reaction, NBC capable mechanized forces so as to achieve victory on earth.

(d) Outer Space - Universe - Cosmic Strategy. Terms akin to them would get evolved in the next millennium as warplanning would reach outwards, away from the planet earth - towards the Moon and the Sun. The region of outerspace would reach half way to the Moon or approximately at the zero gravity location notified by 'L', which will become a 'Key Orbital Ring (KOR)' the occupation of which would give a force multiplication in space weapon platforms. Therefore, outerspace manipulation would become vital to the grand strategy on earth. Thereafter, sequentially will come the 'Universal or the Lunar' segment, which has inherent advantages as explained later in the concept of operations. Therefore, in comparison, the word 'Universal Lunar' signifies the strategy in space. Going yet beyond, in the unknown will be the cosmic force, as per Hindu philosophy depicts the power centre of creation and may be the ultimate. Man, may yet reach it as part of a grand strategy of mankind from this universe exploring towards new life into the infinite.

THE INDIAN SATELLITE STORY

S.No.	Satellite	Date of Launch	Launcher	Result
1.	ARYABHATTA	March 19, 1975	RUSSIA	Success
2.	BHASKARA-1	June 7, 1979	RUSSIA	Success
3.	ROHINI	August 10, 1979	SLV - 3	Failure
4.	ROHINI-I	July 18, 1980	SLV0-3	Success
5.	APPLE	June 19, 1980	ARIANE	Success
6.	ROHINI-II	May 31, 1981	SLV - 3	Failure
7.	BHASKARA-2	Nov. 20, 1981	RUSSIA	Success
8.	ROHINI	April 17, 1983	ASLV-3	Success
9.	SROSS-1	July 13, 1988	ASLV	Failure
10.	IRS - 1A	March 19, 1988	RUSSIA	Success
11.	SROSS-2	July 13, 1988	ASLV	Failure
12.	IRS - 1B	Aug, 29, 1991	RUSSIA	Success
13.	SROSS - 3	May 19, 1992	ASLU	Success
14.	INSAT - 1A	April 10, 1982	USA	Failure
15.	INSAT - 1B	Aug 30, 1983	USA	Success
16.	INSAT - 1C	July 22, 1988	ARIANE	Failure
17.	INSAT - 1D	June 12, 1990	USA	Success
18.	INSAT - 2A	July 10, 1992	ARIANE	Success
19.	INSAT - 2B	July 23, 1993	ARIANE	Success
20.	IRS - 1E	Sept. 20, 1993	PSLV	Failure
21.	SROSS - C	May 4, 1994	ASLV	Success
22.	IRS - P2	Oct. 15, 1994	PSLU	Success
23.	INSAT-2C	Dec. 7, 1995	ARIANE	Success
24.	IRS-IC	Dec. 28, 1995	RUSSIA	Success
25.	IRS-P3	March 21, 1996	PSLV	Success
26.	INSAT - 2D	June 4, 1997	ARIANE	Success
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A Perspective on Electronic Warfare (EW)

Major Nimish Gupta

The concept of electronic warfare (EW) is to exploit the enemy's electro magnetic (EM) emissions covering the entire spectrum in order to provide Intelligence on the enemy's EORBAT (Electronic Order of Battle); intentions; capabilities (hostile capabilities, tactics and force status); and to use counter measures to deny use of communication and weapons systems while protecting one's own use of the same spectrum. EW is a dynamically changing field and it must respond to continually changing threats. It is a vital element of military strategy which when used in concert with the other military assets, provides a method of neutralising an enemy force (force divider effect) while simultaneously enhancing the power of a friendly force (force multiplier effect). In this context, the force multipliers could be stealth, EW ac (aircraft), multi-role ac, precision guided munitions (PGM), air to air refuelling, real time secure data link, wide bodied ac and improved maintainability etc. EW is integral part of an overall military strategy which concentrates on the neutralisation of an enemy's C⁴I² system (Command, Control, Communication and Computer and Intelligence and Interoperability system) while maintaining the capability of operating own C⁴I² system.

Full Spectrum Dominance

Electromagnetic spectrum is utilised by a large number of electronic devices which are used for military applications. These are covered under the following :-

(a) Communication Systems.

(i) Satellite.

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- (ii) Troposcatter.
- (iii) Micro wave,
- (iv) Radio relay.
- (v) Depending on usage of frequency band viz VLF (very low frequency), HF (high frequency), VHF (very high frequency), UHF (ultra high frequency) and so on.
- (vi) Laser communications.
- (vii) Cellular communication and WLL (wireless in the loop).

(b) Radar Systems.

- (i) Tracking radar.
- (ii) Surveillance radar.
- (iii) Identification friend or foe (IFF).
- (iv) Navigation.
- (v) Mapping.

(c) Electro Optic and LASER (Light Amplification Simulation of Electromagnetic Radiation) Devices. These devices use optical band which is further divided into ultra violet, infra red and visible light. Accordingly these can be classified as :-

- (i) Infra red devices (active and passive).
 - (ii) Electro Optic devices [night vision, LLTV (low light television) etc].
 - (iii) Laser Devices like laser range finder, laser communications, laser dazzle weapons, laser damage weapons etc.
- (d) Satellite Imaging.**

- (e) Weather Prediction.
- (f) High Energy Radio Frequency Gun (HERF).
- (g) RPVs (Remotely Piloted Vehicles), Drones and UAVs (Unmanned Aerial Vehicles).
- (h) Sensors.
- (j) Stealth technology.
- (k) Vaneck radiations.

Jamming a radar or a communication system in itself may have little effect on the operation of an enemy's weapon system. What is necessary is to break the mode of the enemy's weapon system. The pace of modern warfare is very fast. To add to this, the range of weapon platforms and their lethality has increased manifold. The enhanced pace, increased lethality of weapon system and the large distances involved require electronic means for controlling the application of weapons, assessing their effectiveness and generally managing the overall weapon engagement. The structure which links together sensors, battle management command posts and communication centres is called the command and control system. It is through this structure that a commander exercises control over his forces to accomplish the assigned missions. Therefore, the communication links, command posts, sensors and correlation centrism are the prime targets for countering command and control system. Most of us are familiar with the communication and radar systems. In this paper these two are not proposed to be discussed and focus is on other electronic devices thereby covering the entire electromagnetic spectrum.

Space Based EW

There have been developments in the field of EW which use space as the medium for collecting ESM (Electronic Support Measures) data and also for taking counter actions against enemy's emitters. Satellites have proved very useful for electronic reconnaissance and early warning. Electronic Intelligence (ELINT) satellites are generally placed in geostationary orbits around

36,000 km. The satellite which intercepts and records electromagnetic emissions can be used to store emissions and then re-transmit as jamming signals when the satellite is over the enemy's ground stations. These satellites can be destroyed by means of high energy lasers and charged particle beam weapons either by ground based or other satellite based systems.

RPVs/UAVs/UGVs

These devices provide versatile platforms to battlefield commanders for a variety of roles.

- (a) For seeking chaff clouds corridors through which strike missions penetrate to radar defended targets.
- (b) As an aid to strike aircraft using potentially expendable drones which can carry chaff pods or by using recoverable RPVs which can carry jammer pods.
- (c) To carry out tactical ELINT.
- (d) Tactical TV reconnaissance and battlefield surveillance.
- (e) For disposing expendable jammers in heavily defended target area to degrade enemy's early warning, acquisition radars and directed anti aircraft guns.
- (f) As a platform for communications in adversary's territory.
- (g) Target acquisition and target designation.
- (i) Chemical and Biological Warfare detection.

Electro Optical Devices

"Electro-optics is the field of technology which, aided by electronic components and techniques, involves the emission and or reception of radiation in the infra - red, visible and ultra - violet portion of the electromagnetic spectrum."

Notwithstanding the above definition, the military uses of ultra - violet (UV) radiation are few at present. The ozone layers in the

atmosphere prevent most ultra-violet from reaching the earth's surface, and accordingly, ultra-violet aspect will not be covered in this paper.

The Electro-optical (EO) techniques for military use have developed recently. The characteristics of infra red (IR), visible and UV energy, along with the other forms of electromagnetic energy (i.e. radar and radio), are inherently similar in nature. All radiations obey similar laws of reflection, refraction, diffraction and polarisation and their velocity of propagation is the same. They differ from each other only in their wavelengths and frequencies. In the part of the electro-magnetic spectrum under consideration it is usual to refer to wavelengths, rather than frequencies, and to use the unit of a micron (10^{-6} m) or micro meter. The wavelengths of interest are as under :-

- (a) Ultra Violet. 0.01 - 0.4 micro meter.
- (b) Visible. 0.4 - 0.7 micro meter.
- (c) Infra red.
 - (i) Near IR - 0.7 - 3 micro meter.
 - (ii) Middle IR - 3 - 6 micro meter.
 - (iii) Far IR - 5 to 15 micro meter.
 - (iv) Extreme IR - 15 - 1000 micrometer.

Reflected Energy Systems. When an object is illuminated by an external source such as the sun (either directly or indirectly, i.e. moon light), the scene is observed by reflected light. This holds true for the near UV, the visible and near IR bands. The human eye, which is responsive to visible light and the television (TV) system which operates in visible and very near IR bands, are almost entirely dependent on reflected light and, therefore, require some scene illumination.

Television has been applied to a wide range of uses, in avionic systems ranging from monitoring reconnaissance cameras to missile homing heads. The airborne TV may be smaller and more

rigid than its commercial counterpart but the basic principle of operation is identical.

Reflected Energy System Countermeasures. The use of reflected energy by enemy is extremely difficult to detect and if detected and a countermeasure used, it is also very difficult to assess the countermeasure's effectiveness. A countermeasure against a purely optical system must be directed against the operator, whilst countermeasures against electro - optical devices can be directed against the device itself – though to remove the operator from the system could be equally effective.

Electro-optic reflected energy systems, like every piece of military hardware, have their weaknesses and some countermeasures are listed below:-

- (a) Contrast reduction.
- (b) Deception.
- (c) Obscuration.
- (d) Active means.
- (e) Tactics.

Infra-Red System. Any object whose temperature is above absolute zero (0°Kelvin or $-273^{\circ}\text{Celsius}$) emits electromagnetic radiation. This radiation can be used for target detection, acquisition or homing.

Infra-Red Viewing System. The use of passive infra-red viewing systems by military forces is expanding rapidly because of their ability to provide unique information which can both compliment and improve the effectiveness of the system of which they form a part. Those in service are Infra - Red Line Scan (IRLS) and Forward Looking Infra-Red (FLIR). The main advantage of IR sensors are:-

- (a) They are independent of artificial or natural illumination.
- (b) They are passive.

- (c) They are virtually impervious to camouflage.
- (d) The classification of targets can be made on the basis of radiation characteristics.

Infra Red - Homing Systems. The application of IR techniques to missile guidance is a natural one since most targets of military interest emit large amounts of thermal radiation. The most successful application has been to the air-to-air homing missile where precision guidance can be obtained passively using compact IR seeker heads. If an aircraft target is considered, the three main sources of IR energy are as follows :-

- (a) The jet engine tailpipe : 3.5 - 4.0 micro meter.
- (b) The jet fumes : 2.5 - 4.5 micro meter.
- (c) Air frame kinetic heating : 7.0 - 8.0 micro meter.

Infra Red Counter Measures. Infra Red Counter Measures (IRCMS) are designed to defeat or reduce the effectiveness of IR sensors, by either reducing the amount of radiation emitted, by decreasing the sensors' discrimination ability or by affecting the major IRCM as listed below:-

- (a) Reduction of thermal signature.
- (b) Suppression of IR radiation.
- (c) Use of smoke.
- (d) Use of flares.
- (e) Active jamming.
- (f) Tactics.

Laser Devices. Increasing military use is being made of devices which incorporate laser because they are able to generate extremely narrow - angle beams of very high intensity coherent radiation at frequencies in the EO part of the electromagnetic spectrum. The wave lengths of some useful military lasers are as under :

- (a) Ruby: 0.6943 micro meter (6943⁰A).

- (b) Neodymium Yttrium Aluminium Garnet (YAG): 1.06 micro meter (near IR).
- (c) Carbon Dioxide : 10.6 micro meter (far IR).

Laser light, being electromagnetic, obey the laws of reflection, refraction etc and can be modulated in both frequency and amplitude or transmitted as a continuous wave (CW). Most lasers are monochromatic (i.e single frequency) but some can be tuned over narrow bandwidth. The pulse widths available with lasers can be as narrow as 20 nanoseconds or micro secs or milli seconds for radar pulses and these narrow pulses, when used with very narrow beam widths, allow laser wafers to have extremely high resolution. Its military applications are as under :-

- (a) Range finders.
- (b) Target designators.
- (c) Communications.
- (d) Dazzle weapons.
- (e) Damage weapons.

Laser Counter Measures. Laser light in the visible or IR bands is susceptible to the same attenuation and scattering as 'normal' visible or IR light and has difficulty in penetrating fog, haze and cloud. In general, laser countermeasures fall into the following categories:-

- (a) Absorption.
- (b) Reflection.
- (c) Ablation.
- (d) Jamming.

STEALTH TECHNIQUE

Stealth techniques are some of the best kept secrets. Not much emerged about the stealth projects till the Gulf War.

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- (a) Range finders.
- (b) Target designators.
- (c) Communications.
- (d) Dazzle weapons.
- (e) Damage weapons.

Laser Counter Measures. Laser light in the visible or IR bands is susceptible to the same attenuation and scattering as 'normal' visible or IR light and has difficulty in penetrating fog, haze and cloud. In general, laser countermeasures fall into the following categories:-

- (a) Absorption.
- (b) Reflection.
- (c) Ablation.
- (d) Jamming.

STEALTH TECHNIQUE

Stealth techniques are some of the best kept secrets. Not much emerged about the stealth projects till the Gulf War.

Techniques for suppressing electromagnetic signatures have been sought since the fielding of radar during World War II. Germany coated its U-boat snorkels with paint that could absorb the electromagnetic waves. Today, these low observable projects eclipse even the magnitude of 'Strategic Defence Initiative'. Stealth techniques have been incorporated in Northrop Corp's B-2 bomber and General Dynamic Corporation advanced circuit missile for the Air Force. From the EW point of view all ECMs could be classified into these categories.

- (a) Radiate active signals to interface with the radars.
- (b) Change the electrical properties of the medium (the atmosphere) between the target and the radar.
- (c) Change the reflective properties of the target itself.

Stealth technology mainly addresses the changes in the reflective properties of the target itself. Low observable techniques make most aircraft less detectable to radar and infrared sensors, but not undetectable. Stealth technology decreases the enemy's detection range.

The Technology. Stealth aircraft should not be visible to any sensors including acoustic and eye. Low observable techniques make most aircraft less detectable to radar and infrared sensors, but not undetectable. Stealth technology decreases the enemy's detection range by :-

- (a) Radar cross section (RCS) reduction.
- (b) Thermal signature reduction.
- (c) Emission control.
- (d) Passive sensors.
- (e) Camouflage.
- (f) Noise suppression.
- (g) Elimination of smoke trail.

Reduction of RCS. Various techniques are used for reduction of the RCS. Contour control and shaping are made use of along with use of radar absorbing structures and material, aerodynamic shapes, such as delta wing and blending them into fuselage; sharp edges are avoided. Tail fin structure stabilisers are either contoured inward or outward. Use of composite materials in reducing RCS (Radar Cross Section) is more subtle and these days the radar absorbing structures are slowly replacing the radar absorbing materials.

For Thermal Signature Reduction, the following techniques are used :-

- (a) Subsonic Performance.
- (b) Shielding of jet engines.
- (c) Mixing hot air of the engine with cooler air.
- (d) Ducting the hot exhaust air from engine over the wing leading edge and then ejecting it on the top of the wing.
- (e) By use of IR suppression coatings, a reduction by a factor of 10 is possible. Structures may be made of temperature resistant alloys like Titanium.

To control emission, the following methods are adopted :

- (a) Use of passive sensors.
- (b) Spread spectrum techniques to bury the transmission among the normal background of radio and radar signals making them difficult to detect and identify.
- (c) Millimeter wave radar.
- (d) Communication may use low power millimeter wave transmitter at frequencies which are rapidly absorbed by water vapour within the earth's atmosphere.
- (e) Highly but compact 'smart' antennae could be used to beam the radio energy in the direction of the intended recipient.

The use is made of passive sensors instead by radio frequency (RF) sensors to avoid detection. There is a greater emphasis on the use of EO or IR sensors. These are as follows:

(a) Camouflage.

- (i) Use of paints allowing to merge with background.
- (ii) Active camouflage is carried out with the help of various light sensors constantly adjusting the luminance so that it matches with the background.
- (iii) Blending microscopic particles of metal (normally iron) into paint itself to produce what is known as iron ball paint.

(b) Elimination of Trails.

- (i) Fuel and air mixture control is one of the techniques for smoke suppressions.
- (ii) Additives may also be used with fuel for smoke suppression during operation sorties.
- (iii) To improve combustion efficiency digital electronic engine control system may be used.

(c) Noise Suppression.

- (i) Engine design.
- (ii) The speed of the aircraft (it is a trade off).
- (iii) Engine buried deep inside the body.
- (iv) Mixing the fast moving efflux from the engine with slower moving air.
- (v) Noise suppressors like 'Hush Kits' may be used.
- (vi) The fan stage noise may be reduced by long and sinuous Intel ducts.

No weapon in history has remained unchallenged for long.

There have been weapons regarded as the ultimate in technology, and defeated. "Stealth Technology" is bound to share a familiar fate.

Conclusion

Electronic Warfare is likely to play a major role in future wars. There is a need to exploit the entire electromagnetic spectrum, covering a large number of systems and devices. Identifying systems and devices with any particular arm viz AD (air defence) with radar or Signals with communications *per se* would only use a part of the entire spectrum. Hence, a large number of electronic devices or systems would not be exploited. It would be prudent to look at electronic warfare as a complete warfare covering all devices and systems.

Martin Libicki of National Strategic Institute has given a new dimension to electronic warfare in his article on Information War. He has clarified EW as radio, electronic and cryptographic war; to quote "EW attempts to degrade the physical basis for transmitting information, while cryptographic warfare work between bit and bytes"

EW is a fast changing field due to rapid technological development in the field of electronics and computers. There would always be a requirement to update and have a re-look. According to the Tofflers, "So far much of this doctrinal discussion skill focuses on the details of electronic warfare - knocking out an adversary's radar, infecting his computers with viruses, using missiles to destroy his command and intelligence centers, "spoofing" his equipment by sending false signals, and using other means to deceive him. But Strassmann, Marshall, and the other military intellectuals are thinking beyond practical how to doctrine to the broader realm of high - level strategy as well."

That means it is not just a matter of battlefield intelligence or tactical attacks on the other side's radar or telephone networks, but a powerful lever capable of altering high - level decisions by the opponent. More recently, Andrews spoke of "knowledge warfare" in which "each side will try to shape enemy actions by manipulating the flow of intelligence and information."

The endeavour has been to highlight and focus attention on a large part of the electromagnetic spectrum, which is utilised by

electronic devices other than communication and radar systems. EW needs to be viewed as a battle of the entire electromagnetic spectrum.

"The army", it is said, "is very hard to change. After all, it is a ... Second Wave institution. It's a factory. The idea was that our industrial factories will produce and produce and produce weapons. The army will run men through a training factory. Then it will bring the men and the weapons together and we'll win wars. The entire approach is Second Wave. It needs to be brought into the Third Wave world".

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Assessing Chinese Air Power

Air Commodore RV Phadke

"Air Power will become the main fighting force in local wars and have increasing influence on the progress and outcome of war"

Lt Gen Liu Shunyao
Commander PLAAF¹

Early Years

At the time of People's Republic of China's (PRC) birth on 1 October 1949, it possessed a motley collection of some 159 aircraft of mixed vintage, remnants of the long civil war, and 202 pilots.² In less than ten years the strength of the People's Liberation Army Air Force (PLAAF), had reached a staggering 5000 combat aircraft. This was the result of the 14 February 1950 or Valentine Day Treaty of Friendship and Co-operation, that China's Supreme Leader Mao Zedong signed with the Soviet Union, another fraternal Communist country. The new People's Republic entered the Korean War on the side of North Korea in November 1950 and soon the pace of PLAAF's growth accelerated. It also learned some valuable lessons from this war although its performance was not particularly impressive. The kill ratio in air combat was 8:1 in America's favour. This poor performance was no doubt the result of throwing into the fray new and as yet inexperienced fighter pilots and the relative superiority of the US fighter aircraft. Later, during the fifties, the Chinese also found that the PLAAF was no match to the combined efforts of the Taiwanese and US Air Forces who continually violated Mainland China's air space. Air defence of the cities thus became the prime motive and the sole aim of the PLAAF. To be sure, "On 7 October 1959, the PLAAF shot down a Taiwanese reconnaissance aircraft over Beijing, the first combat use of surface-to-air missiles (SAM-II) anywhere in the world. In the ten ensuing years, the missile force shot down six US-made U-2 high-altitude reconnaissance aircraft and three US-made pilot-less aircraft."³

This is an abridged version of an as yet unpublished paper that the writer prepared during his fellowship at the Centre for International Security and Co-operation (CISAC), Stanford University CA, USA in 2001.

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By the late fifties, however, China's relations with friend and mentor Soviet Union soured to such an extent that China found it difficult to sustain the ambitious aircraft and aero-engine construction programmes that it had embarked on during the heyday of Sino-Soviet co-operation.

The quality and serviceability of equipment suffered and flying hours reduced drastically. This incited the quest for self-reliance and China began a process of reverse engineering the Russian equipment that it had received in huge quantities. It also launched new programmes for aircraft design and development. However, Mao's disastrous 'Great Leap Forward' movement caused serious problems only to be exacerbated by the ten-year long 'Cultural Revolution' (1966-76) that not only compelled the country's intellectuals to forced labour in the rural areas but also disturbed the PLAAF's training programmes. A number of its technical training institutes and colleges were closed with the students and faculty sent to work in rural areas. Some of the key programmes such as those directed at building China's strategic arsenals, however, were left unscathed. Leadership transitions, purges and domestic upheavals took a heavy toll on the Chinese Air Force.

Modernisation

It was not until a few years after the second coming of the visionary leader Deng Xiaoping in 1975, that the PLAAF's fortunes revived, albeit haltingly. In fact Deng proved to be the saviour of China's air power. He not only articulated the decisive role that air power would play in any future conflict but also castigated the Air Force for being lazy, inefficient and overstaffed.⁴ Such personal interest and understanding of air power evidently made it easier for the Air Force to cut the flab and weed out the less educated, old and inefficient officers.

By the early eighties the PLAAF was firmly on the path of recovery even though military had the last priority in what came to be known as, 'Four Modernisations'; agriculture, industry and science and technology were the other three. China had used its Air Force in the 'Liberation' of Tibet in 1950, and gained some experience from the Korean War, but strangely the PLAAF was

used only for air defence duties during the numerous encounters in the Taiwan Straits conflicts of the fifties and early sixties. China did not employ its air power during its 1962 War with India, the 1969 Usuri River Border conflict with the former Soviet Union nor in its 1979 invasion of Vietnam. Although, in the case of Vietnam the PLAAF was mobilised for the war, it did not even support the Army's offensive. As a result the mighty PLA suffered heavy losses and an ignominious defeat. In short, the Chinese never really used the huge, if somewhat unwieldy, PLAAF in war. The 1979 encounter with Vietnam, however, hastened the process of introspection in the Air Force.

The Chinese military leaders have maintained that the 1991 Gulf War was not a model that had universal application. To be sure they readily saw the stark asymmetry of power between the US led Coalition and Iraq and the overwhelming technological superiority that the former enjoyed. Most US-based Chinese scholars on the contrary assert that the Gulf War came as a 'rude wake up call' for the PLAAF and the Chinese political leadership.⁵

The ground forces have ruled the roost since all of Chinese Communist Party and State leadership has at one time or the other been part of the victorious People's Army or were familiar with its role in the liberation struggle. Perhaps they did not have much knowledge of air power employment; nor was the Army likely to surrender its position of superiority in the internal hierarchy of power. But then they understood that the efficacy of modern air power was the outcome of high technology-based Precision Guided Munitions (PGM), space-based surveillance and reconnaissance platforms, communications and command and control. Thus began in earnest, a renewed search for the means to rebuild China's air power and to develop the doctrines essential to prosecute such a high-tech war.

Hardware

By 1992 China had already signed a deal with the Russians for the supply of 72 Su-27 multi-role air-superiority fighters. China also received considerable technological assistance from the US till the 1989 Tiananmen incident. Although at one time in the early

seventies China had some 27 different designs of aircraft on the anvil, its record of indigenous production is not particularly impressive. It is claimed that it had built some 13,000 aircraft and 49,000 engines of all types in its short forty-year history since the founding of the PRC.⁶ These figures, however, appear to be highly exaggerated. The PLAAF strength reduced quite dramatically in the post seventies period. Combat aircraft of vintage design were becoming increasingly difficult to maintain and their usefulness was diminishing. What China needed was a lean and mean Air Force equipped with modern, state-of-the-art, aircraft and a suitable supporting infrastructure. A number of new aircraft development programmes were started, the military organisation revamped and restructured. By the year 2000, the PLAAF strength of combat aircraft stood at 3,520, down from an all time high of over 5,000 in the late sixties. But its quality had considerably improved.

Today, the PLAAF has some 1600 J-6 (Chinese MiG-19), 450 J-8 II (of all versions), 700 J-7s (MiG-21), 500 plus Q-5 FanTan (an indigenously developed strike version derived from the MiG-19), and 120 of the venerable H-6 (Chinese version of the fifties vintage nuclear capable Soviet Tu-16) bombers. In addition it has some 120 Su-27 air superiority fighters, a few Su-30 MKK multi-role fighters, and an assortment of new and old transport aircraft and helicopters. By any standards this constitutes an impressive inventory.

The PLAAF's much-anticipated F-10 multi-role fighter was test flown in March 1998. China's first indigenously designed 'fourth-generation' fighter, the F-10, has performance capabilities roughly comparable to the Lockheed Martin F-16A. It is a dramatic improvement over China's existing inventories.⁷ In all probability, the fighter would be in the PLAAF inventory by the end of the decade. Western observers, however, believe that the PLAAF is still no match for the Taiwanese Air Force that has, since the nineties, received some 150 F-16 and 60 Mirage-2000 aircraft in addition to over 300 indigenously developed fighters supported with a modern radar network and US delivered Patriot air defence missiles. They also feel that given the vast expanse of the country and its long borders, the Chinese Air Force is as yet too small to meet the country's basic air defence needs leave aside offensive

operations. There is certainly some truth in this assessment, but one cannot ignore the inherent flexibility of modern air power nor the fact that following the resolution of almost all its border problems with her neighbours except with India the threat of air attacks to the Chinese mainland has vastly diminished. Following the cancellation of the Phalcon AWACs deal with Israel in July 2000,⁸ China has been busy trying to acquire the A-50 Russian AWACs planes and the indications are that it has succeeded in getting three or four of them. China has also converted some of its H-6 (Tu-16) long-range bombers for air-to-air refuelling role and has further obtained some IL-76 Tankers from Russia. There are reports that along with the formation of Rapid Reaction Forces, it has also given higher priority for enhancing its strategic airlift capability. China already possesses a number of S-300, PMU1 (NATO reporting name is SA-10d 'Grumble') mobile long-range surface-to-air missiles and has indigenously produced FT-2000 and 2000A versions that work with a modern 3D phased array radar. By the end of the current decade the PLAAF modernisation would in all probability be complete.

History suggests that China put its faith in the efficacy of air power but remained largely an air defence force. Right from the time of the split with the former Soviet Union in the early sixties, it was well aware of the limitations of its Air Force and its gradual obsolescence a few years later. Strangely though, it continued to build more and more of these aircraft maintaining a very large inventory but did not use it in any conflict. China decided to build its nuclear forces as an instrument of deterrence on the assumption that the 'people's war' doctrine was adequate if rudimentary nuclear capability could preclude war and resist blackmail, and if the PLA could take care of a minor border war. In other words, China managed to conduct its diplomacy on the basis of its nuclear status and its image as a 'tough guy' without being overly bothered about the state of its armed forces. China has shown remarkable dexterity in dealing with other countries, small and large, weak and strong even if the record of its military engagements since Korea was not particularly impressive. In fact the 1962 border conflict with India was the only time that the PLA registered a victory and that too perhaps because India did not use its Air Force for fear of escalation. It must be noted that at that time China's domestic

situation was far from conducive to waging a full-fledged war and it did not possess any nuclear weapons.

The PLAAF's present strength and level of sophistication are yet to grow at a rapid pace but it is still a formidable force. Its 1600 odd MiG-19 or J-6 aircraft are most likely deployed for local air defence in areas where the air threat is low. Its 450 or more J-8s, 700 J-7s and 120 Su-27 fighters, however, can hold their own even when faced with a modern Air Force such as that of Taiwan or India through a clever employment of China's conventional Short Range Ballistic Missiles (SRBM) for coercion and intimidation. China's test firing of its missiles during the 1995-96 Taiwan Straits crisis showed a glimpse of how it might use the combination of its missiles and aircraft in the future. It is evident that the Chinese also analysed the Iraqi use of Scuds as a political weapon. China is now building and modernising its arsenal of SRBMs (DF-11 and 15) and Cruise missiles (HN-1, 2 and 3) so as to make them more accurate, lethal and survivable. China is likely to employ these missiles to make up the shortage of combat aircraft. According to a reputed magazine, China is in fact developing a family of cruise missiles including air, surface and ship launched versions with ranges from 600 to 1800 kms.⁹ These are likely to be dual (nuclear and conventional) capable although it is not as yet known if any of these are already operational. The senior PLAAF leaders are probably formulating new ways and means to employ these missiles alongside their modern combat aircraft. A few accurately delivered and well-targeted cruise missiles can signal China's political resolve without causing too much destruction to the enemy while keeping the danger of collateral damage to the minimum. At the same time retaining escalation control would be given high priority.

In the aftermath of the 1979 Vietnam War, the PLA launched a series of exercises at increasingly higher levels of command to improve command, control and co-ordination between the different arms of the military and made many changes to the organisational structures to enhance its efficiency. It has also reorganised the military by reducing the number of military regions from eleven to seven, reintroducing ranks and insignia, strictly adhering to retirement age, weeding out the uneducated and the less efficient officers, and encouraging higher education at the various Defence

universities. Retirement rules were revised and strictly adhered to by removing the difference between 'grades' and 'ranks', which had often resulted in officers of lower ranks getting higher pay on account of their seniority. Many incompetent officers were retired and at the same time the leadership profile became relatively younger. Today's officer corps is younger, better educated and more technologically proficient than its counterpart 20 years ago. A small proportion of it is better travelled and more cosmopolitan in their outlook.¹⁰ In 1983, its 35 field armies were reorganised into 24 group armies, with integrated infantry and armour to facilitate combined arms operations.¹¹ Reorganisation of "six of the 21 (24?) Group Armies has continued, with conversion from a division-based structure to a more flexible brigade-based structure".¹² Xue Litai, a CISAC scholar, feels that the PLA has successfully completed the process of employing the 'Combined Arms Concept', so that there is good co-ordination between the infantry, artillery and armour, but that inter-service co-ordination has still not reached the desired level. The PLA has also streamlined the procedures for fire and air support during the recent years. It is said that "The very assembly and deployment of coalition forces constituted the 'first-firing' and justified pre-emptive strikes."¹³

Doctrines

Though the Chinese military doctrine has evolved slowly over the past twenty five years, the Gulf War gave the process the added impetus. But, as the PLAAF is subordinate to the PLA and its Commander's status equals only that of a Military Region Commander, it may not be particularly easy for the PLAAF leadership to develop and officially lay down its own independent air power doctrine. According to Ken Allen, "the Chinese Military does not even think in strategic terms but that all its doctrinal changes have been restricted at best to campaign or operational levels". "The PLA writings", states Ken, "have always stressed that the most important element of China's air power doctrine is gaining air superiority". He goes on to add that, "The trend in the PLA's air power strategy and doctrine is to gradually move away from the myth of direct support to the ground forces".¹⁴ In simple terms the overall doctrine emphasises 'active defence', which means that the Chinese military may not be the one to launch a

pre-emptive attack, but it also does not mean that it would follow the classical Maoist doctrine of, "luring the enemy deep" before mounting a counter-attack. This may be interpreted to mean that while the PLAAF would normally not launch a pre-emptive strike against the enemy, should it appear that an attack by the enemy were imminent, the PLAAF may take the offensive to thwart it. General Liu Jingsong (then Commander of the Lanzhou Greater Military Region and later the President of the Academy of Military Science) stressed that, "*the very assembly and deployment of coalition forces constituted the 'first firing' and justified pre-emptive strikes*". (Emphasis added)¹⁵

Gaining and maintaining air superiority would however require a sustained offensive campaign against the enemy's capability to wage an air war. Would the Chinese authorities permit such a campaign? This is the crux of China's evolving air power doctrine. Having absorbed the 1991 Gulf War lessons, the Chinese are unlikely to wait for the enemy to strike first because they rightly fear that a technologically superior enemy would probably cause such extensive damage to the Chinese offensive capability that it would make delayed retaliation difficult if not impossible. If this assumption is true, then the PLAAF would have to be given considerable freedom for independent action even in the early phases of a conflict. In other words the Chinese PLA cannot treat Air Force as a subordinate supporting service. It is hard to tell when and if such a change is likely to take place, but going by the statement of General Liu Jingsong it is only natural to assume that such a change may be round the corner. This would require a very deep and thorough understanding of the complexities of modern air power employment. Such a change would also highlight the urgent need for inter-service co-operation and co-ordination *led and orchestrated essentially by the PLAAF*. There is no direct evidence of this having already happened, but PLAAF watchers would have to carefully monitor developments in this area.

Once the PLAAF breaks out of the present straitjacket of the PLA, it is quite likely that it will want to take the initiative in any possible future conflict. Major changes in the organisation and structure of the PLA in general and the PLAAF in particular would perhaps give a clue to the likely direction and thrust lines of the

Chinese Air Force doctrinal evolution. But the long established Chinese strategy of, "threatened use of force in manipulating the adversary's responses" would require that the military unquestioningly yield to political authority when calibrating the magnitude and timing of the pain, if any, to be inflicted. In these circumstances, recourse to force always remains subordinate to political stipulation that can violate standard military principles".¹⁶ These views of John Lewis, and Xue Litai are particularly important to emphasise that even after the PLAAF has acquired modern weapons and support systems, its doctrine and employment would continue to bear a unique Chinese imprint. Would the Chinese be able to employ air power in the classical way that the West has got used to? A careful analysis of future joint exercises may offer some inkling as to the direction that the PLAAF doctrine might in fact take. In the case of local border wars in the future, air power would be the preferred tool. This may be because it is usually time-consuming and expensive to move and deploy large ground formations. Distance from the border and the terrain can add to these difficulties.

Training

Air Force training is a highly capital and labour-intensive enterprise that must go on without major disruptions in peacetime. As we have already seen, PLAAF training, both flying and ground, was badly disturbed during the decade long 'Cultural Revolution' and the preceding 'Great Leap Forward' period. It is quite possible that the PLAAF leadership was so completely caught up in the frequent purges and internal factional troubles that no one really bothered to assess the long-term impact on the overall operational preparedness and combat-worthiness of the PLAAF. It was only after the 1979 War with Vietnam and after the Gulf War lessons were fully absorbed that the PLAAF addressed this huge problem.

According to one report, "As of 1996, Class-A combat regiments accounted for 95 per cent of the total number of combat regiments, with 74 per cent pilots trained in all-weather flight. About half of all flight and air defence units (were) Category B units, equipped with old armaments and not receiving training."¹⁷ The frequently cited RAND Corporation Study, "The People's Liberation

Army in the Information Age", published in late 1999, also does not give details of the actual training philosophy and routine of the PLAAF. Ken Allen, one of its authors while discussing logistics issues, refers to the recent changes in the training pattern in so far as they affect PLAAF logistics. He says, "On the training and operational side, the PLAAF has established a 'Blue Army' aggressor unit to simulate hostile forces against the 'Red Army' both offensively and defensively. Furthermore, PLAAF pilots have intensified their training under different weather conditions, at lower altitudes, and, most significantly, over water. They have also practised rapid deployment to fixed and auxiliary airfields. As a result, the Air Force has had to adjust its logistics and maintenance, training and operations to meet these new challenges. He quotes the PLAAF Commander Liu Shun Yao saying that "Air Force aviation units during 1996 exceeded their annual training plan requirements by 1.8 per cent and flight safety has remained up to the world's advanced level for 16 consecutive years." However, "One has to take comments about the PLAAF's annual training plan and safety record with a grain of salt", cautions Ken. "For example, the PLAAF was involved in the huge joint exercises opposite Taiwan in early 1996, which obviously increased the planned flight training effort. Further, according to a 1996 Xinhua report, a series of arresting cables installed at various units, safely arrested more than 140 aircraft that either aborted take-off or overshot the runway during landing. This report indicates that there were numerous accidents that took place before the arresting cables were installed. In addition, General Cao Shuangming, the PLAAF's commander from 1992 to 1994, was relieved of duty because of an excess (sic) number of aircraft accidents during his time". Ken Allen also supports the estimates, "of the A-Class regiments, which have higher combat capability, as now accounting for approximately 90-95 per cent of the flight units' combat regiments".¹⁸ But it is difficult to accept these figures at face value, since the reality may be quite different.

Some 1500 combat aircraft, or nearly 50 per cent of the PLAAF, comprises the ageing, and, therefore, difficult-to-maintain J-6 (MiG-19) fleet, while the remaining belongs to the reasonably modern category. Maintaining its operational readiness must be difficult. It should be safe to assume that at the rate of approximately 1.5 pilots per aircraft, the PLAAF would have to provide a minimum

of 120 to 150 flight hours annually to 4500-5000 of its active duty pilots. Allowing for those employed on Staff and Headquarters appointments, at least 4000 pilots would need regular flying training. A 'back-of-the-envelope' calculation would show that to provide 150 hours of flying to 4000 pilots at 60-70 per cent rate of serviceability or availability, the PLAAF fleet would have to fly some 285 to 333 hours per serviceable aircraft per year, or 24 to 28 hours per month; a huge task by any standards. It is difficult to believe that the 1500 odd J-6 aircraft can all be maintained at the 60-70 per cent serviceability level essential to generate the sortie rates essential for such a mammoth flying task the whole year round. It, therefore, appears that the PLAAF must usually concentrate only on the relatively modern 50 per cent of its fleet comprising the J-8, J-7, Su-27/30 and a much smaller portion of J-6 and Q-5 aircraft. Most of the J-6 fleet is possibly used for cannibalisation.

If all this were actually true, then the PLAAF must be maintaining a very high and hence a nearly unbelievable level of daily availability of its huge combat fleet; but this is extremely doubtful. This is one aspect of the PLAAF capability that needs more detailed data and deeper analysis. Without a comprehensive understanding of this facet of the Chinese Air Force, the assessment of its air power capability would be open to conjecture. Chinese rhetoric that highlights even minor routine deeds as spectacular achievements further confounds the confusion.

Future

It may take the PLAAF some years before it can fully absorb the variety of sophisticated equipment and hardware that it has imported from Russia since 1992. There is little doubt, however, that the Chinese leadership has fully understood the role and efficacy of modern air power in a future conflict. Given the Chinese tact to deftly address complicated political crises and their grasp of power it would not be long before the PLAAF actually emerges as the most important instrument of China's military and political power. The current decade is crucial to China's military modernisation. Once China has attained that objective its quest for building its 'comprehensive national strength' would be complete, and it would then be easier for its leadership to more vigorously

pursue China's long outstanding national goals. The changing structure and doctrine of the PLAAF would give a good indication of China's strength and perhaps even its grand strategy and hence would need to be watched carefully.

Notes

¹ *Aviation Week & Space Technology*, 28 February 2000.

² Richard M. Bueschel, as quoted in AK Sachdev, *Strategic Analysis*, June 2000, Vol XXIV, No 3, p. 525.

³ PLAAF Order of Battle, FAS.org file://A:\plaaf-orbat-fas.org.html, this is believed to be one of the more authoritative web sites on Chinese and other militaries.

⁴ Lewis & Litai, n. 3 p. 74.

⁵ *ibid*, p. 78.

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⁷ Mark Burls & Abram N Shulsky, "Patterns in China's Use of Force", *RAND*, p. 52.

⁸ Steve Rodan, *Janes Defence Weekly*, 19 July 2000, p. 4.

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¹⁰ June Teufel Dreyer, in David Shambaugh and Richard H Yang (Ed), *China's Military in Transition*, Oxford, Clarendon Press, 1997, p. 71.

¹¹ n. 13 p. 48.

¹² *ibid*, p. 89, where the authors have quoted this statement of a former commander of the Lanzhou Greater Military Region, later the President of the Academy of Military Science, to show how the 1991 Gulf War changed Chinese thinking.

¹³ Ken Allen, "China's Aviation Capabilities", a paper presented at a conference at National Defence University on 26-27 October 2000, cited with the author's permission, available at http://www.ndu/inss/China_Center/paper1.htm, p.3. And personal conversations with the author on 02 July 2001.

¹⁴ Lewis & Lital, n. 3. p. 89.

¹⁵ Ibid, p.86.

¹⁶ fas.org. file://plaaf-orbat-fas.org.html. This is a good example of how confusing the details can be. The Federation of Atomic Scientists, "a reputed think tank also mentions on the same page that detailed information concerning the PLA order of battle is not readily available in the unclassified literature". It goes on to add that while the Directory of PRC Military Personalities produced for many years under the sponsorship of US Military Liaison Office at the US Consulate in Hong Kong, the only source of such information, provides reasonably illuminating depiction of the PLA ground forces order of battle, coverage of the PLA Air Force is rather more fragmentary. At the Division level only 29 of the reported 45 Air Divisions are even alluded to in the Directory, and of these only half a dozen are identified with any specificity. The Directory provides no order of battle data for the Chengdu Military Region and only fragmentary insight into even the frontline Nanjing Military Region.

¹⁷ Ken Allen, "PLA Air Force Logistics and Maintenance : What Has Changed?", in, "The People's Liberation Army in the Information Age", RAND Report, Santa Monica, CA, 1999, p. 84.

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Security and Stability in Arunachal Pradesh : A Prognosis

Brigadier RS Grewal (Retd)

Of the seven North Eastern states of India, Arunachal's biggest asset is its holding on to peace. But ominous clouds have already started appearing on the horizon. Today the ULFA militants have set up hideouts in the forests of Arunachal Pradesh making the situation tenuous. The state has also been burdened with warding off the threat from the Khaplang faction of NSCN which has been successful in building a good network in Tirap and Changlang districts. Though the ULFA militants and the NSCN (K) cadres have not started disturbing the people of Arunachal as yet, their mere presence in the state should be a major cause for concern for the security and stability in the state. These outfits might just prove to be the spark in the tinderbox. The poor economic conditions, the Chinese claim to almost the complete territory of the state and the socio-political upheavals that are unfolding demand a careful review of the policies being followed in the State. In order to get a better perspective of the situation, it may be prudent to study the process of emergence of Arunachal as a state in the Indian Union, the nuances of its socioeconomic conditions, and the political set up.

The Birth of Arunachal

Arunachal Pradesh, the erstwhile North East Frontier Agency (NEFA), has undergone a gradual process of constitutional changes. In 1972, the NEFA was made a Union Territory and placed under the charge of a Chief Commissioner. The territory was bestowed with legislative powers with effect from 15th August 1975. And finally, Arunachal Pradesh, the land of the dawn, emerged as a full-fledged state in 1987.¹ The four decades from 1947 to 1987 had been a long period of probation under the Nehruvian

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model of tribal development, enshrined in the Panchsheel of tribal policy.² The Policy was to approach tribal people with affection and friendship. Tribal life and culture was to be treated with respect. It was intended to bring the best things of modern life to the tribes in such a way that these will not destroy the traditional way of life, but will activate and develop all that is good in it. It was hoped that tribal people would be allowed to grow according to their genius and tradition. But no appreciable headway could be made in this direction because invariably the tribal people were referred to as 'primitive', just because they were small scale societies and had simple technologies.³ The elite in India betrayed a crude bias identifying the tribals as those with a 'primitive way of life' and having a 'general backwardness in all respects'. This approach has had far reaching effects on the process of development of the tribal people.

In India, the tribal people have generally been approached in two ways. Firstly, it is an anthropological approach wherein they are treated as museum specimens to be observed and written about. They are not thought of as human beings with whom it is possible to work and live. The other approach is to ignore their special needs and attempt to forcibly absorb them into the so-called mainstream.⁴ Invariably, the bureaucrats fail to identify the special needs of the tribals and try and impose impracticable solutions that are not in conformity with their way of life.

The British had introduced Inner Line Regulations for the erstwhile NEFA ostensibly to discourage unnecessary interference with and to prevent economic exploitation of the tribal people. They posted political officers to deal with the tribes and only sent survey parties and expeditions into the tribal areas. In reality it amounted to excluding all contact between them and the inhabitants of the plains. The States Reorganisation Commission set up immediately after independence felt that integration of NEFA with Assam was not feasible as a special kind of administration was contemplated for this frontier province.⁵ There was need for a safeguard to assure the people of Arunachal Pradesh enough power to prevent them from being forced to become helpless victims in a fast-changing socio-economic scenario. Instead of providing the safeguards,

exactly the opposite happened. Invariably, outsiders were able to impose themselves on the people of Arunachal, often by proxy or by exploiting the loopholes in the legal system. The introduction of market economy, so alien to the people, changed their way of living and initiated devastating upheavals in their society. The businessmen from the plains were able to exploit the local population. The prolonged neglect and indifference, initially of the Britishers and later of the Union Government, geographical isolation and communication gap has thus brought about a sense of alienation amongst the people of Arunachal Pradesh. The trend needs to be reversed to prevent the situation getting out of hand. The problem needs to be tackled at the social, economic and political levels.

Sociological Upheavals

At the outset it is important to understand the ethos of a tribal society. There is, generally, a misconception about tribal societies. It is not ethnicity but its social organisation that marks out any group as a tribal society.⁶ The tribes are societies without any stratification based on caste, class or monetary status. All natural resources like the agricultural land, forests, pastures, fisheries and water resources are held jointly by all the members of the tribe. The right to utilisation of these resources is enjoyed equitably. No member of the tribe has the right to dispose off his plot of land to an outsider or to sell it off. Their concept of private property in land is totally different. Tribal cultures do not make commodities of their natural resources. Unlike the popular belief, solely a particular type of art, song or dress does not distinguish tribal cultures. Their mainstay is kinship that unites them in the absence of a government, police force or a court of law. That is why the tribes are viewed as simple societies. In the absence of formally constituted institutions of governance or administration they lack developed economic systems that require elaborate book-keeping. Thus, they are generally pre-literate. Similarly, unlike the popular belief that they lack a literature, most tribal societies possess voluminous oral details of their genealogies, origin, myths, folk songs and legends. It is just that chirographic traditions have not recorded these in writing.

Arunachal is home to some twenty-five major tribes which are basically heterogeneous. Some of these major tribes are further divided into sub-tribes mainly on the basis of dialectical differences.⁷ They belong to Indo-Mongoloid racial stock and speak languages, which could broadly be classified under the Tibeto-Burman family of languages. The societies of people are governed by some traditional unwritten and non-codified customary laws, which are executed by village councils of elders. The society of people is highly democratic. Each tribe has its own organised institutions called variously as *Kebang* among the *Adis*, *Ngongthum* among the *Noctes*, *Jong* among the *Sherdukpens*, *Mele* among the *Akas*, *Buliang* among the *Apatanis*, *Wancho-Wangsa* among the *Wanchos* and so on. These organisations maintain law and order, decide disputes, and take up all activities for the welfare of the tribes. The people select the members constituting these organisations.⁸ The tribes of Arunachal practice Buddhism, Vaishnavism or a form of animism based on magico-religious beliefs and practices. The societies are casteless but have classes such as chiefs, aristocrats and commoners, slaves, freemen etc. However there is no persecution based on class. The ethical code is of single standard and written laws do not exist. Association of individuals within the society is compulsory. Individual preference or choice is not permitted in associations. All have to conform to the pattern in vogue. Social conventions carry unchallenged authority. Thus, social conduct is regimented on a single standard moral and ethical code. The main theme of all activities is common good.

However, the tribal societies of Arunachal are in a state of flux. Major upheavals are occurring due to the impact of developmental projects as well as gradual urbanisation. New traits of culture and customs are making inroads into the societies bringing in changes in their traditional life styles especially among the younger generations and the residents of the urban centres. The biggest casualty of the change has been the tribal ethos of common good. It is increasingly being replaced by individualism. The concept of habitat being a common heritage has started disappearing. Individual ownership of property, an entirely alien concept till about four decades back, has started making inroads into the society resulting in terrible consequences for the tribal communities. After

independence the tribal tradition of self governance was sought to be institutionalised in Arunachal Pradesh through the Sixth Schedule of the Constitution with the creation of a third tier of legislative-executive-judicial institution to conform to the tribal situation. The objective was that the process of fast change should not disturb the tribal way of life. It was constitutionally provided that the laws could be made for the regulation and control of monetary-economy and trading and to prohibit or restrict transfer of tribal land. It was intended that the tribal areas would function as a sub-system with the prime consideration of well being of the tribal communities. Such trust was reposed in the powers-that-be to ensure that the most vulnerable sections of society were protected⁹. However, there were two major prerequisites needed for this policy to succeed; firstly the persons formulating the policies should have an intimate knowledge of the tribal society and, secondly, the personal involvement of the field executives was a must. Sadly, the State failed on both these counts. The emphasis was on massive expenditure of funds rather than achievement of results. Consequently, the younger generation of the State has neither been able to adapt to the tribal way of life nor has it been able to imbibe the requisite skills to compete independently in a fast moving urban society. The changes in village economies and social relationships have had an adverse effect on the society and community. Thus, there is a large population in the State which has lost its moorings which could be exploited by anti-national elements to the latter's advantage.

There are some who believe that Arunachal Pradesh's relative stability is due to the policy formulated by Dr Verrier Elwin, erstwhile NEFA's tribal adviser, who called for a compromise between assimilation and isolationism. He felt that slower development with a 'tribal touch' could lead to better integration of the State with the rest of the country.¹⁰ However, the lack of 'tribal touch' in execution of the successive policies and onslaught of the 'civilisation' has inhibited total integration of the State with the Union resulting in sociological upheavals and alienation of a large segment of population. This vast segment of the society in Arunachal cannot be kept insulated from the happenings in its neighbourhood.

Spread of Literacy. If one goes by the statistical figures the spread of literacy in the state indicates a high level of progress. From a mere 11.29 per cent literacy rate in 1971, the progress achieved indicates a quantum jump to the levels of 20.79 per cent in 1981 and 41.59 per cent in 1991.¹¹ The corresponding figures for the rest of the country as per the census of 1971, 1981 and 1991 respectively were 29.34 per cent, 43.56 per cent and 52.11 per cent. However, these figures conceal an inherent weakness in the education system that is pro-urban and pro-English or pro-Hindi and totally irrelevant to the majority of the tribals. There is a gross underestimation of tribal life, culture and values. Official apathy, incompetent teachers and an alien medium of instruction has produced misfits and a class of people that is totally divorced from their own life and culture. This is borne out by the declining trend registered in the work participation rate to total population. The corresponding figures for 1971, 1981 and 1991 are 57.6 per cent, 52.69 per cent and 46.24 per cent respectively.¹² This indicates a high level of unemployment. Thus, an irrelevant curriculum of education has only helped ensnare a vast section of society in Arunachal in the trappings of so called 'development' and 'civilisation' and has worsened their plight.

Politico-Economic Changes

Arunachal Pradesh has been part of the political and cultural system that developed in India in the Brahmaputra valley. The Hindu influences penetrated along the Brahmaputra right up to the Dibang Valley. The archaeological ruins of Bhishmak Nagar, Bhalukpong, Ita fort, Malinithan, Tamresvari, Brahmakund and Parsuramkund are associated with myths and stories related in the Mahabharata and the Puranas.¹³ The Assamese connection with Arunachal Pradesh is attested by the presence of some communities like the Deoris and the others and the use of Assamese as the lingua franca.¹⁴ Sacred centres representing Hindu culture had also sprung up between the 11th and the 13th Centuries. However, the arrival of the Ahom kings in the North East and establishment of the Mughal empire in the rest of the country brought about a temporary break in the interaction. The power of the Ahom kingdom started declining in the later half of the

Eighteenth Century. The British expelled the Burmese in 1826 and took over the administration of Assam. They made over Upper Assam, with the exception of Sadiya and Muttuk to Purander Singh, the last of the Ahom kings. But the chaos that had set in with the breakdown of Ahom authority in the wake of Burmese invasion could not be checked. The British finally annexed the whole of Assam in 1838 and made it into a Non-Regulation Province of the British empire in India.¹⁵

Even before the advent of the British, unrestricted interaction existed between the tribal population in the mountains and the people in the plains of the Brahmaputra Valley. Initially the British sent out several expeditions into the tribal territories. However, they soon realised that the enforcement of laws unsuited to the tribal conditions and contrary to the spirit of their customs spread disaffection leading to sporadic uprisings. Thus, they enacted the Inner Line Regulation Act of 1873 stipulating rules regarding trade, possession of land beyond the line and other related matters. Specific administrative measures were initiated to gather knowledge about and cultivating better relations with hill tribes. In 1912-13 a separate district was formed comprising the tribal areas East of the Subansiri-Siyom divide and it had two parts – the Eastern and the Central. Similarly, the area West of Subansiri-Siyom was organised into a district. The Eastern and Central district had its headquarters at Sadiya and the Western district was administered from Charduar. The districts were later renamed in 1919 as the Sadiya Frontier Tract and Balipara Frontier Tract respectively. The Government of India Act 1935 reconstituted these tracts as Excluded Areas. Later in 1943, a post of Adviser to the Governor of Assam was created to assist him in the administration of the North-Eastern Frontier Tracts. In the same year a new administrative division called the Tirap Frontier Tract was created out of some areas of Lakhimpur Frontier Tract and Sadiya Frontier Tract. The Balipara Frontier Tract was again divided into the Sela Sub Agency and Subansiri Area in 1946. After independence, in 1948, the Sadiya Frontier Tract was further divided into the Abor Hills and Mishmi Hills Divisions respectively. Thereafter, in 1954 the Frontier Tracts were again renamed the Kameng Frontier Division, Lohit Frontier Division, Tirap Frontier Division and Tuensang Frontier Division

under the NEFA. In 1957, Tuensang was separated and attached to the Naga Hills District. Finally, in 1972, Arunachal Pradesh was born as a Union Territory.¹⁶ Full-fledged statehood was bestowed on Arunachal Pradesh in 1987. The changes effected after independence were intended to set the pattern for effective governance of the State.

The process of democratisation, recurrent elections for public offices and the politics of self-governance have made the population of the State politically conscious. The frozen social relationships within the tribal communities have begun to thaw and a new class of people is emerging. The inner dynamics of the tribal society has changed and an elite group, with vested interests and endowed with power, has been able to corner resources to deprive the general public of the fruits of development. The problems afflicting the political scenario in other states have started making inroads into Arunachal. The sad result has been that the democratic way of life, a significant feature of the society in Arunachal, has suffered a setback. Full benefits of economic development have not been able to percolate to the grassroot levels. The flow of easy money in the name of development and the softening up of the tribal society has totally disrupted a community, which was essentially egalitarian. The requirement is to help the tribal people grow according to their genius and traditions and to provide them with equal opportunities with rest of the country. More pragmatic policies to ensure better facilities for health care and education and for development of communication and other infrastructure need to be implemented.

The long historical isolation and inaccessibility of the State has posed formidable constraints to its socioeconomic development. The topography of the area, with the Rivers Lohit and Brahmaputra and their numerous tributaries posing formidable challenges to development of the road communication network, has reinforced the sense of deprivation of the people of Arunachal. The recent turmoil in Assam has dampened the pace of development of road communication in Arunachal, particularly in the areas bordering the former.

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The State is endowed with rich natural resources like forests and water. Out of a total geographical area of 83,743 sq. km of the State nearly 51,540 sq. km (62 per cent) is under forest cover.¹⁷ However, widespread felling of trees, thanks to a nexus between the contractors, politicians and bureaucrats, had threatened to deprive Arunachal Pradesh of its major resource till the Supreme Court imposed a ban on tree-felling in 1996. But the ban has also had its negative effects. It is estimated that the State is losing nearly Rs 52 crore every year due to the ban on timber cutting.¹⁸ The Net State Domestic Product (NSDP) of Arunachal Pradesh for 1998-99 was Rs. 936.56 lakhs and had shown a growth of 6.5 per cent. The per capita income of the State for the same period was Rs 8979 indicating an increase of 3.9 per cent.¹⁹ However, the figures could be misleading due to vast disparities in income distribution between different strata of society. Moreover, the State is heavily dependent on grants-in-aid from the Centre.²⁰ Such heavy dependence on Central aid and the imbalance in receipts versus expenditure could prove to be counter productive to the state in the long run. The Centre, obviously, may not be able to sustain the tempo of such heavy grants. A curtailment in the same could lead to widespread resentment in public. Moreover, these funds could be diverted from what these are intended for. An improper political set up could prove to be a serious threat to the stability of the State.

A major problem, which every Chief Minister of North Eastern States faces, is to achieve tribal unity at the State level. Traditionally, the culture and customs of different tribes have been considered so highly reverent and honourable that these have come to be treated more as hindrances to achieve regional homogeneity than acting as agents of inter-tribal unity. Thus, in almost all the seven North Eastern States, tribal loyalties transcend the spirit of regional unity. The policies of the Central Government have also not helped much in this direction. The ruling elite; both politicians and bureaucrats, consider the nation-state in terms of cultural entity rather than political economy. This has given birth to fissiparous tendencies in the North Eastern region. The demand for establishment or creation of new ethnicity-based states bears testimony to that. So far Arunachal Pradesh had been spared this

torture, But economic mismanagement has started making the population restless. In such an environment it has not been difficult to arouse passions in the name of tribal disparity. There have been growing demands in the Tirap and Changlang districts to be separated from Arunachal Pradesh and for the grant of status of a Union Territory. These districts are on Indo-Myanmar border with the population having ethnic homogeneity with certain tribes across the border. Thus, the demand for breaking away from Arunachal Pradesh has to be handled tactfully and genuine grievances of the people addressed immediately to prevent it from graduating into a secessionist movement.

In one significant way the emergence of Arunachal as a state was different from the other states of India. Immediately after independence the country was reorganised into various states on linguistic basis. However, Arunachal Pradesh evolved as a state on administrative grounds. Despite that, language was and is still considered as a weapon to bring homogeneity, develop fraternity and inculcate a sense of unity and mutual understanding among the larger tribal groups of Arunachal Pradesh. Most of the languages and dialects spoken in the State have, in the absence of their own script, adopted the Roman script. This has happened because of better acquaintance with the Roman script over a period of time despite phonological suitability of Devnagiri for sound affinity. Christian missionaries have also played an important role in this development. Moreover, practical convenience of Roman script for typing and acceptance of English language in 1971 as the medium of instruction in school curriculum in the entire Arunachal Pradesh favoured continuation of the Roman script.²¹ However, the schools affiliated to the Central level organisations did not follow this policy. They adopted Hindi, that too its Sanskritised version, as the medium of instruction. It is not uncommon today to find Sanskritised version of Hindi being used by some speakers at various public functions. The overwhelming majority of the audience at such functions does not understand this type of language. Sooner or later, it is likely to lead to resentment and could be construed as thrusting an alien language on the State. Already, there are instances, though not in very significant numbers, in the interior districts of Arunachal Pradesh where hoardings on the shops have been put

up in a script resembling those of the Chinese or the Tibetan characters.

Irrelevant education curriculum is likely to cause another problem. The complete curriculum is biased towards providing type of knowledge and information to students, which has no bearing towards regional affinities. Thus, the students learn about the history of the Indus Valley without first being aware of their own roots. The role played by the tribals in challenging the British to thwart their expansionist missions into Arunachal has been ignored from the syllabi of the schools. The students learn about the heroes of the Indian freedom movement. It is quite often implied as if the tribals never joined the freedom movement.²² But this is far from the truth. There are numerous tribal warriors who resisted the Mughals and the British and even laid down their lives. For example, very few Indians are aware of the heroic battles fought by Senglung, a Sixteenth Century warrior of Arunachal Pradesh. He defeated the mighty Mughals in a series of battles in 1532 AD and prevented their advance beyond Nagaon.²³ Similarly, a Mishmi Chief, Kahksia Manyu, waged a grim battle against the British in 1855 and was later captured and hanged at Dibrugarh.²⁴ In 1894, a seven hundred strong British force equipped with muskets and artillery guns, trying to advance on Dambuk and Mebo, was totally annihilated by Adi warriors and only one coolie and a dhobi survived to report the loss to Captain Needham.²⁵ History books at school level in India do not find a mention of such heroic deeds of the people of Arunachal Pradesh. Such bias in the curriculum at school level is not at all conducive to integration of the State with the rest of the country. It seems that the Indian ruling elite considers the nation-state in terms of cultural entity rather than a history based political existence. The seeds of mistrust and alienation take root due to such narrow-minded predisposition. This problem is compounded by the ignorance of the history of the North-East by a common Indian citizen. Little does an educated Indian know that an average person from the North-East knows much more about the rest of the country than vice versa. For example, during a survey, none of the more than 90 per cent MA students of an elite institute like the Tata Institute of Social Sciences, Mumbai could name a single freedom fighter from the North-East.²⁶ The mistrust is

further reinforced by the policies followed by the government. For example, it is alleged in certain quarters that Freedom of Religion Act 1978 was enacted in Arunachal Pradesh to restrict Christian missionaries but the government was quite open in supporting Rama Krishna Mission and Vivekananda Kendriya Vidyalayas who continue their activities mainly in the educational field.²⁷ There is already a sons-of-soil movement that has taken root in the East Siang Valley.

The China Factor

China has been claiming an area of 90,000 sq. km in Arunachal Pradesh, which comprises almost the whole of the State. A 1030 km stretch of McMahon line between India and China touches Arunachal Pradesh. The original trade routes between India and China in this region have virtually been closed down. But at micro level, the barter trade still continues. Arunachalees procure black salt, brass, metal etc from China in exchange for State's indigenous ornaments. Some of the tribes like the Nyshis have their relatives in China. That some sort of an informal interaction exists between the people of the two countries is borne out of the fact that there have been instances of students from villages of Arunachal Pradesh going to Chinese villages to study in the early 1960s. A report in the *Assam Tribune* details how a tribal from Arunachal, Mr Dindu Miri of Dri Valley, went to study in China. He along with some other children of Idu tribe went to a school across the border and studied in Chinese language.²⁸ Narrating his stay in China he mentions about his meeting with Mao Tse Tung and Chou-en-Lai. He describes the routes from India to China via the Agula and the Keyla Passes. The Chinese appointed him as a political interpreter and he acted as a guide for the Chinese forces in 1962. He mentions that some Idu tribesmen are settled in Bapa village in the Chinese Tibet region. He is now a Political Interpreter Grade I with the Arunachal State Government. Interestingly, it was in the region of Keyla Pass in Dibang Valley that Mr Mukut Mithi, the Chief Minister of Arunachal Pradesh, reported the recent Chinese incursions. There were also reports of intrusions in the Tawang, Taksing and Maja areas of Arunachal Pradesh.²⁹ Though the Sino-Indian relations have shown a change for the better in the recent past and the

Confidence Building Measures seem to be showing results along the LAC (Line of Actual Control), the incidents narrated above must not be ignored in the light of continued Chinese claims to almost the whole of Arunachal Pradesh.

Prognosis

A border state should be well administered, stable and resourceful, capable of resisting the evil designs of any foreign power and also capable of thwarting any internal threats to security. In Arunachal Pradesh we have a vast segment of population belonging to the younger generation which has lost its moorings and is suffering the deprivations caused by rampant unemployment. The false hopes generated by an unrealistic educational curriculum have shattered them. Moreover, the economy of the State is totally dependent on Central aid and grants. Developmental policies, far divorced from ground realities, have made the population dependent on easy money instead of generating meaningful employment opportunities. The presence of ULFA militants, NSCN (IM) and NSCN (K) cadres in such an environment does not bode well for the internal security situation in the State. The disillusioned and unemployed segment of society could fall easy prey to the evil designs of those bent on fomenting trouble.

The local politicians, instead of creating an environment for economic development of the State, are busy in furthering their own interests. The sons-of-the-soil movement, which is emerging in some parts of the State, is basically a struggle for identity on ethnic grounds. The political agenda of the leaders in the State revolves around ownership of land and other resources, which cannot create jobs. In order to generate better employment opportunities the State and Central Governments should strive to develop the State's agriculture, horticulture, exports, fisheries, tourism industry and other agro-based industries. Moreover, there has been a brain-drain from the State. Most of the educated youth do not return to Arunachal and prefer to explore greener pastures.

Conclusion

The importance of rapid economic development of Arunachal

Pradesh cannot be over-emphasised. However, there is a need for a paradigm shift in the policies being followed. More pragmatic education policies that would increase the level of general awareness of the people and vocational training aimed at generating self employment opportunities could make the unemployed youth contribute in a constructive way. Development of agriculture and horticulture, coupled with agro-based industries, providing meaningful employment opportunities and a better infrastructure in terms of roads and bridges could go a long way to meet the aspirations of the youth. It is unlikely that the change could be brought about by the efforts of the government alone. A committed and motivated bureaucracy aided by effective NGOs could help in moulding Arunachal's economy to pull it out of the morass it is sinking in. Moreover, stern action would have to be taken to prevent the ULFA and the NSCN cadres from developing their bases in the State. To do so would require a strong political will. Six Sisters in the North-East are already suffering. Let not the Seventh Sister follow suit.

Notes

¹ *Economic Review of Arunachal Pradesh, 1999*, Directorate of Economics and Statistics, Govt of Arunachal Pradesh, Itanagar.

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³ Shereen Ratnagar, 'Who are the Tribals', *One India One People*, Nov 2000, p 46.

⁴ Udhav Kulkarni, 'Integrated Approach Needed', *One India One People*, November 2000, pp 46.

⁵ HK Barpujari, *North East India: Problems, Policies and Prospects Since Independence*, Guwahati, Spectrum Publications, 1998, p 4.

⁶ Shereen Ratnagar, n. 3.

⁷ PC Dutta & DK Duarah, *Aspects of Culture and Customs of Arunachal Pradesh*, Directorate of Research, Government of Arunachal Pradesh, Itanagar, 1990.

⁸ Ibid.

⁹ Sadanand A Shetty, "Development at Whose Cost?" *One India One People*, November 2000, p 5.

¹⁰ Anuradha Kumar, "Rare spokesman for the Forgotten", *One India One People*, November 2000, p 20.

¹¹ *Economic Review of Arunachal Pradesh*, 1999, Directorate of Economics and Statistics, Govt of Arunachal Pradesh.

¹² Ibid.

¹³ JN Chowdhury, *Arunachal Panorama*, Directorate of Research, Itanagar, 1992, p 20.

¹⁴ KS Singh, op cit.

¹⁵ JN Chowdhury, op cit, p 32.

¹⁶ Ibid, p 36.

¹⁷ *Economic Review of Arunachal Pradesh*, 1999.

¹⁸ Krishna Das, 'All is Not Quiet in Eastern Front', *North East Sun*, 15-30 November 2000, p 10.

¹⁹ *Economic Review of Arunachal Pradesh*, 1999, n. 1.

²⁰ Ibid.

²¹ RN Koley, "Quest for Development of Adi Language", *Arunachal Review*, March-May 2000, p 11.

²² JJ Roy Burman, "Roots of Tribal Upsurge in the North-East", *One India One People*, November 2000, p 12.

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²⁶ JJ Roy Burman, n. 22.

Manipur – A Degenerated Insurgency

EN Rammohan

Manipur, maid of the mountains, was the evocative title of a book, published by R Constantine in 1981. Manipur continues to be beautiful and lovely, befitting the lyrical title of Constantine's book. The state, however, ravaged by militancy for the last forty years and plundered by its politicians is in shambles and on the brink of a financial emergency. Its environment particularly in the hills has been degraded and as a result its beautiful lake Loktak, is fast silting up. There has been continual siphoning of developmental funds. The insurgency which was initiated by the Peoples Liberation Army [PLA] in 1979 and by the United National Liberation Front in the early nineties, both with some ideology, has degenerated and proliferated into a number of rag-tag groups and is now basically a widespread extortion racket, which has spread like cancer into all facets of politics, administration and the social life of the state.

The Manipur hills consist of a series of parallel ranges extending from the Naga hills to the North and the Mizo and Chin hills to the South. The hill ranges are divided into the Eastern and Western hills. The Manipur Eastern hills form a continuous chain along the Indo-Myanmar frontier for about 200 kilometres with an average height of 1500 metres. The different ranges are the Nupita, Chiaga, Malain, Angoching and Yomadung. The Manipur Western hills comprise parallel ridges and valleys, running North South for about 180 kilometres. They are the Uningthou, Khoupum, Koubru, Nungba, Kalanag, Nungjiabong and Haopi.

The Manipur valley enclosed by the eastern and western hills is a large intermont basin about 70 kilometres long and 35 kilometres wide with an area of 2067 sq kilometers and an elevation of 760 metres. It is a lacustrine plain, site of an ancient lake subsequently filled up, the remnants occupy the south east corner of the valley, ie the Loktak lake.

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The people of Manipur fall into three groups who migrated into the valley from the east and the south from Myanmar. The main group the Meiteis, chanced to settle in the fertile valley by its flowing streams and developed into an agricultural community, thereby getting a headstart to civilisation. Of the second group consisting of three tribes, the Thangkhuls settled in the hills to the West in the present Ukhrul district, the Maos in the North in present day Senapati, and the Zeliangs in the North and West in Tamenglong district. The third group came from the south and settled in the south in Churachandpur district. This is the Chin-Kuki- Mizo group, comprising several sub- tribes. The main Kuki tribe which is more enterprising spread to other districts and even into the Naga Hills and North Cachar Hills of Assam..

The Meiteis having settled in the valley developed into an early civilisation. There were four principalities—Khumal, Lawang, Moirang and Ningthouja, the last enjoying royal status. The Meiteis have a recorded history of two thousand years, the earliest being the Cheitharol Kumbaba chronicling the period from 33 AD, the year of commencement of the reign of Pakhangba, upto 1897 AD the reign of Maharaj Churachand Singh. The Meitei Rajas controlled the valley and hills and extended their sway well into the Naga hills upto Assam and into Myanmar upto the Kebaw valley.

Insurgency came to Manipur with the Naga underground in 1956. The Federal Government of Nagaland [FGN] extended its activities to the Naga districts of Manipur. The Manipur Rifles, the armed police of the state was actively involved in counter insurgency operations with the Army. Led by their Meitei officers it earned a very good name. When the Naga hills district was given statehood in 1962 it hurt the Meitei sentiment. An ancient kingdom which had ruled the area including the Naga hills district, was already insulted when it was given Union Territory status. Manipuri, the language which was the lingua franca of the state, learnt by the Meiteis and all the tribals of the state, was not being included in the Eighth Schedule. And now Naga hills, only one district of Assam was given statehood..

In the late sixties and seventies, the policy of the party in power in Delhi was to flush the North East with funds. A group of

contractors had come up in Delhi, all hangers on of the party in power. Nagaland, Manipur and later on Meghalaya and Mizoram were the states which suffered this policy. Ninety per cent of the funds poured into these states were carried back to Delhi by this coterie of contractors, who had come to be called the Delhi Durbar. Roads were constructed on paper and development funds were siphoned off. Food grains for the public distribution system went wholesale into the black-market. Manipur was sucked into this vortex and its politicians and bureaucrats quickly adapted to this system.

In 1975, the FGN signed the Shillong Agreement, and peace came to the hills of Ukhrul, Senapati and Tamenglong. This was short-lived. Muivah, a Thangkhul and Isaac Swu, a Sema rejected the Shillong Agreement and formed the Nationalist Socialist Council of Nagaland [NSCN] along with Khaplang, a Hemi naga from Myanmar. The NSCN had its Headquarters in northern Myanmar. It was at this time that the Peoples Liberation Army [PLA] was formed on 25 September 1978 by the late N Bisheswar. An ideological and chauvinist group, it was formed because of the corrupt politics and administration of the state.

The PLA was a revolutionary organisation and attracted a number of young people. Several brilliant Meitei students studying in national universities left their studies and joined the organisation and were killed or captured in encounters. The borders of Manipur curiously were never policed like the borders of West and East Pakistan. The FGN had established its camps in the Somra tracts across Ukhrul and in northern Myanmar in Hemi Naga country. There was, however, no border policy with deployment of border forces along the Myanmar border. The Army, Assam Rifles and the Village Volunteer Force [VVF] posts were established, but not on the pattern of the Indo-Pak border. Much later when the BSF (Border Security Force) was raised, some posts were established at Behiang, Phaisanjang and Moreh, but these were isolated and no BOPs (Border Outposts) were strung along the border, to form a linked line of defence. The PLA also crossed into Myanmar, and probably with the help of the NSCN reached Kachin and established training camps with the Kachin Independent Organization [KIO]. The PLA robbed banks and extorted money from the Marwari

traders, who were part of the unholy nexus of politicians and bureaucrats in siphoning out development funds.

There were a number of Meitei settlements in the Kubaw Valley, remnants of the Meitei's earlier domination of the area. With an increase in pressure of the Army and paramilitary forces in the valley, the PLA took refuge in these villages and also in Sylhet district of Bangla Desh, in Srimangal, Chotto Dhamai Adams bazaar, where there were Meitei settlements – again vestiges of the earlier extent of rule of the Meitei kings.

In a series of swift actions in the early eighties, the Army was able to capture Bisheswar; several first and second rank leaders were killed in encounters. In 1990 Bronsen, the President of the KIO withdrew support to the NSCN, the PLA and the ULFA who were all being trained by them. The weapons obtained by these organisations from the KIO were all seized from the Myanmar Army. Neither the NSCN, nor the ULFA and the PLA really acquired sizeable weapons from the KIO. When support was withdrawn, all three groups took refuge in Bangla Desh. The FGN and the MNF had sought and received help from Pakistan in the sixties. The NSCN and the ULFA leaders soon established contact with the Pakistan ISI in their Embassy in Dacca, and very soon the ISI had arranged arms to be purchased from Thailand. The Khmer Rouge in Cambodia had just broken up and Russian light weapons and LMGs were up for sale. An arms bazaar soon formed up in Thailand. Weapons purchased here were brought in coastal trading ships to Cox's Bazaar. In 1991 a group of 250 NSCN (IM) exited from Chandel district in south Manipur and marched south along the eastern border of Mizoram, and cutting across south of Parva entered Bangla Desh. Here ten of the cadres deserted and surrendered to the BSF post at Parva, and the government came to know of the whole plan. Later, the remaining 240 cadres returned with weapons collected from landings in Cox's Bazaar, and the NSCN (IM) got its first consignment of weapons through the ISI. They did two more such trips. When the fourth party was returning with weapons, they were intercepted by the Army and a number of NSCN and ULFA cadres were killed. This, however, did not discourage the NSCN and other groups, and several more consignments were brought. The route was later changed. Instead

of going east from Bandarban in Bangla Desh , the groups struck north through the Chittagong Hill Tracts, and crossed into Mizoram near the tri-junction between Chittagong Hill Tracts, Tripura and Mizoram. From here they traversed east and crossed at Tipaimukh into Manipur and turning north crossed into Tamenglong and then into Nagaland. This route was used several times by the NSCN (IM). It was only once in 1999 that the Assam Rifles ambushed a group of 60 odd NSCN[IM] marching up the Longai valley; nine NSCN members were killed in this ambush. This route has been used several times by the NSCN (IM). It is even reported that the last consignment brought in July 2000 into Mizoram, was sent by vehicle from Mizoram via Jiribam, Tamenglong to Nagaland. The consignment of 2001 crossed Jiribam in January 2002. By the late nineties arms merchants had made their bases in Rangoon. The PLA, UNLF and other groups started purchasing arms from Myanmar across Chandel district.

The United National Liberation Front was founded on 24 November 1964 by Arambam Somerendra. It was a secessionist organisation and was the culmination of several movements like the shadowy Pan Mongoloid movement and the Revolutionary Nationalist Party which raised the banner of independence in 1953. The UNLF was preceded by the Revolutionary Government of Manipur (RGM). A rash of robberies including looting of the Treasury in Imphal in 1968 and 1969 were probably done by members of the UNLF and the RGM. By 1970 there was information that the RGM was in touch with the Naga underground. A link was established in East Pakistan and 52 RGM members crossed the border in 1969. They were arrested and all except their leader Sudhir Kumar were deported into India. Most of them were arrested in combing operations in Cachar and Tripura. Sudhir Kumar was arrested in 1972. Only Somerendra remained. By 1970 the RGM was leading an anti Mayang movement. In 1972, when Manipur got statehood, the RGM lost its base. Many of their volunteers were arrested.

The UNLF remained a social organisation for a decade and took to arms again only in the early nineties. Funds were collected by extortion from the business community and government servants and they purchased arms from across the border in

Myanmar. In 1990 a faction led by N Oken left the UNLF and formed the UNLF Oken group, which later merged with splinter groups of the Kangleipak Communist Party and the Peoples Revolutionary Party of Kangleipak (PREPAK) and formed the Kanglei Yawol Kanna Lup.

The third militant group of the valley – the Peoples Revolutionary Party of Kangleipak [PREPAK] was founded by RK Tulachandra on 9 October 1977. Another revolutionary and chauvinist group, it collected money by robbing banks, extortions from the business community and set up camps in Myanmar for training its cadres.

The Kanglei Communist Party (KCP) was founded in 1980 with a leftist chauvinist ideology. It has its CHQ in Chandel district and a camp in Myanmar. It has today degenerated to being an outfit involved in extortions only.

Till the nineties, these groups operated in the valley alone, and had only some bases in Chandel district. This district has a scattering of smaller Naga tribes Maring Anal Chothe Kom along with a number of Kukis. Hilly and forested with hardly any roads, its border with Myanmar is totally unguarded. The only main road links Paiel in the valley with Moreh on the Myanmar border. The NSCN [IM] operated in Chandel district finding sanctuary in the Naga villages. Churachandpur district was the only district free of militant groups.

All this changed in 1993, when the Kuki National Army was set up in Myanmar. The Kuki-Chin- Mizo group and the Nagas had never got along well ever since they had migrated and settled in the Manipur hills. The Kukis had been used both by the Meitei Rajas and the British as a buffer against the Nagas. Perhaps this is what prompted setting up the KNA across the Moreh border. The bait offered was control of the rich spoils of smuggling through Moreh. The NSCN (IM) was bidding to control this zone. The valley group, who had bases in Chandel district, was also bidding for controlling Moreh through the sizeable Meitei population there and across the border in the Kubaw valley. It was only the Kuki population who did not have a say on this issue. The KNA filled this vacuum.

gunpoint and work executed by them. Executive engineers and their seniors are forced at gunpoint to carry out only 50 per cent of the work and record in their measurement books that 100 per cent work has been done and pass cheques for the full amount to the contractor. 50 per cent of the amount is taken by the militant group concerned. No department was spared. In the Food and Civil Supplies department whole tankers of kerosene oil, petrol and diesel were diverted from the dealers and sold in the blackmarket by the militant groups.

It is clear that ideology had long since been left behind in the valley and hills. While the common people look to the government for succour, there is a half educated crust which has become increasingly anti national and blame everything on the Central Government. The burgeoning strength of the NSCN (IM) bred fears in the Meitei community that this underground group and the Thangkul, Mao, Paumei, Maram, Zeliang and other Nagas behind them would one day control Manipur. Despite the extortions the Meitei community began to feel that only their militant groups would ultimately protect them against the NSCN (IM). There was even a doubt that the North Eastern states might break up. If this happened the Meiteis genuinely feared that they would be dominated by the NSCN and the Nagas, putting an end to the 2000 year domination of the Meiteis. This was intolerable.

Then came the cease fire with the NSCN (IM) in 1997. The fear of the four Naga districts becoming part of Nagaland became real. The NSCN (IM) also changed the name Nagaland to Nagalim. The Meitheis pride was hurt and a massive procession was organised in Imphal. It was intolerable to the Meitei pride that the 2000 year history and domination of the hill districts would be forgotten and they would be only left with the valley.

The ceasefire was extended twice. When it was to be extended a third time, the NSCN (IM) insisted that the ceasefire should be extended to the four hill districts of Manipur. The Government of India agreed. But it angered the Meiteis. This led to arson and rioting which was beyond the control of the Manipur police. The Raj Bhavan was nearly burnt. The half educated crust made it out as if it was a repeat of the 1891 attack on the Residency, when

it was burnt down after the British garrison retreated. Front organisations of the main valley underground groups, the All Manipur Union of Clubs Organisation (AMUCO) and the All Manipur Students Organization (AMSU), utilised the mood to influence the common people about the intransigence of the Central Government. For some time the valley groups who had become quite unpopular, because of the kidnappings and widespread extortions, managed to come close to the common people. This, however, did not last very long.

What is the answer for Manipur? One cannot help feeling that the Central Government in its focus on the Western border and Pakistan has relegated the North East. We must correct this imbalance. In any counter-insurgency module the military and the civil effort must go together. Keeping this as a guiding principle five steps must be taken by the Centre.

(a) Ensure that officers of the All India Services stay in the State. Today ninety per cent of them are on deputation and continually manipulate not to come back. Most of the officers of the last five batches have got cadre transfers. The Home Ministry must post two battalions of the CRPF in the State to exclusively guard and escort all Central and State Government employees. They should guard all offices and residential colonies. All civil police and judicial officers should be shifted to government colonies. Once their security is ensured, there will be no excuses for cadre officers to run away. The tenure rules should be changed to ensure that five year tenure in the state is mandatory. Terms of service in the North-Eastern cadres should be made specially attractive.

(b) Posting of judicial officers in the state should be specially monitored. If necessary, judicial officers should be shuffled from among the North Eastern States to ensure that they are not pressurised to favour militants being tried.

(c) The valley districts have roads and tracks that are fully accessible. Ten battalions of the CPMF should be deployed in the valley in a CI (counter insurgency) grid. The hill districts have very few roads and will need six to eight battalions each with helicopter support to effectively dominate them.

(d) Since in any case the state is dependent on Central finance, all developmental schemes in the state should be monitored by officers deputed from the Centre on short tours. For example all DRDA schemes should be monitored by the Deputy Commissioner (DC) and an officer from the Rural Development Ministry. This will ensure that there will be no interference by the politicians or the militants.

(e) The BSF should be deployed in a string of BOPs three kilometres apart on the borders of Myanmar. Together with this, extensive construction of roads should be taken up in all the hill districts and all along the border.

Development schemes should be taken up with a view to open up employment in the private sector. There is enormous scope for forestry, horticulture, piggery, poultry and fisheries in the hills and plains. The unemployed educated and dropouts are the main source of recruitment for the militant groups—it is this section that should be targeted in all development projects.

The government should come up with a plan on the above lines.

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Saving Siachen from Ecological Decay

Wing Commander NK Pant (Retd)

As we observe this year as the International Year of the Mountains, our attention naturally goes to the Himalayas where rapid environmental degradation is taking place due to human lust. Tourism, pilgrimage to holy places, deforestation, mining, quarrying, mountaineering and military deployment are taking an increasing toll of the region's pristine ecology. Here, we shall discuss the woes of Siachen, the longest glacier outside the polar region, which has been the unfortunate ecological victim of Pakistan's bellicose military designs on Kashmir. It has compelled India to deploy a brigade, which is roughly 3000 soldiers, in the glacial region since 1984. To sustain such large number of troops, about 12,000 tonnes of load is flown into and paradropped there every year. Islamabad, the aggressor, must be maintaining much more military strength and supplies on its side of the occupied territory since 1947.

Located between the Karakoram and Zaskar ranges, Siachen is a 75 km-by-32 km glacial area on the eastern Saltoro ridge which is the dividing line between India's Ladakh and Pakistan's Northern Areas. Strategically located near the junction of Pakistani, Chinese and Turkistan frontiers, the glacier is occupied both by the Indian and Pakistani troops. Indian troops control approximately two-thirds of the glacier and enjoy a superior tactical position by sitting on the commanding heights.

The deployment of such large number of fighting men for such a long time has turned Siachen into the world's biggest and the highest non-retrievable garbage dump posing a serious threat to ecology and environment of the area. It is rather difficult to imagine how much hazardous waste has accumulated there since 1984 when the heights were first occupied.

Wing Commander NK Pant is a Defence analyst.

The garbage mainly consists of plastic remains of crashed helicopters, worn out gun barrels, splinters from gun shelling, empty fuel barrels, burnt shelters, telephone wires, skid boards, paratropping boards, edible oil containers, canisters, gunny bags, rotten vegetables, bad meat, expired tinned meat, cartons, wrappers, shoes, clothing, ration items etc. It also includes bodies which could not be recovered. Lakhs of parachutes are used to drop rations over the posts. Though reusable, these parachutes lie at the posts and are not reinducted. Many of these items have over the period been utilised to erect temporary shelters for living and stowage. But the ever accumulating snow continues to bury these shelters under its layers merging these with the glacier as all-time pollutants.

Exchange of fire at the glacier is a daily ritual. It emanates not only from small calibre weapons but big guns too. Not only is it destroying the serene environment of the area but also adversely affecting all natural processes. The booming guns send tremors, affecting the delicate seismic balance of the region. Wherever guns have been deployed, the surrounding ice has melted. Harmful gases from burning propellant are released when the weapons are fired and at the glacial peaks, where the oxygen content is at its lowest, they prove to be poisonous.

Ammunition is another poisonous pollutant. It consists of propellants and high explosive constituents that have poisonous chemical composition. With no means of retrieving garbage from the posts and in the absence of incinerators, it continues to pollute the otherwise bacteria-free environment there.

According to environmental experts, plastic and metals are the most hazardous of the solid wastes being littered at Siachen. The toxification, they explain, begins the moment metals and plastic come in contact with water. The degree of this toxification depends upon the duration of the contact. The oozing out of the toxic substances by these materials is a continuous phenomenon. It continues even at the extreme sub-zero temperatures when metal and plastic lie frozen in the glacial ice. The toxins so generated are released into rivers as and when the glacier melts. This has

adversely affected aquatic life. All the harmful metallic and plastic wastes such as the lead-based metallic shells, projectiles of ammunition and polythene bags that are dumped in the glacier generate toxic residue, which flows into the Nubra river; which gets its water from the melting snows of the Siachen Glacier. The Nubra, a tributary of the Shayok river flows into the Indus which ultimately becomes Pakistan's principal river.

Human waste is also a big problem. Since the temperature there is sub-zero and the environment bacteria-free, it is believed that bio-degradation does not take place. The waste just keeps lying there. Though the environment at Siachen is bacteria-free, experts say the possibility of bacterial spores exists.

The native wildlife too has been adversely affected. A decade ago, the snow leopard was often spotted here. Now that their habitat has been encroached upon by human beings, these wild animals have shifted and are not sighted near any of the posts along the glacier.

The general temperatures have allegedly risen and the glacier is said to be receding. Moreover, the rivers, streams and water springs are turning toxic. The troops in the area are advised to consume water only from earmarked water sources whose samples are pre-tested. In addition, too much activity by low flying, heavy duty helicopters for para-dropping at the posts disturbs the seismic balance of the region. With the road network right up to the end, hamlets have sprung up en route. This has increased the vehicular traffic and the resultant emission levels.

In this context it is worth emulating the example of Mount Everest's climbing area in upper Nepal, frequented by a couple of international expeditions each year. The area was described as environmental disaster by some activists as the waste left by mountaineers over the years had become an eyesore at several camp sites. A cleaning campaign organised by some agencies to remove tin cans, plastics and other left overs, was given wide publicity in the world media. This environmental degradation, however, is almost trivial and inconsequential when compared to the one caused to the Siachen.

It is unfortunate that some ecological damage has already been done. It must be noted that the ensuing environmental disaster will harm Pakistan more since it is the recipient of the toxic wastes through the contaminated river system which finally flows into that country. The demilitarisation of the Siachen glacier appears to be the only solution to this enormous problem which is not being recognised in Pakistan due to its perennial 'hate-India policy'.

There are suggestions to create a "Siachen peace park" and declare the spectacular glacier a "world heritage site" on the lines of the Alps but Pakistan's constant hostility to India hampers this hope. Perhaps the time has come when Islamabad should give a serious thought to Indian suggestion of demarcating the Actual Ground Position Line on the glacier. The ultimate goal should be withdrawal of forces to save the natural icy heights from the immense ecological degradation.

Letters to the Editor

I

WOMEN IN UNIFORM

The article by Dr Anita Nahal Arya published in the January-March and April-June 2001 issues under the caption "Women in Uniform : Gender Dialectics in the Armed Forces" (Parts I & II), gives a very logical analysis of a woman's career in the Armed Forces. It is the best I have seen so far. It will be recalled that it was a momentous occasion when the last batch of 46 lady officers marched out of the Officers Training Academy in Chennai four years back. It is now six years since the sanctity of this male preserve - the Services - was thrown open to women, to begin with, in the officer class. It was proclaimed as a major landmark in the Indian Army, when a batch of 22 women officers were inducted into the Service, that remained the last bastion of any male dominated organisation in the country. The time has come to review this decision, specially so in the light of the recent Kargil operations.

With due respects to Dr Arya's analysis, let's face it that we are only copying the induction of women in the forces on the American experiment. How far they fit in with our security requirements is yet to be assessed. To begin with, in the American society, military service is a hallmark of citizenship, and dodging the draft is a serious blot on a man's standing and even in his future career. In fact this is the very charge which was brought against the former US President, Bill Clinton, who was accused of shying out of Vietnam. This is not the case in our country, where the military is still not held in high esteem, careerwise, by the civilian society, inspite of Kargil.

The question is not whether the Indian women should be allowed to make a career in the forces; it is also not whether she will make a good soldier or sailor, as the answers to both these are in the affirmative. The specific question to be answered is, whether by their joining the Services, will it increase or enhance the existing

efficiency, morale and the fighting spirit of the combat units in the trenches, or the men on a battleship at sea. If the answer to this is 'NO', then all other arguments concerning the women's role in the Armed Forces are irrelevant, and of an academic nature only.

After the reported incidents of sexual harrassment in the Gulf War, four years back, very serious case of sexual assault which took place on a US Naval ship involving officers, which resulted in the resignation of the then Naval Secretary, and the fact that as of date there are 1200 cases of sexual harassment pending investigation, even the US Government is reconsidering the whole pattern of women in the Armed Forces. The question which it has posed is, "for the sake of satisfying a Constitutional requirement of giving equal opportunities in the Armed Forces for both sexes, are we creating unnecessary new problems, but which does not result in any higher national security?"

However, notwithstanding the above, let's examine the role of women in the purely managerial jobs of the Services. A recent management study has indicated that, contrary to popular beliefs, women do even better than men in management tasks. This has also been confirmed by Dr Arya. Today 60 per cent of the students at the Harvard Business School are women. A recent study indicates that women do a better job than men in 28 to 31 key management categories, including keeping productivity high and generating ideas, but they do poorly in handling frustration. This was a departure from traditional presumptions, which credited women with being mature team players at work but not with skills associated with top management.

Women have traditionally been given credit for being good in terms of intuitive skills, and the study confirmed that they do well and out-perform men in that area. However, the study also showed that women were even stronger in more logic-based skills like, getting things done on time, producing high quality work, generating ideas, problem-solving and planning.

Although women were even with men in delegating responsibility they were behind in the ability to handle pressure and cope with their own frustration. The study did not aim to single out

gender differences at the outset, as Dr Arya has tried to do, but rather to identify leadership abilities.

The 31 areas of management ability surveyed were broken down into seven categories, problem-solving, planning, controlling, managing self, managing relationships, leading and communicating. While women did better than men in 28 of the 31 and excelled by a wide margin in 25, they were behind in a key area, namely, self-promotion. The study, therefore, concluded that women have to be more assertive in demanding recognition for their efforts. Men will not give this to them on a platter, whether in the Services, or even in industry.

Brigadier NB Grant, AVSM (Retd)

II

HUMAN BEHAVIOUR IN THE ARMED FORCES

Please refer to the USI Gold Medal Essay written by Lieutenant Balakrishnan Gurumurthy in your April-June 2001 issue. The writer has made a reference to the work of Group Psychiatrist in the Israeli Defence Forces who monitor the human behaviour. Regrettably, the writer of the essay does not comprehend the essentials of leadership in the Indian Army where a battalion or company commander is to closely interact, study the juniors and interpret any signs of unrest or low morale. All actions of the leader are based on a very close relationship with his juniors and it does not need a psychiatric consultant to come and monitor his soldiers. In fact, if such an idea is translated into action, it would destroy the fabric of the Indian Army's leadership and cause total havoc. At the most, the Army Hospitals in troubled areas like Kashmir could have the services of a psychiatrist who would be available for consultation based on the recommendations of a Commanding Officer.

Brigadier A Thyagarajan (Retd)

Short Reviews of Recent Books

Losing Control : Global Security in the Twenty-First Century. By Paul Rogers (London : Pluto Press, 2000), pp 164, £ 12.99, ISBN 0-7453-1769-4.

This path-breaking book questions the existing global security paradigm which is considered to be totally West oriented. Parvenu Nations retain their domination through economic and political clout backed by rapid reaction forces, long range strikes and counter insurgency operations. This is rightly labelled as unjust by the author. He feels that asymmetric warfare and political violence, together with the security vulnerabilities of the urban industrial states have no place in the widening gap between the rich and the poor and the threats conjured up by strategists. Therefore, the conventional military approach to maintain elite security will hardly be a fair arrangement. He propounds the concept of reversal of socio-economic polarisation and the enhancement of sustainable development as a viable alternative for the West in the first few decades of the new millennium.

The discourse begins with the Cold War years. The nuclear arms race is posited against anti-nuclear movements; wasting of resources on arms against their utilisation on poverty eradication. Despite all this the nuclear future was considered bleak and NATO powers relied on conventional forces to counter the Warsaw Pact forces. This was the major irony of the Cold War. The post Cold War period saw the efforts of the Western countries to keep a lid on their security by resorting to rapid deployment of coalition warfare-type forces. The 1991 Gulf War and the intervention in Kosovo are excellent illustrations of this transition in dogma, that emphasise stand-off control with the inherent advantage of minimal casualties to friendly troops but maximum damage to the economy of the victims. Indeed, the world's elite has been able to maintain its security. The author goes on to say that though this may be the case, it is fundamentally wrong, as the core reasons for dissent are left un-addressed. Therefore, the main thrust of his argument is that, in practice, confronting socio-economic separation and acceptance of sustainable development are the central issues for international security paradigm in the near future.

Lieutenant Colonel A K Sharma (Retd)

Sovereignty : Organised Hypocrisy. By Stephen D Krasner (Princeton : Princeton University Press, 1999), pp. 264, \$ 16.95, ISBN 0691-00711-X.

As may be expected from an eminent realist, the book is a trove of

arguments on the fallacy of the assumption of sovereignty as a hardy perennial in international affairs in both theory and practice. The author discusses the two main attributes of sovereignty, namely Westphalian sovereignty and international legal sovereignty, to debunk any notion of the sanctity of sovereignty. In other words, state practice does not stand testimony either to the belief in the exclusion of external actors from domestic authority configurations ('Westphalian sovereignty') or to the understanding that recognition is due only to state entities ('international legal sovereignty'). This owes to the fact that the 'logic of consequence' supercedes the 'logic of appropriateness' as the guide to state action. Therefore, it is argued that the concept of sovereignty is 'organised hypocrisy'.

The author begins with an overview of his argument. Thereafter he attempts to demolish the meanings vested in the concept of sovereignty in the contending theoretical schools, namely neo-realism, neo-liberalism, the English school and the constructivist school. He then appraises the concept against the backdrop of minority rights and human rights - the two aspects that have caused the transgression of the concept in such a manner as to make it relatively meaningless. A similar examination with respect to the conditionalities imposed by international financial institutions and of globalisation is enlightening in that an Indian reader can relate the arguments to the recent circumstances closer home.

The major thesis that the writer reinforces is the belief that 'the strong will do as they can while the weak suffer what they have to'. For those with grandiose visions of a resurgent India this may be heart warming. However, persisting with such Thucydidian truisms into the new millennium is unlikely to yield a world society or an international community with which we may be able to overcome the problems of the day and those of the future.

Major Ali Ahmed

Politics and Political Change : A Journal of Interdisciplinary History Reader. Edited by Robert I Rotberg (Cambridge : The MIT Press, 2001), pp. 341, price not indicated, ISBN 0-262-18213-0.

The collection of articles in this book analyse the topic using policy outputs or spatial models, multivariate regressions, Guttman scaling, cross-sectional counts or time series, game theory, social or rational choice approaches. Various techniques and theorems have been employed to make the subject revisionist and remarkable. Thirteen essays compiled in this volume were first published in the *Journal of Interdisciplinary History* published by the MIT Press, Cambridge, Massachusetts.

The first essay is by the editor of this volume on the interdisciplinary study of political history. He provides an incisive account of the contributions made in the volume. He examines how interdisciplinary study of political history has been enriched by the methodological and theoretical insights of cognate disciplines like economics, political science and sociology and produced a quantum advance in the meaningful political contents of history. J Morgan Kousser in "Restoring politics to political history" argues that a slavish devotion to some borrowed techniques distorts evidence and leads the political scientist and the historian to false conclusions.

Joseph M Colomer and Iain McLean's study of the election of medieval Popes examines the various theories employed for voting and the introduction of innovations such as qualified majority rule and approval voting. The authors use social choice theory to demonstrate the invulnerability of this rule to disequilibrium. Sharon Kettering evaluates the role of power brokers in arrangement and the rise of provincial notables in Mamuluk Egypt, Ottoman Turkey and Syria and Colonial Mexico. These notables for patronage and power collaborate with colonial or central authority.

Jurgen W Falter and Reinhard Zintl state that the increasing vote for Nazis in Germany during the crisis of 1930's resulted from the radicalisation of the protestant middle class and protest by workers. Allan G Bogue uses Guttman scaling to show voting patterns and degree of radicalism in the US Senate during the Civil War.

And, Mayfield's essay reflects earlier voter fraud on Twentieth Century political reform. Sara Alpen and Dale Baum probe into the reality of electoral participation by women after the passage of the nineteenth amendment. Peter Tucked and Richard Maisel study voter participation by European immigrants from the 1930's. Fink and Hilty saw a shift to the Left from moderate to Liberal in the Senatorial voting record of Harry Truman from 1935 to 1945.

The deeper insights emerging out of these studies should help in evolving complex models of process of policy making in different areas and at different times. This book is a valuable and welcome addition to the corpus of literature available on the subject.

Dr Raj Kumar

Why Wars Happen. By Jeremy Black (New York : New York University Press, 1998), pp. 271, Price not indicated, ISBN 0-8147-1333-5.

War has been a central activity of states, and the conduct of international relations. The overwhelming emphasis on conflicts in the 20th

and, to a lesser extent, 19th Centuries in studies on the causes, nature and consequences of war, limits the basis for theoretical and general reflections. This book raises a number of questions : what is war and why wars happen? Bridging history, politics, and international relations, Professor Jeremy Black marshals an astonishing range of materials, venturing to all concerns of the globe to focus on the universalities of conflict. This study does not restrict itself to examining a few selected case studies or a limited time span, but sincerely attempts to survey the one and a half millennia of world conflict within an analytical framework. Throughout the book there is an emphasis on context, the contingent choice and individual attitudes, views and reasoning of political leaders, and skepticism about determinants, arguments based on concepts such as structure, and the abstractions of international relations writing on the subject. Professor Black concludes by assessing the current state of warfare and speculates on where we are heading in terms of future conflicts.

This is a useful and stimulating study for all those who wish to know more about why wars happen.

I R Kumar

All Possible Wars? Toward a Consensus View of the Future Security Environment, 2001 - 2005. By Sam J. Tangredi (Washington D.C. : Institute of National Strategic Studies), pp. 212, \$ 20.00, ISBN 1071-2025.

With the end of the Cold War and the breakup of the Soviet Union, the USA found it difficult to justify its existing military strength. A Quadrennial Defence Review (QDR) was prepared in 1997 to spell out the national security strategy till 2015. It presented no prospect of a war on a global basis, but retained a high propensity for regional crisis. Middle East (Iran, Iraq, Libya) and Far East (North Korea) were identified as hot spots where an adversary could attack US allies or interests. Therefore, the US was to have the ability to fight two regional wars at the same time. It is under this changing security environment, the Chairman of the Joint Chiefs of Staff sponsored an independent working group to build intellectual capital for a new QDR 2001-2025. The book under review is the presentation of one among the working group.

According to the author, a Captain in the US Navy and a senior military fellow in the Institute of National Strategic Studies, neither a global war is expected nor any anti-US alliance of significance is likely to emerge. The events envisaged are : (a) emergence of military rival, (b) potential alliance of regional competitors, (c) attempts to leapfrog into space warfare, (d) collapse of key ally or regional support, and (e) trend towards increase in terrorist activities. To meet these probable eventualities, creation of strategic reserve capable of being rapidly expanded, anti-

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satellite systems, multiple regional alliances and highly trained low-intensity warfare units have been suggested.

A useful and stimulating study for strategists and those concerned with defence studies.

Subedar Major N Kunju (Retd)

Unholy Wars : Afghanistan, America and International Terrorism (New Edition). By John K Cooley (London : Pluto Press, 2000), pp. 229, £ 12.99, ISBN 0-7453-1691-3.

John Cooley's book is well documented, systematic and timely; for all those interested in international politics. Divided into eleven chapters the author has aptly described the conduct of proxy wars against Soviets and its allies by the US and its Western allies during Cold War years when communism was perceived to be the threat. Muslim religion fundamentally was considered anti-communist and harnessing it was considered to be a mighty weapon against Moscow those days.

One of the notable chapters, chapter seven, very distinctly brings out the menace of drug export which had increased to an all time high in 1990. In Chapters 9, 10 and 11 the author has analysed the spread of Islamists contagion carried by returning Afghan veterans in Egypt, North Africa, America, Philippines and elsewhere. The author has brought out a very important lesson that when you decide to go to war against your enemy, take a good, long look at the people behind you whom you choose as your friends, allies or mercenary fighters. Look well to see whether these allies already have unsheathed their knives pointing it at your back. A very educative and informative book and is recommended for unit and formation libraries.

Colonel J L Sharma (Retd)

Countering the New Terrorism, Project Air Force. Ian Lesser, Bruce Hoffman, John Arquilla, David Ronfeldt, M Zanini (Santa Monica, CA : Rand, 1999), \$ 15.00, pp. 153, ISBN 0-8330-2667-4.

Terrorism is as old as politics and warfare. Its appeal lies in its ability to create fear at the personal level. As a weapon of the weak, it has romanticism of the underdog attaining seemingly instant justice in an unequal world of have-nots. Its warped logic is egalitarian in nature and thus has many followers threatening the moral boundaries of a modern state representing civil society. This Rand study on Terrorism and Counter Terrorism was conducted for the Rand's Project 'Air Force Strategy and Doctrine Program' aimed at addressing the US Air Force's, "force protection" concerns as well as to contribute to the broader national and international debate on terrorism.

Three papers, on trends and prospects; networks and information age terrorism and; the strategic context of terrorism and counter terrorism, seek to focus on contemporary terrorism in an international perspective. In the first Paper on trends, Hoffman identifies emergence of amorphous religious and millenarian aims, less cohesive organisational entities with diffused structure and membership represented by the bin Laden phenomenon, increased lethality motivated by higher need for dramatisation, use of terrorists as surrogate warriors by states, amateur terrorism and religious motivation as the principal strains of modern day terror networks.

In examining emergence of networks, net war and information age terrorism, the authors come up with a study which explores increased preference for networked rather than hierarchical structures, disruption and not destruction of systems as the preferred mode of attacks and extensive use of information technology to support organisations and communicate messages. The authors suggest a bigger role for air power in countering terrorism in the networked world.

In the lead paper on strategic implications of terrorism, Lesser highlights the key tasks of air power being surveillance, targeting of non state actors and individuals, focussing on direct, indirect and systematic attack as that affecting the security system and asymmetric means of making war. For evolving counter terrorism strategies, the US, the UK, France and Israeli experiences are analysed to conclude that terrorism can be contained but not eliminated. The need to study networks and individuals as much as state sponsors, the need for close co-ordination amongst intelligence, civil and military authorities and expeditionary approaches to force protection and force projection are highlighted. Core strategies for countering terrorism include reducing its systemic causes, deterring terrorists and sponsors, reducing the risk of "super terrorism" including weapons of mass destruction and retaliating when deterrence fails.

While one may agree that the use of air and space power may not be the best of instruments in the counter terrorism arsenal, its employment is envisaged in surveillance, discriminate targeting, use of less than lethal technologies and synergising with other counter terrorist organisations. Terrorism as an asymmetric strategy would need asymmetric counters. None have, however, been forthcoming, or perhaps may have been covered in a non public portion. While relevance of the use of air power in countering terrorism may be limited, this slim volume provides an effective overview of the emerging forms of terrorism and the strategies to counter it.

Colonel Rahul K Bhonsle

Nuclear Myths. By N Kunju (New Delhi : Gandhi Media Centre, 2001), pp. 128, Rs. 150.00, ISBN 81-86626-01-12.

The famous 18th Century physicist, Blaise Pascal, offered an argument for why one should believe in God. If God exists, he argued, the penalty for not believing in him is eternal damnation. Supposing, however, that he does not actually exist, then the believer will have suffered but a light penalty: some restrictions on food and drink, abstinence in conduct, and perhaps a few other relatively minor inconveniences. Therefore, on balance, it is far better to believe than not. This is the sort of logic that has often been applied to the issue of nuclear deterrence. The strong emotions generated by the nuclear issue have precluded a genuine debate - at the public level or within the higher echelons of government - on a matter which is both complex and of vital importance. There abounds a plethora of myths and false perceptions, none of which are seriously challenged.

In this book under review the author has given serious attention to critical issues which must be faced squarely by this nuclearised subcontinent. To prove his points the author has quoted hard facts and given a gloomy picture of destruction to mankind by the use of nuclear weapons. The argument that India should agree with Pakistan to make South Asia a nuclear weapons free zone is not sustainable since the Chinese factor in Indian security has been overlooked.

To sum up, this book gives interesting facts about nuclear issues. An interesting narration is the civil defence measures against nuclear attack taken by the Centre and the Delhi Government. An interesting work which should be read by those who are interested in nuclear issues.

Lieutenant Colonel Sunil Chandra

Island of Blood : Frontline Report from Sri Lanka, Afghanistan and other South Asian Flashpoints. By Anita Pratap (New Delhi : Viking Penguin Books India, 2001), pp. 276, Rs. 295.00, ISBN 0-67-004903-4.

An apt introduction to this touching saga of human tragedy is its cover jacket. It carries a creation by *Time* photographer Robert Nickelsberg that shows a Sri Lankan woman whose husband was arrested for interrogation in 1989. She knows she will never see him alive again. A perfect cover picture that tugs at one's heart and takes the reader deep into the spirit of this book. Having caught the reader's imagination Anita Pratap, one of the finest journalists India has ever produced, according to blurb, gives us a rare insight into the mind and working of a journalist, totally devoted to her work. Written in simple language and lucid style,

Island of Blood is unputdownable. The author confronts the reader with controversial personalities like Prabhakaran, Dostum and Bal Thakeray. She has gone about her work under tortuous conditions and at grave risk to her personal safety. In the first part she describes how she managed access to all those who contributed to Sri Lankan tragedy. Interestingly the author approaches this morbid subject from narration of her travel through Karnataka and Kerala. In the story on Afghanistan she starts from scenic landscape of Norway and describes, among other things, the plight of women under Taliban regime. She reaches Ayodhya commencing her journey from Cordoba in southern Spain where a Mosque built by Moors was converted into a Cathedral by the conquering Christians in the 16th Century AD. The fourth part of the book, *The Survivors - The Human Face of Tragedy*, comprises impressions of cyclone in Bangladesh, earthquake-devastated villages of Maharashtra and Gujarat, floods in Terai of UP, draught in Karnataka, plight of glamour queens of south Indian screen, widows of Vrindavan, and sufferings of South Asian children who are physically and emotionally crippled for life. One often wonders why the author describes traumatic occurrences in such details. It is only when one reads the Epilogue, one realises how brutal, sudden and all changing death can be. The reader is made to realise how precious life is.

A very interesting and informative reading. It is recommended for general reading in formation and unit libraries.

Major General Yatindra Pratap (Retd)

State Politics : New Dimensions. By Sudha Pai (Delhi : Shipra Publications, 2000), pp. 284, Rs. 140.00, ISBN 81-7541-037-X.

The Indian subcontinent had not been an integrated political entity before the British domination. India was largely a cultural concept. The British consolidated India as a colony for convenience of governance. And the freedom struggle against the colonisers created cohesion and national feeling among the people. The Indian National Congress became the vanguard of the freedom movement and the first national political party with an all-India sweep.

After the country got independence, the Congress, with the momentum gained during the freedom struggle, dominated the Indian political scene for several years. Later, parties based on ideology, religion, region, caste etc gained prominence. The Jan Sangh, Akali Dal, Muslim League etc. based on religion; Dravida Kazhagams, Telugu Desam, Asom Gana Parishad etc. based on region; and communist, socialist etc. based on ideology, soon grew to be a challenge to the Congress. Now it is clear that neither the Congress nor the BJP is likely to come to power without the

support of the regional parties. The book elaborates how state politics came to centre-stage with regionalist upsurge in every state. It is a thorough documentation of the recent political evolution of India and a very valuable guide for students of political science.

Subedar Major N Kunju (Retd)

State Identity and Violence : Jammu, Kashmir and Ladakh. By Navnita Chadha Behera (New Delhi : Manohar Publishers and Distributors, 2001), pp 384, Rs 600.00, ISBN 81-73044-360-4.

Dr Navnita Chadhra-Behera has come up with a manifest and articulate study of the J and K tangle in this explicit book. It is different from most others of recent times in so far as it centres on the internal political dynamics, social and cultural pulls, pressures and counter currents. Having an imprinted historical perspective and a political dogmatic stance, it presents a lucid appraisal of the State and the Regional Autonomy Committee Reports, that were adopted in part by the J&K State Assembly in June 2000.

The organisation of the Nation-State is identified as the root cause of estrangement of its people. This outdated monolithic structure, militates against the aspirations of the people and marginalises a number of sub-national identities. This is also attributed to the 'failure' of the separatist Kashmiri Muslim Movement along with its associated violence. The author's panacea for the many woes of the State lies in a multi-layered federal arrangement of power sharing and governance.

Four issues are examined in depth in this book; the processes and politics of identity formation in J and K right from the days of Dogra dominance to the penultimate decade of the last century; social, cultural, economic and political demands of the various ethnic groups; a bilateral proportion of the friction in the Indian controlled portion; a long term approach aimed at removal of the *raison d'etre* of the turmoil and strife.

Lieutenant Colonel A K Sharma (Retd)

Kashmir and Neighbours : Tale, Terror, Truce. By Turkkaya Ataov (Aldershot : Ashgate, 2001), pp. 244, £ 35.00, ISBN 0-7546-2246-0.

It is a clinical and thorough study of all aspects of Kashmir region and of *Kashmiryat*. The author has portrayed the land and its people, the development of languages, both Kashmiri and Dogri, and consequent folklore, which makes this book an interesting study. The author skillfully narrates the history of the century that has gone by, and highlights a galaxy

of literary and political thinkers, poets and philosophers of Kashmir and their devout belief in secularism as an essential feature of *Kashmiriyat*. Naturally this throws a fresh light on socio-political developments in the Indian sub-continent and northern neighbours - which have not been placed within an inter-active perspective previously. The author has also analysed the terror and deprivation being inflicted on Kashmir by Pakistan and Taliban-sponsored Jehadi consortium. Amongst the options for Kashmir problem, according to the author, the obvious and only viable solution would be a re-drawing of national boundary along the current Line of Control.

Comprehensive and extraordinary work, this book is an enjoyable literary treat for the readers, by its style and language.

Major General S K Talwar (Retd)

Pakistan's Downfall in Kashmir. By Colonel MN Gulati (New Delhi : Manas Publications, 2001), pp. 336, Rs. 295.00, ISBN 81-7049-127-4.

The book covers the three Indo - Pak Wars of 1947, 1965 and 1971. In dealing with these conflicts the author covers in greater detail the operations in the Kashmir Valley. Of particular interest are the events where the Indian Forces initially drove back the so called 'tribal raiders' from the very outskirts of Srinagar and then had them on the run all the way back to Uri. Instead of then pushing to Kohala and across the International Border, the Indian higher command diverted the efforts of 161 Infantry Brigade to the relief of Poonch along the Road Uri-Poonch over the Haji Pir Pass. This division of the Brigade's main effort allowed the Pakistani forces to regroup, reorganise and occupy strong defences opposite Uri. Further, after the relief of Poonch, when the Brigade returned to Uri, the Pakistanis were allowed to occupy the Haji Pir Pass, thus enabling them to cut the road from Uri to Poonch.

In his narrative of the three conflicts, the author describes the major operations in all sectors. In the 1965 War, he covers in great detail the operations to capture the important Haji Pir Pass. Unfortunately this gain was short-lived. In the subsequent negotiations at Tashkent this vital Pass was handed back to Pakistan. It is sad to note that though substantial gains were made by our Armed Forces in all the three conflicts, these advantages were lost out on the negotiating table by our political leaders. Even after the decisive victory in 1971 and with over 90,000 Pakistani prisoners in their hands, the Indian political leaders were unable to work out a permanent settlement of the Kashmir problem.

There are a few errors in the book, which should be rectified in its future editions. In the footnote on page 140 it is stated that 1 PARA (SF)

was first raised on 1st March 1945 by splitting 152 Indian Parachute Battalion. 1 PARA was originally 1st Battalion 2nd Punjab Regiment, which was raised in 1763 and is the senior most battalion in the Indian Army. 152 Indian Parachute Regiment was disbanded in 1946.

In the footnote on Page 255 it is stated that Akhnoor is situated at 6142 feet above mean sea level. The height of the Chenab River at Akhnoor is correctly given as 1000 ft above mean sea level (AMSL). Since Akhnoor is located on the banks of the Chenab River, it cannot be more than 1200 ft AMSL.

What is really creditable is the excellent printing of the book. Thanks to careful editing, there is almost a total absence of printing and other errors.

Major General Samir Sinha, PVSM (Retd)

The Rising Manipur : Including other North-Eastern States. By Prof M. Horam (New Delhi, Manas Publications, 2000), pp. 167, Rs. 695.00, ISBN 81-7049-117-7.

The vast patchwork of communities that is the North East are sub divided not only ethnically but also geographically between hills, plains, and valleys, tribes and sub tribes making uniform development a nightmare for the modern administrator. The problem is peculiar in Manipur where though the hill areas encompass 90 per cent of the landmass, the development of tribal population residing in these hills, which is approximately 35 per cent of the states population is worst hit and remains an area of concern.

Taking up this cause is the author and his protagonists in a series of essays, in five parts. Part I comprises of nine essays which examine the facets of development of hilly and tribal areas, clearly highlighting the complexity of development, the inertia that mars momentum of the process and the need for a multi disciplinary approach. Part II covers issues on constitutional and administrative problems, with reference to applicability of the Indian Constitution to specific situations in the North East. Part III on Education focuses on ways and means to implement the Universal Elementary Education Programme in the North East. Part IV focusses on Forestry and brings out the problems of development of entrepreneurship in the tribal areas due to lack of opportunities as also psycho socio awareness of the benefits of entrepreneurship. Part V covers issues on land with reference to varied interpretations and variations in land use system in the state. The book is a highlight on the complexities of development in the area with barriers of geography, social and political structures, lack of communications and education.

Colonel Rahul K Bhonsle

Ganges-Brahmaputra-Meghna Region : A Framework for Sustainable Development. Edited by QK Ahmed, Asit K Biswas, R Rangachari and MM Sainju (Dhaka : The University Press Limited, 2001), pp. 208, Tk. 350.00, ISBN 984-05-1608-6.

What oil is to the Middle East, water is to the Ganga-Brahmaputra-Meghna region. The basin comprising of India, Nepal, Bhutan, Bangladesh and China (Tibet) is the second largest system in the world. It supports a growing population of about 600 million. A group of academics from prestigious think tanks from Bangladesh, India and Nepal have got together and given a blueprint to utilise, water and other resources in the region for a sustainable development. The book provides a vision of water for 2025 through a chapter each on the perspective of each country.

The issue of river sharing including water storage, augmentation, environmental concerns, debate on large dams, floods, electricity generation, and quality of water have been given an exhaustive treatment.

The strength of the book lies in integrating the individual concerns of Nepal, Bhutan, India and Bangladesh on a holistic basis. Written in simple style and intelligently presented, here is a text book which must be read (and its suggestions implemented) by politicians, government servants and scholars dealing with national, economic and environmental security of the region.

Colonel P K Gautam (Retd)

The Simla Agreement 1972 : Its Wasted Promise. By PR Chari and Pervaiz Iqbal Cheema (New Delhi : Manohar, 2001), pp. 218, Rs. 390.00, ISBN 81-7304-105-8.

Undoubtedly a historic event, the Simla Agreement was an attempt towards beginning of a new relationship between India and Pakistan. Till the Lahore Declaration and Agra Summit this Agreement remained the reference point to start a dialogue between the two countries.

Both, Chari and Cheema, after extensive research and scanning of papers, confidential as well as academic, have reconstructed the "Simla Agreement". On his part, Chari has chronicled the meeting between the two leaders and has narrated the Indian concerns about Kashmir, the troops withdrawal and delineating the Line of Control. Cheema on the other hand has talked about the procreation, compulsion, and issues which Pakistani leadership addressed at the time of the agreement.

The reading of the book gives a fair insight about the events that took place before Indo-Pakistan War in 1971 up to the Kargil War. It would be pertinent to point out that the agreement drawn out for a settlement of an issue that is ingrained into the psyche of common people of both the

countries would have been a herculean proposition even for the leaders of the stature of Mrs Indira Gandhi and Mr Zulfikar Ali Bhutto. Agreements worked out between symmetrical powers have larger scope of being functional rather than the agreement signed between India and Pakistan which were on unequal platform.

Lieutenant Colonel Sunil Chandra

Indo-Bangladesh Relations : An Insider's View. By Harun Ur Rashid (New Delhi : Har Anand Publications, 2002), pp. 168, Rs. 295.00, ISBN 81-241-0838-2.

India and Bangladesh have all the reasons and logic for a mutually beneficial and promotive relationship - strategic interests vis-a-vis the Bay of Bengal, economic interaction and, most of all, their socio-cultural affinity based on democratic philosophy. Traditional pride in folk arts and literary wealth transcends eastern and western borders of Bangladesh. Harun ur Rashid - a career diplomat and personally involved in discussions/ negotiations between the two countries on all issues, as pointedly highlighted by him all the way is an "insider" and has projected his views in this book.

While reviewing the first theme of his narration, namely, sharing of the Ganges waters in the context of the Farakka Barrage, and fixing of land and sea boundaries, the author takes the discussion to over a score of issues and may sound as an all-encompassing "prosecution case" against India's foreign policy towards Bangladesh. The other themes projected in the book are the areas of discord created by India—unwittingly during the post-liberation events, the foreign policy of successive Bangladesh rulers vis-a-vis India, and India's strategic interests and policies towards her neighbours. The India-Bangladesh Friendship Treaty of 1972, comes in for harsh criticism by the author as it encroached on the latter's freedom of action in global matters. Harun ur Rashid contends that Indo-Bangladesh relations can and should blossom into a viable lasting friendship under appropriate environment, through mutual trust and respect, mainly by the aspiring big power. Subtle exposé by the author concerning various Prime Ministers and Foreign Ministers of India are amusing. He, however, has mis-read and misinterpreted history vis-a-vis the Kashmir problem.

Major General SK Talwar (Retd)

India and the United States in a Changing World. Edited by Ashok Kapur, YK Malik, Herald A Gould and Arthur G Rubinaff (New Delhi : Sage Publications, 2002), pp. 560, Rs. 795.00, ISBN 0-7619-9592-7.

Despite having differed strongly in their perceptions of their respective national interests, strategic worldviews, foreign policy goals and economic

policies, fresh opportunities have arisen for the world's two largest democracies to forge a new and more enduring relationship. Recent developments have made the subject matter of this book more poignant than when it was originally conceived, and much water has flown since then. Though a postscript, 'The Aftermath of 11 September : Changing Geopolitical Equations and Indo-US Relations', has been added before releasing the book. It needs another postscript to cover the Indian side in the aftermath of 13 December attack on the Parliament. The book goes a long way in exploring the chequered course of Indo-US relations and offers pragmatic policy recommendations. The original essays by reputed scholars and analysts cover a wide range of fundamental issues affecting bilateral relations. Topical and multi-disciplinary in its approach, this book will attract the attention of a wide range of readers interested in the study of Indo-US relations.

I R Kumar

Engaging India : US Strategic Relations with the World's Largest Democracy. Gary K. Bertsch, Seema Gahlaut and Anupam Srivastava (London : Routledge, 1999), pp. 284, £ 16.99, ISBN 0-415-92283-6.

Twelve papers presented at a conference held by the University of Georgia's Centre for International Trade and Security in 1998, in the wake of India and Pakistan's nuclear tests and the imposition of United States sanctions on them, have been published in a well produced book. Because the authors look to the future rather than the past, assessing the prospects and barriers to Indo-US cooperation on important issues, and because these issues remain both tricky and topical, the book has not been outdated by the atmospheric improvements consequent to President Clinton's visit to India and declarations of intent by the Bush Administration to "widen and deepen" relations with India. *Engaging India* thus should be read by anyone interested in the broad scope as well as the technical details of recent relations between India and the United States when the agenda is being re-examined. There is nothing superficial about the chapters, whose authors offer many valuable insights along with a wealth of factual material and comprehensive references. The preface gives an overview of the issues and the conclusion looks at necessary next steps to overcome mutual uncertainties and joint efforts to "create a cooperative and better world."

Dr Surjit Mansingh

Reappraising Republican China. Edited by Frederic Wakeman and Richard Louis Edmonds (Oxford : Oxford University Press, 2000), pp. 209, £ 14.99, ISBN 0-19-829617-7.

This book is a collection of nine well researched essays by different

authors on various aspects of the Republican regime in China. These essays cover subjects such as - 'the state of studies on Republican China', 'the State and Society in early Republican Politics - 1912-18', 'Reflections on China's late 19th and early 20th Century Economy', 'the Military in the Republic', 'Internationalization of China and its Foreign Relations at Home and Abroad', and other topics. These collection of essays are an effort at reappraising and placing in proper perspective the achievements of the Republican era and to establish how the effects of their achievements outlasted their regime. They bring out clearly how many of their success stories, such as the unification of the country, were attributed to the Peoples' Republic, but in reality were a carry over of the success achieved by the Kuomintang under General Chiang Kai-Shek. These essays are a broad outline of the subjects covered by them. They do, however, give in great detail the reference works from which their material was obtained and is, therefore, of great value to research scholars.

To get the best value from these works, the reader would be well advised to acquire an outline knowledge of history of China, relevant to the period.

Major General Samir Sinha, PVSM (Retd)

A Romance Called Life. By Sampuran Singh (New Delhi : Siddarth Publications, 2001), pp. 274, Rs. 225.00, ISBN 81-7220-135-4.

Although this book is a work of fiction based on life in the Army, it is so close to real life that it could easily pass off as a true life story of an Army Officer. It is a good social study of the post Independence Indian Army. It is all the more interesting as it covers the trials and tribulations of many an Army Officer as a result of the Partition of the country and the forced migration that ensued. The tragic events of Partition seem to have drawn the affected families close to each other. What was most commendable was that the affected officers willingly sacrificed their own comfort in order to financially support, out of their meagre earnings, their less fortunate relations, who had been left destitute by the Partition. The author also brings out the rather strange phenomena of how with prosperity 'selfishness' appears to replace 'selflessness' of those more difficult times.

The events are well narrated and the author has handled the plot in a realistic manner. He has not avoided relating the less likeable shortcomings of Regimental life, which often occur when Commanding Officers fail to come up to the expected standards of impartiality and fair play. The story brings out various aspects of regimental life.

Proof-reading needs to be improved and errors eliminated in the subsequent edition of the book. This would make for interesting reading for the older officers who have gone through the painful experience of Partition.

Major General Samir Sinha, PVSM (Retd)

Additions to the USI Library for the Quarter - Ending January-March 2002

(The books reviewed in October-December 2001 issue have been added to the Library during this quarter but not shown in this list)

AFGHANISTAN

1. **Afghanistan: A New History** by Martin Ewans (England : Curzon, 2001), pp 239, £ 40.00, ISBN 0-7007-1411-1

ARMY DAY

2. **Memories of the Army Day** by Anuradha S Gupta (Noida : Trishul Publications, 2001), pp. 144, Rs. 495.00, ISBN 81-85384-82-7
3. **Women in the Military** by Rita James Simon (New Brunswick (USA), : Transaction Publishers, 2001), pp. 199, \$ 21.95, ISBN 0-7658-0619-3

ASIA

4. **Asian Development Outlook 2001: Special Chapter Asia's Globalization Challenge**, Oxford University Press, Published for Asian Development Bank (New York, 2001), pp 229 Rs. 745.00, ISBN 0-19-592976-4

FOREIGN RELATIONS

5. **Bangladesh – US Relations: From Cooperation to Partnership** by Sanjay Bhardwaj (Delhi : Kalinga Publications, 2002), pp. 213, Rs. 450.00, ISBN 81-87644-41-9

BHUTAN

6. **Bhutan: Decentralization and Good Governance** Dhurba P Rizal (Delhi : Adroit Publishers, 2001), pp. 84, Rs. 175.00, ISBN 81-87392-24-X

BIOGRAPHY

7. **Kargil Blood on the Snow: Tactical Victory Strategic Failure: A Critical Analysis of the War** by Maj Gen Ashok Kalyan Verma AVSM (New Delhi : Manohar, 2002), pp. 225, Rs. 475.00, ISBN 81-7304-411-2

8. **The Old Soldier Speaks Out** by S R Sanda (New Delhi : HarAnand Publications Pvt. Ltd., 2002), pp. 168, Rs. 295.00, ISBN 81-241-0849-8
9. **Thimayya of India – A Soldier's Life** by Humphrey Evans (Dehra Dun : Natraj Publishers, 1988), pp. 307, Rs. 295.00

BURMA – HISTORY

10. **Burma : Curse of Independence** by Shelby Tucker (London : Pluto Press, 2001), pp. 282, £ 13.99, ISBN 0-7453-1514-0

CHINA

11. **China's Arms Sales: Motivations and Implications** by Daniel L Byman and Roger Cliff (Washington DC : RAND, 1999), pp. 60, £ 6.50, ISBN 0-8330-2776-X
12. **China's Military Faces the Future** by James R Lilley and David Shambaugh (Armonk (USA) : M E Sharpe, 1999), pp. 356, \$ 29.95, ISBN 0-7656-0506-6
13. **China : The New Cambridge Handbook of Contemporary** by Colin Mockeries (United Kingdom : Cambridge University Press, 2001), pp. 313, Rs. 950.00, ISBN 0-521-78674-6
14. **China's Political System: Modernization and Tradition** by June Teufel Dreyer (London : Macmillan Press Ltd., 2000), pp 237, £17.50, ISBN 0-333-91287-X
15. **China's Tibet Policy** by Dawa Norbu (England : Curzon, 2001), pp. 470, £75.00, ISBN 0-7007-0474-4
16. **The Coming Collapse of China** by Gordon G Chang (London : Random House, 2001), pp. 344, £ 9.00, ISBN 0-7126-1464-8
17. **Inviting the Nation : China** by Henrietta Harrison (New York : Oxford University Press, 2001), pp. 290, Rs. 995.00, ISBN 0-340-74134-1

CYBER CRIME

18. **Cyber Crime: Impact in the New Millennium** by R C Mishra IPS (Delhi : Author Press, 2002), pp. 363, ISBN 81-7273-088-8

INDIA - HUMAN RIGHTS

19. **Human Rights and Insurgency: The North East India** by Ranju R Rhamala and Sukalpa Bhattacharjee (Delhi : Shipra Publication, 2002), pp. 196, Rs. 400.00, ISBN 81-7541-091-4
20. **Inside Indian Police** by Joginder Singh (New Delhi : Gyan Publishing House, 2002), pp 354, Rs. 580.00, ISBN 81-212-0727-4

INDIA – SECURITY

21. **India's Security in 21st Century: Challenges & Responses** by Rajendra Prasad (New Delhi : Dominant Publishers and Distributors, 2002), pp. 318, Rs. 650.00, ISBN 81-7888-051-2

INFORMATION AND TECHNOLOGY

22. **Net Spies: Who's Watching you on The Web?** by Andrew Gauntle Edited Sheena Dewan (Great Britain : VISION Paperback, 1999), pp. 209, £ 9.99, ISBN 1-901250-25-3

INSURGENCIES

23. **Modern Insurgencies and Counter Insurgencies: Guerrillas and their Opponents Since 1970** by Ian F W Beckett (London : Routledge, 2001), pp. 267, £ 16.99, ISBN 0-415-23934-6

KASHMIR

24. **War and Diplomacy in Kashmir 1945-48** by C Dasgupta (New Delhi : Sage Publications, 2002), pp. 239, Rs. 440.00, ISBN 0-7619-9588-9

KOSOVO

25. **Kosovo: An Unfinished Peace** by William G O'Neil (London : Boulder, 2002), pp 159, \$13.99, ISBN1-58836-021-6

MILITARY

26. **Commanding Officers** by David Miller (London : John Murray, 2001), pp 273, £ 22.50, ISBN 0-7195-5989-8
27. **The Psychic Battlefield: Behind the Lines of the Paranormal Espionage** by W Adam Mandelbaum (Great Britain : Vision Paperbacks, 2000), pp. 278, £ 9.99, ISBN 1-901250-46-6
28. **Military Law Hand Book for Commanders** by Brig. Nilendra Kumar (Delhi : Universal Law Publishing Co. Pvt. Ltd., 2001), pp 144, Rs. 130.00, ISBN 81-7534-244-3

29. **Military Leaders: The Most Influential – A Ranking of the 100 Greatest Leaders Past and Present** by Michael Lee Lanning (London : Robinson, 1997), pp 372, £ 4.25, ISBN 1-85487-991-X
30. **Sun Tzu and the Art of Modern Warfare** by Mark McNeilly (New York : Oxford University Press, 2001), pp. 304, Rs. 395.00, ISBN 0-19-513340-4

NATIONAL MISSILE DEFENCE

31. **US National Missile Defence Strategy** by M P Srivastava (New Delhi : Gyan Publishing House, 2002), pp 339, Rs. 590.00, ISBN 81-212-0782-7

PAKISTAN

32. **The Monstrous Face of ISI: Real Story Behind the Inter Services Intelligence Agency of Pakistan** by Bhure Lal (New Delhi : Siddharth Publications, 2000), pp. 201, Rs. 375.00, ISBN 81-7220-124-9
33. **Pakistan's Fourth Military Coup** by Aftab Alam (Delhi : Raj Publications, 2001), pp 256, Rs. 480.00, ISBN 81-86208-15-1
34. **The Revolution in Pakistan : A Study of the Martial Law Administration; From Crisis to Crisis 1962-1969; The End & the Beginning of Pakistan 1969-1971** by Herbert Feldman Omnibus (Karachi : Oxford University Press, 2001), pp. 924, Rs. 895.00, ISBN 0-15-579399-4

REPORTS

35. **Census of India Series-1 India: Religion (Table C-9) Part IV-B (II)** by Dr. M Vijayamunni (India : Census Commissioner, 1996), pp. 493, Rs. 61.00
36. **Fourteenth Report, Ministry of Defence, Standing Committee on Defence (2001) Thirteenth Lok Sabha** (New Delhi : Lok Sabha Secretariat, 2001), pp. 38, Rs. 50.00
37. **Report of the Comptroller and Auditor General of India: For the year ended March 2001, Review of Procurement for OP VIJAY (Army)** (Delhi : Union Government, 2001), pp 25 Rs. 65.00
38. **Thirteenth Report, Ministry of Defence, Standing Committee on Defence (2001) Thirteenth Lok Sabha** (New Delhi : Lok Sabha Secretariat, 2001), pp. 20, Rs. 50.00

TERRORISM

39. **Encyclopedia of International Terrorism: Terrorism History and Development Vol. I** by Verinder Grover (New Delhi : Deep and Deep Publications Pvt. Ltd., 2002), pp. 344, Rs. 990.00, ISBN 81-7629-301-6
40. **Encyclopedia of International Terrorism: Terrorism in World Countries Vol. II** by Verinder Grover (New Delhi : Deep and Deep Publications Pvt. Ltd., 2002), pp. 590, Rs. 1730.00, ISBN 81-7629-302-4
41. **Encyclopedia of International Terrorism: Documents and Studies on Terrorism Vol. III** by Verinder Grover (New Delhi : Deep and Deep Publications Pvt. Ltd., 2002), pp. 263, Rs. 780.00, ISBN 81-7629-303-2
42. **Human Development in South Asia 2001 – Globalisation and Human Development**, Human Development Centre, by Mahbub Ul Haq (Oxford University Press, 2002), pp. 180, Rs. 550.00, ISBN 0-19-579764-7
43. **International Terrorism** by M G Chitkara and Girdhari Sharma (New Delhi : APH Publishing Corporation, 2002), pp. 297, Rs.695.00, ISBN 81-7648-313-3
44. **International Terrorism: Conventions Resolutions, Legislations, Terrorist Organizations and Terrorists Vol. I to IV** by K R Gupta (New Delhi : Atlantic Publishers and Distributor, 2002), Rs 495.00, ISBN 81-269-0107-1
45. **Terrorism and New World** by Ashok Kumar (New Delhi : Anmol Publications Pvt. Ltd., 2002), pp. 330, Rs. 1500.00, ISBN 81-261-1059-7
46. **A Terrorist State as a Frontline Ally** by B Rahman (New Delhi : Indian Defence Review, Lancer & Publishers & Distributors, 2002), pp. 127, Rs. 127.00, ISBN 81-7062-223-9
47. **Usama Bin Laden's Al-Qaida: Profile of a Terrorist Network** by Yonah Alexander and Michael S Swetnam (New York : Transnational Publishers Inc., 2001), \$17.50, ISBN 1-57105-219-4
48. **The War Against America : Saddam Hussein and the World Trade Centre Attack – Study of Revenge** by Laurie Mylroie (New York : Harper Collins, 2001), pp. 318, \$20.95, ISBN 0-06-009771-X

49. **World Terrorism Today: US Reactions** by Ajit Singh (Jaipur : Book Enclave, 2002), pp 324, Rs. 695.00, ISBN 81-87036-73-7

UNDP AND INDIA

50. **The UN Development Co-operation and Third World: A Study with Special Reference to the UNDP and India** by M K Kamala (New Delhi : Manak Publications Pvt. Ltd., 2002), pp. 276, Rs. 415.00, ISBN 81-7827-038-2

UNITED NATION AND PEACEKEEPING FORCES

51. **Military Intervention and Peacekeeping: The Reality** by Richard (Connaughton : Aldershot, Ashgate, 2001), pp. 296, £ 45.00, ISBN 0-7546-1802-1

WAR

52. **War and Power in the 21st Century: The State Military Conflict and International System** by Paul Hirst (Cambridge : Polity Press, 2001), pp. 169, £12.99, ISBN 0-7456-2520-7

WARFARE - NUCLEAR, BIOLOGICAL AND CHEMICAL

53. **Nuclear, Biological and Chemical Warfare** by K Bhushan and G Katyal (New Delhi : APH Publishing Corporation, 2002), pp. 496, Rs. 995.00, ISBN 81-7648-312-5

WORLD - ECONOMY

54. **Trade and Development Report 2001: Report by the Secretariat of the United Nations Conference on Trade and Development**, United Nations Conference on Trade and Development Geneva (Delhi : Bookwell, 2001), pp. 160, Rs. 495.00, ISBN 81-85040-56-7
55. **World Economic and Social Survey 2001: Trends and Policies in the World Economy**, Department of Economic Social Affairs, (Delhi : Bookwell, 2001), pp. 283, Rs. 625.00, ISBN 81-85040-57-5
56. **World Investment Report: Promoting Linkages**; United Nations Conference on Trade and Development (Delhi : Bookwell, 2001), pp. 345 Rs. 695.00, ISBN 81-85040-55-9

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