INFLUENCE OF TECHNOLOGY ON FORCE DESIGNS IN SOUTH ASIA

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DECLARATION

Certified that the dissertation entitled "Influence of Technology on Force Designs in South Asia" submitted by Ravinderpal Singh is in partial fulfilment of six credits out of a total requirement of twenty-four credits for the award of the degree of Master of Philosophy of this University. This dissertation has not been submitted for the M.Phil Degree of this University or any other University. This is his own work.

We recommend that this dissertation be placed before the examiners for evaluation.

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PREFACE

In writing this dissertation, I am indebted to my Supervisor, Professor M. Zuberi, Chairman, Centre for International Politics & Organization, whose reflective and thought provoking observations cleared many a cobweb from my concepts, besides providing me with a very useful guidance in improving and shaping my research work. I am also grateful to Dr Zafar Imam and Dr Pushpesh Pant of School of International Studies, for their useful insights and advice during my courses and discussions.

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I utilised the library facilities of the Institute of Defence Studies and Analyses, New Delhi;.the United Services Institution of India, New Delhi; and the Defence Services Staff College, Wellington. I am grateful to their staff for their help.

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RAVINDERPAL SINGH

LIST OF ABBREVIATIONS

AD	Air Defence
APC	Armoured Personnel Carrier
ATGM	Anti Tank Guided Missile
AWACS	Airborne Warning And Control System
JCO	Junior Commissioned Officer
MR	Military Regions
NDA	National Defence Academy
PAF	Pakistan Air Force
PCC	Production & Construction Corps
PGM	Precision Guided Munition
PLA	Peoples Liberation Army
PMA	Pakistan Military Academy .
POF	Pakistan Ordnance Factories
R&D	Research and Development
RDF	Rapid Deployment Force
RoRo	Roll on Roll off
SAC	Strategic Air Command
SAM	Surface to Air Missile
TOW	Tube launched Optically tracked Wire guided missile

Chapter I

INTRODUCTION

Concept of National Security

The concept of national security has been variously described as the ability of a nation to protect its national values against external threats and internal dissensions. Security and independence are inseparable. To be truly independent, a nation must not only be able to control its destiny, but should be immune to threats, pressures and other forms of interferences to its national objectives. A nation is secure when it does not have to sacrifice its legitimate interests to avoid war and is able, if challenged, to maintain them by war. But a nation's will and ability to protect its values and pursue its objective can be effected, not merely by application or threat of armed force, but also by application of political and economic pressures. Creation of dependence status by transfering military technology and modern weaponry, is one such instrument of politico-economic pressure game. Therefore, national security requires high levels of economic strength leading to technological sophistication and a self-dependent military posture. The deterrent capability has to be based on scientific advancement and solid industrial and agricultural foundations.

New Military Technology and its Effects

After World War II, there has been a vast array of developments in military technology. Although their individual

developments have been appreciated, what has not been realised is as to how these developments have collectively rendered obsolete many aspects of the fundamental military techniques which emerged from World War II. At the same time, some of these techniques persist and are effective when used in certain terrains and scenarios. But they have to be modified to take advantages of new technology and new weaponry. Technology has created new opportunities in planning and execution of military operations, but at the same time, it has created demands and disadvantages for those found lacking in scientific temper. The armed forces today are in a state of uncertainity created by technological challenges to known organizations, doctrines and methods. Being traditional by temprament and training, they are not sure of evolving methodologies for incorporating the inevitable process of change. There is an element of truth in the criticism that military personnel have substantially lagged behind in their professional appreciation and application of the developments in technology. This is more noticeable in the case of military establishments from the developing countries.

It is primarily in three areas of the application of military, that technology has made major continuing changes. That is where weapon systems relate to fire power, mobility and coordination. Fire power has developed in accuracy, range and lethality; mobility of land, sea and air platforms have made radical improvements; and lastly, the most spectacular developments have been made in accuracy, speed, volume and

security of communication systems for purpose of coordination of effort. The requirement that has now emerged is, that since technology has contributed to complexities and sophistication in the variety of applications of military power, there is an imperative need for scientific application to the military decision-making processes as well. The entire gamut of military affairs from tactical problems and maintenance of stocks to strategic decision-making methods needs to be systematised in a scientific manner.

By shaping the tactics and strategy best suited to exploitation of military force, technology has also profoundly affected international politics. By setting limits to military capabilities to seize or defend territory it has shaped political expectations and intentions. The major effect of technological development has been the effect on cost. For any major weapon system the following generation of such a system will be significantly more expensive. It calls for a perceptive military to examine whether it would be cost-effective to spend in some cases as much as two or three times for a replacement which promises only a marginal advantages in performance over the existing system. The costly nature of technological substitution has not only led to enhanced capabilities, but gradually turned the armed forces of the countries leading in technology into technocracies. The primary explanation is that these countries have had a comparative edge in technology. Since these nations possess

capital, scientific expertise and a strong industrial base, the exploitation of new technologies is the primary means by which they can manipulate the weaknesses and inadequacies of the developing countries to maintain their influence.

The most striking developments in the post-World War II period has been the development of nuclear weaponry. The phenomenal yields of nuclear firepower has shaken the traditional assumptions about warfare and given a new shape and meaning to the mechanics of deterrence. But beneath the nuclear threshold, however, developments in conventional weapons have been equally dramatic. The order of magnitude increase in the destructive power of conventional munitions may well raise the level of tactical nuclear threshold.

Force Designs

In framing policies to meet the requirements of national security, there is no way of determining with absolute certainity what type and level of forces would be required. What deployments will deter the enemy? Since it depends upon the risks the enemy is prepared to take for the level of gains perceived by him, this assessment would vary from time to time. Nor is there any way of determining with certainity the nature and scale of war a country may have to fight and the situations it may lead to. Since it is only the capacities of the adversaries which are conceivable and not the intention, nor the will or his actions, therefore, a precise forecasting of the design of

the security systems is a misconception. This lack of precision in measuring the requirements and the effectiveness of the armed forces in peacetime is compounded by the very precision with which the price of failure in war can be forecast. In war the effectiveness of the armed forces can be judged by victory or defeat; in peacetime, there are no identifiable measure of effectiveness.

There can be no two opinions on the requirement that an army today has to be prepared to fight the war of tomorrow. The planning process for an optimum defence force begins with the appreciation of likely threats (a variable factor) and then proceeds to tailor forces (a constant factor), to counter these threats. It leads to an intensely complex and challenging task of preparation, which includes development of concepts and doctrines, organizations, material and human resources, and training methods. From the product of these inputs would evolve the armed forces modernisation programme for the future. But then gaps develop in the ideal force design due to the all-prevading influence of the budgetary constraints. This problem has severely limited the efforts of the developing countries like India. Instead of solving the problem from the first principles by tackling questions like -- What kind of wars the armed forces are likely to encounter? What kind of force should be structured? What are the technological advances which lead to modernisation of weapon systems and methods to employ them? -- there is a tendency to look abroad at what is being churned out by the military-industrial-

complexes.[1] These countries have to ask the following questions: What organizations are being developed to structure their forces? What doctrines are being evolved? And what is available for procurement on cash, in kind or in the form of a political pay off? Thus the developing countries tend to import models of force organizations in toto.

Due to the requirements of the combat scenario envisaged on the European Central Front, there has been a marked increase in the variety and the generational turnover of the weapon systems offered by the military complexes. As an Army officer of the United States explains: "national commitments dictate that the army concentrate on modernizing forces on the NATO scenario".[2] In a similar manner, the Soviet Union is designing equipment keeping in mind the requirements of the Warsaw Pact. Considering that the national force designs would normally have marked variations in their operational requirements due to different nature of threats, terrain, tactical concepts, standards of human resources and training, the South Asian countries, by virtue of their dependence on the super powers for the latest military technology, have continued to model their armed forces more or less on the pattern of their patron powers.

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1 The term is applicable in this dissertation to the military-industrial complexes of the United States, the Soviet Union and West Europe.

2 Bigelman Paul, "Force Designs for the Future", Army, June 1981, p.23.

The British military model has been inherited for the Indian and Pakistani force designs. In the case of India, there is a curious marriage of Soviet weaponry and British organization. The Pakistanis have managed to merge American weaponry and doctrines to British organization. In the context of the Indian and Chinese requirements for the Himalayan battlefields, if military technology has not offered weapon systems optimised for the mountain warfare, perhaps it is due to the dormant nature of the Alpine Southern Front. China and the Peoples Liberation Army (PLA) will be discussed in the succeeding chapter since its policies and capacities play a major influence in the South Asian security calculus. The PLA had patterned itself on the Soviet Red Army. Since the Chinese attempts to develop indigenous military technology have reached a plateau China is now compelled to turn towards Western technology for force modernisation. This is primarily to counter the Soviet threat on the plains of Manchuria and the vast open stretches of Sinkiang.

Hypothesis and Assumptions

None of the South Asian powers have been able to design indigenous security systems or reduce the costs of security, primarily due to their continuing dependence on the super powers for military technology. The region, like elsewhere in the Third World, is not only being used as a market for the military-industrial-complexes, but also a testing ground for their military technologies and doctrines. By sustaining inter-regional

disputes, the super powers maintain their influence and markets. If the South Asian countries have to reduce their dependence on the super powers, one of the areas which can be exploited is by optimising the human resources in their security systems. To offset the escalating costs of imported military technology, an indigenous military technocracy needs to be developed which should be capable of matching national technological capacities to the requirements of their particular security perspectives.

The dissertation is based on the following assumptions:

a) The conflict remains below the nuclear threshold inspite of one or more belligerents having acquired nuclear weapons capability. The foci of the dissertation is on the conventional military technology as applicable to the armed forces engaged in land warfare. In this context only the ground and airforces employed in land warfare constitute the term armed forces.

b) The duration of the conflict is limited in time. This is governed by the super power capability to influence, pressurise or intervene, in order to prevent the politico-military credibility of its clients from being demolished in the region. China, with its growing nuclear retaliatory capabilities against the super power's nuclear threat, would be able to manage the pressures on it in due course of time. It would thus dictate the duration of conflict on its southern front according to its capacities.

c) The political-military linkages influencing the South Asian security equilibrium in the 1980s continue in the next two decades.

The Plan of the Dissertation

The dissertation is divided in five chapters. In the second, third and the fourth chapters the focus of the discussion is on the effects of military modernisations of the three principal actors influencing the South Asian security equilibrium, viz., China, Pakistan and India. It examines the proposition that threats to national security identify the organization of its security system. The limitations and problems of the national capacities to indigenise the security system are also contributed by the Super Powers desire to maintain their dominant position in the region. The fact that the two of the states under discussion, China and Pakistan, have been able to identify their mutual interests because of their common adversary, India, has opened up an avenue for a Super Power, Soviet Union, to exert its influence in South Asia, which in turn has created a rationale for the presence of the other Super Power, the United States, albiet in the Indian Ocean.

The chapters on China and Pakistan also consider the threats, problems and potential other than those influencing the South Asian security scenario. This puts the South Asian security balance in a more even perspective, than a discussion

which is India-centric. The chapter on India also considers the Super Power capabilities to exert their power and influence on the sub-continent. The discussion confines itself to the land frontiers only because of the contiguity of their borders which contain the areas in dispute.

The concluding Fifth Chapter discusses the issues of the effects of new weapons technologies on the defence versus offence debate. This is in light of qualitative improvements in the precision guided munitions technology and the consequent effects of missile warfare on the hithertofore predominating influence of the aircraft and the tank on the battlefield. It also brings out the cost of developing a credible deterrance for India in the context of short intensive conflict theory. It examines the relevance of this theory in the context of a Sino-Indian conflict. This chapter also brings out the need for qualitative improvements in the human resources in the shape of a military technocracy to manage the fast changing technological sophistication levels.

Chapter II

CHINA'S SECURITY AND ITS SYSTEMS

Threat Perceptions and Organization of China's Security

Ever since the emergence of the Peoples Republic of China (PRC), various levels of threats have been perceived to its security from different directions and alliances. The long-term strategic threat from the Super Powers is more from the Soviet Union and its Vietnamese allies, than from the United States, which has been lately relegated to "Enemy No.2". Taiwan continues to offer a political alternative to Chinese Communism and friction with the Japanese remains, inspite of a treaty of peace and friendship. With India, there is still an unresolved territorial dispute and the Indian army in particular harbours a resentment over the reverses in the border war of 1962.

In terms of geography, China has both great vulnerabilities and great strength. The vulnerabilities are principally along the 4500-mile border with the Soviet Union in the north. China's geographic strength lies where it is not needed, along the border with less formidable foes in the South - Vietnam and India. The dominant geographical factor, as far as the United States, Taiwan and Japan are concerned, is the sea. In the case of the Soviet Union it is the vast, open and underpopulated frontiers of Sinkiang in the west and the developed Manchurian plain in the north-east. The terrain in Manchuria is marginally

promising for a successful defence. The mountains and swamps that run the Manchurian Plain tend to channel and delay the attacker. But the Russians have means to overcome terrain obstacles. Besides, they could also use the Mongolian territory to severe Sinkiang from the Han population centres. The dominating factor as regards India is the extreme mountainous terrain and non-Han ethnic population[1] of Tibet and Sinkiang. In these areas the Peoples Liberation Army (PLA) operates to some extent as an occupation army and has to be ready to deal with local disturbances, for these are relatively remote and troubled lands where the local population might try to shake off China's hold, should the opportunity present itself. With the passage of time, the possibilities of successful insurgency in these regions are decreasing.[2]

The territorial disputes did not come alive till the Sino-Soviet split in 1960. The Chinese resentment was based on the realisation that the cost of Russian nuclear insurance was rather high when they found they were being used as the Soviet cat's paw in Korea. Later, the Taiwan Straits crises of 1958-60 indicated that the Soviet security guarantees did

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1 The ethnic Chinese Han component of the Sinkiang population has increased from 5 to 40 per cent in the last thirty years. Probably not more than 15 per cent of the soldiers stationed in these regions are minority nationals - far below the percentage share of the region's total population. See, McMillen H.Donald, "The Urumqi Military Region Defence & Security in China West", Asian Survey, vol.xxii, no.8, August, 1982, p.708.

2 See, Corr H. Gerald, The Chinese Red Army (London, 1974), p.159.

not extend to playing brinkmanship with the United States for the sake of Chinese national objectives. The Soviet Union also backed out of its pledge to provide nuclear and rocket technology.[3] The split became a reality when the Soviet Union withdrew its personnel and stopped all material assistance. The clash on the Ussuri River and the subsequent events have led to deployment of fortysix Soviet Divisions on the Sino-Soviet border.[4] Six or seven divisions are deployed opposite Sinkiang and the rest are deployed against the Manchurian border, the latter being the most potent threat to Peking and the Shenyang military regions.[5] These are China's core areas, containing some of China's larger industries, cities and rail transportation networks.

A conventional Russian invasion into Manchuria would require anything upto 80 to 85 divisions according to some analysts.[6] Although the PLA would be outclassed in equipment, its reaction to a Soviet thrust would be the occupation of the key defensive line in the mountains guarding the Chinese plain some 70 to 100 miles north of Peking. These natural barriers would be very well fortified by a number of army corps supported by artillery and armour. A concurrent

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3 See, Nelsen W. Harvey, The Chinese Military System, (Boulder, Colorado, 1977), p.196.

4 McMillen H. Donald, op.cit., p.721.

5 Peking is less than 450 miles from the Mongolian border.

6 See, Mirsky Jonathan & Brigadier X, "The Army that Frightens Russia", Asian Defence Journal (Kuala Lumpur, March 1981), pp.29-31.

strategic withdrawal will be carried out with other forces defending the towns on the main axes of Soviet communications. Once the Soviets contact the mountain redoubts, counter-attacks will be launched against Russian weak spots and guerrilla operations against their rear areas. The possibility of a Soviet nuclear strike would be countered by the Chinese nuclear armoury which includes ballistic missiles, some of which are sufficiently mobile to survive a pre-emptive Soviet strike.[7] The Chinese reckon that any additional reinforcement of the Manchurian invasion would seriously undermine Soviet position in Eastern Europe.

In the northwest, Sinkiang is connected to China proper through the Gansu corridor, a rugged neck of terrain between the southern border of Mongolia and Turpan, and the Gansu mountains. These arid regions stretching from Dzungaria in Central Asia to the eastern fringes of the Gobi Desert have many characteristics of West Asia. Since antiquity, these regions have been controlled by the military organization which commanded greater mobility and firepower. A manpower-intensive force will be a liability, whereas domination could be achieved by a combination of airpower and armoured forces supported by nuclear artillery.

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7 The Chinese nuclear capability includes 40 to 50 medium-range ballistic missiles (700-miles range), 50 to 70 intermediate-range (1500-3000 miles) missiles and at least two intercontenental missiles. See, Mirsky Jonathan & Brigadier X, ibid., p.31.

As far as communications are concerned, a single railway line connects Lanzhou with Sinkiang. The region is vulnerable to interdiction from the Soviet-dominated Mongolia. Since the vast open tracts of Sinkiang permit by-passing of Chinese forces by highly mobile mechanized Soviet forces, the Chinese leadership may well sacrifice most of the northwest while developing guerrilla operations behind the enemy lines of advance. Except for Lop Nor, which is a blast area, there are no production facilities or permanent warhead storage and any other strategic prizes in the region. But ever since 1976, the military capabilities of Lanzhou and Sinkiang regions have been upgraded by improving the fire power, mobility and combat readiness of the units.[8] It is in this context that the recent Chinese military exercise in Ningxia region has to be seen. A combined exercise of armour, mechanized infantry and airforce performing a coordinated counter-attack supported by a simulated tactical nuclear strike was watched by major political and military figures including Deng Hsio Ping himself.[9] Against both the fronts, the Chinese do not have any trans-border operations capability.

Against the Vietnamese in the south-east, the PLA has the capability to mount operations in the mountainous jungle terrain

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8 McMillen H. Donald, op.cit., p.718.

9 See, K.N. Ramachandran, "Military Exercise in China", StrategicAnalysis, vol.vi, no.5, (New Delhi, August 1982), p.282.

characterized by scattered towns and villages and few under-developed main roads.[10] The topography of the region compensates for the lack of modern equipment of the PLA. Notwithstanding the restrictions imposed on movement and communications and the Vietnam war experience of 1979, the PLA can manage the threat to its south eastern territories.

Sino-India Security Scenario

In 1954-55, China began to construct a secret road across the Aksai-Chin area connecting Sinkiang with Tibet. This road was very useful in moving troops from Sinkiang during the Tibetan revolt of 1959 and the 1962 border conflict with India. The conflict demonstrated the PLA's ability to mount trans-border operations in the difficult mountainous terrain. The Chinese undertook only small-unit operations, against widely dispersed Indian posts. Notwithstanding the extremely attenuated logistical lines and inhospitable terrain, Chinese forces never lacked any essential equipment and supplies, or the ability to employ effective artillery firepower.[11]

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10 See, G. Jacobs, "Sino-Vietnamese War 1979", Asian Defence Journal, no.3 (Kuala Laumpur, March 1981), pp.4-13.

11 See, Pollack D. Jonathan, "China as a Military Power", Military Power and Policy in Asian States, China, India Japan (Westview Press, Boulder, Colorado, 1980), p.64.

Ever since 1962 there has been a status quo on the claims and the territories wrested by China. In 1980 China offered a package deal, whereby it would retain 35000 sq.km. in Aksai Chin, which provides a secure access between Sinkiang and Tibet, while Indian de-facto control of some 93000 sq.km. west and south of the McMahon line in NEFA would be given a de jure recognition by China.[12] Apart from the desire to settle all its border disputes, it is more likely that the offer has its origin solely in the realities of military situation in the two sectors. The offer has to examine the implications of Chinese claim to Arunachal and its interest in the Aksai Chin as well as the Indian capacities to retain Arunachal and its interests in Ladakh.

Although the strength of Chinese and Indian military forces and their dispositions is highly classified, but from Western published sources it is suggested that India appears to have a slight edge over China in a conventional confrontation.[13] To what extent such conclusions are inspired in the Western world to present a justification for the modernisation of the PLA is open to question. But the fact of the matter is that the existing force levels in Tibet can be considerably reinforced from the other military regions (see Map on page 22).

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12 McMillen H. Donald, op.cit., p.710.

13 See, Workshop Report of the US Senate Committee on Foreign Relations (January 1982) and T.S. Murty, "Military Factor in Sino-Indian Talks", Strategic Analysis, March 1983, p.708.

According to one Indian general, improvements in communications in Tibet have increased the Chinese military potential in that region. The oil pipeline is already operative and the railway line is nearing completion. These and the development of new roads and airfields give China the capacity to sustain operations on the Indo-Tibet border by 21 divisions for 70 days.[14] The main road communication in Tibet runs parallel to the Indo-Tibetan border with arterial roads extending to main passes and pressure points along the border; these factors enable the Chinese to achieve tactical local superiority at the time and place of their choosing.[15] In addition, the western portions of Tibet and Kashgaria are also open to Chinese intrusions supported from Sinkiang Military Region (MR). The construction of the Karakoram Highway allows China access into Kashmir on a much larger scale than the Aksai Chin Road ever can.

There is no significant Indian presence north of Kargil. Shaksgam valley, which India regards as part of Jammu and Kashmir, has been handed over to China by Pakistan.[16] The

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14 Lt.Gen. A.M. Vohra, "National Security Perspective", USI Journal, vol.cxi, (New Delhi, July-September 1981), p.219.

15 See, Ashok Kapur, "Military Situation in South Asia", Military Digest, no.82, Army Headquarters, (New Delhi, July 1969), p.16.

16 For a description of Karakoram Highway see, T.S. Murty, "Chinese Claim to Arunachal", Strategic Analysis (New Delhi, January 1983), p.576, and "Khunjerab Road Strategic Implications", Strategic Analysis, September 1982, pp.331-36.

extension of the Karakoram Highway over the Khunjerab pass and its extension eastwards upto Pakistan-occupied Skardu, vastly improves the ability of the PLA formations in Kashgaria to develop operations along Skardu-Kargil axis in concert with Pakistanis. The Karakoram Highway has the advantages of moving the Chinese forces to threaten the umblical cord connecting the Leh garrisonn, and also supplementing their administrative requirements from Pakistan. Whatever be the PLA force levels in Western Tibet, the threat to the Leh garrisonn is more from Sinkiang. The Chinese can seriously jeopardise the security of Leh by severing its lines of communications along the Kargil-Leh Road.

In a similar manner is the threat to the Chinese communications between its positions in western Tibet and Sinkiang. Uptil the establishment of the People's Republic of China, Sinkiang was connected only by a tenuous road link with Lanzhou in Kansu. Almost the first thing which the PRC did was to improve the road communications between Lanzhou and Urumqui, and to construct a rail link. The communications to western Tibet were better and quicker via Sinkiang during the occupation of Tibet in 1952. Whether the Chinese interests in Aksai Chin are solely due to the necessity of maintaining good communications between western Tibet and Sinkiang is open to question, considering that the Chinese are claiming areas 50 to 100 miles west of that road.[17] Perhaps there is

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17 T.S. Murty, "Chinese Claim to Arunachal", op.cit., p.577.

something in the speculation about the mineral resources of the region. Since proper geological surveys are yet to be undertaken either by the Chinese or by the Indians, the area in dispute being large, one doubts if either side can forego its claim, without knowing what may be the wealth lying under the ground.

In Arunachal Pradesh there are four main valley routes coming into Assam from the Tibetan Platean. First is via Tawang, which has two bifurcations, one via Bomdi La to Tezpur and the other along Manas River through Bhutan. The other three routes are along the Subansiri Valley, along the Siang Valley and lastly along the Lohit Valley. Except for the Subansiri route, the Chinese roads come right upto the border.[18] This facility enables the Chinese to exert pressures at various points along the border. In addition, India cannot overlook the border with Nepal. The Gangetic plain and its east-west communication system is devoid of any defensible geographical barriers, making it vulnerable to a major Chinese offensive through Nepal. The Chinese have built the 104 km. Kathmandu-Kodari Road which gives them a direct access into the Nepal plains. According to a Chinese defector to Nepal, the Chinese have constructed heavy bridges on this road of bearing capacity of 60 tons.[19] This can take tanks and heavy lorries. The Sino-Indian border

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18 See, T.S. Murty, "The Military Factor in Sino-Indian Talks", op.cit., p.706.

19 N. Mitra, "India and its Neighbours", IDSA Journal, vol.xiv, no.3,(New Delhi, January-March 1982), p.402.

question will remain alive for some time to come, which in turn will entail a state of military commitment.

Organization of China's Security

China is divided into 11 Military Regions which in time of war will become antonomous 'Fronts' and take command of all military forces within the regions' boundaries, including air and naval forces.[20] The air districts have been reorganized to make them coterminous with the military regions, and to facilitate coordination between air and ground forces. In peacetime they are responsible for implementing political and general directives, military-civilian relations, training, recruitment; and perhaps the most important function is to look after the logistical requirements of the troops. The military regions also have control over the regional forces, urban garrissons and para-military production construction corps. The system of military regions is clearly tailored for a defensive war. They are well prepared for deploying troops and mobilizing resources to protect their own territories, but they are not organized to mount sizable military expeditious across China's borders without drawing on assistance from the strategic reserve from Wuhan MR and other dormant theatres. The dissolution of the Tibetan MR in 1968-69 is indicative of

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20 For the layout of the PLA in Military Regions see Map on page 22. Source: Dreyer June Teufel, "The Implications of US-China Military Cooperation", Strategic Digest (New Delhi, August-September 1982), p.474, and Nelsen Harvey, op.cit., p.120.

LAYOUT OF PLA IN MILITARY REGIONS

NOTE:

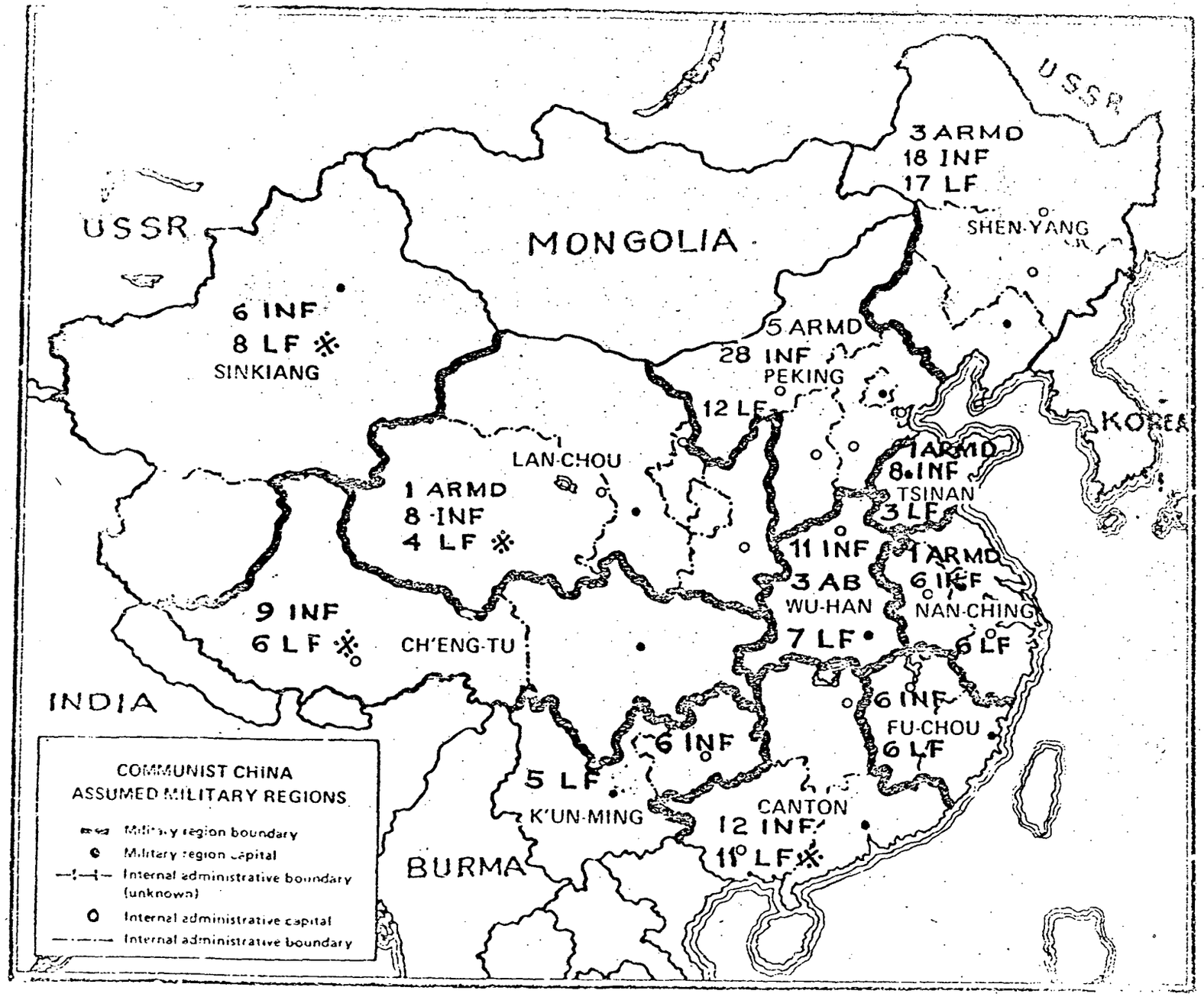
ARMD - ARMOURED DIVISION

INF - INFANTRY DIVISION

AB - AIRBORNE DIVISION

LF - LOCAL FORCE DIVISION

✲ - 2 TO 3 DIVISIONS OF BORDER TROOPS



defensive thinking.[21] The Tibetan region is too remote and troops are too few to justify anything more than a military district status. It has been grouped with Szechuan to form Chengtu MR. Sinkiang MR consists of northern, eastern and the southern Military District.[22]

People's Liberation Army

The People's Liberation Army (PLA) is the collective name of China's ground, naval and air forces, and has a total strength of 4 million men. The ground forces total some 3.5 million, while air and naval forces are more than 3,00,000 and 2,00,000 respectively.[23]

The Main Forces (MF) of the PLA comprise primarily of infantry, organized in 37 to 38 corps of three different types,[24] according to the amount of vehicles, armour and artillery in each. Type A units are relatively modernised. Type B units

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21 Ibid., p.123.

22 McMillen H. Donald, op.cit., pp.717-18. Three infantry divisions are located in this District, at Kashgar, at Hotan, on Aksai Chin Road between Gartok and Rudok, and on Gilgit-Kashgar Road.

23 See, US Defence Intelligence Agency (DIA) Handbook, The Chinese Armed Forces Today (London, 1979), p.1.

24 See, Nelsen Harvey, op.cit., p.115. According to the Military Balance 1982-83, China's Main Force has 42 Army Corps. The US Defence Intelligence Handbook states that there are 130 to 140 Main Force Divisions (118-125) Infantry, 9-12 armour, 3 airborne and 35 artillery divisions).

rely heavily on pack animals and manpower and have less artillery and armour. Type C units are the light infantry with about two-thirds the manpower of the other two types but without armour or medium artillery. Such units are best suited to jungle and mountain warfare conditions. Tibet and Sinkiang would be having Type C units which could also combine with light infantry divisions of Regional Forces.

The Regional Forces, the second major component of the infantry, are equipped with lighter weapons and have fewer troops than the equivalent echelons of the Corps. The Regional or Local Force has 85 infantry divisions and 130 independent regiments including the border guard to carry out provincial and local defence during war.[25] Their peacetime functions include public security, militia organization and civic action. These roles could perhaps reduce their state of preparedness and make them vulnerable to major combined arms surprise attack, notwithstanding the existence of border defence divisions. But in the mountainous Southern Region, because of slower pace of operations, they would be able to achieve a wartime footing within the required period. Although the Regional Forces carry out the same individual and unit training as the Main Forces, they have lower priority for equipment modernisation and lesser combined arms training experience. These limitations are compensated by their local roots contributing to high morale, a will to fight, and advantages of local knowledge.

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25 Dreyer June Teufel, op.cit., p.474.

Para Military Forces

The third element of the Chinese security system is the para military force consisting of Militia and Production and Construction Corps (PCC). Although these forces are capable of providing significant guerrilla and logistic support to the PLA in the defence of Chinese mainland, neither of these groups can make a substantial contribution to the offensive capability of the PLA, except perhaps the road-building capacity of the Production and Construction Corps.

The Militia

It is a part-time volunteer service with its members working at its regular production and service jobs but trained and directed militarily by the PLA. Besides guerrilla warfare, the militia would be employed to defend urban and communication centres, gather intelligence, help maintain production levels, and provide logistic support and manpower reserves for regular forces. The Militia is organized in both urban and rural areas and is divided into three categories. The Common Militia, which comprises at least 75 per cent of the total, receives virtually no military training and provides labour and manpower reserve during wartime. Basic Militia receives some individual and military training. Within this category is the Armed Militia which is well-trained and politically screened.[26]

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26 For a description of the Militia, see Nelsen Harvey op.cit., pp.177-78; the US Defence Intelligence Agency Handbook, op.cit., pp.2-13, 15, and Col.W.Kennedy, "Defence of China's Homeland", The Chinese War Machine (London, 1979), pp.86-87.

They carry arms for public security and coastal and border area defence in platoon-sized patrols. In urban centres, they are also equipped with anti-tank and anti-aircraft artillery.[27]

Until the 1970's, militia weapons were primarily rifles, hand grenades and side arms. The Militia has lately begun acquiring infantry and anti-aircraft machine guns, landmines, mortars, anti-tank weapons. The military capabilities and readiness of the Armed Militia has noticeably improved in the last ten years. Besides its expanded arsenal, the training has been systematized and PLA veterans serve as full-time militia cadres. Despite these efforts, the fighting ability of the Militia remains low. Live fire training is rare, and military instruction is at small-scale and scattered. Yet, despite these shortcomings, should the invading army penetrate deeply into China, the regional forces supported by the Militia would be able to create critical problems behind the invader's lines of advance.

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27 Strength of Militia varies according to different estimates.

	US DIA Handbook	Nelsen	Kennedy
Common Militia	60 Million	23 to 220	100 to 200
Basic Militia	15	15 to 20	20 to 30
Armed Militia	5	7 to 10	7 to 12
TOTAL	90	44 to 250	More than 200

Production and Construction Corps (PCC)

It is also described as PLA Capital Construction and Engineering Corps. Unlike the Militia, the PCC is full-time employed for economic development of remote areas on projects like afforestation, road-building, mining, land reclamation, water conservancy and running of some industrial plants and state farms. It also has a paramilitary role of border defence and surveillance. Although probably less than 15 per cent of its strength is armed with light machine guns, rifles and mortars, it would require substantial training before individuals or units could be reasonably considered combat-effective. Nevertheless, the fact of its full-time employment, offers a better mobilization potential during emergencies.

With its strength varying between 1.5 and 2 million,[28] the PCC has played a valuable role in frontier development. It is not only achieving the social, political, and economic integration of border regions with China, but has closely linked their economies with the mainland, thereby reducing the possibility of minority separatism.

Military Capabilities of People's Republic of China

The Soviet Union is the only country capable of launching a large-scale invasion of China as the United States has moved

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28 Nelsen Harvey, op.cit., p.191. According to the US Defence Intelligence Agency, the strength of the PCC is over 3 million, op.cit., pp.2-15.

closer to a total alliance with it. In the present environment, the likelihood of Soviet invasion seems remote. The circumstances which might provoke such an attack, according to Western observers, could be, first, accession to power of a new Soviet leadership that is more militant, in whose perception the Sino-American alliance might loom sufficiently threatening to Soviet Union; secondly, escalation of a Chinese conflict with Soviet-supported threat from Vietnam.[29]

The Chinese visualise (according to Western observers)[30] that a Soviet offensive will be a surprise attack with heavy use of armour, air support, and nuclear, chemical and biological strikes. To what extent this scenario is promoted by contractual writings to substantiate the US State Departments opinion, is open to conjecture. But one thing is certain, that the scenario is a replica of the NATO's perceptions of Soviet offensive of Central Europe. When one reads of inadequacies, obsolescene or ineffectiveness of the PLA, it is in relation to the modernity of the Soviet Red Army. Military writers in the West, particularly in the United States, regard modernization of the PLA as a useful method of detracting Soviet Potential in Europe. Some even consider China as a tacit ally, which should be given considerable assistance in its military modernization. It is argued that substantial

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29 See, Dreyer T. June, op.cit., p.468 and McMillen H. Donald, op.cit., p.721.

30 See, Dreyer T. June, ibid., p.469; Pollack D. Jonathan, op.cit., p.70, and Col. Kennedy V. William, op.cit., p.106.

modernization of the PLA would not endanger US security (this view is opposed by the Japan-Taiwan supporters), and therefore, the West should adopt liberal policies on the transfer of military technology. In any case, lack of modernization in the PLA does not limit its ability to project power against Vietnam or India.

The bulk of China's main forces are infantry units lacking in mobility and firepower. Although their logistic systems have also been variously described as inadequate, the defensive nature of Chinese strategy employed by a manpower intensive force wherein, hardihood, familiarity with marginal living conditions and the soldiers' ability to improvise, simplifies the logistic problems. Besides, the PLA has the ability to mobilize civil resources, and, therefore, its deficiencies in transportation system are compensated to an extent. These characteristics of marginal logistic reliance have made the PLA infantry division hard-hitting and able to move in more remote parts of China, as was demonstrated in the Sino-Indian war of 1962 and the operations against Vietnam in 1979. Logistically the achievements of the PLA in the two-week war were quite good, considering the requirements of moving more than 300,000 troops. A PLA army of three divisions has about 44,000 troops (44 trains at 1,000 troops per train) and approximately 22,500 to 25,000 tons of equipment (75 trains at 50 freight cars per train). Besides, it has 2400 vehicles and animals requiring 1100 freight cars (22 trains). The daily average resupply requirement of a PLA division is 150-200

tons (or 750 to 800 for an army). This goes upto 500 tons in heavy combat.[31]

Notwithstanding the PLA's reliance on the high morale and inexhaustable reserves of infantrymen, its deficiencies in firepower in terms of tactical aircraft and anti-tank weaponry and the like, will leave the Manchurian plain vulnerable to a Soviet invasion. Therefore, about two-thirds of the PLA's front line infantry divisions, the bulk of its armoured strength, are found in this region. With reduction of tension opposite Taiwan, the Chinese have redeployed their tactical aircraft and upgraded their anti-aircraft potential in the north. There is a growing awareness in the PLA about the need to modernize, as indicated by an article entitled "Integration of Millet plus Rifles with Modernization". It makes the following pertinent observations: "Any future war against aggression will be a peoples war under modern conditions. The suddeness of outbreak of modern war, the complexity of coordinating ground, naval and air operations, the extreme flexibility of combat units and the highly centralised, unified, planned and flexible command structure, all these factors make it appropriate for our army to have

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31 See, US Defence Intelligence Agency Handbook, op.cit., pp.5-6 and G. Jacobs, op.cit., p.6 for the logistic and rolling stock requirements of a PLA field army. According to Harlan Jencks, besides limitations in firepower and command, control and communications, the logistical difficulties would probably have prevented the PLA from advancing further into Vietnam. See, H. Jencks, "China's Punitive War", Asian Survey, August 1979, p.810.

modern equipment. For example, air armed forces must have an automatic computerized count down communications and command systems, and rapid motorised modern transportation facilities. They must also be armed with conventional and strategic weapons so that they can take quick and retaliatory action against the invading enemy".[32]

The PLA's infantry formations are supported by seven service arms,[33] Artillery, Armoured, Signal, Engineer, Anti-chemical Warfare, Railway Forces, and Second Artillery, which is perhaps in charge of China's ballistic missile forces. The missiles have been mostly aimed against the USSR, although few are deployed to strike Taiwan, South Korea, Japan and South-East Asian targets.[34] According to McMillen, there is a possibility that IRBMs and MRBMs are deployed in the caves and tunnels in the Sinkiang mountains, as well as in the Aksai Chin area. They would probably be targeted on key military and communication centres and cities in Soviet Central Asia, Western Siberia and possibly in India.[35]

The artillery is the PLA's largest and most effective service arm equipped with indigenously produced guns of the

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32 Pollack D. Jonathan, op.cit., p.85.

33 Naval and Air Force constitute separate branches of the PLA and are not separate services like in India or Pakistan.

34 Nelsen W. Harvey, op.cit., p.64.

35 Donald H. McMillen, op.cit., p.719.

Russian type. In the last decade, China has produced large quantities of conventional artillery pieces, equalling the Soviet Red Army in number. But due to the large number of infantry units, there is a shortage of artillery in direct support of units. The emphasis has been on towed guns rather than self-propelled artillery, for the purposes of economy, reliability, and ease of transportation to underdeveloped areas and maintainability. However, due to a shortage of towing vehicles, the PLA artillery is likely to be handicapped in tactical mobility. Besides their fire control systems are unsophisticated, and to overcome this weakness, the Chinese are trying to develop a laser range finder and computerised fire control system.

The main battle tank of the PLA is T-59, a Chinese version of Russian T-54, which would be outgunned and outarmoured by the Soviet T-64 and T-72 tanks. But for the rough terrain in Southern China, the PLA has an indigenously-produced light tank T-62. Considering that employment of tanks is advocated in the mountains,[36] especially in the areas where the enemy will not expect them, it is quite likely that the PLA employs the T-62 tank in Aksai Chin and in the Tibetan palateau. Inspite of 10,500 tanks with the PLA,[37] it is still outnumbered by the Soviet armoured forces. The Chinese

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36 US Defence Intelligence Agency Handbook, op.cit., pp.4-55.

37 Military Balance 1982-83, op.cit., p.80.

are expanding rapidly in this field to present a meaningful deterrent, since most of the Soviet armour is deployed in Europe.[38]

Signal Corps units are integrated with other troop units in order to plan and operate all forms of communications equipment. Although the equipment is heavy and old, and there is too much of reliance on vulnerable land lines, military communications in China are efficient. They may not be fast and flexible by Western standards, but the code systems are very sophisticated and virtually impossible to break.

The engineering forces in the PLA are combat engineers and engineering support units. The former are part of infantry formations and specialize in combat engineering functions like laying of minefield, handling demolitions, and providing camouflage etc. The support units specializations include bridging, general construction, water conservancy and supply and other assistance to civil economy. They are supplemented by the para-military Production and Construction Corps, which has large manpower but is deficient in equipment. The equipment in the engineering forces is of Russian origin of the 1950s design. The efficiency of the Chinese engineer forces in North Vietnam was confirmed by the US Air Force, where the former was employed in the tasks of bomb damage

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38 China has at least three tank factories at Loyang, Harbin and Ta-tang capable of producing 600 to 800 tanks annually. See, Harvey W. Nelsen, op.cit., pp.66 and 125.

repairs and keeping open the lines of communications. The ability of these forces was earlier demonstrated in their track and road-building performance during the Sino-Indian conflict of 1962.

The anti-chemical warfare forces are responsible for protecting the PLA against nuclear, biological and chemical NBC) attack. The Chinese at the moment may not have an offensive capability in NBC warfare, but the offensive roles of anti-chemical warfare forces include flame-throwing and smoke-generated concealment.

Railways and railway troops are important to the PLA's strategic mobility and logistics. This is so because of a general shortage of transport vehicles and poor conditions of roads. In China, railways provide a reliable transportation system, moving vast tonnages over long distances, inspite of shortages in rail tracks and rolling stock. The most notable achievement of railway forces has been completion of Kunming-Kweiyang rail line in 1966 through extraordinarily mountainous terrain.[39] The other major human efforts of the railway forces have been extension of railway over the Tienshan mountains in Sinkiang,[40] and the rail link to Lhasa which

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39 Harvey W. Nelsen, op.cit., p.69.

40 The only rail line to Sinkiang, from Lanzhou to Urumqui, has been extended to Korla on the northern fringe of Takla Makan in 1980. It is to be extended to the western part of Tarim Basin which is more populated. See, Donald H. McMillen, op.cit., p.707.

is nearing completion.[41] The latter will greatly enhance the Chinese military potential in Tibet.

The prodigous ability of the PLA was again demonstrated in the Vietnam war in the 1960's, where despite unlimited American air superiority, the flow of supplies never stopped for long over the two rail lines leading into Vietnam from China. The Chinese engineering and railway forces carried out repairs with astonishing rapidity, replacing destroyed steel spans with pontoon bridges, ferrying railway car or their contents where pontoon bridges could not be used. This performance indicates that the rail-dependent logistic system of the PLA is not as vulnerable as it is believed. But with the growing mechanisation in the PLA, it will take more trains to move the erstwhile lightly equipped divisions. The railway forces will have an even more difficult job to perform in the years ahead.

The main areas of weakness in the PLA are in the air defence and anti-tank weaponary. The PLA still bases its anti-armour defences on the pattern of World War-II, relying on conventional artillery minefields and shoulder-fired anti-tank rockets. Lately the Chinese have been looking around for sophisticated anti-tank missiles.[42] Air defence of the

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41 Lt.Gen.A.M. Vohra, "National Security Perspective", USI Journal, vol.cxi, no.465, July-September 1981, p.219.

42 In 1978, China contracted to buy the HOT optically-guided anti-tank missile from France but it is believed that the deal has not been implemented.

regular PLA formations is inadequate. Most radar-guided conventional anti-aircraft systems are controlled by the PLA Air Force (PLAAF) for the defence of strategic targets. Although the PLA formations have a large number of light anti-aircraft cannons and guns for protection against low-level attacking aircraft, these cannot do much against medium level tactical bombing. Chinese weakness in the transportable missiles is evident as they have been trying to contract for Roland or Crotale surface-to-air missiles against low and medium level targets.

The PLA firepower has improved greatly over the past decade, but its mobility, particularly in the tactical area, has lagged behind. It has accorded a lower priority to its tactical mobility either through heliborne capabilities or mechanizing the infantry forces. Although the production levels of the armoured personnel carriers have been increased, the infantry still remains strategically rail mobile and tactically foot mobile. The limitations of the foot mobility in the mountains will be manifested if its adversaries in the south acquire a reckonable helicopter-lift capability.

PLA Air Force (PLAAF)

The Peoples Liberation Army Air Force is the third largest in the world with about 5300 aircraft.[43] During mobilization

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43 Military Balance 1982-83, p.81.

a few hundred civil transport aircraft will augment the fleet. In addition to the flying units, there are ground based air-defence and early warning units organized into 22 radar regiments. China's three air force divisions are also under the PLAAF control located at Wuhan MR. The PLAAF is divided into ten air districts which are coterminous with eleven MR, except the Sinkiang MR. That area is part of the Lanzhou Air District. The air districts are responsible for air defence while the MR control the tactical air operations.

Although the PLAAF has a large number of aircraft, most of them are outmoded models. The Chinese are not capable of designing a modern super-sonic aircraft on their own; their copies of MIG-21 has also had problems and production has been suspended. The only notable success has been in the development of an enlarged version of MIG-19, designated as F-9. Themain areas of weakness are relatively poor avionics and shortage of all weather fighters, which limits the PLAAFs operational ability at night and bad weather.

The PLAAF is capable of delivering nuclear weapons but the chances of relatively outdated IL-28 and TU-16 bombers[44]

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44 Although the TU-16 bomber is of older design, it can nevertheless deliver a 3 megaton nuclear weapon at 1600 nautical miles range. That will put northern and eastern India in its striking distance if operating from airfields in Yunan. See, Roy Werner, "Implications of US-China Military Co-operation", op.cit., p.494.

getting through Soviet air defences are remote. In any conflict with the Soviet Union, the Chinese will lose the control of the air and their poor mobility will be further limited. Even against relatively modern Indian Air Force, the PLAAF aircraft operating from Tibet will be having reduced bomb loads and ranges due to the elevation of airfields.[45] Therefore, the emphasis has shifted to developing a ballistic missile capability. The Chinese have not yet been able to develop a tactical nuclear missile capability. At the recent military exercise at Ningxia, the simulated device was dropped from an aircraft.[46]

Many of the long-standing weaknesses of the PLA have been overcome. Inspite of its relatively inferior equipment, mobility and firepower to the Soviet Red Army, the massive size of the PLA's infantry forces, combined with fine individual and small unit training and high morale, do much to offset its limitations. The PLA's power projection in under-developed areas, where fighting is at lower technological and equipment levels, cannot be matched easily. On balance, the strength of ground forces far outweigh their weaknesses, and their sheer size is the most important deterrent to a would be attacker.

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45 See, Brigadier Rathy Sawhny, "The Defence of India's Northern Borders", Chanakya Defence Annual (Allahabad, 1969), p.183.

46 K.N. Ramachandran, op.cit., p.283.

Strategic and Tactical Doctrine

The Chinese strategic doctrine, as propounded by Mao Zedong, , is the product of the PLA's 50 years of history. The classic components of the concept of people's war include mobilization of the entire population to resist enemy incrusion. Precedence was given to people over weapons. A mobile and guerrilla warfare was planned without having fixed lines of battle or sharp demarcation between the front and the rear areas. A protracted active defence was catered for by decentralisation. This involved a three-in-one fighting force, combining field armies, regional armies and militia; this made use of the advantages of large manpower and reduced limitations of relatively low levels of military technology. The concept of people's war is defensive in nature. Its aim is to draw the invading army into pre-selected battlefields. Meanwhile some of the regional forces defend their own areas and localities, the Armed Militia gets mobilised to conduct guerrilla operations behind the enemy lines, while the Main Forces are intended to engage the enemy in conventional battles and prepare to launch a massive counter-offensive to either annihilate or drive the enemy from the Chinese territory. The main forces would be kept supplied, and intelligence and personnel support provided by other regional forces and militia.

As far as the frontier regions of Sinkiang and Tibet are concerned, neither terrain nor population allow for a full application of the concept of people's war, by which the enemy would be drawn into the region, worn down by guerrilla warfare and then driven out by a conventional counter-attack. People's war depends upon secure rear areas and there is no such thing in the vast desert stretches and steppes of Sinkiang or the mountainous plateau of Tibet. Moreover, much will depend upon the reactions of local, non-Han population. Particularly in Sinkiang, the type of attacks launched by the Soviet Union will be a major factor. Should the Soviets attack with all the conventional means at their disposal, the battle may be over quickly, particularly if the Soviets are helped by a significant number of rebel minorities.

Although the defensive nature of Maoist doctrine serves to support Peking's claim of non-interference in the affairs of other nations, the Chinese offensives against Korea in 1950-51, against India in 1962 and against Vietnam in 1979, prove their ability to mount operations beyond the Chinese soil in underdeveloped terrain. These military operations were basically manpower-intensive, relying on foot mobility, high morale, surprise and deception, in order to compensate for their weakness in firepower and strained logistic lines. Should another major conflict develop, the Chinese leadership will show no hesitation in committing a large number of troops. Litterally millions of Chinese

soldiers continue to prepare for such conflicts on various fronts.[47] Although this type of doctrine appears to be outmoded according to Western military thinking, infantry intensive warfare is not at a major disadvantage in under-developed mountainous terrain.

During the last decade, the traditional concept of "embroiling the invader in the quargmire of peoples resistance" has undergone a change. As asserted by Su Yii, author of few detailed statements on Chinese military policy in recent years.[48] "There must be continuous development of our tactics under new conditions and flexible application of various methods of fighting under objective conditions. Since war and its various stages differ... as arms and equipment, our method should change and develop accordingly. We must be flexible in deploying our troops and in using and changing our tactics. We should constantly study and acquire up-to-date tactics resulting from development of techniques and equipment."

The present concept which is emerging is that the future wars will be under modern conditions. The enemy

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47 In Korea there were thirty Chinese divisions numbering 300,000 troops in 1950; in 1951 the number went upto fiftyseven divisions, 570,000 troops. Against India in 1962 there were only three divisions committed numbering 30,000 troops. In the Vietnam war in 1979, more than 200,000 troops were committed. See, Jonathan D. Pollack, op.cit., p.60.

48 Ibid., p.58.

instead of challenging the PLA's greatest strength may well challenge the technologically deficient Air Force and maintain the operations at higher technological levels. A reduced Chinese Air Force will be a great limitation to the large-scale movement of troops. In the past, the PLA tactical doctrine emphasized the mobility achieved through toughness and endurance of the individual soldier. The doctrine characterised small unit operations involving, first, extensive reconaissance to locate the enemy flanks and gaps between enemy units; secondly, employing flanking and multiple attacks in preference to frontal attacks and an ability to withdraw in the face of superior force in order to reassemble and fight again at another and more favourable point. In the mountains, the PLA's ability for good camouflage, foot mobility and small-unit discipline exploits the limitations of a difficult terrain, where a continuous and an intact front is difficult to offer. The Chinese tactic of careful preparation and superiority of numbers and fire power at the point of attack was evidenced in the 1962 Sino-Indian conflict. The widely separated and static Indian defences enabled the Chinese to follow their tactics to the letter.

The point that emerges is that the PLA tactics were successful against enemy with equally low levels of military technology and training, but if in the next war the conflict is raised to higher levels of technology, especially by an

enemy with superior mechanical mobility, then the PLA's areas of strength will be reduced. Large scale infantry-intensive attacks will provide very expensive results against modern firepower. Besides, modern surveillance devices and helicopters will reduce the advantages gained by superior camouflage and concealment achieved by large units along the few roads and tracks in the mountains.

Modernization of Military Industry: Problems and Projections

China's military equipment, the bulk of which is of Soviet origin, is intended to meet its operational concepts, levels of technical skill and the quantity of requirement. The basic concepts of the PLA's equipment design are simplicity in terms of operation and maintenance. Equipment development is being achieved by copying models of highly sophisticated technical equipment and weapon systems by processes like reverse engineering. Re-equipment policies require operational life of system to be as long as possible due to large amount of effort and time required to reequip such large armed forces; and, besides, large quantities of equipment required demands simplification of design and short inventories of equipment to serve technical and financial limitations. Reliance, therefore, is on easily manufactured low-technology weaponry.

Major requirements for military modernization are in the areas of weaponry to match the equipment and technology-intensive Soviet Red Army. The PLA lacks a sufficient number

of modern anti-tank and anti-aircraft systems, a main battle tank, and armoured personnel carriers of present generation. The air force lacks in modern ground attack and interceptor aircraft, besides transports and helicopters. The avionics and armaments are inferior to those possessed by almost all of China's adversaries. The second problem area is the low level of technical education and military professional training. Particularly lacking are new ideas, communication of new information and large-scale training at joint inter-service and inter-regional levels. The result of these training inadequacies reflects in the readiness levels of combined arms formations and equipment-intensive units. The PLA's limitations under modern combat conditions are largely due to adherence to the strategic concept of People's War, which needs revision under the changed technological environment.[49] As new weapons, tactics and combined army operations concept gets introduced in the PLA, the changes may also modify military region command structure. Inspite of the improvements in China's transportation capacities that have been achieved, strategic mobility will be hampered in large-scale high intensity war due to shortage of vehicles, overburdened rail system and lack of mechanized loading facilities. These limitations will raise problems in China's sustainability in the event of a major Soviet attack.

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49 One of the major lessons learned by the PLA in the Vietnam War of 1979 is that it needs more training and experience in modern techniques of combat. See, G. Jacobs, op.cit., p.9.

China has been able to develop a broad military industrial base with Soviet assistance in the 1950's. Besides receiving weapons and equipment for 60 odd PLA infantry divisions, a large number of Russian specialists assisted the Chinese in setting up production of new types of equipment.[50] The scope of such arms transfer may well be unprecedented in the history of alliances. With abrupt cessation and withdrawal of Soviet assistance in 1960, the Chinese specialists had to quickly undertake management of all arms and plants. Inspite of difficulties and setbacks, the Chinese managed to resume production and self-sufficiency in most of the areas of defence manufacture, which included 'reverse engineering' of key weapons systems from proto-types and models. But then there was no development beyond the existing models and systems. The Chinese armament production is still based on Soviet designs some of which were transferred twenty years ago.[51] The Chinese military planners have realised that they do not have the ability to engage in indigenous design and development of modern weapon system. And if they

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50 Almost all the modern weaponry in China's arsenal in the early 1960s was Soviet-made or copied from their samples and blueprints. Besides giving them tanks, artillery rockets, aircraft, naval and infantry weapons, virtually the entire Russian industry was at the Chinese disposal. See, Nikita Khruschev, Khruschev Remembers - The Final Testament, translation by Strobe Talbott (Little Brown, Boston, 1974), p.269.

51 For Soviet arms technology transfer, See, Jonathan D. Polleck, op.cit., pp.78-82.

have to upgrade their defence capability they would have to look abroad for potential sources of technology.[52]

Given the enormity of the PLA's size and requirements, and vulnerabilities of outright arms purchases and transfers, the Chinese want to broaden their sources of supply and acquire the ability to manufacture complete weapon systems or components. By building indigenous production facilities and training Chinese scientists and engineers, the military planners hope to maintain their autonomy from external control. But for a full-scale military industry to develop, they have to acquire and gain experience in a broad range of technological, engineering and manufacturing skills. A scientific and management infrastructure for research, development and production has to be assembled. To equip and maintain a modern military force will also require the training of military personnel to use such equipment in an optimum manner. Besides, the necessary technical expertise will be required to maintain, repair and refurbish modern weaponry.

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52 Notwithstanding the total rupture of Sino-Soviet defence relations, there is a likelihood of newer Soviet weaponry ultimately finding its way into Chinese inventories. Egypt agreed to provide China in 1976 with a variety of Soviet armaments in exchange for spare parts and maintenance help for Egyptian MIG-17s and MIG-21s. The deal involved unspecified number of MIG-23 aircraft, surface-to-air missiles and T-62 Tanks transferred to China. See, ibid., p.82.

Considering the fact that during the Cultural Revolution, practically a whole generation of Chinese went without technical education, very few trained engineers and technicians emerged during this period.[53] It is doubtful if the Chinese would be able to achieve military modernization quickly. Until China has sufficient engineers and technicians trained and conversant in modern technology and methods, high technology projects will have problems getting off the ground. Although a pool of 40 to 50 thousand Soviet-trained engineers exist in China, even this number is too small to meet the requirements nor it is as skilled as China's Western-educated engineers.[54] As the current emphasis in China on science and technology bears fruit, a growing number of engineers and technicians will start entering Chinese defence industry alongwith several thousand technical students who are currently taking advanced training abroad. China would in the near future be able to mobilize enough technical talent only for selected high priority defence projects.

There are other institutional restraints. The PLA itself is not well organized, trained or equipped to receive new weapons, and to maintain and repair advanced systems.

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53 Thomas Fingar, "Chinas Quest for Technology" in John H. Barton, and Ryukichi Imai, et al, Arms Control II (Cambridge: Massachusetts, 1981), p.254.

54 Sydney H. James, "The Implications of United States-China Military Cooperation", op.cit., p.480.

There is, in addition, human resistance to change. Conservative and traditional elements would not like to forsake old systems, techniques and processes. There is reluctance to adopt new weaponry and unwillingness to learn from developments in science and technology. To break the mental barrier there is increasing emphasis on the technical training of cadres and ordinary workers, particularly those who are using imported equipment and technologically are not as proficient. Efforts are being made to develop familiarity with modern technology, which range from improving primary and secondary education to sending mid-career personnel abroad for study, alongwith highly selective programmes to train first rate technicians. The shortages of skilled management personnel and modern management practices are being redressed by according a high priority to the training of managers. Policies are being introduced to mitigate organizational obstacles to technology transfer, like bureaucratic rigidity, inadequate technical specialization, excessive centralization and poor coordination. Decision-making authority is being transferred from political to managerial personnel.

Problems of political control of the military is not peculiar to China, but what is characteristic is the PLA's political involvement, especially in power struggles. The pattern which has emerged in post-Mao China indicates that the army leadership has no intention of withdrawing from politics or policy-making, although the trend is toward

further disengagement from politics. The advantages derived by the military leaders in the ruling elite tend to involve them in political conflicts for the retention of their privileges. This leads to overaged military leadership whose receptivity to new ideas and adaptibility is naturally restricted. The entanglement of the PLA in civil and political struggles has diverted its attention from military modernization and professional development. Lin Piao, in particular, involved the PLA deeply in the political struggle for his own purposes.[55] Even more serious a constraint on military modernization and professionalism was the climate of accute anti-professionalism created by the radicals during the Cultural Revolution. In this charged and unsettled situation, the military officers were reluctant to relinquish their political posts. This attitude was reinforced by the behaviour of the radicals towards the military who feared that a professionally inclined army would be less amenable to their influence than a highly politicized one. Any attempts to modernize or professionalize the armed forces was criticized by the radicals on ideological grounds. The fear of being accused of advocating "bourgeois military viewpoint" or branded "revisionists", put professional officers on the defensive when talking about advancing national military technology. Such attitudes hindered the development of combat capabilities of the PLA, specially in regard to conventional weapons and equipment.

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55 Ellis Joffe, and Segal Gerald, "The Chinese Army and Professionalism", Strategic Digest, vol.ix, no.5, (New Delhi, May 1979), p.338.

During the latter half of the 1970s, China embarked upon the programme of "Four Modernizations", namely -- modernization of agriculture, industry, science and technology, and defence. Giving economic development a higher priority than defence was on the assumption that there is no immediate security threat to China. It is advocated that economic construction must be stepped up to strengthen the material foundation of national defence. An article in a Chinese journal emphasizes the importance of modernization of science and technology before economic construction.[56] The relatively lower priority given to military modernization indicates that the Chinese want to rectify fundamental weaknesses in the pattern and rate of economic development before they upgrade their defence capabilities. Agricultural growth has lagged behind in particular (2 per cent annual growth). Considering the high costs of advanced military technology, the priorities to domestic economic policies and China's scarcity of capital will combine to prevent the PLA to modernise at a rate it would need to.

All military R&D in China is conducted under the aegis of the National Defence Science and Technology Commission (NDSTC). Its authority extends to defence-related R&D in various military branches, services and regions. It also plans and directs technical and scientific instruction in

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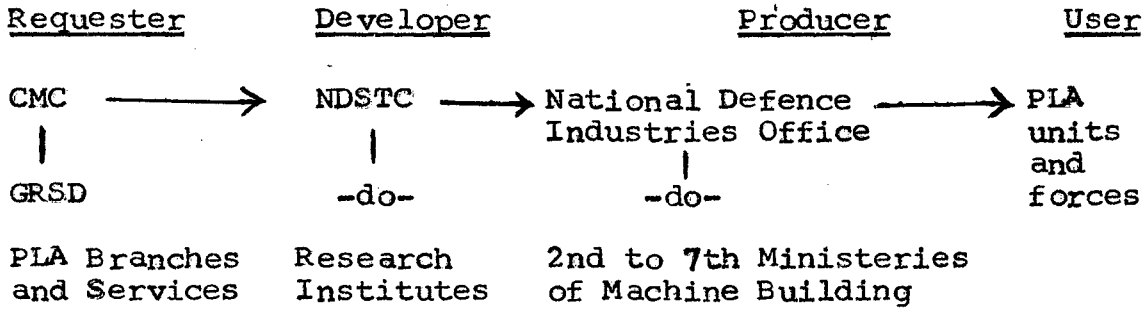
56 Ibid., p.346.

PLA schools and programmes. The General Staff Department (GSD), The General Rear Services Department (GRSD) and Naval and Air Force also have their own subordinate research institutes for specialised equipment needs. This perhaps results in duplication of effort. Nevertheless, the bureaucratic complications are reduced to the minimum and the user-developer interaction is intimate. This is achieved by empowering NDSTC to transfer selected PLA officers to work in various institutes and universities involved in military R&D. The overall military research, development and production cycle in China is on the following lines.[57]



Military production is coordinated by the National Defence Industries Office (NDIO) which is responsible to the Central Military Commission (CMC). NDIO controls the ministries of machine-building which are responsible for various sectors of defence production given as follows.[58]

1st Machinery and equipment for civilian use.

2nd Atomic energy

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57 Harvey W. Nelsen, op.cit., p.62.

58 Ibid., p.60

3rd Aircraft

4th Electronics

5th Ordnance (conventional weapons & equipment)

6th Ship-building

7th Missiles

Some of these ministeries are large, employing tens of thousands of personnel with a high proportion of active-duty PLA men. At present five ministries are led by PLA officers who are allowed to retain their military status. The defence-related ministries of machine-building are adjuncts of the PLA. According to William Tow, visiting Assistant Professor of International Relations, University of Southern California, China's defence modernisation will take decades to achieve due to continued competing demands on what is still basically a Third World nation with a fragile technological and managerial infrastructure. The point has also been made by the Military Affairs Commission's mid-1977 review of China's war production capacity. The review disclosed that China's eight machine building industries which constitute bulk of its defence industry produce an excessive capacity of what are essentially obsolete weapons!

China has embarked on an ambitions effort to move to the front ranks of the world powers by the next century. With acquisition of increasingly consequential military capabilities, China will be able to develop a military posture

with Western assistance, with a potential to project military power beyond its national boundaries. Although modernization of the PLA eminently suits the American interests of building up the Chinese on the Sino-Soviet border, the likelihood of arms sales and technology transfer may even lead to a Soviet reaction, especially if the Russians find PLA modernising at a pace which is difficult for them to manage.

The modernisation processes in the PLA would also be of serious concern to India for two reasons, inspite of emphasis being primarily on mechanisation, anti-tank, and air defence capabilities.[59] First, improvements in communications, command and control systems, optical and radar devices for surveillance, and helicopters, are well suited to improve the PLA's capabilities in the manpower-intensive conflict envisaged in the Himalayas. Secondly, any Indian attempts to seek Soviet military response on China's northern borders may not be responded in view of the vastly improved Chinese credibility against the Russians. Conversely, PLA planners would be able to spare more infantry formations in the eventuality of a conflict in the mountainous South. Mechanization of the PLA would provide it with even greater strategic flexibility than what it has had so far.

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59 See, "Sino-US tie up to hurt India's Security," Times of India, 2 October 1983, p.9.

Chapter III

PAKISTAN - POTENTIAL AND PROJECTIONS

Threat Perceptions

Pakistani perceptions of threats to national security are generated by a complex combination of considerations. These include the historical legacy of British preoccupation with the Afghan frontier and the present reality of Soviet occupation; racial superiority over Hindu India which has gained lead in military industrial infrastructure; and the desire to become the sword arm of the oil-rich Gulf.

Pakistan has a complex two-front security problem which has been exacerbated by internal instability punctuated by military coups. In the east is India, superior in not only industrial and technological potential but also possessing a much larger human resource. In the west is the hilly frontier with Afghanistan, with whom till the Soviet occupation, there was a running dispute over the Pakhtoon issue. The Afghan-Soviet treaty has not only militarily strengthened Afghanistan but has also completely transformed Afghanistan's traditional role of being a buffer state and has brought it firmly in the Soviet camp. Although it has increased the feasibility of Soviet military assistance to separatist elements in Baluchistan and the North-West Frontier, the probability of Soviet-inspired sedition is very much reduced by the anti-Soviet sentiment in the country. All but three of the major dozen tribes have clans on the Afghan side and tribesman freely cross the border. Besides, there is an annual migration of about

three lakh Povindahs (nomads), who spend summer in Afghanistan and cross over to Pakistan for the winter. Because of difficulties in communications and relative military strength of the tribes, the Pakistan Army does not find it prudent to go into some of these areas without the prior permission of the tribal chiefs.[1] Pakistani army has abandoned some of the erstwhile British garrisons, like Razmak and Wana, and has little control over transborder movements of weapons and tribals.

After the Soviet intervention in Afghanistan, almost a million tribals have sought refuge with their kinsmen on Pakistan side. Pakistan by itself can do very little in case of a Soviet attack or intervention in NWFP or Baluchistan. At best, the Pakistani response could be to train and equip the Afghan refugees and send them back to tie the Russians down. Even this has to be with the support of the Chinese and the Americans who can pull Pakistani chestnuts out of fire in case things get out of hand.

Inspite of the Soviet presence in Afghanistan and the western border having been activated, the Pakistani force deployment still reflects major preoccupation with the Indian threat. This obsession with India has resulted from clash of cultural heritage and a climate of mutual fear having been deeply embedded in the psyche of the two nations from the

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1 Fukuyama Francis, The Security of Pakistan, A Trip Report, Rand Note N-1514-RC (October 1980), p.13.

partition holocaust. Ever since the partition, Indo-Pakistani relations have been characterised by continuing tension and mutual suspicion, lack of neighbourly connections, four major armed conflicts and a number of border clashes. Other factors like, Indian consciousness of being a regional power and Pakistani refusal to accept its truncated status, and the communal clashes in India resulting in Pakistani concern for the Indian Muslims, have bedevilled relations between the two countries continuously. Pakistan's preoccupation is reflected in the address by a leading Pakistani military thinker, Lt.Gen. A.I. Akram (retd.), to a visiting team from the British Royal College of Defence Studies.[2] According to Gen. Akram, the main military threat to India, if it is there, is from Pakistan. The implied meaning is obvious. The Indian obsession is also reflected in Pakistan's force deployment. Of the six corps, it has deployed only one corps with two infantry divisions facing the Afghan border. The remaining five including the complete armoured forces are located to face the Indian border.[3] Although there are reports that additional corps and divisions are being raised for deployment on the Afghan border,[4] the deployment of Pakistan's complete

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2 See, "Pak Main Military Threat to India", Times of India, (New Delhi, 4 October 1983), p.1.

3 A Corps with Headquarters at Peshawer has two infantry divisions located in cantonments several miles from the Afghan border. See, Fukuyam Francis, op.cit., p.13.

4 K. Subrahmanyam, "Pakistani Credibility Gap", IDSA Journal (vol.xiv, no.1, (New Delhi, July-September 1981), p.108.

armoured force is not consistent with the rationale of its Joint Staff Headquarters for procurement of additional armour. According to Fukuyama, the Pakistani planners insisted that 4 to 5 brigades of tanks were necessary against the western border as a number of passes debouch rather quickly into flat, open plains where mobile defence would be necessary.[5]

Even before the Soviet threat had become a reality, Pakistani planners worked on the assumption that any conflict with India will develop quickly enough for them to have time to raise new forces. The second consideration was Pakistan's geography. A narrow shaped country, about 90 per cent of its population and nearly all its infrastructure, industry, roads and railways, lie along the length of the Indus river valley. These centres are within 150 to 200 miles of Indian border with no geographical impediments.[6] The country is open and flat, and the deserts in the south are suitable for tank warfare. The Afghan border, on the other hand, being mountainous, lacking in communications and infrastructure, the Pakistani planners feel, that in the event of a standing start attack by the Indian forces from their cantonments near the border, they will not be able to move reinforcements and heavy equipment from the Western border to the Eastern front.

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5 Francis Fukuyama, op.cit., p.28.

6 Ibid., pp.4-5.

The long north-south border with India, makes switching of forces difficult during a short intensive war, without major improvements in rail and road network. The only major port, Karachi, can be attacked from air and blockaded quite easily.

Pakistan, however, enjoys the advantage of interior lines of communication and is in a position to move its forces from contonments to the battle stations within 72 hours, whereas, the Indian forces to be deployed against Pakistan have to be moved from Central and South India and the deployment time is of the order of two weeks.[7] Besides, the initiative for attack is likely to be with Pakistan rather than India, considering the history of outbreak the three Indo-Pak wars and India's avowed intention. According to K Subrahmanyam, the lack of depth in Pakistan in terms of territory is a red herring cited by Pakistani and American strategists. In a war which is unlikely to last more than three weeks, neither side would be able to make thrusts of more than 50 miles into the other's territory.[8]

The Pakistani Joint Staff Headquarters has enumerated four conventional military contingencies that Pakistan could

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7 K. Subrahmanyam, op.cit., p.108.

8 Ibid., p.109.

face. They have been ranked by Fukuyama in the order of their seriousness and not necessarily in the order of their likelihood.[9]

Contingency I: The Russians and Afghans use artillery and aircraft to attack refugee camps within Pakistan on the pretext of hitting Mujahdeen escaping across the border from Afghanistan. The purpose of such an operation would be to demoralise the Mujahdeen; to push the refugee camps back away from the border and to make them less accessible from Afghanistan; and to show the refugees that the Pakistani Government cannot provide them with adequate protection. In addition, the Russians might hope to physically interdict Afghans moving through the passes and trails crossing the border.

Contingency II: With air and artillery cover the Russians and Afghans seize salients of Pakistani territory within their SAM environment and hold it, forcing the Pakistanis to counter-attack. The Durand Line follows an irregular course along the watershed and there are numerous points at which a salient of Pakistani territory juts into Afghanistan. None of these salients is at present defended. If properly chosen, they could be very easy to take from the west and difficult to recapture from the east. The Soviet objective here would be

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9 Fukuyama, op.cit., pp.18-19.

to demoralise the Pakistanis and to teach them a lesson in the event Moscow believed they were giving substantial support to the Afghans. The Russians could also use similar tactics to seize several vital mountain passes.

Contingency III: India, acting as a Soviet proxy, attacks Pakistan in the east. Pakistani forces in the west are contained under the assumption that the 1959 executive agreement with the US would not hold. India's objective would be the destruction of Pakistani armed forces or the seizure of a sizable portion of terrain. Its political goal would be the assertion of hegemony over South Asia and the achievement of dominant power status in the region.

Contingency IV: India and the Soviet Union could launch a coordinated attack from the east and west with the purpose of totally dismembering Pakistan. Moscow's goal would be to achieve access to the sea and to control Afghanistan's southern border. India's goal would be to undo the partition once and for all.

Pakistan military leaders, while listing the contingencies in order of importance, do not necessarily believe that they occur in this order. The Pakistanis view India as a Soviet proxy and believe that Moscow is in a position to control events on both the eastern and western borders of Pakistan. Therefore, "limited contingencies along one portion of the frontier cannot be viewed in isolation from the larger

vulnerabilities of the country as a whole."[10] The Fukuyama report does not appear to stand the test of detailed scrutiny; its political and commercial objectives get exposed by its suggestion that Pakistan requires 4 to 5 brigades of tanks, anti-tank guided missiles and armed helicopters with anti-tank capability,[11] for the defence of the mountainous North-West Frontier and Baluchistan. These weapon systems are more suitable for use in the flat open terrain as available on the Indian front. It is not quite certain whether the Rand Report is an unbiased inquiry by an independent body or the State Department's justification for the arms assistance to Pakistan. Significantly, Francis Fukuyama has recently joined the State Department.

Although the Indian threat ranks lower in the order of seriousness, it is the primary consideration in the organization of Pakistan's security. The Pakistani military planners have worked out several responses to meet the Indian threat.[12]

a) By acquiring new sophisticated conventional weapons, particularly the high performance aircraft and armour.

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10 Ibid., pp.19-20.

11 Ibid., p.20.

12 Cohen P. Stephen, Security Decision Making in Pakistan, Report for Office of External Research, Department of State (USA, September 1980).

Attempts should be made to manufacture the required military equipment.

b) The idea of lightly armed militia is being revived in order to defend large portions of territory.[13]

c) Privately, some Pakistani generals are suggesting a rapproachment even with Soviet Union in order to reduce the threat of a war on two fronts.

d) Building up a nuclear weapons response as a substitute for conventional defence forces.

The Pakistani assumption is that India possesses several bombs which are primarily directed against it and not China. It is assumed that India will strike targets like Lahore, Karachi, Islamabad or other strategic areas, in order to paralyse Pakistan, so as to enable Indian conventional forces to seize the rest of Kashmir or to dismember Pakistan. This argument provides a rationale for a limited Pakistani nuclear programme, essentially to meet the Indian threat.

It is, therefore, obvious that Pakistan's defence policy is a complex reflection of its self-image in world politics and its obsession with India. Pakistan, with strong sense of cultural pride, a large pool of trained manpower, and a

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13 Even the tribal lashkars (armed bodies) are recommended to be employed in conjunction with regular forces. See, Gen. Mohammed Musa, My Version (Lahore, 1983), p.110.

battle-tested and efficient armed forces, seeks to play a role in regional and international affairs. It already prides itself as the sword arm of the Gulf if not of the Islam.[14] It is therefore quite natural for Pakistanis, with their concern about the Soviet pressures and Indian threat, to look up to the common enemy of their enemies -- the Chinese for assistance and support.

Organization of Security of Pakistan

Pakistan was unfortunate in not inheriting on independence a kind of political leadership which would give it stability. With a history of coups, wars with India, and political weakness which revealed at the time of crises, the organization of Pakistan's security was army-oriented. Mr Bhutto, an astute politician, made use of the military defeat of 1971 to reduce the political power of the military. He formulated the Pakistan higher defence organization and a White Paper on the subject was issued in May 1976.[15] The responsibility of safeguarding the national security, constitutional integrity and sovereignty was vested in the elected representatives of the people, viz., the prime minister and other instruments of political control like the Defence Committee of the Cabinet, the Defence Council,

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14 See, Fergus M. Bordewich, "Pakistan Army: Sword of Islam", Strategic Digest, vol.xiii, no.3 (March 1983), pp.170-79.

15 See, Rama Rao, "Pakistan's Higher Defence Organization", USI Journal, vol.cvi, no.444 (New Delhi, July-September 1976), p.224.

etc. This gave the Joint Chiefs of Staff Committee, for the first time, an integrated mechanism for higher direction of war. It gave Pakistan a security system over and above the normal chain of military command. It provided the state and the military a decision-making framework for allocation of resources according to national priorities, a mechanism for weapons acquisition programme, a vehicle for development of defence production infrastructure, and a method to process and evaluate individual service demands.

The major disadvantage of the army's frequent intervention into Pakistani politics has been that the country's alignment has been governed more by the arms suppliers than by an objective assessment of national interests. Since the Pakistani armed forces are dominated by the major service-army, the organizational changes, weapons acquisition priorities and operational plans were all built around the army. The Navy and the Air-force were mere adjuncts to the senior service. According to Fazal Maqeem Khan, there was hardly any joint planning.[16] Unilaterly produced plans were coordinated by the army, air support required by the Navy was never really catered for, and the Air Force plans were exclusively its own. Consequently, due to lack of joint planning and inter-service coordination, there

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16 See, Maqeem Khan Fazal, Pakistan's Crisis in Leadership, (Islamabad, 1973), p.261.

were dangerous flaws in the plans of each service.[17] These imbalances handicapped the operationalization of the total potential of the Pakistani armed forces. Over the years, the military in Pakistan has got accustomed to the exercise of power without accountability. It has developed a vested interest in the continuation of the military rule. Consequently, professionalism in the armed forces has been the main casualty.[18]

There are various theories being offered on the frequent intervention of the military into the Pakistani politics. The general opinion being that the military is compelled to intervene due to the incompetence of the civilians, and the impression among the army officers is that military is the panacea for all problems and shortcomings. Another reason could be that the Punjabi-dominated military and civil bureaucracy wants to control the country in the absence of Punjabi political leadership of any stature. According to Fazal Maqeem Khan, Pakistan inherited a fully professional army with one of the best fighting qualities in the world.[19] Gradually the government started leaning on the armed forces, particularly for the maintenance of internal security, and started entrusting it with socio-economic tasks. More

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17 Cohen Stephen, op.cit., p.132.

18 See, Lt.Gen.Attiqur M. Rahman, Our Defence Cause (London, 1976), pp.40-45, and G. Jacobs, "Pakistan India Comparison of Military Power", Asian Defence Journal, no.3, (Kuala Lumpur, March 1982), p.28.

19 Fazal Maqeem Khan, op.cit., p.258.

efficiently the army carried out these tasks, the more heavily the government leaned on the army at the expense of training and discipline. This sucked in a number of military officers who saw at first hand the failure of political system to run civilian institutions; this, in turn, generated political ambitions in the armed forces.

Notwithstanding the points regarding civilian incompetence and the Punjabi desire to dominate the country, there is the more serious question of moral probity. The military training which hones the army's destructive capacities also justifies that the moral responsibility for destruction lies with the state. Such decisions regarding destruction of life and property get morally justified only if there is a political legitimacy of the government. The government which lacks in political legitimacy cannot be arbiter of morality. Because President Zia's contention is that seizure of power by the military is legal and constitutional; he has now been compelled to look for a moral and ethical justification of his rule. To what extent the drive towards Islamicization has justified the military government's legitimacy is a matter of opinion. Nevertheless, there are contradictions within the Pakistani military elite. There is a section of opinion which wants the army to return to barracks, but perhaps the lure of power has a stronger pull.

Military Alliances and Assistance

Pakistan's American connection has been through a period of fluctuating fortunes. It started with the military aid programme of 1954 followed by the Executive Agreement of 1959. The Pakistani desire to match the Indian strength by welding an efficient fighting machine which will be pre-eminent on the South Asian scene was matched by the American need to ring the Communist world with a system of alliances. There were also cultural reasons attributable to the American connection. The English-speaking military officer Corps was Western oriented, particularly towards the United States. The Soviet Union was not interested in Pakistan at that point in time. But in the 1965 war, Pakistanis felt a sense of betrayal when the United States imposed an arms embargo on both India and Pakistan. The low-key response of the United States to save Pakistan from dismemberment in 1971 further aggravated the situation. Even then, due to a strong mutuality of interests, Pakistani military officers openly desired to return to former close relationship with the United States.[20] This feeling is

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20 See, Francis Fukuyama, op.cit., p.27. Numerous high ranking Pakistani military officers and civil servants who met Mr Fukuyama desired upgradation of 1959 Executive Agreement into a full-fledged treaty. Consequent to the Soviet military intervention in Afghanistan, President Zia expressed a strong desire to have the US-Pakistan Mutual Security Agreement converted into a formal treaty. Also, P.B. Sinha, "Military Modernization in Pakistan: Recent Developments", Strategic Analysis (New Delhi, March 1983), p.696.

reciprocated in the State Department,[21] which preceives Pakistan as a frontline state since the Soviet intervention in Afghanistan.

Inspite of the present regime's dismal record in the sphere of human rights, the Americans feel that their interests would be best served by giving substantial military aid to Pakistan. The need for Soviet containment being an important issue, the Americans feel that Pakistan has a considerable negative value as a Soviet ally. Soviet access to Karachi or ports on Baluchistan coast would put Soviet navy at the head of the Persian Gulf and facilitate its operations in that region. Besides, the entire South Asian coastline from Kuwait to Thailand would be in the hands of powers unsympathetic to the United States, restricting US naval movements and over-flights. Another reason for American support is that Pakistani territory facilitates substantial induction of arms for aiding the Mujahadeen in Afghanistan. This will not only divert Soviet attention and resources from the areas of American interest but would also raise the cost of subjugating Afghanistan. The major advantage Pakistan offers would be in the shape of storage and transiting facilities to the American Rapid Deployment Force (RDF) in the Persian Gulf Region. The possibility of combined Pakistan Army-RDF

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21 Ibid., pp.22, 33-35.

operations cannot be ruled out. This would entail standardisation of equipment and weaponry, which will add to Pakistan army's potential. According to a senior Pakistani strategist, if Pakistan faced no threat from India or Afghanistan, its troops could perform a useful role in West Asia.[22] The Pakistan army, as American proxy, could be employed to reinforce Oman, occupy Char Bahar in Iran, capture the islands in the straits of Hormuz, or support Saudi-Arabia and Yemen against the Marxist state of Democratic Yemen.

The basis of Pakistan's ties with China is mutual antipathy to India. Even since the early 1960s, the Sino-Pak political and military relations developed very closely. China was Pakistan's largest weapon supplier before the United States Administration's 1.5 billion dollars worth of arms sales loan guarantee came through.[23] China has supplied 335 million dollars worth of military hardware during the period 1967-76.[24] According to Bhutto's death-cell testimony, one billion dollars worth of arms were procured from China.[25] Besides replenishing the losses

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22 See, Fergus M. Bordewich, op.cit., p.173.

23 Ibid., p.171.

24 Report, "Pakistan Facts and Figures on National Defence", Military Technology and Economics (Bonn, 1979), p.132.

25 Z.A. Bhutto, If I am Assasinated (New Delhi, 1978), pp.116 and 173.

incurred during the 1971 war, Chinese weaponry was procured for raising new formations. China is also assisting Pakistan in setting up ordnance factories for manufacture of military hardware. The construction of the Karakoram Highway has given China round the year access into Pakistan. Pakistan's China card was of use during the 1965 War when the Chinese gave an ultimatum to India, and again in 1971, when India could not employ its mountain divisions against Pakistan. The Pakistani military is quite aware of Chinese usefulness to contain India and takes pains to cultivate the relationship. Gen. Yaqub during his meeting with Deng Hsioping was categorically assured that China will stand by Pakistan, as in the past, regardless of development of China's relations with other countries.[26]

In recent years, Pakistan has been moving significantly closer to the Arab countries. Since early 1981 the conservative Arab States of Saudi Arabia, Oman, Kuwait, Bahrein and the United Arab Emirates have been searching for ways to combine their economic, political and military resources to safeguard regional stability by dealing with external and internal threats to Gulf security. By coordinating their defence and armaments plan, they may also utilize the Pakistani army to meet their security problems.

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26 Other countries in this context included India. See, P.B. Sinha, "Gen. Yaqub Ali Khan's Visit to China", Strategic Analysis (New Delhi, June 1982), pp.170-71.

The Saudi-Pakistan security linkage commenced when Pakistan started looking for alternative sources of military support after the American arms embargo of 1965. To the Saudis, the performance of the Pakistani armed forces in the Indo-Pak wars was impressive. They (Saudis) could use this modern efficient force to augment the Saudi military capability. Being Muslims and yet not Arabs, the Pakistanis would be useful in maintaining internal security and safety of the Saudi ruling family.[27] The Saudi connection will help Pakistan in not only underwriting the cost of modernising its military with sophisticated American military hardware, but it would also enable her to train its troops on complex US equipment which the Saudis will buy.[28] It enhances Pakistan's security posture with increase in its military, diplomatic and political potential and serves notice on India and the Soviet Union that Pakistan now has a powerful ally with economic and political weight.

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27 A Saudi-Pak agreement for stationing two Pakistani army divisions have been reported for the protection of the Saudi Royal family; in return Pakistan is supposed to receive 1.2 billion dollars for the modernization of its armed forces. See, Amit Gupta, "Pakistan's Acquisition of Arms", IDSA Journal (New Delhi, January-March 1982), p.425. Other reports indicate that there are two brigades totalling about 10,000 men. See, Fergus M. Bordwich, op.cit., p.173.

28 See, Kheli Tahir Shirin, and William O. Staudenmeir, "Pak-Saudi Arms Link", Illustrated Weekly of India, (Bombay, 5-11 September 1982), pp.8-11.

During the Islamic summit at Taif in February 1981, Pakistan was pronounced as a South West Asian state. The concept of the Islamic Armed Force of the Gulf, strengthened by Pakistani troops, was mooted. With this tie-up of Pakistan's security with the Gulf, other West Asian countries would also assure Pakistan of financial, material and political support in the event of another confrontation with India. In this context, the Middle East orientation not only gives Pakistan economic benefits and military material assistance, but, equally important, also gives Pakistan a psychological shift towards its Islamic roots. With Pakistani troops handling sophisticated equipment in Saudi Arabia and their pilots flying in the air forces of Jordon, Morocco, Libya, the Sudan and the Gulf States, it is quite likely that some of this equipment will eventually find its way to Pakistan in case of another Indo-Pak conflict.[29]

The Pakistan-Arab axis seriously worries India, which has expressed fears about sophisticated military hardware being transferred to Pakistan from the Middle East. This valuable link, supplemented by the US arms deal, has put Pakistan back on the road to military parity with India. According to American strategists, a Pakistani military deterrent requires an ability to push into Indian territory to secure defensible

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29 In the 1971 War, Pakistan received limited military assistance from Iran and Jordon. The latter transferred some F-104 aircrafts to Pakistan. See, K.Subrahmanyam, op.cit., p.109. It is reported that the Pakistanis have access to Mirages and F-5 Northorp flown by the air forces of Jordon, Abu-Dhabi, Libya and Saudi Arabia.

salients. The American arms will enable Pakistan to launch an offensive and hold India to a stalemate. Since even Zia does not estimate Pakistan's armed capability in terms of coping with a Soviet offensive, which in any case would involve the United States, Pakistan's armed strength is, therefore, measured by its capacity to deter an Indian attack. Pakistan's perceptions of a combined attack appear to be exaggerated. And if one considers Pakistan's military needs to that of repulsing Indian attacks, then its position is not as weak as it is portrayed in the self-serving reports appearing in the West. In any case, any discussion on Pakistan defence potential should consider the following factors:

a) The favourable geographical factors in regard to Pakistan's defensive potential. This is in terms of the hilly and mountainous terrain in the west and the riverine and canal-strewn topography in Punjab.

b) The likelihood of availability of sophisticated arms supplies at a very short notice to Pakistan from the United States and the Arab countries.

c) The likelihood of a Chinese response, pressures, or even actual military movement on India's northern borders or on the Karakoram Highway.

d) The availability of sophisticated and superior American weaponry as compared to the Soviet weapons with the Afghans and the Indian armed forces.

Although the emergence of Bangladesh has demonstrated the military superiority of India, the separation of East Pakistan has in fact improved Pakistan's security posture. Pakistan, though reduced in size and population, has become more cohesive and has increased its military strength.[30] No longer saddled with the problem of defending East Pakistan, its improved geographical logistics have reduced its vulnerability.

Strategic Doctrine and Tactical Implications

The cornerstone of Pakistan's military strategy is the policy to match India's quantitative advantage with qualitative superiority in terms of firepower and mobility. The American military model on which Pakistani armed forces patterned

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	1970-71	1979-80
Total strength of Pakistani Army	3 lakhs	4 lakhs
Infantry Divisions	11	16
Armoured Divisions	2	2
Independent Armoured Brigades	1	3
Independent Infantry Brigades	-	3
Air Defence Brigades	-	2
Army Aviation Squadrons	-	6

See, Parvaiz Iqbal Cheema, Conflict and Cooperation in the Indian Ocean, Pakistan's Interests and Choices (Canberra Papers, no.23, Canberra 1983), p.32.

themselves, was suitable to such doctrines and force designs.[31] After the Sino-Indian conflict of 1962, with large-scale American and British military sales to India, Pakistani military leaders felt that the military balance was moving against them. This could have been one of the considerations for the Pakistanis to precipitate the 1965 war. Consequent to American military embargo, Pakistan had to go in for large-scale procurement of military hardware from China, which also exported its mountain warfare doctrines and lessons learnt from the Sino-Indian border conflict.

One of the basic assumptions of Pakistan's strategic doctrine is that it cannot fight a two-front war. On the contrary, with substantial military assistance from the United States, West Asia and China, it aims to create a two-front problem for India in conjunction with China. Pakistani strategists advocate an offensive defence by employing a strong mobile force and pre-emptive actions in order to gain initial advantage. Both during the 1965 and 1971 wars, Pakistan planned for a short sharp war opened by a premptive strike, which would achieve its military and political objectives.[32] The calculation was

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31. One of the considerations governing the deployment of troops for the 1965 war was that Pakistan army could hold larger frontages with less troops due to their enhanced firepower. See, Gen.Musa Mohemmed, op.cit., pp.28, 104.

32 Lt.Gen. Attiqur Rahman, op.cit., p.54.

that the consolidation of gains would then be made easier by the pressures of its American patrons to cease hostilities. This strategy assumes availability of high performance armour and aircraft. Another assumption is based on the policy of strategic deterrence, that is, maintaining an adequate military strength to deter an Indian attack. As far as the Soviet threat from Afghanistan is concerned, the Pakistani doctrine is based on the assumption that they will not be able to deal with a major Soviet thrust. It was decided to hold the western border with just enough strength to deter trans-border probing operations, but not so large as to give the Russians and the Afghans an impression that Pakistanis are stepping up their support to the Afghan guerrillas. Besides, a large deployment in the west would reduce their potential and state of readiness against their primary adversary, India.

Another military strategy being considered by some Pakistani military thinkers is the concept of People's guerrilla war.[33] Instead of relying on high technology and expensive weaponry for deterrence and defence of Pakistan against either conventional or nuclear threat, it is suggested that Pakistan should arm and train its population so that the invader is unable to occupy the country. The cost of military victory would be raised so high that an invader like India would have to retreat or be deterred from the

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33 Cohen Stephen, op.cit., p.162.

very beginning. It appears that the concept is inspired by the Maoist theories. A variation to this concept is to train and arm dissidents in the enemy's territories. This is a borrowed doctrine from the American Special Forces training to Pakistan army officers and the Chinese teachings.

Even with the tradition of tribal guerrilla warfare in the North-West Frontier and Baluchistan, the concept of People's war is unlikely to find favour with the Pakistani military leaders for a variety of reasons. First, the regular army favours conventional operations with only light patrol and recconnaissance work to be done by tribal levies. The example of tough, martial Afghan Mujahadeen contributes to this opinion. They have managed only to slow down the Soviet military machine while paying a fearsome price of resistance. The Pakistani army has had two different experiences in military encounters with India. In the Jaisalmer sector of Rajasthan, a lashkar of Hur tribals was employed under the general guidance of Pir Pagaroo alongwith a few Ranger companies. They were found to be very useful in carrying out raids on the Indian posts as they were quite used to the desert conditions.[34] General Mohammed Musa recommended that before the tribal lashkars are employed in an open war, it is advisable to plan their employment, control and administration with political authorities. The tasks which are allotted to them should be

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34 See, Mohammed Musa, op.cit., pp.71-72.

in keeping with their natural characteristics which render them most suitable to sniping, raids and ambushes in hilly or desert country.[35] In Kashmir, however, these tactics did not prove effective. This failure is considered by some Pakistanis to be due to the unwarlike character of the Kashmiri people. But the actual reason against the policy of arming civilians is that a relatively unpopular military regime will have problems if small arms and military training is given to civil population, particularly in the borders areas.

Islamic Strategic Doctrines

The military in Pakistan, in order to strengthen its legitimacy, has set itself up as the ultimate defender of the faith. Having aligned its interests with those of the clergy, in a nation whose reason for existence is centred around religion, the army has thus become the final arbiter of the national ideology. Whenever the government feels threatened by external or internal forces, the clergy and the army have tried to whip up religious sentiments to have the people believe that the purity and the sanctity of Islam depends upon continued loyalty to the army and its rule. Under such circumstances, it is quite natural for Islamic influences to

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35 Ibid., p.110.

permeate Pakistani strategic thinking. Attempts are being made to interpret the holy Quran in order to develop Islamic doctrine of war and strategy. But there is reluctance to develop this line of military thought perhaps due to the fact that Muslims eventually lost to the Christians. This was not due to any lack of martial qualities among Muslims but because of their inferior military technology and techniques and the fragile social base of their society. Nevertheless, attempts are being made in Pakistan to synthesise Islamic theories with Western doctrines and models.

Pakistani army emphasizes Islam as a unifying factor. The Quaranic injunctions have become part of military training and indoctrination processes. Zia ul Haq, after becoming the army chief, improved the status of the Maulvis in the army and now they are required to go into the battle alongside the troops.[36] An increasing emphasis is being laid on the religious motivations of the Pakistani soldiers. According to Zia, "the professional soldier in a Muslim army, pursuing the goal of a Muslim state, cannot become professional if in all his activities he does not take on the colour of Allah".[37] Attempts are being made to mythologize the role of Islam in military action for providing a "holy or just cause" for the

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36 Cohen Stephen, op.cit., p.34.

37 Ibid., p.89.

Pakistani soldiers. In the 1965 War, the Pakistan army, fed on the exaggerated fighting qualities of the Muslim soldiers against the Indians, made some glaring miscalculations. It was boasted that one Muslim was worth a dozen Hindus. This led to exaggerations and suppression of information regarding serious military shortcomings observed during the war. Similar miscalculations were made during the Bangladesh War. The Pakistan Military Academy at Kakul has since started a course on Islamic teachings for the cadets to bring an awareness of religion amongst the officer Corps. These efforts to indoctrinate Pakistani soldiers cannot be completely successful. The typical Pakistan military officer is highly westernised in appearance, attitude and values. His training experience and his social environment is not conducive to acceptance of the Islamic model which he is aware is being projected for cosmetic purposes only.

Dialectics of Islamic Strategic Doctrine and Nuclear Weaponry

With Pakistan's nuclear weapons programme on the anvil, attempts are being made to give it an Islamic justification. It is suggested that the concept of terror is central to Islamic conduct of war. Terror struck into the hearts of the enemies is not only a means but an end in itself.[38] A military

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38 Ibid., pp.101-5.

strategy that fails to instill terror has inherent drawbacks and weaknesses, and should be reviewed and modified. This requirement must be applied to not only nuclear but to conventional wars as well. And since nuclear capability instills terror, the argument goes, it supports and strengthens the central objective of Islamic war. Maj.Gen. Akbar Khan in his article "Islamic Pattern of War Planning and Training",[39] puts forward a different point of view. The Islamic pattern of war, according to him, is a humane and honourable alternative to mass slaughter and nuclear annihilation. It not only prohibits total war but encourages to make honourable peace. Although he accepts that war in certain circumstances is unavoidable, he insists that every effort muse be made to limit the destruction and the horror of war. The point that emerges from the debate is that, although in the Islamic concept of deterrence, terror is a substitute for military action, and nuclear weapons are only being the modern instruments of terror, Islam also provides moral guidance, a set of principles and criteria which prohibit or make it impossible to launch nuclear weapons without a just cause. The Quaranic injunctions are specific about sparing the lives of innocent women and children, even in pursuit of a just cause. The destructiveness of the smallest nuclear weapon, even the tactical battlefield weapons, would thus involve violation of Quaranic teachings.

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39 Ibid., p.102.

Effects of nuclear weapons capability of Pakistan would be felt at two levels. The United States would recover its leverage on India if it gives the blessings to the Pakistani programme. Yet on the Arab-Israeli scenario, the development of Islamic bomb by Pakistan would give America a Hobson's choice. At the sub-continental level it would generate a popular demand in India for launching a nuclear weapons programme which in turn may generate the spiral effect of nuclear weaponry. The senior officials of Pakistan have explained another rational for going nuclear, that although India may overtake Pakistan in total nuclear capability, there will yet be a net gain to Pakistani security on acquisition of nuclear weapons. They assume that with nuclear balance established between India and Pakistan, at some point in time when Indian leadership happens to be weak or the country is involved in a serious domestic disturbances, they will be able to grab Kashmir in one bold and strong move.[40]

Military Capabilities of Pakistan

The weapons acquisition programme and the design of the Pakistani armed forces depend upon a variety of factors, including relations with the weapon suppliers, financial support from the West Asian countries, military assistance from friendly countries, slow growth rate of domestic defence

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40 Ibid., p.173.

industry, quality of human resources, and, last but not the least, the overriding concern with the Indian threat.

When the Pakistani threat perceptions and force designs are considered, the inconsistencies get highlighted by the fact that 20 divisions are deployed against India as against only 2 divisions deployed against the Soviet-controlled Afghanistan.[41] This is inspite of the fact that Islamabad has problems controlling the Baluch and the Pashtun areas. This region is policed by the Frontier Corps, a paramilitary organization raised from the local tribes and officers seconded from the regular army. The local troops have the advantages of greater acceptability, contacts and mobility in the frontier areas. The force is equipped with only light infantry weapons. In case of requirement of additional fire power or air support, assistance is then asked for from the regular armed forces. The deployment is on a series of mutually supporting picquets, usually on ridges overlooking the roads, bridges and defiles. Their primary function is to keep the lines of communication open and prevent major incidents of violence amongst the tribes.

The eastern border is guarded by paramilitary forces, the Ranger battalions, which are also responsible for internal security in the border areas. In Kashmir, there are the Janbaz, the Mujahid and the Azad Kashmir forces, which are locally recruited and equipped as light infantry. Pakistan has about

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41 Ibid., p.165.

one hundred thousand troops in the paramilitary forces.[42] They are primarily utilized for border security duties and for defence of communication centres in the border areas. They also supplement the combat strength of the regular army in areas of low combat activity.

The regular Pakistan military is drawn primarily from the Punjab and the North-West Frontier districts with rich martial traditions. The Punjabi predominence in the ranks as well as the officer corps is followed by the Pathans. Even some of the non-Punjabi ethnic regiments like the Baluch have very few Baluchi troops. One of the negative effects of the Punjabi domination is that it has propelled regionalistic and parochial aspirations.[43]

Service in the army is voluntary and manpower comes from the peasantry. Its lower educational[44] and technical levels are compensated by a highly disciplined and motivated soldiery, layered with a coat of Islamic ideology. With the growth in

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42 See, G. Jacobs, op.cit., pp.30-31.

43 The ethnic proportion in the Pakistan army officer corps is Punjabi 70 per cent, Pathans 14 per cent, Sindhi 9 per cent, Baluchi 3 per cent, Kashmiri 1.3 per cent and the balance is from other minorities. See Cohen Stephen, op.cit., p.51.

44 According to Brig. Salahuddin Rana, 60 per cent of the recruits for the infantry are totally illiterate. And they are taught reading, writing and basic mathematics in the army. Fergus Bordewich, op.cit., p.172.

national educational levels, the standard of sepoys is slowly improving, but the Junior Commissioned Officers (JCO) lack in education and technical skills. As a result, they cannot quite cope with or adjust easily to the sophisticated equipment. The process of replacing JCOs with regular officers in the technical units is under way, for which special efforts are being made to commission officers with technical education backgrounds. Another problem is created by varied technical and educational levels of different ethnic groups. Mixed regiments may get their platoons commanded by and large by JCOs of particularly progressive ethnic group. And in some regiments there may not be a sufficient number of skilled mechanics. Training a peasant with no technical or educational background is a major investment, specially in an environment dominated by the need to keep the equipment in good repair.

The Pakistani army prides itself for its martial spirit and professionalism. Military experts in the United States and in West Asia believe that the strength of the Pakistan army lies in its rigorous training, tight discipline and expertise in handling modern weapons.[45] The ferocity of this well-honed military machine is sharpened by the intensity of its hatered for India. As a matter of fact, the officers on their commissioning at the Pakistan Military Academy, Kakul,

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45 See, Fergus Bordewich, op.cit., pp.170-79.

and the sepoys on their attestation, swear to avenge the defeat of 1971. The average Pakistani officer is well-educated, enterprising, and comes from the traditional military families, either the landed gentry or the upper crust of the urbanised middle class. The quality of military leadership thrown up by this officer class is good . The professionalism of the officer class in addition to religious affinities has gained for Pakistan military missions in 22 countries.[46]

The humiliating defeat of 1971 led to critical self examination in the military and a renewed emphasis was placed on professionalism. Bhutto systematically attempted to highlight the failings in the military leadership with a view to create a professional but docile military like India's.[47] He attempted to reduce the army's power and prestige but not its fighting qualities. Zia has undertaken to reprofessionalize the army even more seriously. Attention is being given to selection and initial training of young officers, serious studies of war and politics are being conducted at the highest levels of military education. A programme of sending officers from combat arms for post-graduate courses in universities in Pakistan and foreign civilian institutions has been started.[48]

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46 Ibid., p.173.

47 See, Cohen Stephen, op.cit., p.80.

48 Ibid., p.195.

The Pakistan Military Academy (PMA) is undergoing reforms for improving professional military education. PMA graduates are trained upto BA/BSc level, and the plans are to give them a broader exposure and increase the emphasis on academic studies.

The Pakistani forces are designed around the concept of offensive defence by qualitative superiority in fire power and mobility. Accordingly, Pakistan has recently taken steps to make considerable qualitative as well as quantitative improvements in the offensive defence capability of its armed forces. Increasing emphasis is being laid on the mechanization of the ground forces. There are plans to acquire in the next five years from the United States about 500 armoured personnel carriers (APC) for the mechanized infantry, and 500 M-60 tanks in addition to 100 M-48 tanks already ordered.[49] Pakistani armoured forces are of considerable potential, though presently having an adverse force ratio as compared to India;[50] a state which will be rectified by the recent acquisitions. They are equipped with both American and Chinese tanks. The American

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49 P.B. Sinha, op.cit., p.693. South Korea is likely to give the M-48 tanks, whereas the United States is likely to deliver M-60 tanks and M-113 APC. G.Jacobs, op.cit., p.34.

50 Francis Fukuyama, op.cit., p.6. Pakistan has 1000 medium tanks as compared to India's 1850, giving a ratio of 1:1.9; whereas it has 550 APC compared to India's 700, giving a ratio of 1:1.4.

Patton M-48 tanks still pack a powerful punch having been upgunned to 105 mm calibre and their engines refurbished in Iran.[51] The Chinese origin T-59 tank is not likely to have matching firepower and accuracy as compared to the Indian Vijayanta tank, this is not going to be much of a disadvantage considering the normal engagement ranges likely to occur in the Punjab plains region. The formidable equipment with the Pakistani army is going to be the M-60 tank. Pakistan also plans to upgrade its anti-tank system significantly to match the Indian acquisitions of Soviet T-72 tanks. It is going to be built around the TOW missile which can outrange any tank gun.[52] In addition, dedicated anti-tank helicopter units are being composed of Cobra-1S attack helicopters equipped with TOW missiles.[53]

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51 The Iranian revolution nearly cost Pakistan about 10 per cent of its armoured force when 123 tanks (M-48 Pattons) were in the Iranian retrofit facility at Masjed-i-Suleyaman. None of the remaining 147 tanks which are part of 270 tanks contracted were rebuilt. G. Jacobs, op.cit., p.29.

52 Plans are affot to raise TOW "Under armour" Units, the missile being mounted on modified M-113 APC. See, G. Jacobs, op.cit., p.34.

53 Military Balance 1982 (International Institute of Strategic Studies, London), p.122. Between 1983 and 1984, 10 Cobra-IS attack helicopters are being procured from the United States and payment is being made by Saudi Arabia. See, P.B. Sinha, op.cit., p.694.

The other supporting systems in the Pakistan army like everything else are of mixed origin. The artillery consists of guns of American, Chinese and British origin. Notwithstanding the problems accruing from such mixture of ordnance, Pakistani gunners take pride in their ability to have mastered such a diverse range of equipment.[54] Pakistani air defence capability is being enhanced by the acquisition of sophisticated weaponry. For low level targets, it is going in for mobile air defence systems like the American M-163 Vulcan, the laser-guided RBS-70 from Sweden and Crotale-3000 from France, the last being a completely automatic system for the all-weather interception of aircraft. For high level air defence, Pakistan has acquired the versatile F-16 aircraft which gives Pakistani Air Force (PAF) a quantam jump in technological superiority on the subcontinent.

In order to achieve maximum operational capability and improve coordination between the three services, it has been decided to shift PAF headquarters from Peshawar to Islamabad. A methodology for providing meaningful air support to the Army and the Navy is being developed and the unitary command structure of the PAF has been replaced by three regional air commands, namely, Northern, Central and Southern Air Commands.[55]

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54 Pakistani artillery is equipped with the British 25 pounder gun, American 105 mm, Chinese 85 mm & 122 mm guns, and 130 mm gun of both Chinese and Soviet manufacture. See, Military Balance 1982, op.cit., p.122.

55 See, P.B. Sinha, op.cit., p.694.

The Chinese-built F-6 (MIG-19 copy) is the mainstay of the PAF, which will be augmented by 60 F-9 fighter aircraft. Consequent to Soviet intervention in Afghanistan, the threat from Afghan or Soviet aircraft flown by Russian pilots has become real.[56] From the east, PAF is concerned about Indian Air Force and its Soviet-built MIG-23 and Jaguar strike fighters. Jaguars have an ability to operate strike missions over 70 per cent of Pakistani territory, including night missions.[57] Under the circumstances, the Pakistanis might even base their critical equipment in the Gulf countries, so as to prevent destruction by any pre-emptive Indian strike.

The PAF has problems in augumenting the availability of its technical personnel. Generally, the air force gets the best calibre individuals from those who join the armed services, but in recent years there has been a major outflux of educated and technical manpower to West Asia. Although wartime expansion is possible, but a country with low educational levels will find it difficult. Another problem is the language barrier, especially with repair and operating manuals which are written in French and Chinese. On the other hand, the advantages of its personnel operating and training air forces in West Asia are enormous.[58] Its pilots get much more

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56 G.Jacobs, "Pakistan's Defence, The Air Force", Asian Defence Journal, 11/81, Kuala Lumpur, p.58.

57 Ibid., p.60.

58 Ibid., p.61.

flying experience, not only on the aircraft which are in the inventory of the PAF, but also get an opportunity to fly some of the Soviet models which the Indian Air Force is equipped with. Their technical personnel achieve greater experience and proficiency in carrying out maintenance. And all this is paid for by the host countries. The PAF in this manner gets a pool of well-trained pilots and technicians who are available to the armed forces in a national emergency.

As far as threat from electronic counter-measures is concerned, it is more from the Russians along the Afghan border than from India. The maximum ECM environment on the Indo-Pak front will be the kind that existed during the earliest years of the Vietnam war. According to some reports, Pakistan has agreed to allow the United States to set up electronic surveillance facilities, to begin with, at Peshawar, Sargodha and Islamabad, and later on in Karachi.[59] Sixty American electronic experts, who were earlier stationed at Egypt, have been asked to man the listening posts in Pakistan. These will be used to monitor naval, army and air forces activities of the Soviet Union and India.

With the recent accretions in the Pakistan military, the superiority gap which the Indian armed forces enjoyed vis-a-vis Pakistan, is narrowing down. The massive inflow of arms has once again restored the Americans their leverage over Pakistan.

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59 P.B. Sinha, cp.cit., p.695.

The Chinese weaponry had provided Pakistan with an alternative source of supply, but the Chinese were in no position to supply sophisticated equipment which Pakistan wanted.[60] With Pakistan armed forces having a commonality of equipment with the Gulf countries, there is an intrinsic reserve of material at their disposal, which can be utilised during emergencies.

Military Technology and Defence Production

At the time of independence most of the ordnance factories were in India. Pakistan did not inherit any industry of significance in the civil sector and was totally devoid of military industries. In the early fifties, Pakistani concern with Indian threat and the compulsions to acquire self-sufficiency in arms and ammunition highlighted the necessity of establishing ordnance factories. For nearly two decades, the growth of defence industry and military technology in Pakistan was focused around the development of ordnance factories at Wah, which produced infantry weapons and a variety of munitions. The 1965 war with India had a great impact on the Pakistan Ordnance Factories (POF). Their activities were put on war footing and a large number of workers were inducted. Consequent to the 1965 arms embargo,

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60 According to a Pakistani army officer, the Chinese arms, however efficacious for the Chinese, are no substitute for American supplies as far as Pakistan is concerned. See, G.S. Bhargava, "India's Security in the 1980s", Adelphi Papers No.125 (International Institute of Strategic Studies, London, 1980), p.9.

Pakistan turned to China and it realised the importance of developing an indigenous defence industry. As a result, several projects were added to the Pakistan Ordnance Factories[61] and concurrently in the civil sector, A few heavy industry units also developed which helped in the indigenisation of military equipment.[62]

A major weakness is felt in the field of electronics. Pakistan's civil and defence electronics industry is at the stage of assembly of components, embodying integrated and transistorised service for communications equipment. There is neither a heavy electrical equipment manufacturing capability nor any steel alloy plant to make special alloys.[63] In addition, according to General Sawar Khan, Vice-Chief of the Pakistan Army, there is a serious concern about the tank technology and anti-tank weaponry,[64] although a tank rebuild factory has come up at Taxila which now enables Pakistan to carry out refurbishing of tanks. In July 1978, China had

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61 A tank and anti-tank ammunition factory was set up at Gadwal. The Heavy Artillery Ammunition Factory which also makes heavy mortar bombs was set up at Sanjwal. A factory to make prepellents for ammunition was set up at Havelian. See, Maj.Gen.Masood Talat, Chairman, POF, Defence Journal (Karachi, March 1983), p.18.

62 A machine tool factory at Karachi and Heavy mechanical complex came up at Taxila which included heavy forge and foundry. Ibid., p.18.

63 Ibid., p.18.

64 Gen.Sawar Khan in his address at a seminar on Defence Technology sponsored by Pakistan Ordnance Factories in November 1982. Defence Journal (Karachi, March 1983), p.12

announced plans to construct a tank and anti-tank missile factory near Karachi, but nothing has come up so far.

In the field of aviation industry, Pakistan has been maintaining an army aviation workshop at Dhamial near Rawalpindi which has been manufacturing Cessna Bird Dog observation and liaison aircraft and Aerospatiale Allouette III helicopters. In May 1977 a factory, which was part of an aeronautical complex at Kamra, was set up for overhauling Mirages. As the factory expands, it is expected to overhaul the Chinese-built aircraft with the Pakistan Air Force. At present, the Swedish trainer aircraft Saab Supporter is being manufactured under licence, called Mashaak in Pakistan.[65]

Pakistan is aware of its limitations in the R&D required for sophisticated military technologies and is proceeding cautiously taking lessons from India's example. According to Brig. Abdul Rahman Siddiqi, India's tank and aircraft industry is nowhere near catching up with that of the advanced countries. It is not only buying these but every other major hardware, missiles, battleships, submarines, etc. Its total arms exports do not account for more than 200 million dollars annually which is negligible figure in the thriving arms bazar. Question is why should arms

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65 See, "Pakistan Facts & Figures on National Defence", Military Technology & Economics (Bonn, March), p.133.

importing countries go in for anything less than the best? Price is hardly the consideration, when security is supposed to be stake." Pakistan, due to its lack of resources and scientific and technological base, does not want to get involved in incremental development of every generation of weapons and equipment. The R&D effort is planned to be utilised to update and improve the equipment already held by its armed forces, incorporating the latest trends in technology. A balance is attempted to be maintained between the sophistication level of the imported military hardware and the sophistication level of the country's scientific talent and its economy. The Pakistani ordnance factories are making major efforts at improving their training facilities in order to adopt sophisticated military technology. Their programme aims to develop general technical skills, and to disseminate scientific, technical and managerial talent available in accordance with their priorities.

As far as the private sector is concerned, its role in the development of defence production is being enlarged and rationalized. Both during the 1965 and 1971 Indo-Par Wars, there were a large number of engineering firms which offered their services and facilities to POF for increasing defence production. With the guidance of POF engineers, their

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66 Brig. Abdul Rahman Siddiqu, Defence Journal, (Karachi, March 1983), p.4.

machines were re-tooled to manufacture components which supplemented the POF production to meet the large increase in demands of the armed forces.[67] Inspite of the limitations due to lack of stringent standards of quality control, a greater involvement and expansion of private sector in the defence production is being planned. Gen. Mohammed Iqbal Khan, Chairman, Joint Chiefs of Staff Committee, recommends an enhanced participation of the private sector in defence production, and hopes that a technological breakthrough resulting in a new military capability may be developed in either sector with applications in one or both sectors. Although government policies encourage private sector participation, this will remain at a low key due to the sophisticated nature of military technologies, high levels of quality control and large investments required in defence production.

On the other hand the POF are becoming more cost conscious and commercially viable. An export department has been created to compete in the international market. Exports are being undertaken not only for profit but for quality improvement created by competition. The POF is Pakistan's single largest exporter of engineering products. It is quite likely that in due course of time it will contribute to the Arab Military

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67. At present the private sector in Pakistan is contributing between 6 and 7 per cent of the total output of the POF. Talat Masood, op.cit., p.15.

Industries Organization and get its expenditures subsidised. Wah-Bofors, a subsidiary of POF and M/s A.B. Bofors of Sweden has exported commercial explosives and their accessories to the UAE, Iran, South Yemen, Ceylon and Afghanistan.[68] From amongst the major foreign collaborations the POF has received knowhow, plant and machinery from West Germany, United Kingdom and China.

Pakistan's defence indeginisation efforts are notable inspite of its lack of scientific manpower and industrial base. Confronted by the problems of high obsolescence rate and Indian armament acquisition programme, Pakistan is compelled to be dependent on foreign sources of arms supply. It has achieved adequate capability to service and maintain sophisticated systems, not only for itself but also for other Arab countries having the same type of equipment. Pakistan, with its South West Asian orientation, could develop its military industries with the help of Arab funds; but due to easy availability of weapons and equipment and sympathisers to defray the cost, the growth of domestic defence industry may not get the necessary impetus to develop its potential.

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Pakistan has to learn to live with a powerful neighbour in the east and a powerfully supported neighbour in the west.

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68 Document on Pakistan Ordnance Factories, Defence Journal (Karachi, March 1983),

It would not like to accept the defacto position of strategic inferiority. This could be due to cultural complexes or genuine fears of an Indian thrust towards regional primacy. The inconsistancies in Indian and Pakistani perceptions of each other's legitimate security needs have led to the action-reaction spiral of an arms race. It is only a question of time when this spiral crosses into the nuclear weapons arena. Another fallout of the Pakistani fear of the Indian intentions is the frequent intervention of its military for gaining political control. Pakistani military is apprehensive of the country's elected representatives negotiating with India and relegating Pakistan to the status of a junior partner.

The Soviet intervention in Afghanistan, for the first time in history, brought a European power physically and in strength, across South Asia's threshold -- the Hindu Kush. The possibility may be remote, but a European power on the South Asian doorstep is bound to destabilize the Sub-Continent as a whole. If in this context, both Pakistan and India re-examine their threat perceptions and priorities, then the irritants and minor aches, Kashmir etc., would get subsumed by the pain of the major ailment - Soviet Russia.

Chapter IV

A PERSPECTIVE OF INDIA'S SECURITY

Threats to India

For a country like India following the policy of non-alignment and non-aggression, the national political and security objectives would be to protect the nation's internal values, essential interests and the geographical frontiers against all types threats. According to P.V.R. Rao,[1] Defence Secretary during the crucial period of 1962-66, "India's security objective is to preserve its territorial integrity along the present defacto boundaries".[2] Although India has not given up its claims to Aksai Chin occupied by China, and parts of Jammu and Kashmir under Pakistan's occupation, it has been categorically stated that these claims are to be settled by negotiation and not by force of arms.

Notwithstanding the major changes having occurred in the 1970's on the South Asian geo-political scenario, the main external threats to India's security continue to develop from the direction of Pakistan and China. With the Soviet military

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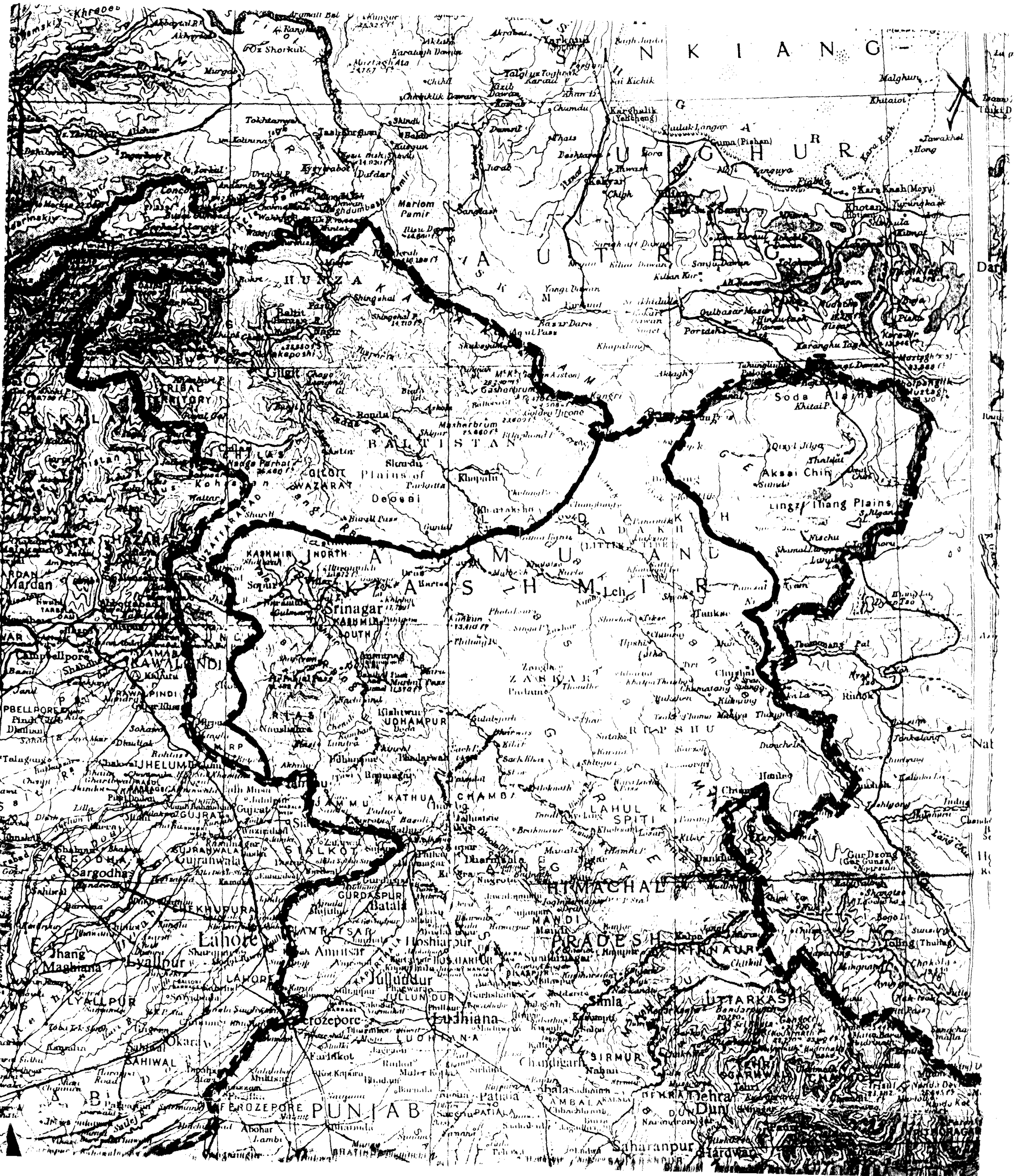
1 P.V.R. Rao, Defence Without Drift (Bombay, 1970), p.320.

2 For India's defacto boundaries see Map on page 100. Source, "Bartholomew World Travel Map: Indian Sub-continent", (Edinburgh 1973). The Orange-Green lines show the international boundry whereas the black-red lines show the defacto boundries.

DE FACTO BOUNDRIES IN JAMMU AND KASHMIR



presence in Afghanistan, and the United States having developed a capability to employ its Rapid Deployment Force (RDF) in South Asia and the Indian Ocean region, the external threats to India in the forseeable future could be in some of the following shapes which are given in the sequence of their likelihood.

a) a conventional military threat from Pakistan. There is a likelihood of development of nuclear potential in the 1990's;

b) a conventional military threat from China, backed up by a threat of use of nuclear weapons. For the time being, the Chinese have chosen to deploy minimal conventional forces along their southern borders supported by a nuclear deterrent.

c) a combined conventional military threat from Pakistan and China;

d) a conventional military threat from the United States, in the sense that the RDF may supplement the potential of the Pakistan armed forces without itself getting directly involved;

e) although least likely for the present, but nevertheless a feasibility, the Soviet presence in Afghanistan contributing to destabilising influences in South Asia.

A country's security perceptions are invariably different from those perceived by the others. So is the case with India-

Pakistan relations, the genesis of which could be traced to their inheritance of the Hindu-Muslim problem on their independence. India's secular state policy is contested by Pakistan's two nation theory. The formation of new state of Pakistan out of Muslim majority areas was one-shot political solution to the problem of sharing power between Muslims and Hindus. It did not mean that the religion of the majority of inhabitants would determine their territorial alignments. Indian refusal to concede Pakistani claim to the Muslim-majority state of Kashmir contradicts the basis of Pakistan's existence. India could have rectified the religion-based demographic imbalance in Kashmir, like the Chinese have done in Tibet and Sinkiang, but it never attempted such methods. Instead, a cautious policy of winning over the Kashmiri people politically has been adopted. Kashmir is the bone of contention in not only a territorial sense but at the deeper levels of the very foundations of the two States as well as politics. This fundamental importance is reflected even in the context of territorial losses and gains during armed conflict. Any territory captured outside Kashmir would have to be returned, but any gains in Kashmir would remain in the victor's possession, as happened in 1947-48 and again in 1971. Thus the military-political stakes in Kashmir are considered vital by both sides.

Inspite of Pakistan's dismemberment in 1971, its threat to India persists, particularly to the vulnerable Kashmir which cannot be expanded politically nor is fully defendable

militarily. Although Pakistan would be able to achieve military parity with India in due course of time, but to launch an offensive to grab Kashmir it would need the Chinese support. A concerted Sino-Pak military action with one jaw of the pincer along the Mintaka Pass and Khunjerab Pass via Gilgit and Skardu to Kargil and Zojila, and the other pincer from the west, would catch the Indian troops in the valley fighting on two fronts. The map of Kashmir shows the present vulnerabilities of the Indian position. Had China not become a factor in South Asian affairs and not started interfering in the Indo-Pak disputes, the status quo on Kashmir might have remained frozen. China, acting as an unseen participant in the Indo-Pakistani negotiations prior to 1965 war, prompted Pakistan to adopt an unyielding position. After 1971, Pakistan by itself is a manageable problem, but a hostile China with or without Pakistani assistance is a very different matter.

The earliest manifestations of the Chinese threat were perceived in the Chinese occupation of Tibet. Prime Minister Nehru accepted the fait accompli of the Chinese occupation of Tibet as he strongly believed that independent India could not exercise hold over the Tibetan territory.[3] The invasion of Tibet placed China in a commanding position along India's northern border. The Indian government did not choose to

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3 See, P.S. Jayaramn, "India's National Security and Foreign Policy During the Nehru Era", IDSA Journal (New Delhi, July-September 1981), p.65.

improve its security potential for a possible armed confrontation with China. This point is contested by K.Subrahmanyam who writes, "that the charge that Nehru hadneglected India's defence does not stand the test of detailed scrutiny. Indian army expanded from 280,000 to well over 500,000 between 1947 and 1962". According to him, the debacle came about not because of lack of defence forces, but was mostly due to local command failure.[4] The fact remains, however, that the Indian military planning, training, deployment, mental and professional orientation emphasised the Pakistani thrust. This was primarily due to the political leadership's obsession with Pakistan and its Mutual Security Agreement with the United States in 1959.

The disaster of 1962 proved to be a blessing in disguise for India. For the first time the political leadership realised that without adequate defensive strength, India's diplomacy alone would not ensure its security. Besides the launching of planned defence programmes, the short-lived availability of American military supplies helped India's military build up.[5] But even more useful from the long term point of view was the Soviet willingness to help India to establish an indigenous defence production capability. It has been suggested that the Chinese military action in 1962

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4 Ibid., p.73.

5 Although the United States had committed 500 million dollars worth of military supplies to India by 1965, when the embargo was imposed, India had received assistance to the value of 83 million dollars only. See, Adelphi Papers No.125, op.cit., p.8.

was more of a signal to the Soviet Union than a reposte to India.[6] China's subsequent reluctance to intervene militarily in the Indo-Pakistan conflicts of 1965 and 1971 was due to anxiety about Soviet reaction. Except for the warning during the Indo-Pakistan War in 1965 and a short sharp border clash in Sikkim in 1967, the Chinese have not posed an immediate military threat to India since 1962. This is because of its other preoccupations especially with regard to the Sino-Soviet rift. It would be myopic to read Chinese restraint on the Sino-Indian border as a change for the better.

The Chinese conventional military responses and reactions against India may get pronounced as their nuclear retaliatory abilities against the super powers develop. Perhaps for a decade or so, the super powers nuclear strike capabilities will restrain China from undertaking a nuclear attack. But as and when China acquires assured capability of inflicting unacceptable damage on the super powers, then their restraining ability will lose credibility. Although for the present, there appears to be no prospect of direct threat from China to use nuclear weapons against India, one has to take into account the fact that the nuclear factor could be utilised by China to pressurise India. Moreover, India should not overlook the likelihood of a Sino-Soviet rapproachment in say a decade or so, which would dictate

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6 Ibid., p.18.

an entirely new set of Indian security responses. These are undoubtedly important considerations in India's security calculations. It has, therefore, to keep its nuclear option open, so that, should it feel the compulsion to exercise it, the time lag to achieve a credible deterrent is reduced to the minimum. The development of nuclear weaponry and hardware will not require as much effort and will not be as time consuming as would be the development of software. The evolution, development and assimilation of tactical nuclear doctrines will take time. Besides, new organizations would have to be created, new equipment will have to be deployed, personnel trained, medical services and control procedures restructured. All this will take time. Only if appropriate action is initiated now would the lead time for absorption of nuclear weaponry be reduced.

Super Power Domination

Notwithstanding one of the axioms of international relations that the greatest opportunities as well as the greatest dangers are in the country's neighbourhood, modern technology has shrunk the concept of neighbourliness. Countries in all parts of the globe are compelled to be immediate neighbours of the super powers. It is the United States, and to a large extent the Soviet Union, which have the ability to influence developments in India through economic, technological and military means. It, therefore,

becomes imperative to discuss the capabilities of the super powers to exert their influence in the South Asian region. Moreover, capabilities cannot change suddenly to a significant extent but intentions can.

The Super Power domination in this region aims at maintaining a balance of power amongst the principal actors on the South Asian security environment. Both Moscow and Washington work on the premise that neither India nor Pakistan should be reduced to such levels in a conflict that their patron's influence is reduced in the region. It was because of this policy that the Americans aided India after the 1962 war. They were aware that any fresh conflict with China would have demolished India's political standing and consequently strengthened China's position. Similar calculations compelled the Americans to despatch the Seventh Fleet Task Force to the Bay of Bengal in 1971 to salvage the remains of what was left of East Pakistan. Such overt American military support to Pakistan is something which can be repeated again, and with a greater weight of force behind it. The American inability to redress the unfavourable military situations of its clients may well have led to the creation of the Rapid Deployment Force.

The United States and its Capabilities in South Asia

Indo-American relations are likely to fluctuate between the scales of bad to worse, depending upon the American interests

in China and Pakistan. Diego Garcia is already a festering sore. Consequent to lukewarm Indian reaction to the Soviet intervention in Afghanistan, Washington has re-evaluated its relationship with India. Now that America and China are functional allies, Washington has no need to prop up New Delhi against Beijing. Besides, the perceived Soviet threat to the Persian Gulf oilfields and Pakistan's proximity to that area, makes Pakistan more vital to American strategic interests in the region. The American State Department is of the opinion that irrespective of American military aid to Pakistan, India will draw closer to the Soviet Union. Yet another view in American circles is that the threat of arming Pakistan will oblige India to adopt a more cooperative posture towards the United States. In any case, American interests in strengthening Pakistan would be greater, but never so deep as to involve Americans in a direct physical conflict with India. The United States will provide overt as well as covert assistance to India's adversaries to keep it in check. It may not be prudent for the Indian strategists to overlook the possibility of RDF assistance to Pakistan armed forces with material assistance or even by physical deployment, to ensure Pakistan's survival. The scenario fits in with one of the defined roles of the RDF of protecting an ally against external aggression.[7]

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7 According to the former United States Secretary of Defence, Harold Brown, "mobile well equipped and trained conventional forces are essential to allies and other friends, should conditions so dictate and should our assistance be needed". See, P. Mukhopadhyaya, "RDF in Perspective", Strategic Analysis (New Delhi, October 1982), pp.453, 458.

Although Pakistan is not an American ally in terms of a common defence treaty, for all practical purposes it enjoys such a status.

Mobility, range and quick response are the key features of the powerful RDF which is designed to intervene not merely in the Gulf or in the Indian Ocean littoral states, but anywhere in the world. The definition of vital US interests may extend to what one may describe as American global strategic interests. According to a press report, a study by the United States Congressional Budget Office carried a map depicting the entire Jammu and Kashmir State as part of Pakistan and as an area of concern for the RDF.[8] The United State's "Four Pillars Policy" of an area of anti-Soviet strategic consensus, stretching from Turkey to include Saudi Arabia, Egypt and Israel also includes Pakistan. Accordingly, United States Central Command was created on 1 January 1983, and its headquarters co-located with that of the RDF in Florida. The key points of its jurisdiction are West Asia, South-West Arabia and Pakistan.[9] Whether it will provide logistic and military support to Pakistan in the event of hostilities with India remains unclear, but the capability to do so has been created.

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8 See, "J&K as area of concern for US RDF", Times of India, (New Delhi, 27 August 1983).

9 See, India Today (New Delhi, 31 March 1983), p.93.

The present composition of the RDF includes two airborne divisions, a mechanised infantry division, and an air cavalry brigade from the US Army, and an amphibous brigade of the Marines. The necessary naval sea-lift support will be provided by 13 Near Term Prepositioning Ships located at Diego Garcia, and the air support will be from three aircraft carrier battle groups.[10] In addition, the B-52 bombers of SAC Strategic Projection Force would play a key role in establishing air superiority, that is, before the first combat battalion is in position within 48 hours. The quick response capability by the 82 Airborne Division will be able to deploy a brigade in 80 hours and the entire division in 11 to 14 days. Besides, US Special Forces would undertake operations behind the enemy lines which will include local forces trained and equipped by the Green Berets. The logistic support would be provided by the roll on roll off ships (RoRo) with capability to load and unload equipment under their own power. With new ships under design being made available, the long term plan is to increase the deployment capability to embark two heavy armoured divisions in five days and deliver one of these in three weeks time.

As far as the operational and logistic support requirements are concerned, the Diego Garcia facilities provide only a

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10 For composition, capabilities and deployment of the RDF see "US Rapid Deployment Force", Defence (June 1982), pp.311-15, and Defence (September 1982), pp.493-503.

satisfactory rear base.[11] Therefore, facilities are required for prepositioning stores and equipment. Forward basing would greatly enhance operational flexibility as well as reduce the logistical problems of maintaining such a large equipment-intensive force. Bases in Oman do offer considerable advantages, but according to unconfirmed reports in the Soviet daily Izvestia, the United States has also secured the right to establish bases in Pakistan with Karachi as a likely tactical headquarters for the US Central Command.[12] In any case, the modernisation and construction of several new airfields along the Makran coast would give some indication of Pakistani involvement.[13] Admiral Thomas Moorer has argued for a US Naval base to be constructed at the port of Gawadar in Baluchistan. This would be utilised as the major station for policing the Gulf as well as Pakistan itself.[14]

The United States, in addition, is in a position to provide accurate and timely information to China and Pakistan about the Indian military deployment and activities. It has positioned four Airborne Warning and Command System (AWACS)

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11 Ibid., p.494.

12 P.B. Sinha, "Military Modernization in Pakistan: Recent Developments", Strategic Analysis (New Delhi, March 1983), p.695.

13 Ibid., p.694.

14 See, Tariq Ali, Can Pakistan Survive? (Penguin Books, 1983), p.190.

planes in Saudi Arabia.[15] The Pak-Saudi connection being what it is, the use of some or all of these aircraft by Pakistan cannot be ruled out. Compared to aerial reconnaissance by aircraft,[16] satellite reconnaissance has many advantages because of its high speed of almost 30,000 kilometers per hour and height which enables it to survey very large areas in a short time. Besides, humans are not exposed to risk. But manned surveillance and reconnaissence has the advantages of human discrimination and judgment. The United States Air Force is flying what is described as an intelligence marvel, designated SR-71 Blackbird. It is equipped with sophisticated electronic gadgetry which is not only capable of disrupting an enemy's tracking systems but even wiping off its own image from the radar scope. Blackbird, flying at the height of 15 miles, at 2000 miles per hour, can film 60,000 square miles of area per hour, and yet locate a mailbox on a country road.[17]

A photographic reconnaissance satellite orbiting at an altitude of 150 kilometers can view an area eighteen times larger than that seen by an reconnaissance aircraft flying at the altitude of 9 kilometers. With enlargements, even aircraft

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15 P. Mukhopadhyaya, op.cit., p.457.

16 Col. E. Bates, Jr., "National Technical Means of Verification", RUSI Journal (London, June 1974), p.67.

17 Bhupendra Jasani, "Outer Space-Battlefield of Future", Chankya Defence Annual (Allahabad, 1979), p.441.

parked on the airfield runways are clearly visible. Military movements on the highways can be picked up. The losses in resolution due to atmospheric interferences like clouds are made up by using computers employing image enhancement techniques. Recent developments have made photography possible under very low light intensity, such as moonlight or even starlight. The ferret satellites and aircraft used for electro-magnetic reconnaissance give tremendous advantage by its ability to pin-point the location of air defence radars, their signal characteristics and the detection ranges. Another outstanding ability these satellites have is to listen to a wide range of domestic communications carried over telephone microwave systems and relay the calls to computer centres where they are analysed. Since India is going in for microwave communications, besides the telephone calls of the armed services, the civil services and other government agencies whose activities impinge on national security will be revealing national intentions and plans inadvertantly. Nothing really big in the military field can go undetected now. Activities of the armed forces in this technological age depend on such large movements of men, material and vehicles, that there is no real secrecy any more.

As far as super power capabilities in this field and threats to Indian security are concerned, the Soviet satellite Cosmos and the American satellite Big Bird, covered the Indian

nuclear test explosion at Pokharan soon after the event.[18] The Big Bird satellite incorporates the latest electronic gadgetry and can identify military units on ground, tanks, aircrafts and ships. More than a dozen such satellites have been launched to cover not only the Soviet and Chinese military movement but any trouble spot in the world. It was also employed to cover the Indo-Pakistan war of 1971.[19] Since 1976, an advanced version of Big Bird called KH-11 has been flying. Its colour and infra-red television transmits pictures to ground or shipboard stations where these are developed immediately. They are then retransmitted to command centres where they are reconstituted perfectly by computers.[20] It has given a tremendous advantage to the Pentagon planners who can have an instant view of anything that is happening anywhere in the world. It is the first stage of the so called "electronic battlefield", in which generals will sit at computer consoles instead of in a map room, controlling battles with computer commands. More than anything else it will give the super power's political leaders a ringside view of the battle between their clients, an ability which will be even

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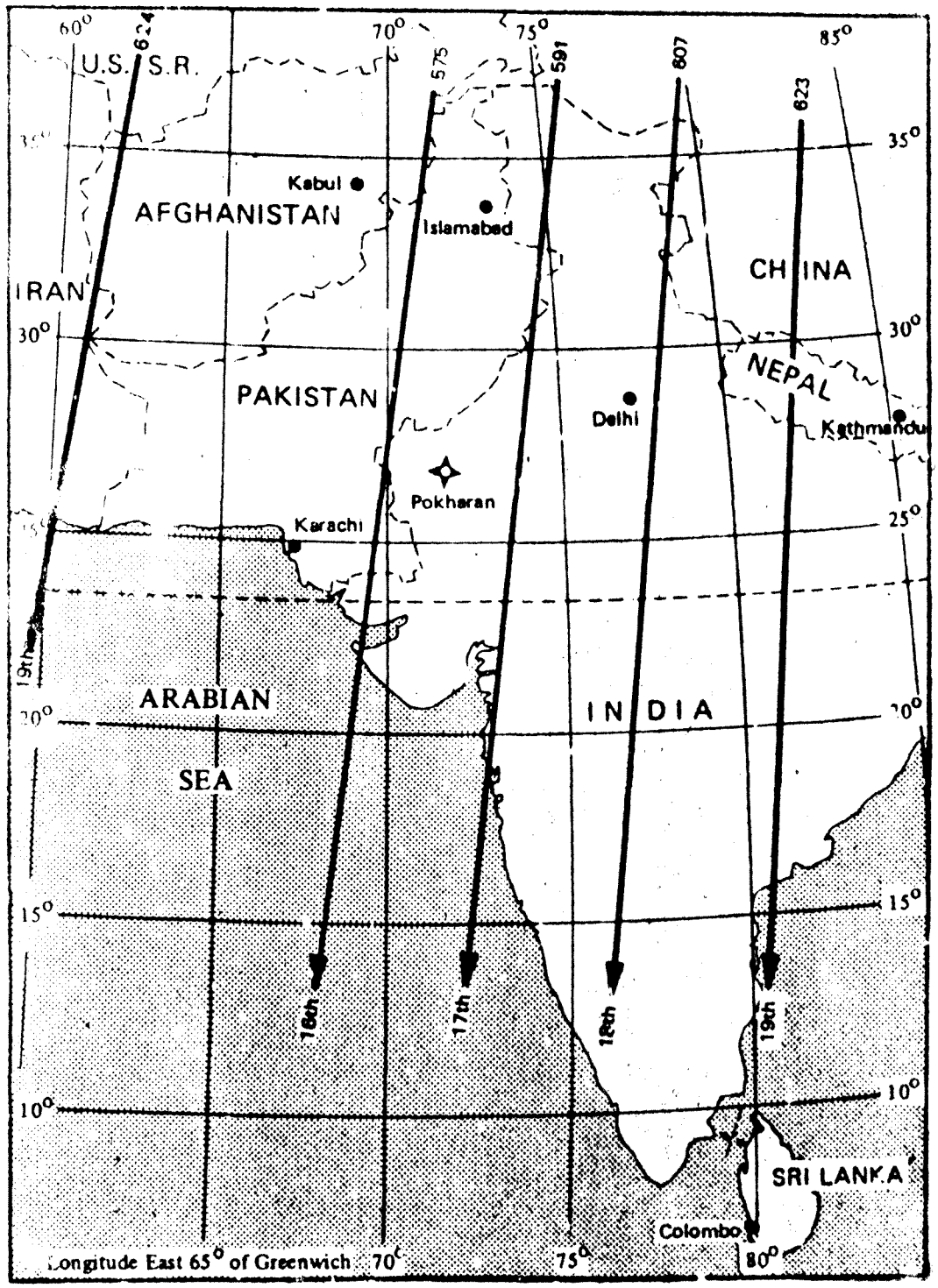
18 The American Big Bird Satellite was launched at an inclination of 94.5 degrees kon 10 April 1974 and the Soviet Cosmos at 62.81 degrees on 15 May 1974, Ibid., p.44. See page 115.

19 See, Report, "Spying by Satellite Watching Over a War", Asian Defence Journal (Kuala Lumpur, January 1981), p.23.

20 Ibid., p.22.

Ground tracks over India of the US 1974-20A Big Bird satellite, launched on 10 April 1974 at an orbital inclination of 94.52°, 16-25 May. The date and orbit number are indicated for each ground track. Note the site of the nuclear test (starred).



better than the armed forces headquarters and the governments of the countries engaged in conflict. It will create a new kind of dependence on patrons, a dependence for information on what is happening in their own country.

Sino-Soviet Capabilities

Soviet capability in the sphere of satellite reconnaissance is not far behind that of the Americans, although in the 1970s they were lagging behind in the technology for information analysis by advanced computers.[21] Computers not only analyse a mass of information but are the real weapons behind international space espionage. In April 1970, China became the third country to launch reconnaissance satellite.[22] Although employed primarily to monitor Soviet troop movements and installations along their border, the Chinese satellites can be easily employed to gather intelligence about the Indian armed forces. Such information can be equally easily passed on to the Pakistanis.

The Russian Bear Hug

India turned to the Soviet Union when the Americans could not provide it with the kind of military equipment

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21 See, "Quest for Technological Superiority: Soviet Military Power" Report by US State Department of Defence, Strategic Digest (New Delhi, April-May 1982), p.264, and Col.E.Bates, op.cit., p.69.

22 Bhupendra Jasani, op.cit., p.48.

which would meet its security requirements. Soviet support to India in 1965 and 1971 wars, and in the setting up of domestic defence industry has created certain amount of political reciprocity. After 1971 war, with Indian military superiority clearly established, the Soviet Union has been displaying greater keenness than India in developing closer relations. India has become, from the Soviet point of view, quite expensive to manipulate in terms of political leverage, arms supplies and economic assistance. India's efforts to diversify its sources of military supplies compelled Moscow to send a high-powered military delegation in March 1982 to woo India back into the Russian fold. The Indian defence minister, during his visit to Moscow in 1983 was offered an unprecedented arms package which includes systems still to be inducted even into the Warsaw Pact armouries.[23]

A study of this nature should consider all possibilities, even the most unlikely ones. There could be situations wherein the Soviet Union and India may not have the kind of relationship that exists today. One such situation could develop should the post-Brezhnev Soviet leadership and the post-Mao Chinese leadership decide to bury the hatchet, reducing India from the status of a dependable friend to an indifferent

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23 See, "The Message from Moscow", India Today (New Delhi, 15 August 1983), pp.40-42.

neutral. Under the threat of growing Sino-Pakistani military potential, India may then be easier to manage. The second contingency which may threaten Indian security could be created by Soviet success in destabilising Pakistan's western provinces. A finlandised Pakistan would reduce the external threats to India, which in turn might generate dissensions in states on the Indian periphery like Kashmir and the Punjab, thereby providing a greater leverage to the pro-Moscow communists and their allied groups.

National Security Organization

India's national security policy utilised nonalignment to reduce its reliance on military strength and yet maintain its security by manoeuvring between the power blocs. The national security organization was formulated on the principles of political control for guiding the nation against external threats. At the apex is the Defence Committee of the Cabinet, which is responsible for laying down the country's political aims, and selecting means and forms for creating conditions that will enable mobilisation of national resources and manpower to meet the aims.[24] Military strategy is devised from the political aims and national resources. The former may have to be altered, if the military strategy finds

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24 See, P.S. Bhagat, Forging the Shield (Allahabad, 1969), and R.Kaul, India's Strategic Spectrum (Allahabad, 1969), pp.136-53.

the latter lacking. Within the bounds of national security policy the Defence Minister formulates the defence policy which is to be executed by the service chiefs. It is observed that the Defence Ministry being a step removed from the service headquarters has all the authority but no executive responsibility. The Defence Minister acting at a separate level relies entirely on civilian servants in the ministry than on the experts at the Service Headquarters.

Service Headquarters which are subordinate offices attached to the Ministry of Defence are subject to two tiers of control -- political control exercised by the Parliament and by the cabinet through the Defence Minister -- a control which is essential in a healthy democracy. Bureaucratic control is exercised by the civil servants in the Ministry of Defence, functioning under the Defence Secretary -- a method which has been instituted to assist in the political control of the military. Indian military with its apolitical complexion finds its developmental efforts stymied and stifled by a feature which is unique to the Indian Higher Defence Organization. Instead of supremacy of political organs, what has come about is supremacy of civil servants. A situation which creates communication barriers. Since planning and building up of forces is a long-term process closely linked with national security policy, any organizational barriers create psychological barriers, which, in turn, divorce responsibility for advice on national policy from responsibility for its execution and implementation.

It is a pre-requisite for efficient functioning that the Defence Minister who bears the overall responsibility, deals directly with those who bear executive responsibility -- the service chiefs. The civil services have a useful role to play, not as intermediaries or as super headquarters, but alongside the service specialists in not only policy formulation but in its analysis and implementation. What it implies is that the civilian bureaucrats cannot afford to function as mere generalists in a supervisory role but as specialists in a functional role with appropriate accountability for failures in policy implementation. The present method, instead of being efficient, has made the system time-consuming, requiring elaborate and detailed preparation of cases, endless conferences and briefings of officials, whose background experience range from revenue collection to handloom exports. In this connection, it is pertinent to quote India's first Defence Secretary, Mr. H.M. Patel: "the ignorance of civilian officials of defence matters is so complete as to be self-evident and incontrovertible fact". Since it is these officials who are called upon to sit in judgment over recommendations of Service Headquarters and take decisions on purely military matters they have all the authority to take decisions without the required knowledge or experience and with no responsibility for executing those decisions.[25] Needless to add, there has been no change in

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25 Lt.Gen. S.K. Sinha, "Higher Defence Organization in India", Of Matters Military (New Delhi, 1980), pp.43-44.

the state of affairs in the last two decades or so. There are any number of military procurement programmes that have got cancelled or deferred due to indecision caused by ignorance. And as a result of cost escalation, the country has bought the same equipment at much higher cost later, when it has nearly become obsolete.

Any organization which aims to develop high sophistication levels in its functioning, requires specialists. It is, therefore, essential that the civil servants in the Ministry of Defence are not amateurs grappling with problems with which they are not quite familiar. There is an imperative need for removing the existing barrier between the armed services and the civil services. A cadre of specialists should be created which is trained and understands the implications of the various requirements and proposals, and makes purposeful contributions. This would require specialisations in systems analysis, cost benefit analysis, operational research, perspective planning, international relations, industrial management and other facets of armed forces management. This cadre should serve not only on the staff of the Defence Ministry and the service headquarters, but all other organisations committed to national security, like railways, border roads, defence industries etc. It will help in reducing inter-organizational communication barriers. A specialised and dedicated cadre of Defence Management Service would produce an integrational trend which will develop a sense of responsibility and accountability in the building up process of the country's defence potential.

If one accepts the premise that sophistication demands specialisation, an aspect which is noticeably absent in Indian higher defence organization, it may be pertinent to mention Gen. Chaudhuri's expressed opinion that due to increasing complexity and methods what will be used by the armed forces in the future, there is increasing need for integration between the three services and a better understanding of not only the functions (capabilities and limitations) of the armed services but their relation to the other wings of the government as well.[26] He advocated that the organization should include a high level advisory and inter-service planning and coordinating functions, which will operate directly under the Defence Minister and yet not infringe upon the functional responsibilities or the authority of the service chiefs.

Some of the problem areas ascribed are, that during emergencies the service Chiefs have to attend various committees, ministerial and Cabinet meetings, as also discussions with secretaries of other ministries like Home and External Affairs; besides meeting some ambassadors, journalists and Members of Parliament. This infringes on the time a service chief would need to discuss the progress and various aspects of the operational plans, equipment, supplies and reinforcement situations with his Principal Staff Officers. During intensive

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26 Gen.J.N. Chaudhuri, Chief of Indian Army Staff during the 1965 Indo-Pakistan War, in his lectures on "India's Problem of National Security", at the United Services Institution, New Delhi, 13-14 January 1971.

operations there would be a need to communicate with the field commanders where situations may be critical.[27] Therefore, there is a requirement of an expert with military background, who should be involved in the advisory and inter-service coordination responsibilities. This requirement will be hightened by the short warning and intensive nature of operations, and the problems created by technical developments which have radically altered the means of projecting military power. The present system under the Defence Minister, with the service chief longest in the appointment functioning as the Chairman, Chiefs of Staff Committee, may have stood the test of time, but if the change is being disregarded only for this reason, then it appears that change is acceptable only after the lessons of a failure are driven home. It should not be forgotten that the present system worked when the services were less technical and operations were restricted, since they were being conducted against Pakistan only. As a matter of fact during the 1971 crisis, the present committee system was not rigidly followed. The interaction between the decision makers -- the Prime Minister, the Ministers for External Affairs and Defence, the three service chiefs as well as other concerned civil officials were kept informal to avoid bureaucratic red tape. The new system worked smoothly throughout the crisis due to

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27 Ibid., pp.49-50.

the personality of the Prime Minister Indira Gandhi. Once the crisis was over the procedure of the two-tier control was reverted to once again.[28] The question is, would the system stand the strain if both China and Pakistan activate their borders and launch a coordinated offensive? Or if the personality of the Prime Minister is unable to smoothen the bureaucratic entanglements?

The proposal of having a Chief of Defence Staff to carry out advisory functions is opposed on the grounds that, "the battlefronts will be near enough to Delhi and nature of operations will require a close and daily liaison of the service chiefs with the Defence and the Prime Ministers. To interpose a Chief of Defence staff between the Defence Minister and three service chiefs would be adding a fifth wheel to the coach".[29] Besides, his technical expertise cannot be superior to the chiefs from other service and it is quite unlikely that his decisions are accepted unchallenged. It is also argued that since the Chief of Defence Staff is likely to be from the Army, which is the dominating service in terms of size and threat perceptions, the interests of the other two services may not be looked after. The questions

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28 See, Raju G.C. Thomas, The Defence of India (Delhi, 1978), pp.82-87.

29 See, P.V.R. Rao, op.cit., p.319.

that emerge are, in what manner is the technical expertise of the civil servants superior to that of the Service Chiefs? Or for that matter, the advice of the Chairman, Chiefs of Staff Committee than that of the other two Chiefs? The suspicion of being parochial is pithily analogised by Gen.Sinha, who asks, "does an infantry officer appointed as a Divisional Commander turn out to be partial to the infantry and unfair to the non-infantry elements in his Division".[30]

The real reason for the opposition appears to be the apprehension of dilution in political-bureaucratic control of the military, and as a result, diffused kind of arguments get raised which overlook the fact that technology offers fast and reliable means of communication which render the battlefield distances inconsequential. The very need of close and daily advice or liaison required by the political leadership would interfere with overseeing the service functions.

The solution may well lie in the shape of a senior secretary in the Ministry who should be a military expert without any control over the three services except coordination of joint plans. He should also coordinate the employment of para-military forces and armed police which should be placed at his disposal on the declaration of

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30 S.K. Sinha, op.cit., p.46.

emergency. Such an arrangement would not only meet the requirements of inter-ministerial cooperation, but, with closer interaction with the political leaders, would harmonise political requirements with military capabilities and methods. Served by a combined staff of civilian specialists and from all the three services, the Secretary (Military) would be able to represent and interpret the services requirements. The implications of this proposal are as vast and varied as the controversy it will generate.

India's Strategic Dilemma

Consequent to the Sino-Indian conflict, our armed forces were required to have an ability to simultaneously fight Pakistan's total military forces and the Chinese PLA deployable in Tibet and Southern Sinkiang. This required a large scale increase and modernisation of the Indian armed forces in the post-1962 period. This expansion alarmed the Pakistani leaders; before it got too late they sought to resolve the Kashmir problem by a military fait accompli.[31] The 1965 Indo-Pakistani War confirmed Indian fears of Sino-Pak collusion when the Chinese accused India of intrusion into their territory. Although China did not attack the Indian

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31 Onkar Marwah, "India's Military Power and Policy", Marwah and Pollack (ed.), Military Power and Policy in Asian States, China, India, Japan (Westview Press: Colorado, 1980), p.113.

positions, its menacing posture bottled up India's newly raised mountain divisions.[32]

India's threat assessment and the geography of its frontiers dictate that it must maintain adequate armed forces for simaltaneous deployment on the two threatened fronts. According to a study by International Institute of Strategic Studies,[33] India's security thinking is based on defending itself against a possible attack by Pakistan or China or by both, and not on using its military capability to redress the annexations of its territory. India apparently has accepted the de-facto boundry as final. The extensiveness of its northern borders, its under-developed mountainous terrain, and lack of suitable weapons technology optimised for mountain warfare, make it essential for India to maintain sufficient forces in being for its defence. Even under the circumstances of the northern front being dormant, these forces will not be available for any confrontation on the western borders with Pakistan. For which the country has to maintain adequate strength of mechanized forces to deter an attack. In case of armed conflicts, these forces should have the capacity to seize critical nerve centres compelling Pakistan to go on the defensive.

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32 Ibid., p.114.

33 Adelphi Papers No. 125, op.cit., p.17.

There is no denying the fact that a requirement of this nature wouldneed a disproportionate accretion in the Indian military strength. National security has never been ensured by a strength which is just about adequate to meet the potential aggressor. Putting up of impregnable defences all along the front will not only be prohibitively expensive but an objective which is beyond the realms of feasibility. A conventional deterrent force would require offensive forces, both for the mountains as well as the plains, with an ability to strike and seize nerve centres of the enemy critical to its war making capability.

The Indian army has inherited the British model for the organization of conventional divisions, which was designed for an overseas operation capability, whereas the requirement now is for a formation which is optimised for transborder operations, either in the plains or in the mountains. The question is that since sophistication demands specialisation, does it mean creation of specialist formations for the plains and the mountains? If the question is tackled considering purely the direction indicated by the inexorable march of technology, the answer is yes. Only a couple of centuries ago, armies had three basic specialities, the infantry, the cavalry, and the gunners. It is the outcome of the industrial revolution and the scientific rennaissance of our times that has produced so many specialists corps and services. Is it any wonder that technology dictates specialist divisions? Maj.Gen.James Lunt,

a former British Military Adviser in India, and others have questioned whether the conventional division, no matter how pared down for a mountain role, is the best type of formation for the task of defending the Himalayan frontier?[34] Other problems like lack of strategic flexibility due to specialised formations and physiological adaptability to high altitudes notwithstanding, it has been suggested that perhaps the Indian Army's traditionalism arrests the process of change. The question is, do we carry on like the battleship admirals or take a lesson out of the American army's book. It recognised the potential which the helicopter offered on the battlefield and was the first to raise the specialist air cavalry units!

Another major fallout from the national strategic doctrine is the weapon acquisition policy. For a country like India caught up in an action-reaction arms race with Pakistan, it is the equipment of the donor nation or nations which influences the force designs. In India's case, the Soviet Union has achieved the predominant supplier position.[35] It is but natural that the employment of Soviet equipment is influenced by the tactical doctrines evolved in the Soviet Union. It should be realised that the Soviet weaponry is primarily designed and developed to suit the Soviet methods of employment

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34 Brig. Rathy Sawhny, "Defence of India's Northern Borders", op.cit., p.190.

35 According to the SIPRI Yearbook 1980, approximately 70 per cent of the imported military equipment is of Soviet origin.

in a terrain found in Central and Eastern Europe. The important implications of Soviet tactics are their relevance and suitability to Indian tactical doctrines and the burden they would exert on our underdeveloped communications and logistic facilities. For instance, unlike the Indian or Western practices of repair and replenishment of equipment and echelons, the Russians carry out replacement of the utilised units or formations by entirely new units or new formations from the reserve echelons. This would necessitate the availability of a large amount of reserves.

The Indian armed forces are equipped with a mixture of Western and Soviet equipment, armament and vehicles. In a firepower demonstration by Indian mechanized forces in April 1983, a mock attack of armoured and mechanized coloumns of T-72 tanks, BMP-1 infantry combat vehicles and Schilka air defence guns (all of Soviet origin) was supported by SSII B1 anti-tank missile (French), 84 mm Carl Gustav Rocket launcher (Swedish) and the British-designed indigenous Vijayanta tank.[36] As a result of economic and political constraints, the Indian armament procurement programme has the handicap of developing a mixed complexion. Since Western systems considered most

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36 See, "An Exciting Fire Power Show", Indian Express (New Delhi, 13 April 1983).

suitable by the Indian armed forces were not available, there was little alternative but to buy Soviet material, even if it was considered inferior.[37] The journalists from International Defence Review were told that the ideal fighter for the Air Force would have been F-16. The Soviet T-72 tank was ordered in small numbers since it proved unsatisfactory in desert conditions and will be used only along the northern part of the border with Pakistan. But now, according to press reports, the Indian army is going in for the induction of T-72 in a big way. It only goes to prove that our armament acquisition programmes are conditioned not so much by our military requirements but by the compulsions of the reluctance of certain Western countries to help us attain a measure of military capability.

Operational Readiness of a Standing Army

In a country with a population of India's size there is no dearth of volunteers. The manpower ceiling has been fixed to balance teeth to tail ratios in order to improve efficiency and optimise organizational economy. The armed forces are designed to maintain a state of operational readiness required of a brief intensive war which is likely to break out at a very

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37 See, R.D.M. Furlong, and G.S. Sundaram, "India-Asian Power Broker of the 1980s?", International Defence Review, 4/1981, Geneva, p.383.

short notice. It is worthwhile basing the discussion on the opinion expressed at a seminar on India's Security and its Politico-Strategic Environment.[38] It was stated that "conflicts in the Third World would automatically be of limited duration given the dependence of these countries on the super powers and the resultant pressure they could exercise. The only instance in which a long drawn-out war could take place was when the belligerents had the full backing of super powers". There is no doubt that the short war scenario is more likely in the Indo-Pakistan conflict for other reasons like the military-industrial capacity to sustain operations, and the super power desire to preserve the integrity of their clients. But in case of a Sino-Indian conflict, the theory needs a critical assessment.

In case of any future Sino-Indian conflict, the warning period is going to be longer and so would be the duration of conflict due to slower nature of operations in the mountains. China's deployment on the Soviet border, the distances to Tibet from China's interior, the time required to build up its offensive forces on comparatively slower means of transportation, and lastly the space-based means of detection, a capability which India can develop in not too distant future, are some of the factors which make it very difficult for China to launch a surprise attack on India.

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38 U.S. Bajpai (ed.), India's Security: The Politico-Strategic Environment (New Delhi, 1983), p.13.

The surprise of 1962 was more to our misperceptions of Chinese intentions and the intensity of their reactions to our forward policy. Therefore, it was psychological in nature, rather than a surprise created by disguising the indicators of an offensive. It is within India's means at present to achieve a conventional force parity with Chinese armed forces in Tibet. But once the railway and oil pipeline to Lhasa are completed, India will have to mobilise greater resources of its manpower than what it can afford in a standing army. According to an influential section of opinion, the only military force the country can rely upon is the force in being.[39] Not disputing the validity of the point in case of a Pakistani adventure, the reasons for not incorporating the para-military forces and national reserve against the Chinese, appear to be nebulous. According to Onkar Marwah, India has 2 lakh regular reserve troops, 2 lakh para-military forces and one million Home Guards trained and drilled in military weapons. Besides, there are the National Cadet Corps and the National Volunteer Force with a modicum of military training and a strength in excess of 5 lakhs.[40] In the event of a conventional war against China and Pakistan, the country will be compelled to depend upon the national reserve of armed manpower. India has reached a

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39 Gen. J.N. Chaudhuri, op.cit., pp.66-67.

40 See, Onkar Marwah, "India's Military Power and Policy", Military Power and Policy in Asian States, China, India, Japan (Boulder: Colorado, 1980), p.133.

stage where the auxiliary forces have been conglomerated to an extent that they make no contribution to war making potential. Both in the 1962 and 1965 wars, the reservists failed to report quickly for duty and no action was taken to ensure that they did so, resulting in a failure of mobilisation.[41] Ever since 1962, there have been additions in the Armed Police battalions of the states, the Home Guard and the National Cadet Corps (NCC). From these, only the Armed Police can be mobilised for duty without loss of time. There is no reason, why the other two cannot be incorporated to assist in local defence responsibilities. In 1965 the NCC Act did not even allow the rifle companies of the senior battalions to assist in local defence.[42]

It may be yet another fallacious assumption that all future wars thrust on India are going to be short and intense conflicts, and the belligerents will be compelled by the international community and the super powers to cease hostilities. Such compulsions on the on the belligerents can only be exercised by the super powers if they can manage the belligerents by economic and military pressures. In case of both China and India, a growing ability to resist outside pressures and manipulations is in evidence. After

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41 Ravi Kaul, India's Strategic Spectrum (Allahabad, 1969), p.212.

42 Ibid., p.212.

the war of 1971, India did not favour a repetition of a Tashkent-type mediation, but chose to resort to bilateral negotiations at Simla. In another decade or so, China would have acquired adequate nuclear retaliatory capability to resist Soviet nuclear threat, and having achieved a modus vivendi with its erstwhile arch enemy -- the United States -- the Chinese are no longer going to call it a day, just because someone else says so. Under such circumstances failure to mobilise our hetrogenous armed organizations for national security could lead to a major disaster.

Our security compulsions dictate that we maintain adequate strength for simultaneous deployment on two threatened fronts. The extensive northern border, large portions of which are jungle and mountainous terrain, entail large number of infantry formations equipped, trained and specialised for operating in such terrain. And for the Western border, the mechanized formations with offensive -- defensive capabilities would be an appropriate deterrent. According to one opinion, there is a need to rationalise logistic support since our ground forces are not likely to operate far from the home base.[43] Every formation need not have its normal complement of hospitals, workshops and transport units; instead, civil capacities should be utilised and augumented. But the point that has not been examined is that by pruning the logistic

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43 Brig. Rathy Sawhney, op.cit., p.188.

support facilities, the army would be denying itself the ability of launching any sort of trans-border operations from the very beginning. One wonders to what extent a purely defensive capability will achieve the objective of deterrence? It is imperative that the army's formations be designed with sufficient flexibility, in order to develop appropriate responses to all sorts of initiatives of the enemy.

India's Military Limitations and Potential

India's military capability seeks to establish national image for the country, commensurate with its size, potential and desired role in the international community. It aims to neutralise Pakistan's conventional military potential to the point where its foreign patrons would increasingly find it cost prohibitive to encourage or seek the creation of a military balance between the two countries. This capacity and the development of indigenous weapons production base is required to compensate for the possibility of a large portion of sophisticated weaponry being supplied to the Gulf countries, finding its way eventually to Pakistan. Indian military capability has simultaneously to match China's conventional military forces deployable in the next decade in the military districts of Tibet and Sinkiang.[44]

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44 Tibet is the Xizang Military District being part of Chengdu Military Region and Sinkiang is Nanjicing Military District being part of the Urumqui Military Region. See, Lewis Young, "The Chinese People Liberation Army Air Force: An Assessment" Asian Defence Journal, no.5, (Kuala Lumpur, 1981), p.6.

India by 1979 had acquired the world's third largest standing army, fifth largest air force, and eighth largest navy; the army officers corps, being about 30 to 40 thousand, had a sufficient number trained in staff duties. The Indian armament industry is one of the biggest among the Third World non-communist countries in terms of volume, value, diversity of manufacture, and R&D facilities.[45] In addition, it has intentions to acquire strategic weapons and delivery capability in the future. With the third largest skilled and technical manpower and the tenth largest industrial base, India's military potential appears to be awesome. But what is relevant is an appraisal of the military balance between China and Pakistan on the one hand, and India on the other. India is still committed to the resolution passed in both Houses of Parliament in November 1962, affirming the resolve of the Indian people to recover the territories lost to China, however, hard and long the struggle may be. There are, however, no significant military preparations to indicate a willingness to achieve this objective.[46]

On land, India can take on any attack which Pakistan mounts by itself, although there may be some losses of enclaves achieved by surprise in time, place and intensity of attack. According to a Western report,[47] India is also capable of

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45 Onkar Marwah, op.cit., p.101.

46 P.V.R. Rao, op.cit., p.48.

47 See, Adelphi Papers No.125, op.cit., p.16.

meeting a combination of Pakistani attack and any diversionary moves by the Chinese to pin down Indian troops on the northern borders. The Indian armed forces can also withstand a full-scale conventional attack by China, as long as Pakistan does not use the opportunity for an adventure in Kashmir or elsewhere in the west.

In the air, India is reasonably safe against Pakistan, unless the latter's air force is unduly strengthened by the Americans or by purchases in Europe with money provided by the friendly Gulf countries. It will not be possible, however, to achieve the kind of air supremacy secured during the 1971 War. India has had no experience of actual Chinese air capability, because neither side used its air force in 1962 but there is an awareness of vulnerability to air strike. The Assam oil fields and population and communication centres along the entire Gangetic plain are within striking distance from airfields in Yunan, Tibet and Kashgaria.[48]

Thus India can take on conventional attack by Pakistan and China separately, but not if they join forces. With growing Chinese logistical capabilities in Tibet, the Chinese conventional military capability on its southern borders will increase. For the time being the Chinese are maintaining just about adequate military strength to control

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48 See, P.V.R. Rao, op.cit., p.84.

Tibet and Sinkiang and ensuring the sanctity of their southern borders with nuclear deterrence against India. At the same time it seems least likely that the Chinese leadership will agree to use nuclear weapons against a non-nuclear power trying to regain its lost territories. The question that emerges is, can Indian leaders risk trying to test the Chinese reaction. So the conclusion is, accept the status quo because you have no power to alter it. Not quite different from Nehru's justification on being accused of surrendering the cause of Tibet for the sake of short-lived Chinese friendship.

Leadership Resources: A Growing Handicap

Of late, a number of reports have appeared in the press lamenting the deterioration of discipline and morale in the armed forces and the poor quality of intake of the officer candidates.[49] The major effects of these ominous developments would be loss of professionalism and military ethics, and their replacement by careerism and personal business pursuits. The problem gets accentuated if discipline and loss of faith deteriorates below a certain level. It would then generate its own momentum, and to arrest and check the slide at that stage would be very difficult. The effects are already

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49 See, "India's Harmed Forces", Gentleman (Bombay, April 1982), pp.23-30; "Why are we Unfair to Our Forces", Illustrated Weekly of India (Bombay, March 1983), pp.8-12.

evidenced by a sudden increase in the armed forces personnel resorting to civil courts to redress their grievances.[50]

Even with the best of military hardware, the potential of the armed forces would deteriorate due to poor and indifferent leadership material. P.V.R. Rao has suggested that efforts should be made to provide conditions for effective motivation. According to his assessment, a selective conscription of the educated youth may be required to meet the requirements of technological skills in the armed forces.[51] With the growing sophistication of equipment and the new responsibilities even of the internal security duties, greater demands are being placed on the leadership of the armed forces. This requires a person who is not only well-trained but well-informed and self-confident -- requirements which call for higher educational background than what is available. Attempts to increase the emphasis on technical education would be rendered futile by the inability of the officer candidates to cope with the technical syllabi. If the lynchpin of the security machine is of inferior quality, the results are not too difficult to forecast.

Although the government is going to look into the reasons of a drop in the intake of cadets by the National Defence

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50 Report, "Torture in the Armed Forces", India 2000 (New Delhi, May 1983), pp.4-13.

51 P.V.R. Rao during his lectures at the United Services Institution of India at New Delhi on 29-30 March 1976.

Academy and Sainik Schools,[52] the twin problems of poor leadership intake and deteriorating morale also need to be viewed in the perspective of civilian control of the military. There is a growing belief in the military of a tacit understanding between the political leadership and the civil bureaucracy to peg the compensations of a military profession on a lower scale, thereby ensuring that the services do not attract the cream of the nation's talent. Fears of Bonapartism have ensured that mediocrity finds its way to the services and it is that quality which gets thrown up for leadership functions.[53] As it is, civilian establishments draw off the best talent. It would be a fallacious assumption that military's human resources could be improved by merely offering it the conditions of employment found in the civilian society. This would be disregarding the peculiar nature of military service, which expects the supreme sacrifice as an ordinary course of function. It requires a motivated mind to cultivate a professional ethos of self-denial and self-sacrifice. A democratic society has to accord the professional soldier a position which is based on his special code of honour. It is, therefore, necessary to build and maintain differentiation between the civilian and military roles. The current drift

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52 "Government to look into Fall in NDA Intake", Indian Express, (New Delhi, 31 October 1983).

53 For an analysis on the civil-military relations in India, see, Stephen Cohen, "Civilian Control of Military in India", in Claude Welch (ed.), Civilian Control of the Military (Albany, 1976), pp.47-57.

towards destroying the differences between the civilian bureaucracy and the military by an erosion of the latter's status, instead of producing genuine similarity, runs the risk of creating new forms of hostility.

As a result of the growing technical nature of modern warfare, individual initiative has acquired greater significance than traditional enforcement of discipline. Speed of communications, mobility and range of firepower have gradually opened up the battlefield. Instead of solid lines of older formations, operations will be conducted by scattered small units, sub-units and independent detatchments. This calls for informed and educated responses to discipline. A study is required by itself whether the modern role of Indian military needs a rigid enforcement of traditional forms of control rather than creating high levels of morale of highly skilled persons. More than anything else there is a need for an informed debate on the problems of India's security and limitations and role of its human resources.

India's Military Industry

At the time of independence, the Indian defence industry had the twin drawbacks of a narrow industrial base and lack of trained manpower with specialised skills required for modern armaments production. The policy at that time was to ensure indigenous production of the basic items of military equipment; secondly, to produce essential items even though their demands were small. This was irrespective of economies of scale.

Thirdly, to import those items which were extremely costly and sophisticated, like aircraft and missiles.[54]

The desire to achieve an independent political status necessitated maximum self-sufficiency in the requirements of defence equipment. Self-reliance in domestic armament production became an aim to be achieved, regardless of the knowledge of the problems and pace of growth in the military technology elsewhere in the world. The Industrial Policy Resolution of the government issued in 1948 and revised at the start of the second Five Year Plan in 1956, designated munitions, aircraft and ship-building as industries whose future development would be the exclusive responsibility of the state.[55] It goes without saying that maximum self-sufficiency in the armament production was desirable to enable the country to pursue its foreign policy objectives, but what developed was an obsession to produce every nut and bolt in the country, and that too in the exclusively state-controlled sector. This desire stemmed from the consciousness of India's size and potential, and sensitivity to possibilities of external presence and coercion. Although we have come some distance in achieving self-reliance in this field, the question that arises is, at what cost in terms of time and resources of skilled labour and budgetary inputs?

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54 H.M. Patel, The Defence of India (Bombay, 1963), pp.15-16.

55 J.Lorne Kavic, India's Quest for Security (Berkeley and Los Angeles, 1967), p.126.

Economics of Indian Defence Production

The Indian defence industry was designed with an eye on the civil military linkages. The range of industrial activities were deliberately widened so that the military industry could be usefully integrated with the civil economy at all levels. In theory, such a policy should yield economic advantages. The indigenous development of shipping and aircraft, the two being the most expensive defence items, were to save valuable foreign exchange for other users. But how did this policy work out in practice, and did it achieve the primary objective of self-sufficiency?

The Gardern Reach Workshop and the Mazgaon Docks were taken over by the Department of Defence Production in 1960. They were primarily meant for construction of warships for the Indian Navy. The docks soon had large orders and found themselves in great demand for maintenance and repair of both naval and civil shipping. In addition, small-scale projects like construction of barges and tugs were undertaken. Instead of utilising the revenues from this work for increasing the sophistication levels, the docks went in for diversification for the manufacture of diesel engines, compressors, cranes and pumps.[56] Therefore, inspite of the experience gained in

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56 K. David Whynes, Economics of the Third World Military Expenditure (London, 1979).

construction of ships of the sophistication of Leander class frigates, the country still has to import sophisticated fast patrol boats from South Korea.[57]

A similar pattern is displayed in the aircraft industry. The Aeronautics Committee report in May 1969 recommended that "India should acquire self-sufficiency in the maintenance of aeronautical material in the period 1974-79 and in the design and development of the country's most important requirements within a ten year span".[58] The country did start building a front line supersonic fighter in 1956 with the help of German designer, Dr Kurt Tank, but in 1960s, it went on to assembling British Gnats and Russian MIG-21. The indigenous design and development facility was confined to light trainers and aeroplanes for agricultural purposes. The growth of the industry was limited to the assembly of imported components only. Little has been learned about the design and manufacture of aircraft because the foreign collaborators are reluctant to part with designs and manufacturing techniques. Therefore, we still have to go on with deals like licence production of Jaguar and Mirage 2000,[59] and would be doing so even at the turn of the century. The country has not been able to develop an expertise even for a light transport aircraft and is looking for collaboration abroad.

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57 SIPRI, Yearbook 1980, p.144.

58 SIPRI, Arms Trade and Third World, op.cit., p.738.

59 Times of India, 13 February 198 , p.1.

Tank production is another area where we have made little progress. Based on the British-designed Vickers tank, the first Vijayanta was assembled in 1965. Seventeen years later the indigenous main battle tank is probably more than a decade away. And when it finally rolls out, it will be obsolete. The country, therefore, has to make crash purchase of the Russian T-72 tank. Although the policy of licence production has contributed to the creation of the essential technical and managerial skills, the import of modern military technology has not kept these skills up-to-date. The fact remains that the country is still dependent on the foreign sources for its armament programme, and shall remain so if it continues to make panic purchases.

An Analysis of the Problem

A closer examination of the Indian defence industry reveals that the potential long-term benefits which the country hopes to achieve will have to be at the cost of short-term investments. As in other developing countries, the Indian defence industry faced the problems of lack of skilled manpower, financial resources and special types of raw materials. And when these inputs were available, there was a lack of demand. As a result, there were imbalances in its growth and inconsistencies in its sophistication effort.[60]

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60 Production of the 1918-model hand grenade continues side by side with efforts to develop third generation anti-tank missiles.

The belief that cheap domestic labour would enable the indigenous armament industry to produce sophisticated equipment cheaper than the cost of importing has been proven erroneous. This is due to the fact that first, the armament industry is capital and technology intensive, where labour costs account for only a small proportion of the total cost. It has been computed that the labour costs vary from 1 to 5 per cent, whereas the material costs vary from 40 to 80 per cent of the total cost of the systems produced in this country.[61] The material costs are high due to the subsidies given to the indigenous producers, who find it uneconomical to produce specialised components on a smaller scale. Besides, the import of components and sub-assemblies is more expensive than the cost of importing complete equipment. This is due to the freightage and insurance overheads. In addition, the supplier cashes on the strong desire for indigenisation and raises up the profit margins on the components.

Moreover, the lack of testing facilities considerably raises material costs. This at times requires transporting of completed assemblies or even whole equipment for testing. Besides, the non-availability of a particular component slows down the entire production rate. One of the major problems is that the country has not been able to derive advantages from the economies of scale. This is due to lack of sufficient

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61 SIPRI, Arms Trade and Third World, op.cit., p.739.

demands generated by the captive market of the national armed forces, resulting in short production runs. The nature of demand for weapons is not continuous like in a consumer industry. Because of sudden increases in demand for armaments due to emergencies[62] or generational turnover of equipment,[63] the productive capacity has to exceed the normal requirement for the weapons. The quantum of domestic procurements and the delivery period determines the normal requirement. The period between the demands is the idle capacity, which if left unutilised, is uneconomical, and if it produces for the civil market, it leads to erosion of highly developed skills.

Armament production requires a particular type of skilled labour which calls for substantial resources devoted to its training and experience. As workers become more efficient, there is less wastage of materials and better utilisation of plant and machinery. In addition, sophisticated weaponry requires special type of raw materials, alloys and electronic components. These are generally in short supply as they do not have much utility in the civil sectors of industry. These problems can only be overcome by developing economies of scale, achieved by large production runs which in turn will require large markets.

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62 Former Secretary for Defence Production estimated that the ratio between wartime and peacetime wastage of carbines and mortars was about 100 to 1, and the ratio of mortar ammunition was about 50 to 1. See Raju G.C.Thomas, op.cit., p.108.

63 On an average, after every 12 to 15 years, a new generation of weapon system is required to be delivered in a period of 3 to 6 years.

Problems in Developing a Military Industrial Economy

It is seen that the major problem area in developing the economies of scale has been the utilisation of surplus capacity. Various methods are adopted in this regard, one of them being international collaboration. Sophistication has made the development of some of the weapon systems not only prohibitively costly, but also beyond the technological capacity of some of the collaborating nations. Collaboration has several advantages; first, development costs are shared; secondly, increased demand makes production economical; and thirdly, given political will and mutual trust, pooling of technical know-how will lead to product improvements. But there are problems in international collaborations: each participating country wishes to have equipment delivered over the same period. Besides, there are difficulties in collaborating with countries with different methods and technological levels.

Another method for utilising surplus capacity is product alternation, that is, production of civilian goods during periods of low military demand. The degree with which the armament factories can alternate the products will depend upon the degree of convertability of skills and resources. This is mainly applicable in the aeronautical and the electronics industries. For example, production of commercial aircraft will also contribute to the nation's emergency airlift capability. Diversification into space programmes

will retain skills and resources required for high performance combat aircraft. The development of electronic systems also has similar dual utilities.

The product alternation method cannot be applied to the ship-building industry. In most countries, the naval and merchant ships are built in separate yards. This is not so in Britain. As a result, highly specialised facilities required to build naval vessals lead to excessive costs when employed to produce merchant ships.[64] According to a naval architect, sophisticated skills and resources acquired during warship construction can be utilised for merchant ship construction, but the converse is difficult.[65]

In the same manner, to say that a tank factory can build the latest generation of armoured vehicle after it has gone through a period of making bulldozers and heavy vehicles may not be valid. The model produced will neither be costly nor performance competitive by the time production commences. The armament industry utilises the highest levels of sophistication available in the country in order to produce the state-of-the-art equipment. It follows that a policy of civil-military industrial linkage will lead to a disparate growth of skills. Besides, such linkages are inefficient

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64 SIPRI, Arms Trade with Third World, op.cit., p.393.

65 Commander N.P. Gupta, Deputy Director, Naval Designs, Naval Headquarters, New Delhi.

from the production point of view. There is always the fear of losing the established civilian market during the period of high military demand, which does not allow full utilisation of resources for military purposes.

Another factor which has aggravated the problem of surplus capacity is the pace of technology. It has led to faster generational turnover of equipment and a soaring cost of weaponry. This has necessitated shorter duration of the production runs leading to expansion of capacities. One method to overcome this problem is to increase the delivery period and thus slow down the production rate. It calls for perceptive military planners to accept a mixed inventory of old and new weapons, plan theatre priorities, and training and maintenance methods, in order to absorb a steady and continual replacement of weapon systems. The second solution is to accept multi-role type of systems. This policy has been adopted by the Swedish Air Force which has only three types of combat aircraft, compared with eight types in Britain, ten in France, twentyfive in the Soviet Union and thirty in the United States.[66] The argument against this policy could be that a multipurpose aircraft cannot perform a particular task as efficienty as an aircraft designed for a specific purpose. But conversely there are advantages of economic production, ease of training, maintenance and inventory control.

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66 SIPRI, Arms Trade with Third World, op.cit., p.388.

Large production runs are required to achieve economies of scale with twin advantages of offsetting costs of R&D inputs,[67] and increasing productive efficiency. But this requires creation of an export market, which also protects the industry from fluctuations in domestic demands. The problems of developing an export market for arms are, however, multifarious. Political factors have to be weighed, like regional disputes or re-export of arms to a country with hostile policies. This requires adoption of restrictive export policy.[68] Besides, the traditional arms suppliers will not allow a dilution in their commercial or political influence in the region. The competition is enormous, especially if the systems and components are common to the ones being marketed by established exporters. Success depends not only on merchandising and aggressive product promotion but the exporting country has to maintain very high levels of technological sophistication at competitive prices. No country is willing to go in for the second best equipment when it can buy the best elsewhere.

The present Indian policy is not to expand arms exports, possibly in the belief that such exports contribute to arms

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67 R&D investments represent the single largest cost in the development of a modern weapon system; on an average it is about 30 per cent of the total procurement costs. Ibid., p.384.

68 See "India's Bid to Sell Arms to Britain", Times of India, 21 November 1982, p.9.

races. But the point is that if India does not export, then, someone else will.[69] It can be argued that the country would be in a position to influence the international arms trade processes if it emerges as an arms producer. According to recent reports, Indian officials think that there is a potential for arms sales in the former British colonies.[70] But if the country hopes to earn foreign exchange by selling obsolete or scrap arms and ammunition, then it does not contribute to the development of domestic armament industry in any way.

The establishment of a domestic armament industry has been an expensive proposition when one considers the foreign exchange costs of importing weaponry and India's level of industrialisation. The economic costs of local production may not be as prohibitive as the statistics indicate. Besides, the development of defence industries contributes to the growth of integrated metal and engineering sectors.

Pattern and Problems of Indian Armament Imports

After Indian independence, Britain held the dominant supplier position for a long time. This position steadily

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69 During the decade 1970-79, Indian arms exports amounted to $18 million as against Israel's export of $447 million, Brazil's $349 million and Singapore's $48 million. SIPRI, Year Book 1980, op.cit., p.86.

70 Times of India, 21 November 1982, op.cit.

declined with the Soviet Union's entry into the Indian arms market in the early 1960s. This major shift in the sources of military supplies was necessitated by the reluctance of Britain to supply equipment needed by India and by the Indian desire to decrease dependence on the former colonial Power.[71] But in the process, the Soviet Union became the dominant supplier by the early 1970s.[72]

One of the major problems associated with imported armaments is that they are developed primarily for the security environment, terrain and tactical doctrines of the exporting country. They are designed for use by their own armed forces, which would also be using a wider range of complimentary support equipment. If the importing country buys only one system out of the complete range of weapon systems, it will lead to either operational incompatabilities or under-utilisation of that equipment's capabilities. And if the complete range of weapon systems is imported then it would be best utilised in accordance with the tactical doctrines of the parent country. This in turn creates new pressures and dependence on the exporting country for after sales maintenance and training facilities.

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71 SIPRI, Year Book 1980, op.cit., p.117.

72 a) The Soviet Union supplied 70 per cent of Indian armament imports in 1970-74 and 52 per cent in 1975-79. Ibid., pp.96-97.

b) Both Egyptian and Indian sources have claimed that since 1975, the Soviet Union has demanded payments in hard currencies and roubles, instead of local currencies or raw materials. Ibid., p.60.

Some of the traditional arms exporting countries are developing equipment for the export market suitable for the kinds of conflicts in the third world countries. But to claim a near universal suitability for such weapon systems to conflicts in terrains ranging from South East Asia, West Asia or Africa, would not be valid. From a national perspective, the best solution would be to import those systems which are designed to meet our own security requirements, terrain pecularities and manageable by troops conversant with indigenous tactical doctrines and technical skills.

Defence Research and Development in India

The defence R&D programme has been an element in the planning process for the last twenty years, but the results have not been commensurate with the efforts. One of the reasons for this poor performance is low allocations to R&D budget when related to the sophisticated nature of the programmes. In 1968-69, the Indian R&D budget allocations were 1.3 per cent of the defence budget. In contrast, Britain, which has an existing R&D base, spent nearly 12 per cent of its defence budget on R&D.[73]

The R&D investments can be offset by utilising the research efforts for civil purposes. But one has to be

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73 SIPRI, Arms Trade with Third World, op.cit., p.757.

careful in that the civilian outlets should be compatible and contributive to the requirements of the military industry. For example, the aeronautical industry could have developed the expertise required in building transport aircraft before launching itself headlong into the development of prestigious projects like the development of sophisticated supersonic combat aircraft. Investments in the electronic industry both in consumer as well as space communications sectors would have paid rich dividends. It would have created skills needed not only for the development of avionics and military communications, but also for the all-prevading electronic warfare capabilities. The country could have concentrated its R&D effort in any one major area of advanced technology; success in this area would then have offset investments in other sectors of R&D. The Israeli defence industry, by concentrating its funds and R&D efforts on the military electronics sector, has been able to achieve levels of sophistication comparable to those obtaining in the United States.[74]

Another problem area is shortage of technical manpower. Although the Defence Research and Development Organization

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74 Neummann, op.cit., p.302. According to another report, "The level of R&D (in military electronics) is very high. potential exists for the country to become the world technological leader". See, Gowri Sundram, "Military Electronics in Israel", International Defence Review, vol.15, no.1 (Geneva, 1982), p.60.

employs 25,000 scientists, engineers and technicians,[75] there is shortage of specialised personnel with sophisticated skills. More serious is the lack of faith in the ability of Indian scientists and engineers amongst the defence personnel. This could be due to a communication gap resulting from the lack of scientific background and technical culture in the defence forces themselves. This lack of technical interaction between the armed forces and the scientific community has inhibited indigenous innovation. After all, it is always the user who is in a better position to identify the shortcomings and the inadequacies of an equipment, the environment it is required to operate in and the modifications, innovations or developments which are required and can be incorporated. If the user cannot translate his requirements in the language that the scientist understands, then the communication gap inhibits development.

A major drawback is the lack of technical managerial expertise at decision-making levels. This limitation, alongwith the multiplication of organizations has led to dissipation in the R&D effort. The Ordnance factories are functioning under the Department of Defence Production. There are four bureaucratic organizations between the users and the producers. The bureaucrats in the Ministry of Defence, the Department of Defence Production, the Directorate General of Supply and Disposal and at the Ordnance factories do not have

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75 See, Report by Ministry of Defence, Glimpses of Defence Research in India (New Delhi, 1983).

either the technical background or the field experience of the users. In most of the cases they are in possession of neither. These bottlenecks contribute to delay and dissipation of research effort.

A major factor contributing to imbalances in our military industrial development is the lack of realisation of the essential inter-relationship between the technological capabilities and the general economic level of the country, that is, the relationship between the GNP and the per capita GNP. It has to be understood that, while the GNP is a good indicator of economic development, the per capita GNP is an indicator of technological levels and capabilities. A country with fairly large GNP like ours might be able to have an arms industry, but only with borrowed or licenced technology. A country with large GNP but low per capita GNP is at a relatively low level of economic development. It is, therefore, not likely to have a broadbased scientific or technological infrastructure which is essential to sustain a sophisticated military industry.

Both China and India have had trouble in developing their own weapon systems, although both have been able to produce a major portion of their military equipment under licence, or by reverse engineering in case of China. Israel and Sweden have a rather modest GNP but rank relatively high in per capita GNP levels, and therefore have been able to develop an independent

arms production base. A country with large GNP can develop a large production capability to manufacture weapons, but for an indigenous development of sophisticated military technology, a reasonably high level of per capita GNP is required.

The industrialised countries are not willing to part with technological know-how and the Indian R&D base needs a wider technological foundation. This in turn calls for a high per capita income. Assuming that both financial resources as well as scientific talent are available for developing a viable R&D base, the lack of markets will be a major hurdle in making the industry self-supportive. The time needed to develop weapon systems in a demand deficient captive market will make the system obsolete by the time it is operationalised. It is, therefore, likely that in the present state of affairs, India will be dependent on imported military technology for quite some time.

It has been attempted to examine the problems, the potential and the future of Indian defence production. A moderate growth in the industrial development precludes the ability to achieve modernity in the indigenous defence production. It is a universal fact that in the demand deficient and captive markets, the quality and sophistication of products are natural casualities. This is precisely the situation in the case of Indian arms industry. At the same

time, due to growing sophistication and soaring cost of weaponry, more financial as well as technological inputs are required. Even the highly advanced West European countries are developing military industrial consortiums. If there are problems in developing an Asian military industrial collaboration with countries like Japan, due to economic and technological disparities, then India to begin with, should develop linkages for specific projects with any country which is comparatively liberal in transfer of technology, say like the Soviet Union.

A more viable policy for India may be the encouragement of the private sector to offer competition to the state (protected) sector, promotion of restrictive arms exports, development of multi-role equipment, and streamlining of the military industrial organizations. As regards the private sector, notwithstanding its relative economic viability and engineering capabilities, the governments inhibitions of greater collaboration appear to be due to the ideological considerations.[76] What is urgently required for the Indian armament industry is greater interaction between the scientist and the soldier, the kind of interaction which is in evidence in the growth of the Israeli military industries. The Israeli field experience has been invaluable not only for the growth of the state-controlled industries but also for the foreign armament producers, who, in turn,

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76 See, Raju G.C. Thomas, op.cit., pp.120-21.

were willing to part with their technological know-how in exchange.[77] It is only by such an interaction that a purposeful armaments development can take place within the requirements of Indian threat perceptions. Besides, it will save us from resorting to hurried off-the-shelf panic procurements or making general staff qualitative requirements by merely leafing through glossy armament journals and brochures.

The military has to be wary of this desire to get the best and the latest weapon system. Because such attitudes only contribute to increased dependence on the donor country. Moreover, we may not be able to absorb, utilize and maintain such sophisticated equipment optimally. Sophisticated equipment lacks in maintainability and restorability,[78] in those armed forces where the technological skills are not high. In the ultimate analysis, the requirement is to have the maximum availability of equipment during military operations. And if the armed forces do not have high technological skills, then the availability and utilisation of the equipment which is primarily developed for the technology-intensive armies

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77 a) SIPRI Arms Trade with Third World, op.cit., p.769.
b) See, Gowri Sundaram, op.cit., p.59.

78 Restorability implies that the fitness of the equipment is restored within the time frame and by the resources deployed for the operations. So that, it can be re-used and influence the very same operations, in which it got damaged.

will not be worth the cost. It is, therefore, the responsibility of the military commanders to analyse their requirements judiciously and tap the foreign markets accordingly.

The Indian defence production policy has been largely governed by political considerations rather than pure economic, industrial and technological imperatives. Ambitious projects were undertaken for reasons of national prestige, only to flounder afterwards. Ironically, the establishment of local arms industries does not ensure independence from the industrialised world. The establishment of technologically sophisticated military production centres in an otherwise underdeveloped economy ties the country even more closely to the sources of military technology. Because, the purchase of arms and related technology increases the flow of resources towards the major arms producers, who can produce even more sophisticated weapons. And as a result of sophistication, the next generation of weapon system is even more costly. There is thus a vicious circle of cause and effect which engulfs the countries who are pursuing arms production policies purely on the basis of political considerations.

We, therefore, find that domestic defence production has not removed dependence on the industrialised countries, but only changed its form. Technological innovations will continue to be led by the industrialised nations and the country will find itself constantly outpaced and trying to

catch up in various areas of advanced technology. The crux of the matter is the need to develop an ability to withstand external pressures during times of crisis. We must not only modify our production and stocking policies, so that we have critical items available to us during hostilities, but also develop an expertise in conflict management, both in the political direction and its military projections. In order to meet these challenges, the leadership, both political and military, will have to be of a high calibre.

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India's independent stance in the international fora has hardened the attitude of the Western powers towards her. This was to a large extent responsible for India turning to the Soviet Union which led to a continuing dependence on it for sophisticated weaponry. Soviet weapon systems are primarily designed for the European plains and therefore not quite appropriate for the Sino-Indian border. The Indian armed forces could benefit from the Soviet weapons if designed consequent to their Afghanistan experience. India has to make the most of Soviet interests in maintaining the Indian connection. India has to tread a delicate path so as not to make itself overly expensive as against the political benefits which accrue to the Russians. The Soviet Union also plays an important role in building Indian defence industries. Considering the competitive nature of armament industry, India may find it

quite useful to have co-development and co-production tie ups with the Soviet Union for sophisticated systems, while carefully safeguarding political-industrial independence.

The Indian armed forces, having inherited the British model, have not been able to evolve changes in the model to meet the requirements created by the introduction of sophisticated systems. Creation of dedicated formations optimised for operations in the mountains against the Chinese and for mechanised operations against the Pakistanis in the plains, needs to be given serious consideration. Since there is a possibility of Pakistani army units serving as a proxy force in the Gulf for the Americans, it is also equally likely that such well-trained and equipped Pakistani units may be employed against India. Pakistan's potential as a threat to Indian security being what it is, one finds a disproportionate attention being given to it as compared to a much stronger threat which looms in the north. Perhaps this distortion has its origin in the historical preoccupation with the Hindu-Muslim confrontation being scaled up at the state level; or perhaps the Indian leaders relish discussing the Pakistani threat more than the threat posed by the Chinese, due to the fact that the former is manageable as compared to the latter. The very absence of discussion on possibilities of Sino-Pak forces trying to devour Kashmir reflects a tendency to evade the harsh realities of the situation.

Be that as it may, these issues raise some vital questions which require serious examination. What is lacking is a public debate on matters which undoubtedly concern the security of the whole nation. It is essential that informed sections of the Indian society are able to effectively contribute to national security. This requires understanding the rationale of national security policy, its problems and methods. A conservative and inhibited attitude to matters pertaining to national defence needs to be removed by twin approaches of promoting a meaningful debate and developing a sense of involvement, a commitment, to national security by all sections of the society.

Chapter V

FORCE DESIGNS IN SOUTH ASIA

During the present century, the contributions of science and technology have increased at an unprecedented rate, a rate which is developing even faster with the passing of every year. As a result, the technology of destruction by conventional military weaponry is becoming unmanageable by the third world countries. The developed nations, because of their high economic, educational and scientific levels, continue to dominate the developing nations in the fields of military technology, and they will widen the technological gap even further, in order to maintain their regional influences.

The discussion on China, Pakistan and India, the principal actors whose security calculations impinge on the South Asian political equilibrium has also attempted to identify problems and threats other than peculiarly South Asian. As far as the military potentials of India and China are concerned, not only their economic systems and but their social organizations also vary greatly. This enables the latter to harness national resources for security purposes much more quickly and productively. The characteristics common to both countries being an ability to generate large surplus manpower and middle-level technology to support military effort. In case of India, the organization to mobilise and train the manpower is not as well

developed as in China. As regards military technological comparisons between the two, at times fallacious conclusions are drawn from the fact that Indian armed forces are equipped with relatively modern arms.[1] Such conclusions do not seem to have taken into account the influence of the underdeveloped mountainous terrain which reduces the marginal advantages offered by the so-called technologically "better" Indian military equipment. Both the countries have populations which can be organized into large infantry forces and their industrial sector can turn out weapons required by such forces, even though it may not match state-of-the art equipment. China's defence burden is much greater than that of India's, but it has been able to manage its problems in some ways which are different from that of India's. Its military units are linked with economic production, notwithstanding the adverse effect on the PLA's combat readiness. The strategic deterrence potential is in the shape of growing nuclear weapons capability as well as the large reservoir of trained manpower. The Sino-Indian border dispute being in areas which have not been completely integrated with the populations of the Indian plains, China has many opportunities for subversion, and assistance to guerrilla movements; moreover, large distances and difficult terrain facilitate such support.

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1 See, K.Subrahmanyam, "India's Defence Problems II-Compulsions of Technology", Times of India (New Delhi, 29 March 1983), p.7.

Pakistan, on the other hand, is unable to play off one major power against the other since it has lost the capacity to balance India. Being strategically weak, and although listed as a third world arms producer, it cannot meet even a small percentage of its equipment requirements through indigenous manufacture. It, nevertheless, retains a nuisance value for India. The Soviet intervention in Afghanistan has restored Pakistan's importance in the American calculations. Its Islamic connection and ability to provide military assistance to the West Asian monarchies have enabled it to obtain subsidies for armament acquisitions and to maintain large forces in being. In the Indo-Pakistan context, this armament acquisition has created an effect, which, in turn, has pushed India to acquire force levels of a size that becomes a major factor in American calculations in the Indian Ocean region. The prospects of an American-supported Pakistani adventure cannot be ruled out. The Pakistani threat looms larger in the Indian psyche because of the deep historical reasons. This preoccupation with Pakistan diffuses the major Indian security problem -- China. The Chinese threat is also played down due to the fact that the Indian planners find it unmanageable.

India having acquired the mantle of leadership of the Nonaligned Movement is on the threshold of shouldering new international responsibilities. Its security requires a far more effective and sophisticated national security apparatus

than it has ever needed before. The emergence of new weapons of vast power and range, accuracy, and quick means of control, have given a critical dimension to the time factor. This in turn has given a new equation to the threats to Indian security. It is necessary to have a new look at the design of the Indian armed forces. The major problem areas are twofold; first, the inexorable compulsions arising out of the sophistication of military technology and its cost; and secondly, the inadequate quality of human resource potential to absorb this technology, especially at the leadership levels.

The sophistication of weapons technology is primarily dependent upon the national level of industrial technology, the investments made in the defence research and development and the pay offs therefrom. While attempting to get the most suitable equipment for the national security requirements, the Indian armed forces have been accused of not reposing enough confidence in the indigenous equipment. It must be understood that a combat equipment of a lower efficiency cannot function at a lower performance rating in a battle (unlike an industrial or combat support equipment), because it will be destroyed at the first instance. The very dynamics of combat require better performance for survivability. And this need for sophisticated arms is compounded by the widening technological gap between the developed and the developing countries.

Diversification of arms procurement sources is one of the methods to increase independence from the arms supplier; the other method -- achieving total self-reliance -- is difficult in this country due to lack of technological as well as investment potential. Even the West European military industries have problems in keeping their heads above water. India can, however, go in for selective specialisation, say in micro-electronics, in order to offset the procurement costs in other areas. Besides, technology tie ups, equipment re-export and component production agreements could also be worked out with a major supplier like the Soviet Union. No doubt, the Soviet linkage will increase, but so would mutual interdependence for developing new technologies and new markets.

The problem of indifferent quality of human resources has to be viewed in the context of the escalating costs of new equipment, both in terms of procurement as well as maintenance. Costly new developments are taking place across the entire field of defence preparations. The problem gets further highlighted when coupled with the fact that the development and exploitation of new discoveries takes place in a shorter time scale than that required for production, absorption and operationalisation of equipment based on current technology. Hence there is always a risk of falling behind adversaries in the technological race. There is a tendency for the equipment to get outmoded before full use can be made of its life cycle.

This situation worsens every year because of the high rate of equipment obsolescence resulting from rapid advances in the state-of-the-art. The consequent effects of wrong decisions and inadequate equipment management on national security are more critical in the armed forces than in the industry, where the risks are merely a drop in profits or at worst bankruptcy. Gavin Kennedy has summed up the situation very well: "even under ideal conditions of peace time training, using skilled operators, the cost and effort of maintenance is extremely high. Ideal conditions do not exist in the third world; terrain is difficult, climate is unsuitable, operators inexperienced and maintenance functions inappropriate and inadequate. This situation gives country with well trained troops using properly maintained equipment striking advantages over the potential enemy. To a large measure this explains the failure of the Arabs and the Pakistanis in their military confrontation .... it was not the question of valour but of military preparation; the Israelis and Indians simply worked harder being operationally efficient".[2]

The gains resulting from any hard work cannot be out of proportion to the quality of the worker. A direct result of

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2 See, Gavin Kennedy, The Military in the Third World (London, 1974), p.305.

the introduction of complex equipment is the increasing intellectual difficulty in understanding their operations, functions and maintenance. This in general calls for a higher calibre of men and a technically oriented training, which requires not only expensive training equipment but a longer training period. And to justify the increase in personnel costs, longer periods of engagement will be required. The cost and problem gets more accute in case of the commissioned officers than of the ranks. The shape of the officer cadre in the armed forces is cylinderical upto the level of unit commanders and then due to the nature of the structure required for combat, it becomes pyramidical by the selection or elimination processes. Therefore, a large number of officers have to be progressively phased out to keep the armed forces efficiently structured. This fact, alongwith the pecuniary attractions of the thriving civil sector, are the biggest detracting considerations for the talent from entering the armed services. The armed forces have to realise that favourable opportunities would be available to young officers in the civilian enterprises, which can absorb appropriately trained personnel having fulfilled their required careers in the armed forces. If the armed services want talented personnel to remain at the required levels of efficiency they must make arrangements for a second career for these personnel.

It is worthwhile to take note in this regard of the British Army Joint Short Service Industrial Career Scheme for its officers. In conjunction with the British Federation of Industry, arrangements have been made for the absorption of short service commissioned officers into the industry. There are twin advantages of the scheme; the Army gets educated, enterprising young men from the colleges, and the industry gets men scientifically screened by the services selection boards whose character, sense of responsibility and leadership experience have been developed during their short service career.[3] In a similar manner, Indian armed forces, in order to offset the cost of losing trained officers, the short service commission should increase the intake of management and technical graduates, which will have greater acceptability by the industry. The increasingly close contacts with industry will bring greater understanding and cross-fertilization of ideas, which should be encouraged and fostered. Recognition of skills learnt during the military career and acceptance of ex-servicemen by civilian workshops

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3 The popularity and advantages of the scheme are indicated by the increase in numbers and improvements in the quality of the officer candidates. Since the scheme was introduced with 90 participating companies, a further 23 have already joined and 14 more companies are planning to do so. See, Sir Dunnet James, "Impact of the Services on Society", J.N. Wolfe, and John Ericksson, et al, The Armed Services and Society, Alienation, Management, Integration (Edinburgh, 19), p.77.

and agencies is as important as the process of management recognition. However, this inter-relationship must not be forced at too fast a pace, since mistakes due to haste take longer to eradicate than the time lost in a measured and a pragmatic approach.

Effects of New Military Technologies

The development and direction of the conventional military technology in the post-World War II period have been primarily inspired by the scenario of the European Central Front. Nevertheless, these developments are being utilised all over the globe. The Falklands War and the 1983 Lebanon War are indicators of the shape of things to come on the sub-continent. In the Lebanon War, sophisticated technology on one side resulted in disproportionate casualties on the other. In the Falkland War, the developing country did comparatively well in the air battles because of near technological parity between the two sides. The Vietnam War -- a testing ground for the American military technology -- demonstrated that scientific developments and the analysis of the battlefield can raise the destructive capacities of the military force. Amongst recent developments, micro-electronics has revolutionised weaponry and the technology of war. The precision guided munitions have achieved unprecedented accuracies. Area weapons such as fuel air explosives, cluster bombs and sense-and-destroy armour are increasing

the attrition capabilities at an astonishing rate. Although the gap between the conventional and nuclear weapons may never close, technology has produced conventional munitions which have comparable capabilities to that of a low-yield tactical nuclear device in terms of killing power. Such developments may even raise the tactical nuclear threshold.

During the last decade or so, another major advance relating to the ground force designs is the development of Anti-Tank Guided Missile (ATGM) technology. Since a modern combat force is built around tanks and other armoured support vehicles, the possibility that a new kind of defensive technology could make tanks obsolete or to make them loose their pre-eminence on the battle-field would radically alter the ground warfare. A closer examination shows that while ATGM would seriously effect the tactics of any major tank-intensive force, they do not by themselves make armoured warfare obsolete. The concepts of employing combined arms will have to be modified since large numbers of inexpensively produced ATGM would make it prohibitive for tanks to be employed in classical modes of warfare. In order to overwhelm ATGM-biased defences, appropriate tactics of force concentration and battlefield preparation with artillery and air attacks will have to be evolved to support armoured assaults. The ATGM can make such assaults costly enough to deter an armoured offensive. As part of the continuing technical competition between the tanks and the ATGM, the

most effective ATGM must themselves be mounted on armoured vehicles which afford protection against a massive use of artillery. Such systems cost as much as the tanks. Therefore, buying such ATGM systems in quantity as a means to defeat armour is no less expensive than buying tanks in quantity to defeat such an attack.

In the recent years, there has been a tremendous increase in the aircraft's attack potential. Precision Guided Munitions (PGM) mounted on aircraft with increased weapons load, range, speed, and target acquisition means, can attack targets with greater accuracy, effectiveness and economy. In response, the capability of ground-based air defence (AD) weapons systems has also improved greatly. The airforces cannot, therefore, operate in ground attack missions without first reducing the ground-based air defences in addition to their primary opposition -- the enemy's air force. This new development has led to a technical competition to develop effective stand-off weapon systems that can reach the ground targets beyond the effective ranges of the ground-based air defence systems. And to contribute to this action-reaction, the ground forces will be increasingly utilised to help in suppressing air defence in the combat zone by electronic or physical means. This entails specialized small-sized unit operations.

Military technology today has so many facets, spanning a diverse range of projects, wherein so much is being developed at such a fast rate, that an individual will find it extremely difficult to keep abreast, even superficially, of all the latest developments. The difficulty of coming to grips with the bewildering range and ever-increasing complexity of modern weapon systems is a major handicap for those who are not equipped with an understanding of science and yet wish to specialize in weapons technology. The days of the generalist, with only a nodding acquaintance with science and technology, are over. The offerings of military technology will contribute to the side which has the ability to assimilate, absorb and operationalise them.

A major change has brought about vast improvements in the guidance techniques. This has led to debates whether precision-guided weaponry has led to a new era in waging war, or has defence has gained an advantage in the conduct of battle, and so on. These questions are being tackled at various levels. The concept of SAM or ATGM armed infantryman whose small battle profile contributes to his survivability is being questioned. He has to be installed, revictualled and relieved. His position is detectable by improved surveillance techniques. Nevertheless, the attacker, when accosted with deep coherent, anti-tank and anti-aircraft systems, will find

his aerial and tank superiority offset to unacceptable levels in terms of cost and rates of attrition. This may compell the attacker to resort to tactical nuclear weapons to take out large sections of the defended sector so as to progress the course of his offensive. For such reasons the Western as well as the Russian military equipment is designed to operate in the nuclear, biological and chemical warfare environment. An environment which is not likely to develop in South Asia for some time to come.

On the technical level, there is still scope for improving the survivability of tanks and aircraft. These can, in conjunction with other support systems like terminally guided artillery, electronic counter measures and detection devices, give the attacker an advantage of choosing his attack paths and launching an offensive by a series of 'punches' launched over a wide area, instead of a concentrated attack.

The economic aspects reveal an interesting tendency in the technologically developed countires. They no longer optimise weapon systems on the basis of technical feasibilities alone; but a greater consideration has begun to be given to the quantity of equipment that can be financed, built or sold. Never have military technology developed so fast, calling for large teams of specialists, facilities and complex development stages.

On the political level, the smaller regional powers, on acquisition of sophisticated equipment like the PGMs, will gain reckonable potential, and consequently, relative immunity from pressures. The military-industrial eminence of the major regional powers may not be of significant advantage in a short intense conflict. The cost of the offensive may well rise beyond the identified political objectives, leading to more cautious calculations in planning military solutions. On the other hand, the speed and accuracy of new weaponry will add to the initiative of the attacker's pre-emptive strikes, thus compelling a high state of readiness. On the sub-continent, Pakistan will be a relative gainer as compared to India, since it will be able to compensate for its numerical weakness in armour and aircraft. Tanks and aircraft are at a premium on the world's arms market. China, which has been Pakistan's major single source of tanks and aircraft, has not been able to supply the latter ever since the PLA got preoccupied with its mechanization. As late as May 1980, President Zia visited Peking with the hope of obtaining significant new equipment for the airforce and augumenting his armour strength. Although the Chinese agreed to sell tanks, but the terms were altered drastically. They put up prices by about 150 per cent, on par with the European prices, and payment was demanded in cash instead of earlier interest-free credit arrangements.[4]

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4 G. Jacob, "Pakistan-India Comparison of Military Power", op.cit., p.29.

In any case, new military technology will lead to a greater dependency of the regional powers on the technological superiority of the Super Powers for an entirely new range of weaponry. According to Professor Stephen Cohen, "the introduction of PGMs in South Asian region is part of a broad technical military revolution. It is difficult to predict how it will turn out and whether PGMs and other new weapons may not make it more difficult to achieve a reduction in arms, a pull back of forces, etc."[5]

The new arms race is going to exert pressure on the regional powers which will enable the Super Powers to perpetuate their influence. India, with a comparatively broader scientific base, is in a position to bypass the intermediate stages of technological development. This would be a useful investment particularly in those areas which have spin offs in the civilian sectors.

Concept of a Credible Deterrent

The conventional war of the future would become prohibitively expensive in terms of material and manpower losses, thus raising the cost of intervention for the developing countries as compared to the weapon supplier states. Even nations like China, India and Pakistan, with

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5 Stephen P. Cohen, "Prospects in South Asia", Times of India, (New Delhi, 20 December 1982) p.8.

their middle-level scientific potential, are unlikely to master the new techniques of war without massive technological investments in manpower and material. The continued developments and refinements in the equipment and the methods might show diminishing returns on the battlefield, as the technical demands on the individuals begin to approach the limits of their abilities, especially at the lower levels, if lacking in technical expertise. Alternatively, surgical strikes at the nerve centres in the India-Pakistan context may lead to results beyond the proportionate efforts. As a consequence, it would require a high state of equipment and manpower readiness.

The higher attrition rates and the escalating cost of weaponry will necessitate an expensive weapon systems inventory. This in turn has created the concept of short-intense wars. The concept may prove hazardous, in that, the outcome may be influenced by small mistakes in planning assumptions about the duration and attrition rates of the conflict. Since military events rarely go as planned, there is a need to develop a capability for an extended conflict. The prospect of a long, inconclusive, escalating war, will by itself deter the potential aggressor.

It is commonly believed that India will be involved in a short swift war, a belief created by the Indian experiences

of the wars fought by it since independence. There are three kinds of compulsions leading to early culmination of conflict. The first constraint is imposed by the inability of national military-industrial infrastructure to sustain long war. But, with indigenous economic resource or Super Power support to replace equipment losses, wars can be prolonged. For example, the Iran-Iraq war gets animated as and when equipment losses of the contending parties are made up; and the North Vietnamese sustained a long war with Soviet equipment support. Secondly, the Super Power pressure is built up to prevent reduction or collapse of the politico-military viability of their clients to a level where their regional influences would get reduced drastically. For example, failure of American and Soviet efforts to bring to an end the Indo-Pakistan conflict of 1965 would have further strengthened the Chinese position on the sub-continent. And thirdly, an early culmination of conflict results due to achievement of politico-military objectives. The Sino-Indian conflict of 1962 and the Indo-Pakistan War of 1971 are good examples of such a termination. Notwithstanding the foregoing, there can be contingencies of Super Power indifference stemming from a common desire to pare down Chinese and Indian strengths. The conflict in the mountains may get prolonged due to the time-consuming nature of operations andslow rates of attrition. Thus there is a likelihood of a near stalemate. Can one,

therefore, always choose to scale one's war reserves on short war pattern? Wars are thrust on nations if not initiated by them; nations cannot choose the duration of wars either.

The choice between planning for a long or short war is governed by the pattern of war itself. As modern weaponry is capable of producing high rates of attrition, the time available for a military solution is limited by the level of stocks and the rate of their depletion. One has to take note of the fact that, more often than not, battles and wars invariably tend to take longer than what they are planned for. Besides, it is no advantage to merely possess highly advanced weapon systems if they are insufficient in quantity to turn the tide against the large inventories of relatively inferior weapons. In the context of the changes in the United States 'defence planners' opinion, Seymour Deitchman has observed that,"recognising the potentially high rates of attrition that are likely to characterise wars using modern weapons (as demonstrated in 1973 Arab Israeli War)", a major conventional war in Europe is going to be a short one, and large inventories of modern expensive weapon systems are not needed. This policy may be vulnerable to the other sides option, if it wishes to make the commitment, to put by enough to prevail, when one side, having been more frugal,

runs out of weapons and ammunition.[6] As a consequence, defence planners are now planning for a more sustained fighting capability than had been thought necessary a short while ago.

In this regard Indian planners have to take note of the fact that although Pakistan lacks its own military industrial infrastructure for maintaining large stocks, but it can always procure sufficient stocks from friendly countries, as a one-time measure, to outlast those of India's.And these procurements will be of the state-of-the-art equipment which can be easily procured should it desire to initiate a military solution. India, on the other hand, due to its indigenisation policy, will find it cost-prohibitive to maintain large stocks, and at the same time, pursue the objective of generational turnover of equipment. Against China, the stocking policy will have to cater for the diverse requirements of slow attrition rates in the mountains and a longer duration expected of the conflict. And when weaponry which is optimised for the mechanized warfare in the plains or for the mountain warfare is added to the Indian inventory in larger numbers, the problem would get further exacerbated.

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6 Seymour J. Dietchman, New Technology and Military Power - General Purpose Forces for the 1980s and Beyond (Colorado, 1979), p.221.

In order to identify the level of war stocks, it would be necessary to understand the problems and the time required to mobilise the national military industrial base. It may be assumed arbitarily that Indian forces are required to be scaled for war stocks for two months. And if this period is too short a time for the spare capacity to build up to the required levels, then the country will need to evolve a graduated war mobilisation policy. It would then be necessary for Indian diplomacy to ensure a longer pre-war tension period, in which the mobilisation of spare capacities could be effected.

On the other hand, preparation of a long war capability would reduce the risks attending an exclusive short war strategy. It would not only add flexibility to force deployments but would provide diplomatic leverage as well. There is no doubt that it will add to the defence burden. To a cost-conscious legislature and defence planners, such investments will not find favour as against the requirements of a short intensive war with modern weaponry; but such investments would guard against uncertainity.

Management of Modern Technology: Bureaucracy or Technocracy?

We can thus conclude that technological diversity has become too complex for a generalist organization to handle.

To enable the armed forces to get their priorities right within the allocated resources, more scientific management methods will have to be adopted. A military technocracy will have to be shaped to identify optimised methods and advantages from the technological diversity of the present for the uncertain future. The spectrum of conflicts, which has widened during the last three decades, ranging from terrorism to total war, requires to be handled by an enlightened military leadership. Recent developments in military technology and decision-making techniques have blurred the distances between designers, maintainers, and users.

The cost of acquisition and operation of the increasingly complex variety of weapon systems can be controlled by better personnel and equipment management. The military management in the country is still traditional in the sense that there have not been much improvements in the techniques inherited from the British military institutions. A greater weightage is given to personalised rather than institutionalised methods for control. Modern management methods enable sound decision-making when confronted by different choices, variable inputs and results.

Modern technology and its cost has generated a sense of managerial inadequacies; as a result, decisions get delayed instead of being analysed meaningfully. Should new technology

be used to reduce costs or increase the performance? Should the armed forces go in for large quantities of fewer weapon systems or a variety of dedicated weapon systems optimised for each role. These are some of the decisions which cannot be made without an informed discussion at various levels. A methodology has to be evolved for the utilization of collective wisdom, knowledge and experience at all decision-making levels, without impinging on the prerogatives of the commander or causing delays in the process.

Given the variety and the overwhelming scale of options likely to be available across the whole military field, it would require the development of scientific analysis of the decision-making process along the chain of Command. Operational Analysis for coordination of weapons effectiveness in various combat situations, Systems Analysis for the examination of cost effective alternatives, Force Design Studies to probe a variety of organizations and equipment methods, Strategic Studies for the major policy problems involving military, political, economic and technological considerations. All these techniques of analysis will greatly enhance the accuracy and reliability of conclusions.

In the field of military R&D, staff officers are not able to originate new weapon systems as they are too engrossed in ensuring optimum utilisation of the existing systems. New

equipment is generally the consequence of innovative thinking during project studies and design level. Those with an understanding of the requirements of military operations and understand the technical environment are most suited for military R&D. It is from such backgrounds that a strategic analyst is thrown up. Military training and experience by itself involve implementation of strategic plans rather than the generation of new ideas. Professional knowledge, technical proficiency, careful attention to detail, stamina, and other leadership qualities required of a successful military leader may be lacking in the strategic analyst. He has to be an intellectual, may be of another background, an economist, a scientist, or an international relations specialist. A strategist has to deal with incomplete information and uncertainities which cannot be measured by statistical procedures. He must, however, understand technology, although he need not be and preferably should not be a technologist as technologists have an overpowering orientation towards their own speciality. But at the same time there is a need to understand what the technologists are talking about. It calls for an ability to balance the realistic attitude of the engineer with the visionary attempts of the scientist. And finally, the most important requirement is to communicate effectively with the political analyst and military operations specialists. It requires an understanding of not only strategy but of war! As Clemenceau said, war is too important

to be left to the generals. If the strategic analyst has to be involved in areas wider in scope than the generals are, then he must be able to visualise the character of the next war, and not merely its political context and complexion. It requires an ability to identify technological initiatives and translate them into decisive military advantage -- and this is an ongoing process. The question is, how does the military establishment create an environment for scientific analysis if the establishment itself does not acquire a technical complexion. Does it call for a technical orientation of the military bureaucracy?

The standards required of the armed forces like India's, which has to confront a professional, technically well-supported and determined adversary, are anything but what is available today. What is needed is a widely disseminated capability to improve, innovate and improvise systems. An accurate decision-making methodology requires uniformly high educational levels. It will need a mental equipment and training for different kinds of situations and opportunities. Inspite of their competence to operate quickly and methodically, military leaders will have to deal with situations where standard operating procedures and doctrinal tactics may be dangerously uncertain. Notwithstanding the potential of the military leaders, it is necessary to maintain closest contacts between the military planning staff and the defence scientists and

engineers. All this will necessitate the reshaping of the military bureaucracy into a technocracy.

For a military leader today, mere traditional education in leadership and professional military knowledge is not enough. He has got to be a technologist, and a top class personnel and materials manager. Skills in computer-aided management and work study are as important as knowledge of pure sciences. Since military officers have to fulfil their professional obligations, they cannot possibly be turned into scientists, and neither is it desireable, because it will create a different intellectual grouping from those engaged in study of strategic and tactical problems. What is required is increasing the emphasis on scientific education and military technology, and then developing specialists from amongst the selected officers. The aim should be to create a multi-disciplinary meeting of the minds, instead of creating different backgrounds with different languages and problems. The problem can be tackled by offering appropriate courses on military problems at various institutes of technology and at the universities. Similarly, specialised courses could also be offered in the service schools to the scientist or academic researcher who wants to qualify as military analyst or advisor. There is a need for the military to open its windows. Organizations grow if there is cross-fertilisation of ideas and not by insulating them from indigenous intellectual development.

In the conditions of tomorrow, the military manager will have to be as sophisticated as any specialist in understanding the technological, political and economic compulsions attending the application of the military instrument. If the Indian armed forces have to maintain the advantage of technical preparation that Gavin Kennedy observed, then the force has to be designed in a technical culture.

Appendix I

ABILITY TO MANUFACTURE WEAPONS CHINA AND INDIA, 1979 (SELECTED ITEMS)

Item	China	India	
Space and nuclear			
Nuclear weapons	+	?	
Missiles	+		India has SRBM & MRBM capacity; and IRBM capability in inception stage
Air			
Aircraft:			
Bombers	+		India has decided not to produce bombers. China is not producing them anymore.
Supersonic fighter bombers	+	+	
Subsonic fighter bombers	+	+	
Transport	+	+	
Trainer	+	+	
Helicopter	+	+	
Aircraft missiles	+	+	
Ground			
Tanks/armoured vehicles	+	+	
Guns/artillery/field pieces (radar-controlled and others)	+	+	
Antitank missiles	+	+	
Infantry weapons (rifles, mortars, machine guns, etc.)	+	+	
Heavy trucks	+	+	
Jeeps and patrol wagons	+	+	
Ground support equipment (all varieties)	+	+	
Sea/under sea			
Submarines	+	+	Indian production to begin soon.
Destroyers	+	+	
Missile-carrying boats	+	+	
Fast patrol boats	+	+	
Miscellaneous			
Defense radar	+	+	
Electronics for defense (man-pack transmitters, tracking equipment, etc.)	+	+	

Source: Jonathan D. Pollack, op.cit., p.120.

Appendix II

COMPARATIVE GROWTH IN SELF-SUFFICIENCY LEVELS: INDIA AND ISRAEL 1968-78

	1968	1978	
I N D I A			
Aircraft	4	3	More advanced airframes licence built, less advanced and simple airframes home designed Engines licence built, Armament Avionics licence built/imported.
Helicopter	6	4	Airframes & engines licence built.
Tanks	6	4	Chassis, engines, guns licence built but many tanks still imported.
Ships	6	4	Large hulls built to own design Engines electronics armament imported.
I S R A E L			
Aircraft	5	3	Airframes home designed. Engines imported or licence built. Some armaments and avionics imported. Some aircraft exported many imported.
Tanks	5	2/3	Chassis, guns home designed. Engines and some electronics imported.
Ships	8	3	Hulls home designed, Engines imported, armaments and electronics are locally built and imported. Some ships exported.

Source: IISS, Military Balance, 1979-80, p.101.

Appendix III

THE ACCELERATING PACE OF WARFARE: AN ILLUSTRATION

A: Air-to-Air Warfare - Exchange Ratio = 5[a]

	Friendly Force Parameters[b]		Outcome
World War II (later stages)	Number of Aircraft	100	
	Probability of detecting enemy	.2	
	Probability of engaging	.5	Half-life[d] of friendly force: 19 mos.
	Probability of kill[c]	.1	Time to kill 100 enemy aircraft: 6 mos.
	Sorties per day	.6	
	Losses per sortie	.002	
1970s	Number of Aircraft	100	
	Probability of detecting enemy	.8	
	Probability of engaging	.5	Half-life of friendly force: 7 days
	Probability of kill	.5	Time to kill 100 enemy aircraft: 2¼ days
	Sorties per day	2.5	
	Losses per sortie	.04	

B: Air-to-Ground Warfare - Exchange Ratio = 100[a]

	Friendly Force Parameters[b]		Outcome
World War II	Number of Aircraft	100	
	Vehicle kills per sortie[c,e]	.5	Half-life of friendly aircraft force: 8 mos.
	Sorties per day	.6	Time to kill 1000 vehicles: 35 days.
	Losses per sortie	.005	
1970s	Number of Aircraft	100	
	Vehicle kills per sortie	3	Half-life of friendly aircraft force: 9 days.
	Sorties per day	2.5	Time to kill 1000 vehicles: 1½ days.
	Losses per sortie	.03	

a) Enemy aircraft killed per friendly aircraft lost, or enemy vehicles killed per friendly aircraft lost; taken as constant over time in each case as a surrogate for constant different in weapon quality.
b) Typical values, assumed for purposes of illustration.
c) "Kill" means damage or destroy, throughout.
d) Time for the force to be reduced by half.
e) Includes bombing and strafing of "soft" and "hard" vehicles; includes all detection and attack probabilities.

Source: Seymour Deitchman, op.cit., p. 58.

SELECT BIBLIOGRAPHY

I Primary Sources

Government of India, Ministry of Defence, Glimpses of Defence Research in India (New Delhi: Government of India Press, 1983).

_____, Defence Service Estimates (New Delhi: Government of India Press, Annual Estimates for the period 1972-83).

_____, Annual Reports (New Delhi: Government of India Press, Annual Reports to the Parliament for the period 1960 to 1982.

Her Majesty's Government, Secretary of State for Defence, The Falklands Campaign (London: Her Majesty's Stationery Office, December 1982).

United States Congress, Committee on Foreign Relations, The Implications of US-China Military Cooperation (Washington, D.C.: US Government Printing Office, A Workshop Report, 1982).

United States, Department of Defence, Soviet Military Power (Washington, D.C.: US Government Printing Office, 1981).

II Secondary Sources

a) Books

Bajpai, U.S., India's Security: The Politico Strategic Environment (New Delhi: Lancer Publishers, 1983).

Barnaby, Frank, and Huisken, Ronald, Arms Uncontrolled (Cambridge: Harvard University Press, 1975).

Barton, H. John, and Imai, Ryukichi, et al, Arms Control II (Cambridge: Oclyeschlager, Gunn & Hain Publishers, 1981).

Beaumont, R.A., et al, War in the Next Decade (London: Macmillan Press, 1975).

Bhagat, P.S., Forging the Shield (Allahabad: Chanakya Publishing House, 1969).

Bhutto, Z.A., If I am Assasinated (New Delhi: Vikas Publishers, 1978).

Bonds, Ray, et al, The Chinese War Machine (London: Salamander Books Ltd, 1980).

Chaudhuri, J.N., India's Problem of National Security in the 1970's (New Delhi: United Services Institution of India, 1973).

Cheema, Parvaiz Iqbal, Conflict and Cooperation in the Indian Ocean: Pakistan's Interests and Choices (Canberra: Canberra Papers No.23, 1983).

Cohen P. Stephen, Security Decision Making in Pakistan (Report for Office of External Research, USA: Department of State, September 1980).

Corr, H. Gerald, The Chinese Red Army (London: Osprey Publishing Ltd., 1974).

Dickson, Paul, Electronic Battlefield (London: Marion Boyars, 1976).

Deitchman, Seymour, New Technology and Military Power: General Purpose Forces for the 1980s and Beyond (Colorado: Westview Press, 1979).

Fukuyama, Francis, The Security of Pakistan: A Trip Report (Santa Monica: RAND Corporation, Rand Note, N-1514-RC, September 1980).

Hanning, Hugh, Peaceful Uses of Military Forces (New York: Praeger Publishers, 1967).

Harkavy, E. Robert, Arms Trade and International Systems, (Cambridge: Ballinger Publishing Co., 1975).

Janowitz, Morris, Military Institutions and Coercion in Developing Countries (Chicago: University of Chicago Press, 1977).

Kaldor, Mary, et al, The World Military Order (London: MacMillen Press Ltd., 1979).

Kaul, R., India's Strategic Spectrum (Allahabad: Chanakya Publishing House, 1969).

Kavic, Lorne, India's Quest for Security (Los Angeles: University of California Press, 1967).

Kennedy, Gavin, The Military in the Third World (London: Duckworth, 1974).

Khan, Fazal Maqeem, Pakistan's Crisis in Leadership (Islamabad: National Book Foundation, 1973).

Khera, S.S., India's Defence Problem (Bombay: Orient Longman, 1968).

Khruschev, Nikita, Khruschev Remembers - The Final Testament Translation by Strobe Talbot (Boston: Little Brown, 1974).

Marwah, Onkar and Pollack, Jonathan, ed., Military Power and Policy in Asian States: China, India, Japan (Colorado: Westview Press, 1980).

Maxwell, Neville, India's China War (Bombay: Jaico Publishing House, 1971).

Musa, Mohammed, My Version (Lahore: Wafidalis, 1983).

Nelsen, W. Harvey, The Chinese Military System (Colorado: Westview Press, 1977).

Neumann, G. Stephanie, and Harkavy, E. Robert, et al, Arms Transfer in the Modern World (New York: Praeger Publishers, 1979).

Patel, H.M., The Defence of India (Bombay: Asia Publishing House, 1963).

Pearton, Maurice, Knowledgeable State (London: Burnett Books, 1982).

Possony, T. Stefan, and Pournell, J.E., The Strategy of Technology (Massachusetts: University Press of Cambridge, 1970).

Rahman, M. Attiqur, Our Defence Cause (London: White Lion Publishers, 1976).

Rao, P.V.R., Defence Without Drift, (Bombay: Popular Prakashan, 1970).

_____, India's Defence Policy and Organization Since Independence (New Delhi: United Services Institution, 1977).

Sinha, S.K., Of Matters Military (New Delhi: Vision Books, 1980).

Stockholm International Peace Research Institute (SIPRI), Year Book, 1980 (London: Taylor & Francis Ltd., 1980).

_____, Arms Trade With the Third World (New York: Humanities Press, 1971).

Subrahmanyam, K., Struggle for Disarmament (New Delhi: Institute of Defence Studies & Analyses, 1982).

Tariq, Ali, Can Pakistan Survive? (London: Penguin Books, 1983).

Thomas, Raju, The Defence of India (Delhi: The Macmillan Company of India Ltd., 1978).

United States Defence Intelligence Agency Handbook, The Chinese Armed Forces Today (London: Arms and Armour Press Ltd., 1979).

Welch, Claude, ed., Civilian Control of the Military (Albany: State University of New York Press, 1976).

Wolfe, J.N., et al, The Armed Services and Society, Alienation, Management, Integration (Edinburgh: Edinburgh University Press, 1972).

Whynes, David, Economics of Third World Military Expenditure (London: MacMillan Press, 1979).

b) Articles

Alexevey, N., "Scientific and Technical Progress and the Armed Forces", Soviet Military Review (Moscow), February 1979, pp.2-7.

Barry, Bernard, "The Response of Organizations to Change" RUSI (Journal of Royal United Service Institution of Defence Studies, London), December 1975, pp.33-40.

Bates, E., Jr., "National Technical Means of Verification" RUSI (London), June 1974, pp.63-70.

Bhargava, G.S., "India's Security in the 1980s", Adelphi Paper No.125 (International Institute of Strategic Studies, London), 1976, pp.1-30.

Bigelman, Paul, "Force Designs for the Future", Army (Association of the United States Army, Washington D.C.), June 1981, pp.22-33.

Bordewich, M. Fergus, "Pakistan Army: Sword of Islam", Strategic Digest, vol.xiii, no.3 (Institute of Defence Studies and Analyses, New Delhi), March 1983, pp.170-79.

Braune, H.J., "Modern Air Defence Systems", Military Technology & Economics, no.5 (Monch Publishing Group, Bonn), 1979, pp.27-33.

Burt, Richard, "New Weapons Technology: Debate and Directions", Adelphi Papers No.126 (London), 1976, pp.1-28.

Cordesman, Anthony, "Lessons of the Iran-Iraq War: Tactics Technology and Training", Strategic Digest, vol.xiii, no.3 (New Delhi), July 1982, pp.383-95.

Dev, Atul, "India's Harmed Forces", Gentleman, vol.iii, no.2 (Bombay), April 1982, pp.23-30.

Eliot, Christian, "Conventional Armaments for Combat Aircraft", Military Technology & Economics, no.11 (Bonn), 1980, pp.117-19.

Epstein, Charles, "Precision Guided Munitions: A Perspective", Strategic Digest, vol.xiii, no.3 (New Delhi), March 1983, pp.180-83.

Furlong, R.D.M., and Sundaram, G.S., "India - Asian Power Broker of the 1980's?", (International Defence Review (Geneva), April 1981, pp.380-83.

Gupta, Amit, "Pakistan's Acquisition of Arms: Rationale, Quest and Implications for India", IDSA Journal, vol.xiv, no.3 (Institute of Defence Studies and Analyses), January-March 1982, pp.422-42.

Henderson, F.P., "The FMF: Alternative Future and How to Get There", The Marine Corps Gazette (Quantico, Virginia), July 1971, pp.18-48.

Hewish, Mark, "The Assault Breaker Programme", International Defence Review (Geneva), September 1982, pp.1207-15.

Issac, J.R., et al, "Computer Aids to Command and Control", USI Journal (United Services Institution of India, New Delhi), April-June 1976, pp.135-46.

International Institute of Strategic Studies, Military Balance (London, IISS), 1979-80 and 1982-83.

Jasani, Bhupendra, "Outer Space - Battlefield of Future", Chanakya Defence Annual (Chanakya Publishing House, Allahabad), 1979, pp.42-54.

Jayramu, P.S., "India's National Security and Foreign Policy During the Nehru Era", IDSA Journal (New Delhi), July-September 1981, pp.62-73.

Jacobs, G., "Sino-Vietnamese War 1979", Asian Defence Journal (Kuala Lumpur), March 1981, pp.4-13.

_____, "Pakistan's Defence: The Air Force", Asian Defence Journal (Kuala Lumpur), November 1981, pp.58-70.

_____, "Pakistan-India: Comparison of Military Power", Asian Defence Journal (Kuala Lumpur), March 1982, pp.28-34.

Jencks, H., "China's Punitive War", Asian Survey (University of California Press, Berkeley), August 1979, pp.801-15.

Joffe, Ellis, and Segal, Gerald, "The Chinese Army and Professionalism", Strategic Digest, vol.ix, no.5 (New Delhi), May 1979, pp.329-50.

Khan, Sawar, Lt.Gen., "Defence Technology", Defence Journal vol.ix, no.3 (Karachi), March 1983, pp.11-12.

Kapur, Ashok, "Military Situation in South Asia, Military Digest, no.82 (Army Headquarters, New Delhi), July 1969, pp.15-22.

Macmillen, H. Donald, "The Urumqui Military Region: Defence and Security in China's West", Asian Survey, vol.xxii, no.8 (Berkeley), August 1982, pp.705-13.

Marriot, John, "Anti-Tank Weapons", Military Technology & Economics, no.4 (Bonn), 1978, pp.66-72.

Masood, Talat, Maj.Gen., "Interview", Defence Journal, vol.ix, no.3 (Karachi), March 1983, pp.13-16.

Mitra, N., "India and its Neighbours", IDSA Journal, vol.xiv, no.3 (New Delhi), January-March 1982, pp.399-420.

Mukhopadhyaya, P., "RDF in Perspective", Strategic Analysis, vol.vi, no.7, (Institute of Defence Studies and Analyses, New Delhi), October 1982, pp.453-58.

Murty, T.S., "China's Claim to Arunachal", Strategic Analysis, vol.vi, no.10 (New Delhi), January 1983, pp.575-81.

_____, "Khunjerab Road Strategic Implications", Strategic Analysis (New Delhi), September 1982, pp.331-36.

_____, "Military Factor in Sino-Indian Talks", Strategic Analysis, vol.vi, no.12 (New Delhi), March 1983, pp.703-11.

Ragget, R.J., "Field Communications - To Sophistication onto ECCM", Military Technology & Economics, no.5 (Bonn), 1979, pp.49-55.

_____, "Tactical Data - A New Dimension in Communications", Military Technology & Economics, no.10 (Bonn), 1981, pp.43-47.

Raj, Christopher, "Weaponry in the Fifth Arab-Israeli Conflict", Strategic Analysis, vol.vi, no.5 (New Delhi), August 1982, pp.293-96.

Ramachandran, K.N., "Military Exercise in China", Strategic Analysis, vol.vi, no.5 (New Delhi), August 1982, pp.282-85.

Rao, Rama, "Pakistan's Higher Defence Organization", USI Journal (New Delhi), July-September 1976, pp.219-29.

Robins, Yves, "More Air Mobility on the Battlefield", Military Technology & Economics, no.14 (Bonn), 1980, pp.15-25.

Sawhny, Rathy, "India's Northern Borders", Chanakya Defence Annual (Allahabad), 1969, pp.178-93.

Sen, J., Lt.Col., "The Technical Education of Service Officer", USI Journal (New Delhi), October-December 1974, pp.401-12.

Shirin, Tahir, Kheli, and Staudenmeir, O.William, "Pak-Saudi Arms Link", Illustrated Weekly of India (Bombay), 5-11 September 1982, pp.8-11.

Sinha, P.B., "Gen.Yaqub Ali Khan's Visit to China", Strategic Analysis (New Delhi), June 1982, pp.169-71.

_____, "Military Modernization in Pakistan: Recent Developments", Strategic Analysis, vol.vi, no.12, (New Delhi), March 1983, pp.693-99.

Srivastava, H.K., "Future Service Officers - Necessity of Academic Education", USI Journal (New Delhi), January-March 1981, pp.23-41.

Sundaram, Gowri, "Military Electronics in Israel", International Defence Review (Geneva), January 1982, pp.59-66.

Subrahmanyam, K., "Pakistan's Credibility Gap", IDSA Journal, vol.xiv, no.1, (New Delhi), July-September 1981, pp.105-27.

_____, (ed.), "Struggle for Disarmament", Strategic Analysis, vol.vi, nos.1-2 (New Delhi), April-May 1982, pp.57-75.

Varma, Dhanjay, "Torture and Dishonour in the Armed Forces", India 2000, vol.i, no.3 (New Delhi), May 1983, pp.4-14.

Vohra, A.M., Lt.Gen., "National Security Perspective", USI Journal (New Delhi), July-September 1981, pp.215-21.

Young, P. Lewis, "The Chinese People Liberation Army Air Force - An Assessment", Asian Defence Journal (Kuala Lumpur), May 1981, pp.7-18.

c) Reports

Pakistan : "Facts and Figures on National Defence", Military Technology & Economics (Bonn), 1980, pp.128-36.

"Pakistan Ordnance Factories", Defence Journal, vol.ix, no.3, (Karachi), March 1983, pp.29-40.

"Landmines and Counter-measures", Military Technology & Economics, no.14 (Bonn), 1980, pp.37-41.

"Spying by Satellite", Asian Defence Journal (Kuala Lumpur), January 1981, pp.22-23.

"Battle Tank Designs: Some Thoughts for the Future", International Defence Review (Geneva), February 1982, pp.171-76.

"The Border Security Force", Chanakya Defence Annual (Allahabad), 1972, pp.129-37.

"Why Are We Unfair to our Armed Forces", Illustrated Weekly of India (Bombay), 20 March 1983, pp.8-12.

"The Message from Moscow", India Today, vol.viii, no.15, (New Delhi), 1-15 August 1983, pp.41-42.

"Indian Ocean Change of Command", India Today (New Delhi), 16-31 March 1983, p.93.

d) Newspapers

Indian Express

The Hindustan Times

Times of India