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## **CAPABILITY BASED FORCE STRUCTURES FOR INDIA**

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By

Maj Gen G D Bakshi SM, VSM (retd)

Force Structuring can be done in two ways – Threat based or Capability based. Traditionally, Indian Force structures have generally been premised upon a threat-based analysis in the post-independence period. Indian Military history, however, can be studied in terms of the three local Revolutions in Military Affairs (RMAs) that ushered in very major changes in the socio-political realm. In fact South Asia has largely been a civilisational and not a political entity. There were only three episodes of unification in its 5000 year long history. The three unifications of South Asia were in fact effected by local RMAs that replaced the attrition mindset with a manoeuvrist orientation. These three RMAs ushered in significant changes in the Indian political and economic spheres. The three RMAs were:-

- **The Elephant Based RMA of the Mauryans.** This unified India in the wake of Alexander's invasion. Kautilya in fact first unified India from Afghanistan and Baluchistan frontier regions down to Karnataka. He achieved this by using War elephants in the mass to generate "Shock and Awe" and usher in unprecedented rates of mobility in all types of terrain. He was a master of Information warfare. The Kautilyan Paradigm provides the essence of an Indian Strategic culture that has tended to persist over the millenniums and reasserted itself whenever India became a unified entity.

- **The Cavalry, Field Artillery and Musket based RMA of the Mughals.** This unified India under the Mughal Empire by an intelligent combination of Horsed Archers, Field Artillery and Muskets. The artillery and muskets terrified the war elephants of Ibrahim Lodhi's Army; and created a paradigm shift in the nature of warfare in South Asia. For the second time the South Asian economy was monetized under Akbar. The economic device of Feudalism and military urbanism served to finance a massive Mughal Army of some 350,000-400,000 horsemen and over two million Infantry. This was Akbar's solution to suck out the four million pool of the military labour market free floating in India during the Mughal era itself.

- **The Infantry based RMA of the British.** This RMA was based upon the introduction of European-style well-drilled infantry battalions, that could fire a thousand shots a minute. This infantry routed the Mughal style Cavalry and laid the foundations of the British Empire in South Asia. India became a crown colony and an efficient civilian bureaucracy sucked out the resources of India for the industrialization of Great Britain. The Present Indian Republic is a direct successor entity of the British Empire in India and also traces its origin to the Mauryan and Mughal unifications of India.

#### **Generating the Fourth RMA.**

- *Any restructuring of the Indian Armed Forces must therefore aim at generating a Fourth RMA in South Asia by fielding over-matching military capabilities in this region in relation to local or likely adversaries. Such a restructuring would therefore have to be capability and not threat driven. Today the time and economic conditions*

*are ripe for India to generate a fourth RMA in South Asia. Only then can it hope to decisively influence the course of events and shape the unfolding of history in the sub-continent.* Today India has the economic strength to generate precisely such an RMA in South Asian terms. What it must now display is the political will and vision to guide the process of change in South Asia and not simply be buffeted along by rapidly changing circumstances. *India has to transit from a purely threat based military buildup to a capability based build up. India will have to identify the military capabilities it needs to generate a local RMA against its likely adversaries.* Such an RMA alone will enable it to gain a decisive conventional military edge that can deter and if needed defeat its adversaries. The amazing fact is that so far Pakistan has, by and large, led the process of the introduction of military technology in South Asia (it was the first to introduce supersonic aircraft-F-104 Star-fighters and later the F-16 class, Post world War II era tanks like the Pattons, 155mm Self –Propelled Artillery and Air Independent Propulsion Submarines etc).This largely occurred because of its alliance with the USA and the primacy of the Pakistan Army in security matters in that state. However the time has now come for India to introduce the Fourth RMA in South Asia and *rapidly field dominant war fighting capabilities.*

#### **- The Fourth RMA**

India can change the course of history in South Asia and order the pace of events only if it can generate a fourth RMA in the Sub continent. What would be the essentials of such an RMA? On what would it be premised? Would it be an RMA based on technological innovation or on Doctrine or on a path-breaking revamp of military organisations? Would it result from a combination of all three? At the Global Level – the current RMA has been initiated by a massive quantum Jump in the lethality and precision of Air Power. In World War II the CEP of the gravity bombs

dropped was to the tune of 3,000 feet or more- hence, the need for mass armadas of bombers for carpet bombing. Precision navigation with the help of GPS based systems and accurate strike by Precision Guided Munitions has created a quantum Jump in the lethality of air power. Radar had forced attacking planes to fly low to evade radar detection. The 1973 Yom Kippur War demonstrated the massive increase in the lethality of shoulder fired surface to Air Missiles and rapid firing Air Defense Artillery Systems like the Schilka (ZSU-23). These decimated the Israeli Air Force as it tried to intervene in the battle with Egypt and Syria in the Yom Kippur War. By 1982 (within one decade) the solution had been found. The Americans had developed the F-15 and F-16 class of Air superiority/ Multi-role Combat aircraft based upon the very extensive experience of air combat gained in the Vietnam War. They had developed Air Borne Warning and Control Aircraft (AWACs) that could fly Synthetic Aperture Radars on the own side of the border and pick up enemy fighters as they took off from their air fields 3-400 kms away. The Israelis used this combination to devastating effect against the Syrian Air Force in 1982 over Lebanon. The Americans had also developed the A-10 Warthog for dedicated Close Air-Support (CAS) missions- also based upon the experience gained in Vietnam. The technological solution therefore came in the form of the highly advanced F-15/16 class of Air superiority fighters in combination with A-10 Ground Attack fighters in tandem with a revolution in Transparency. The RMA really provided a global telematic-spectacle in Gulf War I. The Coalition Aircraft launched all attacks from the mid and high altitude. They used Tomahawk cruise missiles and Precision Guided Munitions (PGMs) to overcome the loss of accuracy due to altitude.

- However only 7.3 percent of the ordnance used in Gulf War I war was Precision Guided Munitions (PGMs). The rest were plain gravity bombs.

- This proportion improved much further in Kosovo (35%) and then in Afghanistan (60%).
- It reached a peak in Gulf War II (70%) as GPS guidance kits were strapped to normal Gravity bombs in a big way.
- Surveillance Satellites, AWACs and UAVs were able to look deep and acquire targets in enemy depth areas. PGMs enabled them to be attacked with pin point accuracy. Col John Warden tested his theories of “inside out attack” in Iraq. Air Power had once again become the key to victory. The new RMA was based upon this transparency and Air Power revolution.

Can India generate this RMA in South Asia? India has inducted sophisticated fourth generation fighters like the Mirage-2000, Mig-29 and the SU-30. It has just introduced the Israeli AWACs (mounted on a high endurance IL-76 platform). Pakistan is desperately trying to catch up by purchasing Swedish AWACs, F-16 fighters and Chinese Fourth Generation JF-17 (copies/variants of Mig- 29). India has a quantitative and qualitative edge vis a vis the Pak Air Force. It will have to be widened rapidly if an RMA type impact has to be created. India has launched spy satellites and acquired Israeli Aerostats and UAVs. *India has a definite transparency edge but not of a “revolution” standard.* The prime focus area therefore has to be on an accretion of Airpower.

- India needs a 60 Squadron Air Force with a good mix of 4<sup>th</sup> and 5<sup>th</sup> Generation fighters that can deliver 60-70 percent PGM type ordinance instead of gravity bombs from the mid and high altitudes.
- The IAF will have to go in for two classes of aircraft .4<sup>th</sup>/5<sup>th</sup> Generation (SU- 30, Mirage 2000/Rafaele or US/European equivalents, the Mig-29/35 and Fifth Generation fighters being jointly developed with Russia) will be needed for the Air superiority and MRCA role.
- In addition it will need the A-10 equivalent dedicated Ground attack aircraft. Trainer Aircraft like the Hawk can double for this role immediately and India could try and produce its own variants in large numbers to affect the surface battles in a meaningful way. The attack will have to be from beyond the shoulder fired SAM envelope. There is a need for a custom built Ground- Attack aircraft that is slower and relies more on stealth and Titanium armour protection and suppression of enemy air-defences to carry out attacks (if needed from the low level also). In the operations in Chechnya, the Russians had also felt the need for such a Titanium hulled aircraft for close air support. Future LCA versions should also aim to address this requirement.
- Once a favourable air situation has been gained, the simpler dedicated ground attack aircraft must be used to exploit it with GPS guidance based ordinance.
- *The Satellites, AWACs, Aerostats and UAVs would generate the transparency revolution. The Fourth/Fifth Generation fleet of MRCAs/ Air Superiority fighters would exploit it and the dedicated Ground Attack Aircraft would convert it to victory in surface combat by massing effects.*

- India has to think beyond Pakistan. The main air threat now is from China. China purchased Russian Mig-29s and SU-27s. It reverse engineered them and is now mass producing the JF-10 and J-11 and working feverishly to develop its own Fifth Generation fighter. The quality of this indigenous fighter fleet is yet to be tested in combat. China is encountering problems in ingesting Russian technology. The break in Sino-Soviet cooperation after the Korean War had added to this problem. To that extent India has absorbed Soviet/Russian military technology in a much better way. While China after Tiananmen had to suffer military technology sanctions, India has been better placed to, buy Israeli, French, British and American systems in addition to the bulk purchases of Russian military hardware. Indians have been able to innovate and mate Western software with Russian hardware/platforms.

India, however, has failed so far to make a break through in indigenous design and development of its own aircraft. The HF-24 project was aborted for lack of a suitable engine. The LCA is encountering similar problems and time and cost overruns. The GE -404 engines are now being purchased to power the LCA even as we struggle with the Kaveri engines. *However there is a strong need to persist. India will have to indigenise its capital arms manufacture.* The only answer is to tap the vibrant and innovative Private Sector. Only then will India be able to nurture talent and attract it to these projects with suitable remunerations. The Soviets had many competing design Bureaus. India must similarly encourage competition between its various Public Sector Defense Enterprises as also with and amongst the Private sector to ensure the value engineering of the product. To get our Private Sector seriously involved in creating a worthwhile Military-Industrial base, we need to raise the FDI cap from 26% to upto 49%. With the USA the

purchase process has revealed a lot of hurdles in the transfer of technology. India was never required to submit itself to so many stifling agreements while purchasing Russian, French or Israeli weaponry. It may be better to seek US assistance to build up a military-Industrial complex in our Private sector. It would be in American interests to build up Indian military capacities to countervail the power of a rising China. So far President Obama was trying to accommodate the rise of China. However China's recent assertiveness and aggression have forced him to rely on India. It is now a natural partnership. To be enduring, the Americans must facilitate the rise of Indian Military power in the 21<sup>st</sup> century even as Russia had done so in the decades of the 1970s and 80s. The pro-Pakistan mindsets of the Pentagon bureaucracy will have to be rapidly overcome. In investing too much in a failing state America must not put at risk its relationship with a rising power. The Obama visit has underscored this realization and laid the political basis for future military cooperation based on a mutuality of interest that is far more in tune with ground realities. The Military- ISI complex in Pakistan may fancy itself as the new Caliphate, but its locational advantage due to the ongoing war in Afghanistan is quite temporary and ephemeral and Pakistan is reaching the end of the road as far as its ability to sucker the rest of the world is concerned. In geo-economic terms this state is sinking and temporary transfusions cannot save it from the systemic chaos it has unleashed in the hope of destabilizing its neighbours. Reinforcing a failure is always a bad choice and the US change in perception is now more clearly visible than ever before. The US at best needs Pakistan for another four to five years till Afghanistan stabilizes.

### **Economic Empowerment to Generate RMAs**

A nation must empower itself economically if it wishes to generate and sustain an RMA. A huge Army needs the resources of a massive state. That was Kautilya's primary

dictum. Post independence, India has unconsciously followed this Kautilyan Paradigm. India came into its own by 1970 when the First Green Revolution gave it Food Security. The Soviets subsidized India's military capital stock in a very major way. Post-1962, a decade long military build up enabled India to generate a decisive conventional military edge over Pakistan. This qualitative and quantitative edge was the cause of the brilliant military victory of 1971. In Indira Gandhi, India found a strong nationalist leader who was willing to use military force to further India's National interests. 1971 therefore marks the coming to age of the Indian Republic as a credible military power. The Soviet quasi-alliance however was the primary basis of that military power and impressive build up. The impressive scope and scale of the 1971 military victory established India's credentials as a significant regional power. (The Soviets had similarly subsidized the build up of the Egyptian and Syrian Armed forces, but all they could achieve was a stalemate in 1973). India thus displayed the managerial talent and strategic genius to wage a decisive conventional war which led to the creation of a new nation state with the force of arms.

The bane of the Indian economy has been its fossil fuel dependency. It imports up to 70 percent of its fossil fuel needs from the Middle East. This oil dependency is likely to grow up to 90 % within a decade. Fluctuations in the price of oil have had a major impact upon the Indian economy in the past. The oil shocks of 1973 and 1991 had derailed its economy and created major political crises. The first oil shock led to the Emergency and the decline of Indira Gandhi's centrist Congress Party. India carried out a peaceful Nuclear Explosion in 1974 but failed to follow through. By 1987 the sub continent had reached the level of recessed deterrence. By 1990 the Soviet Union was in precipitate decline. The oil glut of the late 1980s ruined its economy and the imperial overstretch of world wide competition with the West engendered the economic collapse of the Soviet Union. In grand -strategic terms this was a major strategic blow to India as it over night

evaporated the source of its subsidized arms build up. The Indian economy itself next reeled from the Second oil shock of the Gulf War and came perilously close to collapse.

India was forced to reinvent its economy and 13 years after China, set itself on the trajectory of accelerated economic growth through liberalisation. By 2006/07 it had achieved GDP rates of growth of close to 9% per annum. However so far, it has failed to translate its economic growth to usable military power commensurate with its regional or global aspirations. This enabled Pakistan to rent its territory, first for the CIA's anti-Soviet Jihad in Afghanistan and next for the GWOT (which it engendered). It reaped economic and military windfalls from the US and Chinese support which enabled it to gain nuclear and conventional military parity with India. Pakistan fully exploited this parity to launch an Asymmetric assault against India in 1989. For two decades it waged a Proxy War in J&K and then extended its Jihad to the cities of India, confident that India lacked a clear conventional and nuclear edge to be able to respond forcefully.

India has exercised deliberate restraint for over three decades and focused on its economic development. The Pakistani economy in the meantime has twice come to the point of collapse in the last ten years (1998 and 2008). Its persistent use of Jihad and asymmetric warfare has resulted in an indiscriminate weaponisation of its civil society. This unprecedented level of weaponisation has now made the State dysfunctional. Pakistan's patrons, the USA and China have pumped in/promised some 30 Billion dollars worth of aid to revive the Pakistani society and shore up the crumbling state in Pakistan. Pakistan's Military-ISI complex however is consumed with its need to compete with India militarily (both in nuclear and conventional terms). It is rapidly increasing its nuclear arsenal and going on a conventional arms purchase spree that could once more derail its economy. American pressures to vigorously pursue the GWOT are putting it

under serious systemic strains that could easily fragment its polity. The paradox is the truculence of its Military-ISI elite which continue to dream of a new Islamic Caliphate centered on Islamabad. They are confident the Americans will exit Afghanistan and leave their Taliban protégés in charge in Kabul. They are persisting with their war of a thousand cuts to bleed India to death. This irrational behavior could lead to more Mumbais and ultimately to serious conflict in South Asia.

How then can India generate a Fourth RMA?

- By major accretions in Air Power and transparency.
- By developing “Over the Hump” Air Assault capabilities that can be used across the Himalayas, in J&K and also for regional power projection.
- By using its Navy to project power along the Pakistani coastline to support Air-land offensives. *This calls for the development of an operational manoeuvre capability from the Sea. This translates into a viable Marine Capability of one to two divisions that is based on Amphibious Tanks/ICVs that can rapidly project power ashore in concert with major land offensives in the Desert Sector. To affect an RMA India needs to generate Over the Horizon (OTH) Beach assault capabilities using helicopters and Hover crafts (Air Cushion Vehicles). India must exploit the Sea Flank in any future conflict with Pakistan. A Turning manoeuvre from the Sea could unhinge Pakistan’s defences and lead to victory.*

### **Ground Forces**

- India needs to invest heavily in night fighting capabilities to increase the tempo and pace of its operations. The entire Tank fleet and Infantry Formations must

overcome their night blindness at a pace which can usher in a revolution in surface combat in South Asia. The investments will be limited but provide the highest payoffs.

- **Holding Ground by Firepower Instead of Manpower** In 1956 the Pak Army had transited to holding ground by firepower instead of manpower. As a result they hold the same length of ground with half the troops that India deploys. The American gifted Recce and Support Battalions enabled Pakistan to hold ground with firepower and release matching force levels for offensive operations. It is an amazing fact that the Indian Army has still not redressed this ground holding differential that enables an Army half its size to release a matching number of formations for offensive tasks. India's Pivot Corps must now hold Ground with mobile Fire power based upon Fast Attack/Light Strike Vehicles and thereby release much more force levels for offensive tasks.

- **Artillery.** The Artillery Calibre must be standardized on the 155mm caliber at the earliest so that effects can be massed. The Indian Artillery as an arm has been the victim of criminal neglect. After the Bofors crisis, it has not been able to induct any new Medium caliber Artillery systems. It had purchased 400 Bofor howitzers. Sweden was thereafter supposed to transfer the technology to build another 1000 such guns in India. This never happened as the Bofors scandal broke out. It had to improvise by converting Russian 130 Medium guns to 155 cal. It also went in for further purchases of the World War II vintage Russian 130mm guns and 122mm guns. Only lately has it been able to add the Russian Smerch Multi-Barrel- Rocket Launcher System and the indigenous Pinaka system. It is yet to get its 1000 medium guns and its tracked/self-propelled artillery for supporting its armoured formations. The Indian Air Defence Artillery is still stuck with guns and SAMs of the 1960s era.

India must complete these badly delayed modernizations at a most urgent pace that must take into account the rising profile of threats from China and Pakistan. As India's economic profile rises exponentially, India must create the capacities to dominate the arc from the states of Hormuz to Malacca and create Out of Area contingency capabilities that are credible and usable. It must create the capacities to be able to intervene militarily in Afghanistan and Central Asia to safeguard its vital interests and not secede this strategic space so supinely to Pakistan or China. It can not afford to ignore its land or maritime environments. Both are equally vital to its well being and National Security. Let us now examine the concepts to actualize such capabilities in greater detail.

### **Turning the Sea Flank**

The India Navy must acquire the capability to Project Power in the Littoral and contribute meaningfully to any Air-Land conflict against Pakistan. It will have to project power ashore and must rapidly acquire the land attack capabilities in terms of three Carrier Battle Groups, enhanced Naval Aviation and a viable Marine Corps based not on straight legged Infantry but Amphibious tanks, ICV and Hover craft-based Mechanised Infantry that can rapidly break out from Beach heads and execute decisive tasks in a manner that speeds up the overall tempo of operations. It must also build up a sizeable inventory of Land Attack Cruise Missiles and contribute to surface operations by deploying more Special Forces (MARCOS) units. These capabilities will also help it in any Out of the Area Contingencies. In the event of a conflict with China, it will help it to safeguard the Andamans and respond to any Chinese aggression by retaliatory interdiction of Chinese Sea Lines of Communication (SLOCs).

## **Force Structure: Islands of Excellence**

One of the key lessons from Indian Military History is the need for large armies. India's predominant occupation is in agriculture. Agriculture cannot absorb the entire work force. Even in Akbar's, time dealing with the huge military manpower/labour pool was a problem. The Mughal solutions were simply to expand the size of the Army and absorb this military manpower. A demographical study of India indicates that by 2026 India will have the highest Recruitable Male Population (RMP) in the world. Hence, the Gen V P Malik era idea of downsizing can turn out to be a prescription for disaster. By 2026 India needs to generate some 700 million additional jobs. Downsizing the Army can be a particularly bad decision in such circumstances. It could only add to the army of the unemployed which can pose a serious risk to India's Internal Security.

In fact, Internal Security requirements have always necessitated the need for maintaining huge standing Armies in India and China. China today has a standing Armed Forces of 1.4 million men and an Internal Security Force (Peoples Armed Police) also of 1.4 million (demobilized PLA formations). India had provided a peak level of 2.5 million men in World War II (all volunteers). Today at 1.1 million men it is still the second largest Army in the world. All talk of downsizing it is down right dangerous and completely out of sync with our realities. Internal Security tasks (CI/CT) are hugely man power intensive. They are our primary threats. Manpower is India's key resource. A youth bulge in our population makes downsizing a particularly dangerous and insane enterprise In fact the Maoist threat demands that we urgently raise 6 additional Infantry divisions. These could generate two additional Mountain strike corps in times of a war with China or Pakistan or both.

**Role Redefinition.** There is a new school of thought in the Army to the effect that it must be kept out of CI/CT operations as these detract from its main task of conventional warfare. In the same breath, post nuclearisation, the chances of conventional warfare are said to be practically next to zero. This is creating a crisis of relevance. There is a similar debate in the US Army. Should it prepare for the conventional wars with peer nations (Russia/China) that may never come to pass or should it more realistically prepare to fight CI/CT campaigns that are actually going on in Iraq and Afghanistan? The Indian Army's dilemma is very similar. Ideally it would like to prepare for conventional conflicts with China or Pakistan. These may or may not materialize. What it will have to deal with are rising threats to India's Internal Security in the form of Jihadi terrorism and Left Wing Extremism. The Indian Army's response in the last ten years has increasingly bordered on denial. The rise of a non-combat experienced leadership in recent years is reinforcing this denial. The Indian Army does not want to take part in Internal Security threats like LWE as these will take it far away from the borders. Such an attitude is breeding irrelevance. LWE is a tribal and virulent insurgency. It can not be tackled by the police. *Combating insurgencies provides valuable combat experience – especially at the tactical levels. It enables a combat hardened junior leadership to emerge.* As per the Chinese theory guerilla armies, overtime, grow into successful regular Armies. The Vietnamese Army is a model of this very effective switch from irregular to regular operations. The theory that CI/CT operations distract an Army from its main task is pernicious and seriously flawed. It is unfortunately being propagated by a new peace time breed of officers who lack combat experience. Combat experience is a sine qua non for higher command assignments. With live CT operations in J&K and CI operations in the North East ongoing – the bulk of our higher military leadership cannot

emerge from our peace stations. No mistake syndromes can destroy the fighting spirit of any military force. There is a serious need for introspection. Is the Indian Army back to the pre 1962 era of a complete absence of operational challenge? The Low Intensity Conflicts in J&K and the North East are petering out. India's last conventional combat experience was in Kargil (over a decade ago). There has been a decade without a major environmental challenge. A sword that is not used rusts rapidly. A peace time Army syndrome is the very anti-thesis of what a combat Army should be. We need to nurture our combat experience and ensure that we keep our cutting edge honed. The prime training ground of the British Indian Army during the Second World War was in the jungles of Chhattisgarh and Jharkhand. A major Left Wing Tribal Insurgency is now raging here. It is about time that the Indian Army should step in and nip this movement in the bud before it becomes unmanageable in correlation with any worsening of the situation on our Northern or Western borders. The late Gen BC Joshi was a strong proponent of the value of CI/CT operations in training our Army. There is no better training experience than the adrenalin rush of live combat. Professional Armies welcome such hands on experience. The argument that CI/CT operations distract the Army from its primary role is pernicious and seriously flawed. It calls for a redefinition of the role of a 1.1 million strong Army in the new post- nuclear setting. The debate is endemic to many other Armies as well and is most pronounced in the post- Cold war role of the US Army. In India's case the Rashtriya Rifles, an Army Force tailor-made for CI/CT operations provides the optimal answer. It lets the main army focus on conventional operations even as it spreads combat experience in the parent body by the device of the rotation of manpower. A realistic assessment of our internal-security environment clearly indicates the urgent need to raise 6 additional Light Infantry/ RR divisions. Regular Infantry divisions would be preferable as these would be most useful in any conventional war

and would permit India to exercise meaningful pro-active responses. It would also provide badly needed jobs for our youth- bulge.

**Islands of Excellence in a Large Army.** So India will require a large standing Army. Won't that divert funds towards manpower instead of the Capital Budget for acquiring new technology? The answer lies in not aiming for across the board modernization of the entire mass but a three tier approach of high tech and cutting edge capabilities being fielded in some key formations and units that form Islands of Excellence. The balance may have technology that is fairly current or under discard. The Panzer Divisions in the World War II were such Islands of excellence in a mass Army many of whose formations that invaded Russia were using Horse drawn carts for logistics support! The Special Forces , Paras, the Armoured Corps and Mechanised Infantry and technology intensive Arms must form such Islands of excellence in our case.

By 2026 India will have the youngest population profile in the world. In theory therefore it could field the worlds largest Army, Marine Corps, Para Military and Internal Security Forces. What are the structural changes that the Indian Armed Forces would need to usher in to face the challenges of the 21<sup>st</sup> Century? With in manpower intensive land forces, it will have to create Islands of technological excellence. The force structure must increasingly be capability based and not just Threat based. These capabilities merit elaboration.

- **Air Power.** If India is to generate the next RMA in South Asia it will have to embrace Air Power and Naval Aviation in a very major way. India needs a 60 Squadron Air Force with a healthy mix of Fourth and Fifth Generation fighters, AWACs, Aerostats, Air to air refueling capabilities and a massive increase in its

inventory of Precision Guided Munitions. Precision strikes can only be launched with precise intelligence and this will need a transparency revolution based upon satellites,, synthetic aperture radars, aerostats and Unmanned Aerial Vehicles (UAVs).This has been covered in detail earlier.

- **Naval Aviation.** India needs a Three Carrier Navy with the ability to project Power ashore not only in terms of naval aviation but also Land attack Cruise missiles and SLBMs. The third leg of the Indian Nuclear triad must be based on nuclear powered submarines. It would need a viable Marine Corps. Why does India need this marine capability? It will give it the *capability to execute Operational Manoeuvre from the sea. Its capability to turn the flank in a war with Pakistan is immense and overwhelming.* Besides India would need this to counter China's growing amphibious assault capability which was created for Taiwan but is now largely rendered surplus. This could be used to seize the Andaman & Nicobar Islands. Such marine intervention capability could help India to come to the aid of island microstates like Maldives, Mauritius or Seychelles, and react strongly to pirate attacks upon its shipping fleet in South Asia or off the coast of Africa. It could enable India to assist friendly countries (like Vietnam) in case of need or even assist the Indian diaspora in case it faces threats or persecution. Marine Amphibious capabilities that are able to exploit the Over the Horizon envelope would truly constitute an RMA in South Asia.

- **Power Projection Assets**

- **Marine Corps/Naval Infantry.** India has so far created a Brigade plus sized amphibious capability of straight legged Infantry. These Infantry battalions are rotated once every three years and as such loose their

specialization. Once landed, their mobility and reach is painfully restricted. What India needs is a full fledged Marine Corps of Two Divisions. This should be patterned on the erstwhile Soviet Naval Infantry which was fully mechanized (It used BTR-60 and BMP amphibious Infantry Combat Vehicles and PT-76 tanks)The Soviet Naval Infantry was 16000 strong and had one Naval Infantry Division with the Pacific Fleet and one Naval Brigade each with the Baltic , Northern and Black Sea Fleets. The Baltic fleet had staged marine landings in Georgia recently (2008). The Soviet concept relied upon landing of armour and mechanized Infantry directly on to the beach in amphibious ships and Air cushioned vehicles (ACVs). The Soviet Naval Infantry Brigades had four Naval Infantry Battalions, one Amphibious Tank Battalion along with Artillery and Anti-tank Battalion each. It had 83 Assault ships and 82 Air Cushioned Vehicles. Mechanisation would make it a dual tasked capability. It could be used over land and it could be projected ashore by the Navy. India needs to go in for helicopters to land troops ashore and large Hover crafts (Air cushioned vehicles) that will help actualize the "Over the Horizon Beach Assault Concept". This merits explaining. The current crop of existing amphibious equipment and methods make surprise very difficult to achieve. Only some 30% of the world's beaches lend themselves to assault by the existing equipment. This severely restricts options and choices. The enemy can easily identify and defend the beaches that are assaultable. Besides Amphibious ships have to close with the beaches (come within 10-20 Nautical miles) to launch the Amphibious assault vehicles. This makes the assault force critically vulnerable to mines, coastal artillery and Anti Ship missiles. The

Americans are now talking in terms of a new RMA that can be initiated by the employment of Tilt Rotor Helicopters and Air Cushioned Vehicles. With ACVs up to 70% of the worlds beaches can be negotiated. It is this which will enable the Over the Horizon assault concept and make opposed landings a thing of the past. Tilt rotors would land troops to secure a beach. The ACVs would then rapidly deliver tanks and mechanized Infantry directly on to the beach to counter the enemy's response and break out for depth areas/ vital objectives in the enemies' rear. Given the high mobility of amphibious ships, (eg water Jet Powered Ships can carry 12,000 tons of military cargo- including Abram Tanks and Bradley ICVs and travel 1000 miles in 24 hours or 7000 miles in a week!) Tilt rotors could strike suddenly at any point over a wide area of littoral and secure landing areas for ACVs. In the Tilt rotor- ACV- Water Jet Powered Ship combination we have the makings of another Military RMA.

- **Air Assault Capabilities.** A direct spin off of airpower would be the creation of Air assault capabilities. India needs these urgently to counter the rising threat profile from China. China has brought about a paradigm shift in its logistical capabilities in Tibet by extending a railway line to Lhasa. It is planning to extend the same to Nepal. It is also planning to create two more rail lines into Tibet. As part of generating trans-regional mobility, this will enable China to mass massive forces for any conflict with India. The Chinese mobilisation will now be by air, rail and road, and the velocity and scale of induction into Tibet has undergone a dramatic paradigm shift. The very scale of the initial Chinese offensive would foreclose most of India's response options. Unless India wants to

confine itself to a suicidal defensive-defense format, it will be forced to counter attack uphill, over the Himalayan hump. To speed up this process it needs credible Air assault capabilities.

- **An Air Borne Corps.** China's 15 Air Borne Corps could well serve as the model for a Rapid Reaction Force capability for India. It would surprise most to learn that during the Second World War, the British Indian Army had an Air Borne Corps of two divisions. These included:

- **2<sup>nd</sup> Indian Air Borne (AB) Division.**
  - ~ 50 Para Brigade (still existing);
  - ~ 77 Para Brigade (disbanded after 1947-48 J&K war);
  - ~ 14 Air Landing Brigade (went to Pakistan).
  
- **6 Air Borne Div (ex Europe).** This AB Corps was disbanded on 23 Oct 1945. However its elements had earlier played a significant role in the Second Chindit operations that tried to affect a deep turning manoeuvre in Burma by getting injected in the depth of the Japanese Army in Burma. Unfortunately, the wrong depth area had been selected and did not draw the level of Japanese reaction that it was designed to. The Second Chindit Operation was largely an Air landed operation using Glider borne troops that landed in improvised airfields cleared by the first wave of paratroopers. India is heir to this military historical tradition, yet its "think small" attrition mindset led it to disband all of its Airborne assets (less 50 Para Brigade). India at least needs an Air Borne Corps consisting of one Air Assault Division and one Air Landed Division along with upto Division strength of Special Forces capability. To create the space for their

employment and for exploiting the air flank, India first and foremost needs to invest most heavily in the current RMA based on Air Power. With such an Air Borne Corps, India can force Chinese offensives to recoil by seizing airheads on the Tibetan plateau for large scale air assaults that execute significant turning manoeuvres and directly threaten the Chinese lines of communication. An air assault capability can achieve, and create serious problems for Pakistan in any future war in the subcontinent. These Air Assault capabilities must primarily be raised and tasked for conventional conflicts with China and Pakistan, but would have a secondary role for Out of area Contingency tasks, say in Afghanistan, Nepal or the microstates of the Indian Ocean, as also to assist the legitimate governments in South Asia in case they ask for our assistance. Air Assault capabilities could play a significant role in any international coalition that seeks to prevent/retrieve Pakistan's nuclear assets from falling into the hands of Jihadi non-state actors in the event of that country experiencing a collapse of the state.

### **Addressing the Ground holding Differential with Pakistan**

In the late 1950s, Pakistan as a member of the SEATO and CENTO alliance architectures received massive amounts of American military aid. This enabled Pakistan to switch from holding ground with manpower to holding it with Firepower instead. This was done by the newly raised Recce & Support Battalions (R&Sp). These battalions had large numbers of machine guns and Anti- Tank recoilless rifles mounted on jeeps. These enabled Pakistan to hold the same length of ground with just half the number of troops that India was using for defence. Thus even though the Pakistani Army is half the size of

the Indian Army, by holding ground thinly, it was able to release matching levels for offensive operations against the much larger Indian Army. This concept served Pakistan quite well in both the 1965 and 1971 wars. In these conflicts the Indian Army spent the bulk periods of the war in the Western theatres fighting the R&Sp battalions and Recce Regiments of the Pakistan Army. The most amazing aspect is the fact that India has not been able to redress this ridiculous ground holding differential for the past 50 years. Post Operation Parakram the mobilisation differential of the Pakistan Army was once more highlighted rather painfully. The Cold Start Doctrine tried to redress the aspect of Pakistan's geographical advantage in mobilisation timings by using the defensive /Pivot Corps to launch rapid offensives into Pakistan virtually from the line of march. To generate this offensive potential, it is imperative that the defensive /holding corps hold the existing lengths of ground with far fewer troops and thereby generate greater force levels for offensive operations across the border. The way to achieve this would be to raise Pakistan style R&Sp battalions. These could be based either on tracked BMP Infantry Combat Vehicles. However technology today offers a radical new solution which could generate a mini RMA. India could base these new R&Sp units on Fast Attack Vehicles (FAVs) or Light Strike Vehicles (LSVs). These are very high mobility cross country vehicles which represent a quantum jump from the Jeep technology of the Second World War. The jeep class vehicles weigh some 4-5000 kg whereas the FAVs weigh just a 1000kg or less. With 400 or more HP engines these have a terrific power to weight ratio and pack a lethal punch in the form of an Anti-Tank guided Missile, A Machine gun and an Automatic Grenade Launcher. These are low silhouette vehicles with very low levels of engine noise and hence low acoustic and infra-red signatures. As such these depend on stealth and not armour protection for survival. The best part is their heli-portability. One Mi-17 class helicopter could carry two to three such FAVs to place in the path of any surprise enemy breakthrough. FAV based R&Sp battalions or

even Infantry battalions equipped with such vehicles could generate a revolution in the South Asian context and enable India to generate far greater force levels for offensive tasks.

**Overcoming Night Blindness.** Another significant RMA can be wrought in South Asia by making India's Tank and BMP fleet fully capable of night fighting. In fact every Soldier of the Infantry should be equipped with Third generation Night- Vision Devices and all Army Aviation Helicopters must rapidly acquire the ability to fly by night in all weather conditions. Though this is currently being done, what is needed is an all out effort to speed up the scope and scale of this project

**Internal Security.** The growing profile of Left Wing Extremism (LWE) in Central and Peninsular India is an ominous development. India will have to raise upto 5 to 6 additional Rashtriya Rifles / regular divisions to cater for the same. Keeping in mind the ever escalating envelope of India's Internal Security threats, India needs at least an overall 9 to 10 Division strong capability of the RR. This would be analogous to the Chinese People's Armed Police Force (which was simply converted from demobilised Chinese infantry divisions). For the five to six new RR/Infantry divisions, the bulk of manpower should be recruited from the tribal areas themselves (so as to suck out the Recruitable Male Population) and to provide immediate gainful employment to the forest tribes. 40 to 50% of the recruitment should be from the tribal areas of Chhattisgarh, Jharkhand, Orissa, Bihar, Andhra Pradesh and Maharashtra. This would prove to be the greatest vehicle for upward social mobility of these groups. Dr Ambedkar, incidentally was the son of a Subedar Major of the Mahar Regt.

## **Doctrinal Approach**

India needs to urgently revamp its Cold Start Doctrine. It is too land power centric to be credible or viable. Airpower centric response options that graduate up the escalation ladder and set the stage for a meaningful Limited Air-Land War that seeks to inflict severe costs on Pakistan for its continuing support to Jihad/Proxy War in India, need to be formulated at the earliest. Indian force usage profile (post nuclearisation) has shown an alarming downturn.

India's political elite seem to have sadly come to the conclusion that post- nuclearisation, conventional military force is no longer a usable option. This is a dangerous misperception that is making the Indian Armed Forces highly irrelevant. India's failure to respond militarily to Pakistan's persistent sub-conventional provocations is needlessly encouraging the ISI to widen and extend the scope of its Asymmetric assault on India. It will lead to many more Mumbai-like mayhems and the continuing loss of innocent civilian lives. Such unchecked terrorist depredations in mainland India will make a mockery of India's regional/global power aspirations. An asymmetric war cannot be countered by defending each and every target in India. The targets of terrorist assaults are infinite. It would be dangerously foolish to eschew all proactive response options that seek to raise costs for the aggressor forever. The onus of conventionalising the conflict lies on India. *For this it will have to field dominant war fighting capabilities that generate a convincing conventional military edge. This will provide credible response options to Pakistan's unending asymmetric assault.* The key lesson from the Indian military history is the need to generate a conventional RMA once again in South Asia. A military technical analysis indicates that such an RMA will have to be based primarily on:

- Air Power,
- Air Assault Capabilities,
- Marine Amphibious Capabilities,
- Special Forces Capabilities.

India will have to deal decisively with China's cat's paw in South Asia – Pakistan; and compel it to rollback its Asymmetric war against India. It will then have to prepare itself to deal with any aggressive/hegemonic behaviour by a China that is emboldened by its rising military power and a probable retreat of the USA from the Asia-Pacific region. While doing so it must be prepared to deal with the worst case scenario of a Two- Front War with the Maoists and Jihadis fully trying to exploit such a dire situation. The entire thrust of such an Indian Grand Strategy should be to deal with these threats sequentially and not concurrently.

An Indian Doctrine for Limited wars in South Asia will have to be Airpower centric. It should mirror itself on the Chinese doctrines for Limited/Local Wars. These envisage very high levels of the use of conventional military force and place the onus of going nuclear solely on the aggressor. These also envisage preemptive strikes and stress surprise and deception. These seek to focus trans-regional capabilities upon a single theatre of conflict or a war zone.

In Korea, the Chinese had thrown in a million troops (wholly unfazed by US nuclear capabilities). In Vietnam, they threw in some 250,000 troops (despite Soviet nuclear

capabilities). In Taiwan today they are talking of employing, some 300,000 troops and the bulk of their Air Force, Navy and missile assets to ensure Access Control that will deal savagely with any US attempts to intervene.

Such actions stem from a *clear cut practical resolve to safeguard national interests*. The Indian political elite unfortunately give the impression of having let themselves be overawed by Pakistan's nuclear rhetoric and capabilities to an extent that they seem paralysed into inaction. For three decades they have not summoned up the will to retaliate across the LC/border and raise costs for Pakistan (one decade in the Punjab and two in J&K). Possibly the decision to defer conflict till a sound economic base was created was pragmatic. *The time has come to call Pakistan's nuclear bluff in South Asia*. India now has the economic strength to field dominant conventional war fighting capabilities in South Asia. It must do so rapidly to introduce the fourth RMA in the subcontinent. Only such an RMA will have a decisive impact upon the course of military history in South Asia.

In recent years, India has been unconsciously emulating Japan. In the last two years, it seemed keen to outsource India's security to the USA. The USA is concerned primarily with the security of its own homeland and citizens. It is already overstretched in Iraq and Afghanistan. It is in no mood for taking on India's internal security. Yet there were pathetic bleatings in the Indian media post-Mumbai that since US strikes were more "acceptable" to Pakistan (than India's), the US should launch Predator attacks on Muridke to deter future Mumbai-like mayhems! This coming from a regional/global power aspirant sounds pathetic and shameless. Yet the fact remains that after mumbling about

all options being open, India was easily persuaded by the west to do absolutely nothing in response to the Mumbai-mayhem. It was clear that the lives of hundreds of innocent Indian citizens meant nothing to the USA. They have their hands full, protecting their own citizenry and have little or no time/sympathy to spare for a country that has virtually decided to make itself a sponge to absorb all terrorist casualties locally and not let them singe the west. India will have to take care of its own security. India will therefore have to protect its own citizenry. It does possess the requisite economic means to do so. It must display the will to transform economic power into usable military capability.

Japan may be a great economic power but its (till recent) unwillingness to militarise itself had reduced it to a geopolitical non-entity in Asia and the world. The first signs of the revival of Japanese militarism however have generated genuine alarm in China. The US is the biggest debtor nation in the world. Yet it carries so much clout in the global affairs because it has translated its economic power into military strength. It spends some US\$650bn on defense annually (more than the next 20 countries put together). That alone explains its dominant unipolar position in the world affairs. The Indian economic elite somehow seem uncomfortable with translating economic prowess into military power. They have been sluggish in military modernisation and have mired the Indian arms acquisition process in a forest of red-tape that is unprecedented and is now becoming a cause for serious concern in view of the fast escalating nature and number of threats to Indian security. The Mumbai mayhem may have had a marginal impact on the Indian Assembly and Lok Sabha elections results. However, it has given India serious food for thought. The time for a second decisive restructuring of the South Asian security has now come to hand. India urgently needs to field dominant war fighting capabilities in South Asia and generate the Fourth RMA on the subcontinent. Only then

can it realize its full potential at the regional and global level. Only then can it break out of the containment cage/scaffolding that China has designed for it in South Asia. The Chinese threat is now manifesting most malignantly via Pakistan. China's aggressive behavior in J&K throws up the spectre of a major two front war with China and Pakistan. J&K is one theatre where they can attack jointly. India can no longer afford to avoid facing up to it. It has to take care of its own security if it wants to sup on the global high table. Being next only to Iraq in the amount of casualties sustained annually from Pakistan-sponsored terrorism, is no qualification for a regional/global power status. Dealing firmly and vigorously with such challenges would constitute such a qualification. India has the economic and demographic capacity. It has to firmly make up its mind and display the political will, resolve and determination to uphold its vital national interests in the face of such unprovoked assaults on its security and dignity as a nation state. India clearly has the capacity. In the years to come it will have to display the will and vision to actualize the same in a timeframe that is realistic and responsive to the challenges that are emerging at such a rapid and accelerating pace, not only in South Asia but in the whole world in general. India initially sought allies in first the Soviet Union and then America to face up to the China-Pakistan combine. The time may well be coming when India will have to face them alone. It will have to rely upon its own resources to safeguard its vital national interests. India now has the economic and demographic resources for such a confrontation. In the years ahead it will increasingly be called upon to respond to ever greater challenges from its geo- political environment. *Great civilizations arise only in response to such challenges.*

## **BIBLIOGRAPHY**

### ***Ancient, Medieval and Colonial Era Wars***

1. Herman Kulke and Dietmar Rothermund, "*A History of India*", 4<sup>th</sup> Ed., Routledge, Taylor & Francis Group, London & New York, 2004 (first published 1986).
2. Dietmar Rothermund, "*From Chariot to Atom Bomb Armament and Military Organization in South Asian History*", in Jos Gommans and Om Prakash (ed.), "*Circumambulations in South Asian History*", E.J. Brill, 2003.
3. Maj Gen Gurbachan Singh Sandhu, "*A Military History of Ancient India*", Vision Books, New Delhi, 2000.
4. Dr. Anjoli Nirmal, "*The Decisive Battles of Indian History*", Pointer Publ., Jaipur, 1999.
5. Plutarch, "*Life of Alexander*", Ed. K Stinterus, Issiam Leipzig, 1881.
6. AG Reos (Ed.), "*Anabasis by Arian*", Leipzig, 1907AD.
7. Jos Gommans and Dirk Kloff (Ed.), "*Warfare and Weapons in South Asia 1000-1800AD*", Oxford Univ. Press, Oxford, 2004.
8. Om Prakash, "*Down Fall of the Mughal Empire*", Anmol, New Delhi, 2002.
9. Jos Gommans, "*The Rise of the India-Afghanistan Empires*", Oxford Univ. Press, Delhi, 1999; and "*Mughal Warfare*", Routledge, London, New York, 2002.
10. Iqtidar Alam Khan, "*Gunpowder and Fire Arms*", Oxford Univ. Press, Oxford, 2004.
11. Kaushik Roy, "*From Hydaspes to Kargil : A History of Warfare in India from 326BC to AD1999*", Manohar, Delhi, 2004.
12. Douglas E. Streusand, "*The Formation of the Mughal Empire*".
13. Simon Digby, "*War Horses and Elephants in the Delhi Sultanate*", Oxford Univ. Press, Karachi, 1971.
14. Maj Gen G D Bakshi, "*The Indian Art of War : The Mahabharatan Paradigm*", Sharda Publication, New Delhi.
15. Maj Gen G D Bakshi, "*The Indian Military Revival*", Lancers, New Delhi, 1987.

### ***J&K 1947-48***

16. Maj K Brahma Singh, "*A History of the J&K Rifles*", Lancers, New Delhi, 1989.
17. S N Prasad & Dharm Pal, "*History of Operations in Jammu & Kashmir (1947-48)*", History Division, Ministry of Defence, Govt of India, New Delhi, 1987.
18. Maj Gen D K Palit, "*Jammu and Kashmir Arms*", Palit and Dutt, Dehradun, 1984.
19. Lt Gen L P Sen, "*Slender was the Thread*", Oxford Univ. Press, Delhi.
20. Maj S K Sinha, "*Operation Rescue*", Vision Books, Delhi.
21. Lt Gen Harbaksh Singh, "*In The Line of Duty : A Soldier Remembers*", Lancers, New Delhi, 1988.
22. Maj Gen Shaukat Riza, "*The Pakistan Army 1947-49*".

### ***Hyderabad 1948***

23. S N Prasad, *Operation Polo : The Police action Against Hyderabad 1948*, Historical Section, Ministry of Defence, Govt of India, New Delhi, 1972.

### **India-China War 1962**

24. Neville Maxwell, *India's China War*, Orient Longman, New Delhi, 1972.
25. Maj Gen D K Palit, *War in the High Himalayas*, Lancers, New Delhi, 1990.
26. Lt Gen B M Kaul, *The Untold Story*, Vikas Publ., New Delhi, 1964.
27. BN Mullick, *The Chinese Betrayal*, Vikas Publ., New Delhi, 1962.
28. Maj Gen A K Verma, *Rivers of Silence*, Lancers, New Delhi.
29. Brig John P Dalvi, *Himalayan Blunder*, Natraj Publ., New Delhi, 1967.
30. Maj Sitaram Johri, *Chinese Invasion of NEFA*, Himalaya Publ., Lucknow, 1988.
31. Maj Gen Jagjit Singh, *The Saga of Ladakh*, Vikas Publ., New Delhi, 1982.
32. D R Mankekar, *The Guilty Men of 1962*, Vikas Publ., New Delhi, 1986.

### **1965 Indo-Pak War**

33. Lt Gen Harbaksh Singh, *War Despatches : Indo-Pakistan Conflict 1965*, Lancers, New Delhi, 1988
34. Lt Gen Harbaksh Singh, *In The Line of Duty: A Soldier Remembers*, Lancers, New Delhi, 1988.
35. Maj Gen Joginder Singh, *Behind the Scenes*, Lancers, New Delhi, 1991.
36. Maj Gen Muhammad Musa Khan, *My Version*, ABC Publ. House, New Delhi, 1983.
37. Lt Gen Gul Hasan Khan, *The Memoirs of Lt Gen Gul Hasan Khan*, Oxford Univ. Press, Karachi.
38. Brig Desmond Hayde, *The Battle of Dograi*, Lancers, New Delhi, 1973.
39. Maj Gen Shaukat Riza, *Pakistan Army – War 1965*, Oxford Univ. Press, Karachi.
40. Brig Gulzar Ahmed, *Pakistan Meets the Indian Challenge*, Oxford Univ. Press, Karachi.
41. Air Msl Mohammad Asghar Khan, *The First Round*, Oxford Univ. Press, Karachi.
42. D R Mankekar, *22 Fateful Days*, Vikas Publ., New Delhi, 1967.
43. Maj Gen Sukhwant Singh, *Defence of the Western Borders*, Lancers, New Delhi.
44. Brig AAK Choudhary, *September 1965*, Oxford Univ. Press, Karachi, 1982.
45. Maj Sitaram Johri, *The Indo-Pakistan Conflict of 1965*, Himalayan Publ., Lucknow, 1967.

### **1971 War for the Liberation of Bangladesh**

46. Lt Gen JFR Jacob, *Surrender of Dacca*, Manohar Publ., New Delhi, 1997.
47. *The Hammudur Rehman Enquiry Committee Report*.
48. Lt Gen K P Candeth, *The Western Front*, Vikas Publ., New Delhi.
49. Lt Gen AAK Niazi, *Betrayal of East Pakistan*, Oxford Univ. Press, Karachi.
50. Vice Admiral N Krishnan, *No Way but Surrender*, ABC Press, Delhi.

51. Maj Gen Lachman Singh Lehl, *"Indian Sword Strikes into East Pakistan"*, Lancers, New Delhi.
52. Maj Gen D K Palit, *"The Lightning Campaign"*, Thompson Press of India Ltd., New Delhi, 1972.
53. Sadik Salik, *"Witness To Surrender"*.
54. Maj Gen Sukhwant Singh, *"The Liberation of Bangladesh"*, (Vol I and III), Lancers, New Delhi, 1983.
55. Lt Gen Hanut Singh, *"Fakhr-E-Hind : The Story of The Poona Horse"*, Agrian Publ., Dehradun, 1992.
56. Maj Gen S S Uban, *"The Phantoms of Chittagong : The Fifth Army in Bangladesh"*, Allied Publ. Pvt. Ltd., Delhi, 1988.
57. Maj Gen Shaukat Riza, *"Pakistan Army 1966-71"*, Oxford Univ. Press, Karachi.
58. Brig H S Sodhi, *"Operation Windfall : Emergence of Bangladesh"*, Vikas Publ., New Delhi.
59. Lt Gen P N Kathpalia, *"Mission with a Difference: 71 Mountain Brigade"*, Lancers, New Delhi.

### ***IPKF in Sri Lanka***

60. Maj Edgar O'Ballance, *"The Cyanide War : Tamil Insurrection in Sri Lanka 1973-1988"*, Brassey's, London.
61. Maj Gen Afsir Karim & Shankar Bahadury, *"The Sri Lankan Crisis"*, Lancers, New Delhi, 1989.
62. Lt Gen Depinder Singh, *"IPKF in Sri Lanka"*, Defence Publ., Noida, New Delhi, 1990.
63. Rajesh Kadian, *"India's Sri Lanka Fiasco : Peace Keepers at War"*, Lancers, New Delhi.
64. Rohan Gunaratna, *"Indian Intervention in Sri Lanka"*, Brassey's, London.
65. Lt Gen S C Sardeshpande, *"Assignment Jaffna"*, Lancers, New Delhi.
66. J N Dixit, *"Assignment Colombo"*, Vikas Publ., New Delhi.

### ***Brass Tacks***

67. Kanti Bajpai, *"Brass Tacks and Beyond Perception Management of Crisis in South Asia"*, Manohar Publ., New Delhi, 1995.
68. P R Chari, Pervaiz Iqbal Cheema and Stephen P. Cohen, *"Four Crises and a Peace Process : American Engagement in South Asia"*, Brookings Institution Press, Washington DC, 2007.

### ***Kargil and Op Parakram***

69. Gen V P Malik, *"Kargil : From Surprise to Victory"*, Harper Collins Publ. India, New Delhi, 2006.
70. The Kargil Committee Review Report, *"From Surprise to Reckoning"*, Sage Publ., New Delhi, 2000.
71. Robert G. Wirsing, *"Kashmir in the Shadow of War: Regional Rivalries in a Nuclear Age"*, ME Sharpe Armonk, New York, London, 2003.

72. Lt Gen V K Sood and Praveen Sawhney, *"Op Parakram : The War Unfinished"*, Vision Books, New Delhi, 2003.
73. Jaswant Singh, *"A Call to Honour: In Service of Emergent India"*, Rupa & Co., New Delhi, 2006.
74. Pervez Musharraf, *"In the Line of Fire: A Memoir"*, Free Press (Simon & Schuster), New York, 2006.
75. Gaurav C. Sawant, *"Dateline Kargil"*, ABC Publ., Delhi.
76. Amarinder Singh, *"A Ridge Too Far"*, Vikas Publ., New Delhi.
77. S. Kalyana Raman, *"Operaton Parakram : An Indian Exercise in Coercive Diplomacy"*, Strategic Analysis, Vol 26 No.4, Oct-Dec 2002.

### **Nuclear Issues (South Asia)**

78. Michael Krepon and Chris Gagne, *"Nuclear Risk Reduction in South Asia"*, Honey L. Stimson Centre, Indian edition by Vision India, Delhi, 2003.
79. Rear Adm K Raja Menon, *"A Nuclear Strategy for India"*, Sage Publ., New Delhi, 2000.
80. T V Paul, *"Asymmetric Conflicts : War Initiation by Weaker Powers"*, Cambridge Univ. Press, London, 1994.
81. George Perkovich, *"India's Nuclear Bomb : The Impact of Global Proliferation"*, Univ. of California Press, 1999.
82. Gen K. Sunderji, *"Blind Men of Hindustan : India-Pakistan Nuclear War"*, UBSPD Publ., New Delhi, 1993.
83. Lt Gen V R Raghavan, *"India's Need for Strategic Balance : Security in the Post Cold War World"*, Delhi Police Group, New Delhi, 1996.
84. Draft Report of National Security Advisory Board on the Indian Nuclear Doctrine, 17 August 1999 (**Unclassified**). ([www.indianembassy.org/policy/CTBT/nuclear-doctrine.Waug171999.html](http://www.indianembassy.org/policy/CTBT/nuclear-doctrine.Waug171999.html))
85. Henry D. Sokolosky (ed.), *"Pakistan's Nuclear Future: Worries Beyond War"*, Strategic Studies Institute, US Army, Jan 2008. ([www.StrategicStudiesInstitute.army.mil/](http://www.StrategicStudiesInstitute.army.mil/))
86. Dr. E. Sridharan, *"The India-Pakistan Nuclear Relationship : Theories of Deterrence and International Relations"*, Routledge, Taylor & Francis group, London, New York, New Delhi, 2007.

### **Cold Start**

87. Moeed Yusuf, *"India's Cold Start Doctrine : Explaining Pakistan's Stance"*, Presentation at US Naval Post graduate School Seminar, Monterey, California, 28 April 2004.
88. *"India's Cold Start Doctrine"*, Rand Paper, Santa Monica, USA, 2007.
89. Brig Arun Sehgal, *"Cold Start : New Doctrinal thinking in the Army"*, CLAWS Journal, Summer 2008, Knowledge World Publ., New Delhi, 2005.

### **Common to All Wars**

90. Stephen P. Cohen, *"The Indian Army"*, The Brookings Institution Press, Washington.
91. Stephen P. Cohen, *"The Pakistan Army"*, Oxford Univ. Press, Karachi.

92. Stephen P. Cohen, *"Emerging Power India"*, Brookings Institution Press, Washington, 2007.
93. Stephen P. Cohen, *"The Idea of Pakistan"*, Brookings Institution Press, Washington, 2006.
94. Ross Babbage and Sandy Gordon, *"India's Strategic Future : Regional State or Global Power"*, Oxford Univ. Press.
95. Paul Kennedy, *"The Rise and Fall of the Great Powers"*, Harper Collins and Publ., New York, 1988.
96. Paul Kennedy, *"Preparing for the 21<sup>st</sup> Century"*, Harper Collins and Publ., New Delhi, 2006.
97. Gen K V Krishna Rao, *"Prepare or Perish"*, Lancers, New Delhi, 1997.
98. Maj K C Praval, *"A History of the Indian Army"*, Lancers, New Delhi, 1993.
99. Shuja Nawaz, *"Cross Swords: Pakistan Its Army and Wars Within"*, Oxford Univ. Press, Oxford, 2008.
100. Brian Cloughly, *"A History of the Pakistan Army: Wars and Insurrections (2<sup>nd</sup> ed.)"*, Lancers Publ., New Delhi, 1999.
101. Pushpindar Bedi, Ravi Rikhye and Peter Steinmann, *"Fiza'ya : Psyche of the Pakistani Air Force"*.
102. B. Raman, *"The Kaoboy of R&AW : Down Memory Lane"*, Lancers, New Delhi, 2007.
103. Ashley J. Tellis, *"Stability in South Asia"*, Rand Arroyo Center Report prepared for the US Army.
104. Aditya Chibber, *"National Security Doctrine: an Indian Imperative"*, Lancers, New Delhi, 1990.
105. Peter Howarth, *"China's Rising Sea Power : The PLA Navy's Submarine Challenge"*, Routledge, Taylor & Francis Group, London, New York.
106. Annual Report to Congress, *"Military Power of the Peoples Republic of China 2008"*, Office of the US Secretary of Defense.
107. John E. Peters, James Dickens, et al., *"War Escalation in South Asia"*, Rand Corporation Report (prepared for US Air Force), Santa Monica, USA.
108. *"National Security and Nuclear Weapons in the 21<sup>st</sup> Century"*, Joint Report of US Department of Energy & Defence, September 2008.
109. C. Christine Fair, *"The Counter Terror Coalitions : Cooperation with Pakistan and India"*, Rand Project Report (prepared for US Air Force), Rand Corporation, Santa Monica, USA, 2004.
110. Gen Shankar Roy Chowdhury, *"Officially At Peace"*, Rupa & Co., New Delhi.
111. Barnett R. Rubin, *"The Fragmentation of Afghanistan : State Formation and Collapse in the International System"*, Yale Univ. Press, New Haven and London, 1995.
112. Antonio Giustozzi, *"Koran, Kalashnikov and Laptop : The Neo- Taliban Insurgency in Afghanistan"*, Foundation Books, New Delhi, 2007.

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