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The Centre for Advanced Strategic Studies (CASS), Pune was registered on 21st September, 1992 under the Society's Registration Act, 1860, and as a Charitable Public Trust on 28th October, 1992, under the Bombay Charitable Public Trust Act of 1950. The Department of Scientific and Industrial Research, Ministry of Science and Technology, Government of India have accorded recognition to CASS as a Scientific and Industrial Research Institution. The Centre has been granted extension of IT exemption U/S.80G from 01.04.2008 to 31.03.2011 vide letter No.Pn / CIT I / 12A (a) / 80G / 396 / 2008-09 / 4587 dated 30.01.2009 and U/S.10(23C)(iv) for AY 2004-2005 and onwards vide Government of India Notification No.80/2007 dated 26.03.2007. Section 10(23C)(iv) gives hundred percent exemption for income of the Centre, and Section 80G gives fifty percent exemption to the donors. ITE U/S 80G is now in perpetuity.

The Centre aims at undertaking research and analysis of subjects relating to national and international security and development through seminars, discussions, publications at periodical intervals and close interaction with the faculty members and research students in allied disciplines in the Universities/Institutions and the Armed Forces. It expects to award research fellowships as soon as its corpus builds up and makes it possible. It aims to generate and promote interest among the academicians and public in these subjects with a view to making them alive to national security concerns. It has received very valuable support from the University of Pune in all its activities, specially from the Department of Defence and Strategic Studies. It has an Memorandum of Understanding (MOU) with Yashwantrao Chavan Academy of Development Administration (YASHADA) enabling mutual collaboration for making available their infrastructure, publications and teaching and research activities. The Centre has held a number of seminars, panel and group discussions.

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Printed by On-Line Printers, Pune-58

CENTRE FOR ADVANCED STRATEGIC STUDIES

BRIGADIER NB GRANT MEMORIAL LECTURE

BY

MAJOR GENERAL (RETD) RK ARORA

INDIAN ARMY MODERNISATION : AN ASSESSMENT

14th February, 2013

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WELCOME BY DIRECTOR

AIR MARSHAL S. KULKARNI

Air Marshal (Retd) S. Kulkarni welcomed everyone present for the Brigadier NB Grant Memorial Lecture. He said that Brigadier NB Grant, a stickler for service discipline and uprightness was a very active participant in all seminars / panel discussions / lectures conducted by the Centre and always made valuable contribution.

Air Marshal S. Kulkarni said that the first Brigadier NB Grant Memorial Lecture on "Future Environment, Perceived Threat Perceptions and Imperatives in Response" was held on 02 Dec.07. Thereafter on "Refurbishing the Brand Image of Indian Defence Forces" on 03 Dec.08, on "Modernisation of the Indian Army" on 22 Jan.10. Lt Gen (Retd) Ashok Joshi, in 2010, spoke about the "Value System in the Armed Forces". In January, 2012, Southern Army Commander gave a presentation on "Security Overview and Transformation of the Indian Army".

This year, we are happy to invite the Chief Editor, Indian Military Review to talk to us on "Indian Army Modernisation : An Assessment". This programme will be presided over by Lt Gen (Retd) Dr. DB Shekatkar, a member from the Governing Council of the Centre.

BRIGADIER N.B. GRANT MEMORIAL LECTURE

BY

MAJOR GENERAL (RETD) RK ARORA

"INDIAN ARMY MODERNISATION : AN ASSESSMENT"

Respected Air Marshal Kulkarni, Gen Shekatkar, distinguished guests, ladies and gentlemen.

I am fully aware of the honour bestowed upon me to be asked to deliver the Brig NB Grant Memorial Lecture. I am also aware of the high quality of the audience. Hence, I have pitched the talk at higher levels.

My talk does not address softer issues like personnel management, training and logistics. Nor does it cover regional security to save time and devote it to the core issue of modernisation.

Not long ago it was said that the Indian Army was like an elephant – it moves slowly, when it comes around you get to know about it, you can attack it from the rear or from the sides. Only you should not confront it from the front.

Role and Tasks

The ministry of defence (MoD) lists the national security objectives. The Annual Report of the MoD says, "The primary role of the army is to safeguard the territorial integrity of the nation against external threats.... assist civil administration....."

Gen Padmanabhan, a former army chief, listed the roles quite differently. The Indian Army Doctrine of October 2004 gave absolutely different primary and secondary roles. The tasks included in the Army Doctrine are quite badly conceived.

You will agree that modernisation is a function of threat assessment based on intelligence inputs. Thereafter, countering those threats by building capabilities falls into place. Roles and tasks are the basis of creating the essential capabilities.

Higher Defence Planning

The National Security Council (the erstwhile Defence Committee of the Cabinet), established after 52 years of Independence, has been given a role vide Cabinet Secretariat Resolution dated 16 April 1999. It says ""The Central Government recognises that national security management requires integrated thinking and coordinated application of the political, military, diplomatic, scientific and technological resources of the state to protect and promote national security goals and objectives. National security in the context of the nation needs to be viewed not only in military terms but also in terms of internal security, economic security, technical strength and foreign policy. The role of the Council is to advise the Central Government on the said matters."

The NSC has not been able to fulfill this role.

The NSC and the Cabinet Committee on National Security have two distinct and complimentary roles. NSC looks to the future. The task cannot be carried out without dedicated staff with adequate expertise. The NSC should come up with holistic assessments and advise different ministries.

The CCNS should also consider the NSC's recommendations. But the NSC does not have a fully developed staff support. The old JIC staff is functioning as NSC staff. The same staff provides Secretariat support to the NSAB.

The ministries themselves are focused on the present rather than on the future.

The generalist system of civil service inhibits civil servants from acquiring the expertise, or a culture of research or sharing information.

At the top most political level there is an attitude of casual approach to national security. One cannot expect the bureaucracy, the Parliament, the media and others to pay more attention to national security. It might as well be wound up.

National security is looked upon as a short term issue by the Cabinet. There is no long term vision. The nation will pay high costs

for this.

The three Chiefs used to attend the DCC but they are excluded from the NSC.

The NSC is expected to frame the threat perceptions and prepare the Security Defence Review.

The NSA is a bureaucrat. There is no CDS.

Can the security system get worse.

Shortcomings in Potential

Over the last 15 years professionalism and fighting potential have taken a hit. The reasons are:

- Lack of vision and knowledge amongst the political leaders and bureaucracy.
- Withholding budgetary allocations.
- Resistance to change amongst senior officers. There is too much personality-

  oriented policy formulation..
- Short command tenures are preventing long term outlook are implementation.
- Aversion to risk taking.
- Status quo mentality.

The Indian Army is conservative in its outlook and its attitude and outlook. It does not visualise and accept changes easily.

New developments in weapon systems and equipment require changes in tactics and strategy, more frequently, say every 10 years rather than 25-30 years as may have been the case in the past. The military has to be more innovative and more open to change.

India has a weak strategic culture. It is incumbent upon the armed forces to force a change in the situation.

There are no white papers, no vision documents, no periodic reviews on the issue of national security in Parliament. The Parliamentary standing committee on defence and the CAG's reports

are not given due attention.

The Army is permanently deployed on the Pakistan and Chinese borders including Siachen and is heavily involved in counter-insurgency operations. To an extent this has created a psychosis against change. The Army is too busy in managing the current situation rather than seriously think about the future. This is not to say that it's perspective planning, financial planning and military operations are not looking at the future but the effort is not good enough.

Chinas' Military Modernisation

China is a challenge for all the countries surrounding it. Suddenly you have top-of-the-line fighter jets, stealth fighters, robust ballistic missiles, MIRV warheads, space warfare capabilities, submarine fleet under development, aircraft carriers under construction and so on.

The Chinese are masters in deception. Their military build-up has caught the world by surprise. China has a comprehensive military modernisation plan to become self-reliant based on direct imports, reverse engineering, dual use technologies, internal research and development.

China wants a peaceful international environment and periphery, while it completes modernisation of her armed forces. It is also in the process of strengthening the Party's grip on power.

The day China seeks pre-eminence and exerts military power in Asia, the world will face serious problems.

China's search for energy and raw materials has taken her to Central Asia, Middle East, Africa, South China Sea and beyond. South Korea, Japan, Philippines, Taiwan, Vietnam and even Australia are feeling the ripples.

India has a tough choice. The US-China-India triangle is still evolving. Will India swing towards China or the US? I feel that the threat from China is played up in India. There is little chance for a serious conflict with China.

China has packed 50 years of modernisation into 20, which

India has extended 20 years of modernisation to 50.

China has published White Papers on defence. India has not.

China has clearly laid down its military modernisation goals thus:-

"The first step is to lay down a solid foundation by 2010, the second is to make major progress around 2020, and the third is to basically reach the strategic goal of building informationised armed forces and being capable of winning informationised wars by the mid-21st Century."

The Chinese have transformed their computer, software, communications, broadband infrastructure and cyber capabilities. It has tight control over internet networks. It considers this a part of military power.

China's primary operational strategy is called "Active Defence", claiming that it will not strike first. In the decade of the 2000s, it shifted from "Joint Operations" to "Integrated Joint Operations". Operationally, it is laying emphasis on trans-regional mobility, air-ground integrated operations, long-distance manoeuvres, rapid assaults and special operations.

The army is getting more vehicles, tracks, wheeled vehicles, self-propelled artillery, self-propelled air defence systems, aviation assets, Special Forces and information warfare units.

Defence Research. Chinese research is focused on high-technology weapons development like:

- Military lasers for communications, radar and weapons.
- Radio frequency weapons (high power microwave or EMP).
- Thermobaric weapons.
- Hypersonic vehicles.
- Unmanned combat vehicles.
- Electromagnetic weapons.

- Nano materials and machines.
- Biotechnical weapons.
- Stealth and counter-measures.

Russian, Ukrainian, Israeli and some European companies are actively involved in Chinese military programmes.

Computer Network Operations.

China ranks as the No 1 cyber threat in intents and capabilities. The Pentagon says that the PLA sees CNO as critical to seize the initiative and achieve 'electromagnetic dominance' early in a conflict. It has devoted considerable resources to develop infrastructure to conduct information warfare and has raised computer warfare units.

The Future Battlefield Milieu

The future will see induction of various kinds of missiles, laser-aimed weapons, target designators and smart munitions. Two or three rounds of precision guided munitions (PGMs) will achieve the same result as 300 dumb bombs or artillery shells.

High technology will influence organisation tactics, equipment and logistics. It will reduce the 'observe, orient, decide and act' loop or cycle. C3I integration will lead to faster decision making and responses.

Advances in communications technology, computers, information systems, surveillance and target acquisition systems will provide commanders with better means of command and control and better awareness of the situation.

With more lethal, accurate mobile fire power, smaller forces will achieve decisive results. Rapid action, lightly armed forces with tactical airlift will be able to close in and destroy irregular combatants more easily.

Wars may be short but the tempo will be enhanced. Fighting in the plains and deserts will be swift, but set-piece in areas with linear obstacles and Ditch-cum-Bunds (DCB).

Satellite imagery and aerial and ground sensors will provide increased warning period. Thermal imagery devices, unattended ground sensors, battlefield surveillance radars, satellite imagery and intelligence, surveillance recce (ISR) assets will provide reasonable transparency and see the use of counter-measures.

Night devices will add a new dimension to night fighting capabilities.

Future threats are not likely to be easily identifiable.

Future wars will be marked with high attrition rates and much greater casualties than in the past.

Contact battles will be fought at longer ranges.

Defence Expenditure

Let's get rid of the fallacy that defence expenditure as a percentage of GDP has been falling and the defence forces are not getting enough for their capital modernisation schemes. While it is true that the percentage is falling (total defence percentage as a percentage of GDP was 2.12% in 2011 and is projected to be 1.76% in 2015), it is also true that capital expenditure by the army in 2011, which was $6948 million in 2011, is projected to be $10173 million in 2015.

The argument to reverse the imported vs indigenous ratio of 70:30 is also of no consequence. The ratio is improving in favour of domestic production. What is even more important is that domestic industry is given the opportunity to develop complete systems and not just components or carry out some offset obligations through joint ventures with foreign OEMs.

There is also no excuse for surrendering funds on account of capital expenditure year after year. 2005 was an aberration when all three Services completely utilised the capital fund allocations and we must analyse how such efficiency was achieved and implement those lessons.

Operational Modernisation

To ensure success at the operational level, the Army must plan

effectively, coordinate, execute rapid, simultaneous and decisive operations. It needs to develop a force capable of rapid deployment with built-in speed, lethality and information dominance. The structure should be such that it can meet challenges across the entire spectrum of threats.

Spectrum of Threats.

The spectrum of war includes:

- Full scale conventional war.
- Limited and sectoral conflicts.
- Border skirmishes.
- Defence of island territories.
- Counter-insurgency and counter-terrorist operations.
- Internal conflicts.
- Out of area contingencies.
- Information warfare, psychological warfare, cyber warfare.
- Peacekeeping operations.

Fourth Generation Warfare.

The Indian Army is organised, equipped and trained for second and third generation warfare, ie, warfare against fixed defences, attrition and defensive operations. It has rich experience in counter-insurgency operations, But it needs to go a long way to be prepared for fourth generation warfare, in which the threats are undefined and uncertain, the operations are against the whole gamut of the enemy's society, ie, psychological operations, information warfare, dispersed groups with organisations, weapons and tactics not in keeping with conventional practices.

Use of Air Power.

The Army needs to give special emphasis to:

- Airborne, heliborne and air transported operated

operations in mountains.

- Intra and inter-theatre movement of troops and equipment.
- Intelligence, surveillance and recce (ISR) operations.
- Integrated theatre organisations for all operational commands.
- Integrated task forces' employment.
- Close air support in counter-insurgency and counter-terrorist operations and sub- conventional conflicts.
- Integration with Special Forces.

Downsizing and Restructuring.

Sooner or later, introduction of new weapon systems and limitations of funds will demand resizing and restructuring. While doing so it must be ensured that our capabilities in the following specialised roles are not eroded, besides, of course, fighting conventional wars and counter-insurgency operations:

- Rapid deployment of forces to meet contingencies.
- Amphibious operations for out-of-area contingencies.
- Special operations for counter-terrorism.
- Deterrence through strategic forces.
- Closely integrated land-air operations including use of the Army's own aviation assets to the strategic, operational and tactical levels.
- Information and psychological warfare.
- Power projection capability.

Restructuring does not mean merely changes in organisational structures. It includes management of internal and external conflicts, optimisation of doctrine and concepts, upgrading human resources, fine tuning logistics and making training efficient.

Restructuring should achieve balance between manpower, weapons and force multipliers with the funds available.

Post-1962 and in the mid-1980s there were structural changes but no matching doctrinal changes despite a revolution in military affairs and dramatic changes in the security environment.

Army's Major Thrust Areas for Modernisation

The Army has grand plans to transform itself into a fully networked force capable of 3-dimensional operations. The plans include:

- Battlefield transparency.
- Night fighting capability.
- Firepower including terminally guided munitions.
- Integrated manoeuvre capability with self-propelled artillery, quick-reaction surface-to-air missiles, latest assault engineer equipment and integrated aviation support.
- Network centricity and tactical control systems.

Mechanised Forces.

Shortcomings in defence technology absorption capabilities and intellectual property rights issues with OEMs have contributed to delays in modernisation of mechanised forces. On Army Day 2010, the then army chief had stated that as compared to Pakistan India's night fighting capability with armour stood at 20%. Progress in addressing night blindness has since then been satisfactory.

Artillery.

While state-of-the-art surveillance systems have been introduced with extended ranges, the artillery rationalisation plan to replace lighter guns with heavy calibre 155mm howitzers and guns continues to be plagued with inordinate delays, mainly due to the inability of the defence ministry to manage vendors and refusal to give domestic industry opportunities to develop complete systems.

The contract for 145 M777 guns from BAE Systems, USA and

the two regiments of Smerch multi-barrel rocket launchers from Russia have been a blessing when you consider that the artillery is waiting for over 1400 guns since two decades and the first ones will not come in for five years after the contract is signed.,

Air Defence.

It is no secret that our air defence system is in a shambles. The current air defence systems have been rendered largely ineffective due to their vintage and advancements in fighter technology, generational improvements, increased stand-off and attack ranges and anti-detection technologies. Upgrades in electro-optical fire control systems, surveillance, communications and battlefield management have not been effective.

Air defence needs an integrated family of layered and tiered defence with state-of-the-art guns for Very Short Range, Short Range and Medium Range surface-to-air missiles. The vintage L70 40mm gun, the 4-barrelled ZSU 23-4 Schilka (SP), SAM-6 Kvadrat and SAM-8 OSA AK all need urgent replacement. Akash and Trishul are yet to be inducted. The DRDO is working with the Israelis on a LR SAM and MR SAM project.

Net Centricity.

C4ISR requires a reliable, omnipresent high-speed, scalable and survivable network to enable decision support systems. The Army has made progress in achieving a high speed Common User Network (CUN) across the country. The Army Switched Communication Network (ASCON), Command Inter-Communication Network (CICN), Army Wide Area Network (AWAN) and Army Radio Engineered Network (AREN) have been established and are being upgraded. Further, Network for Spectrum (NFS), ASCON Phase IV and Tactical Communication System (TCS) for the tactical battle area (TBA) has been initiated.

On the flip side, most of the TacC3I projects have reached only first phase development. There is lack of synergy between the Signals Directorate (which itself has achieved much) and the Directorate General of Information Systems (DGIS). Some of the Tri-Service projects like ASTROIDS for higher level strategic communications

are lying in disuse. The communications and information management part of F-INSAS, the infantry soldier modernisation programme, should be handled by DGIS but continues to be handled by the infantry directorate.

Battlefield Management System.

Battlefield management system (BMS) aims to integrate all elements that undergo frequent grouping and regrouping in the TBA which operate in a given geographic area to provide a common operational picture. All issues involved are still being deliberated, although the real reasons for delay may be somewhat different. The fact remains that in the absence of a BMS the other components of net-centricity are not effective.

Tactical Communications System.

TCS will provide state-of-the-art technology to upgrade the present AREN. It will be a fully deployable mobile tactical communication system with voice, data, video, inter-communication with confidentiality and inbuilt redundancy. The project is being executed under the 'Make (High Tech)' Indian category of the Defence Procurement Procedure.

Information Systems.

The Data Communication Network (DCN) and Network for Spectrum (NFS) at the Tri-Service level will provide a network for seamless flow of informational between tactical and strategic important locations of all the three Services.

Cyber Warfare.

This is a weak area. Information Warfare staff has been posted to formation headquarters to monitor and coordinate all information warfare issues including cyber warfare. But it is not enough just to carry out cyber audits, crisis management, vulnerability analysis and cyber forensic analysis. There is a need to be proactive and offensive.

Defence Procurement Procedure.

The normal time laid down for completion of actions from

Acceptance of Necessity to signing of a contract is 24 to 30 months under 'Buy' and 'Buy and Make' categories whether ex-global or Indian acquisition. For DRDO and defence public sector undertakings (DPSUs) the time period is flexible.

Special Forces

Operation Geronimo to kill Osama bin Laden showed, without doubt, the great usefulness of Special Forces (SF).

India requires to build sizeable Special Operations Forces (SOF) capable of fighting jehadis and naxals, within and outside the country's borders. These SFs should have capability to mount deep trans-border strikes against terrorist camps. In fact this should have been done immediately after the recent beheading of Indian soldiers on the Line of Control.

The five or six parachute commando battalions are being wasted in petty counter-insurgency operations. Our higher commanders need to have a better understanding of the employment of SFs.

SFs need to be air and sea-mobile and multi-skilled, not just in high altitude sky diving, but in language skills, psychological operations, ELINT-SIGINT and so on.

Doctrine and Strategy

The Army should move away from the idea of just capturing territory and destroying military forces. It must target the minds of the enemy's military and political leadership. The enemy's strategic assets, on the other hand, must be destroyed at the earliest opportunity. Its strategy should be proactive with a shift from attrition to manoeuvre warfare.

Linear tactics eat up troops. Look at the ditch-cum-bunds (DCBs). It is time to modify operations, hop across and deal with the obstacles piece-meal later. Mobility is the key.

The Army should also look at simultaneous and continuous operations without pauses and how to fight or manage one front at a time.

It is important to achieve quick military victories. For this, operations will have to be conducted in 3-dimensions with increased tempo. Army aviation and mechanised forces need to grow exponentially.

Modernisation of the Mind

Sir Basil Liddell Hart said "The only thing harder than getting a new idea into the military mind is to get an old one out."

Though the Army is moving towards change, in many respects this change is more in form than in substance. If we wish to have a potent fighting force it is imperative that both the national and military leadership focus its energy and mind on making the armed forces more effective through appropriate organisational changes.

The key to creating value is not just a providing top-down direction, vertically, but also in enabling and motivating commanders and staff to work at the lateral level. Training institutions for officers must also look into the aspect of encouraging and developing creative thoughts on military matters.

We need to invest in designing and building strategic organisational capabilities which would have hierarchy for organising work as well as adequate scope for lateral interactions to promote and maximise the growth of mind power.

Conclusion

The Army of the future must have deterrent capability, war-fighting and winning strategy, internal security management capability, force projection and peace-keeping capabilities. The overall strategy should be proactive with doctrinal shift from attrition to manoeuvre warfare. The Army must fight for decisive results in short durations making maximum use of Special Forces, army aviation and precision munitions.

About Maj Gen (Retd) RK Arora

Maj Gen (Retd) RK Arora was the former Head of Red Forces at the Army Training Command and General Officer Commanding 12 Infantry Division. He has commanded an amphibious brigade and served in Iran as a UN peacekeeper as well as in the Perspective

Planning Directorate of Army HQ and with the Joint Planning Committee in the Ministry of Defence. After taking voluntary retirement in 2009, Gen Arora launched Indian Military Review magazine. rk.arora@idyb.com

CONCLUDING REMARKS BY THE CHAIRMAN

LT GEN (RETD) DR. DB SHEKATKAR

It is a matter of great honour to have presided over the Brigadier Grant Memorial Lecture this morning. I have been interacting with him earlier and have great admiration and respect for his strategic vision.

I am also aware that I speak to this well informed wonderful audience. Most of the prest personalities are senior to me in age and experience. I have been the student of warfare under some of them. I also had the honour to serve under some very senior officers. It will be highly presumptions on my part to explain to you the importance of the theme and continuous need for modernization of Indian Army. Modernisation is a continuous process. It does not stop. It is never complete.

There is an age old philosophy that "in no other organization the penalty for failure to forecast future, is as high as in the armed forces specially the Indian Army. The speed of change of technology has a tremendous impact on war fighting, specially the Land Warfare adequately supported by air power".

It is getting exceedingly difficult to predict accurately the future security environment, as the events in the last decade of 20th Century and first decade of 21st Century have clearly shown. The character of emerging military threats will depend on how nations, no matter how big or small, focus their resources and keep the Army in a state of readiness to combat any emerging threat. In Indian context it is necessary for Indian Army to be prepared for a combination of conventional and unconventional war.

There is yet another philosophy of conflict or warfare. "If you wish to prevent a war or conflict of any nature, be prepared for it. If you are not adequately prepared for war, you will get sucked into war at the place, time and circumstances which will not be of your choosing". India got caught and sucked into war totally unprepared in 1962 war with China, 1965 war with Pakistan and again during Kargil war with Pakistan. We were totally caught by surprise during attack on Indian Parliament and again 26/11 at Mumbai. Pakistan

was fully aware that India had neither the capability nor the will to retaliate. I request your consideration ; should we be caught unprepared again ? Our unpreparedness and lack of will power will not allow us to even evict a small intrusion in India territory by Chinese Army. Chines are fully aware of our limitations and short comings and may not hesitate to exert military pressure on us. I hope this situation does not arise, but knowing well our state of modernization and preparedness for war I feel scared to rule out such a possibility in near future.

Gen Arora has very aptly dealt at length the state of modernization and our inadequacies. I would not like to repeat these. I request your consideration on following realties in the field of future challenges to India's security and preparedness for war. The strategic mega trends to be considered are as follows :-

a) Any one who controls the space and sea will dominate area of interest and influence.

b) The Centre of geo-politics, geo-economic and geo-strategic scenario is shifting to Indian Ocean Region and Asia Pacific Region. India is acknowledged to be a dominant power in the region.

c) Geo political uncertainties are likely to persist.

d) Shift from geo-political to geo-economic will dictate geo-strategy.

e) Transformation of conflict is well under way. Regular conventional war are being replaced by irregular, non standard conflicts and war as well as terrorism insurgency and internal unrest / uprising duly instigated by interested powers as we have witnessed in Tunisia, Yemen, Egypt, Libya and now in Syria. The next in line for the change of ruling regime are likely to be Iran, Pakistan and Saudi Arabia. India will be influenced by events in immediate neighborhood and region of interest.

f) Risk and dangers of nuclear proliferation in the hands of "non state actors" have increased. I can see the possibility of a crud

nuclear, chemical, biological device in the hands of terrorist organization.

g) There will be a shift from use of weapons of mass destruction to "means and mechanism of disruption of masses" without entering into a conventional war. Look at Libiya and Syria !!

h) Political diplomacy is being supported and supplemented by politico-economic and politico-military diplomacy.

j) There will be a shift from "how many killed" to "how quickly killed and destroyed".

k) The currency of power in the 20th Century was armed power (deterrence) ; the currency of power in 21st Century will be knowledge power and ability of a nation state to influence the thinking of people before resorting to use of armed power. Psychological warfare and psychological deterrence will assume greater importance in years to come. The focus will be on people and rank and file of the Army. Therefore "Perception Management", "image management" will be of great importance. If we as a nation fail in perception and image management then we should be prepared for "Consequence Management". Despite such a large standing army, strong airforce and navy, why is India considered and projected as "soft state" ? Why is governing mechanism is always accused of "Lack of will Power". Why we as a nation are always caught wanting and unprepared to face unexpected situation. Is it the fault of the Armed Forces, specially the Indian Army or others are equally responsible, answerable and accountable.

If India wishes to seek its rightful place under the Sun in the emerging world environment then there is no short cut or substitute but to have effective, well equipped, trained, motivated slim and trim Indian Army. Army which is always prepared (not eager) to respond to emerging threats and challenges. While discussing and deliberating on Modernisation of Army, I request your consideration that "Obesity of Numbers can never win a war". It is slim and trim who will win the war. It will not only be the "survival of fittest" but also the meaningful and respectful survival of the fastest.

I thank the General far an excellent presentation and I thank you all for your kindness to listen to me and permit me to speak.

Thank you all ladies and gentleman.

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CASS PUBLICATIONS

Sl. No.	SEMINAR PROCEEDINGS	Date of Seminar
1.	"Defence and Industry"	17 May 93
2.	"Use of Force in Internal Peace Keeping"	04 Dec.93
3.	"The Emergence of China : Political, Economic and Military Implications for India"	22-23 Nov.94
4.	"First SLK Memorial Lecture" by Shri P.Chidambaram, Union Minister for Commerce.	05 Jun. 95
5.	"Human Rights : Law and Order in India"	30 Sep. 95
6.	"The Emerging Security Environment in South East Asia with Special Reference to Myanmar : Political, Economic and Military Implication for India"	02-03 Dec.95
7.	"India 2020 : An Agenda for the Nation" by Maj Gen (Retd) KS Pendse.	Feb. 96
8.	"India : The Nuclear Challenge" by Lt Gen (Retd) EA Vas, Maj Gen (Retd) KS Pendse, Dr. Col (Retd) AA Athale.	Mar. 96
9.	"Challenges to India's National Security And India's Defence Preparedness"	20-21 Apr. 96
10.	"Citizens Rights and Indian Democracy" "Second SLK Memorial Lecture" by Dr. P.C. Alexander, Governor of Maharashtra	20 Jul. 96
11.	"Challenges of Comprehensive Test Ban Treaty Implications for India"	28 Aug. 96
12.	"Regional Security Environment To The North-West of India With Special Reference To Afghanistan."	21-22 Mar. 97
13.	"Changing Scenario of The Constitutional Values" "Third SLK Memorial Lecture" by Justice AM Ahmadi, Former Chief Justice of India	02 Aug. 97
14.	"Information Warfare"	24 Sep. 97
15.	"Laws of War"	09 Jan. 98
16.	"Indian Ocean - The Challenges Ahead"	06-07 Mar. 98

Sl. No.	SEMINAR PROCEEDINGS	Date of Seminar
17.	"The Changing Pattern of India's Relations with America" "Fourth SLK Memorial Lecture" by Dr.Abid Hussain, Vice Chairman, Rajiv Gandhi Institute of Contemporary Studies.	03 Jul. 98
18.	"Pokhran II and its Implications"	01 Sep. 98
19.	"Nuclear India And The World	08 Sep. 98
20.	"The Challenge of Terrorism"	29 Oct. 98
21.	"Foreign Policy Imperatives For Nuclear India"	26-27 Feb. 99
22.	"On Building a Globally Competitive Indian Industry : The Role of Research & Technology" "Fifth SLK Memorial Lecture" by Dr. R.A. Mashelkar Director General, Council of Scientific & Industrial Research,	22 Jul. 99
23.	"Challenges of J&K"	04 Feb. 00
24.	"Indo-Pak Relations : Challenges Ahead"	30-31 Mar. 00
25.	"Insurgency In India - Causes & Perspectives"	28 Dec. 00
26.	"Self Reliant Defence and Indian Industry" "SLK Memorial Lecture – 2000" by Shri K. Subrahmanyam, Converner, NSAB	18 Jul. 00
27.	"Governance In India : Challenges Ahead"	25 Jan. 01
28.	"India and China by 2020 : Political, Economic Sociological and Military Perspectives"	14-15 Mar. 01
29.	"Global Terrorism And India's Response"	19-20 Mar.02
30.	"Globalization And Its Impact" "SLK Memorial Lecture – 2002" by Dr. C. Rangarajan, Governor, Andhra Pradesh	24 Apr. 02
31.	"Governance In India" "Shri N.K. Firodia Memorial Seminar : 2002"	03 Oct.02
32.	"Globalisation And India"	19 Mar.03
33.	"Elections And Democracy in India" "Shri N.K. Firodia Memorial Seminar : 2004"	17 Feb.04

Sl. No.	SEMINAR PROCEEDINGS	Date of Seminar
	by Mr. J.M. Lyngdoh, former Chief Election Commissioner, Justice B.P. Jeevan Reddy, former Justice of Supreme Court	
34.	"Comprehensive Security : Need of the Hour"	25-26 Feb.04
35.	"Ombudsman, Lokayuktas, Lokpals ; Concept and Working, with Special Reference to State of Maharashtra"	25 Mar.04
36.	"Comprehensive Security II : Economic And Internal Security"	03 Mar.05
37.	"India And Its Neighbours : A Regional Security Perspective"	04 Jan.06
38.	"Probity And Propriety In Public Life" "Yashwantrao Chavan Memorial Seminar:2006" by Shri Milind Gadgil, Journalist.	03 Feb.06
39.	"Social Unrest in India : Challenges Ahead" "Yashwantrao Chavan Memorial Seminar:2007" by Dr.DN Dhanagare, former Vice Chancellor, Shivaji University, Kolhapur; Ambassador PV Joshi, IFS Addl.Secy., MEA and presently with Home Ministry for last two years	13 Mar.07
40.	"Emerging World Order And Sino Indian Relations"	21 Mar.07
41.	"Aerospace Power in a Changing National Security Environment" "Air Marshal YV Malse Memorial Lecture:2007" by Air Chief Marshal FH Major, PVSM, AVSM, SC, VSM, ADC, Chief of the Air Staff	28 Jul.07
42.	"Future Environment, Perceived Threat Preceptions And Imperatives in Response" "Brigadier NB Grant Memorial Lecture:2007" by Lt Gen N. Thamburaj, SM, G.O.C.in.C., HQ, SC	02 Dec.07
43.	"Indian Democracy : Its Strengths & Weaknesses" "Professor S.V. Kogekar Memorial Lecture" by Dr. Dileep Padgaonkar,	25 May,08

Sl. No.	SEMINAR PROCEEDINGS	Date of Seminar
44.	"India's Strategic Environment And Its Implications for Military Modernisation" Air Marshal YV Malse Memorial Lecture by Dr. Bharat Karnad	08 Jul.08
45.	"Indo-US Relations : The Changing Perspective"	22 Oct.08
46.	"Challenges Before the Fifteenth Lok Sabha" "Professor S.V. Kogekar Memorial Lecture" by Dr. Madhav Godbole, former Home Secretary, Govt. of India	26 May,09
47.	"Secularism in India : Meaning andPractice" "Yashwantrao Chavan Memorial Lecture" by Justice Narendra Chapalgaonkar	14 May,10
48.	"Right to Information : Reality and Rhetoric" "Professor S.V. Kogekar Memorial Lecture" by Mr. Wajahat Habibullaj, Chief Information Commissioner, Govt. of India	26 May,10
49.	"West Asia : A Factor in India's Security and Foreign Relations"	21 Apr.10
50.	"Essentials of an Aerospace Power : India Context" "Air Marshal YV Malse Memorial Lecture" by Air Marshal PK Barbora, PVSM, VM, ADC, Vice Chief of the Air Staff, IAF	09 Jul.10
51.	"Naxalism and Maoism and Indian Army"	26 Aug.10
52.	"Indo-Pak Relations and The USA"	17 Sep.10
53	"The Kashmir Imbroglio"	29 Oct.10
54.	"Value System in the Armed Forces" "Brigadier NB Grant Memorial Lecture" By Lt Gen (Retd) Ashok Joshi, PVSM, AVSM	18 Dec.10
55.	"Poverty Alleviation in India : Challenges Ahead" "Yashwantrao Chavan Memorial Lecture" By Dr. YSP Thorat, Former Chairman, NABARD & Chief Executive Officer, Rajiv Gandhi Charitable Trust, New Delhi	13 Jan.11
56.	India and East Asia : Opportunities Ahead	23 Mar. 11

Sl. No.	SEMINAR PROCEEDINGS	Date of Seminar
57.	Prof. S.V. Kogekar Memorial Lecture By Gopalswami "Free & Fair Election : Challanges Ahead"	26 May.11
58.	MAE Seminar on "India & East Asia : Opportunities Ahead"	23 May,11
59.	Prof. S. V. Kogekar Memorial Lecture on "Free and Fare Elections : Challenges Ahead" by Shri N. Gopalaswami, Former Chief Election Commissioner	26 May, 11
60.	MAE Seminar on : "The Arab Spring : Meaning Causes and Implications"	24 Feb, 12
61.	Air Marshal Y V Malse Memorial Lecture on "The Future of Aerospace Power" by Air Chief Marshal (Retd) P. V. Naik PVSM, VSM.	29 Jun, 12
62.	"A Gandhian Perspective on International Security" "Yashwantrao Chavan Memorial Lecture" by Ambassador P.A. Nazareth, IFS (Retd)	03 Jan.13