



Centre for Air Power Studies (CAPS)

Forum for National Security Studies (FNSS)



Centre for Air Power Studies

8th JUMBO MAJUMDAR INTERNATIONAL CONFERENCE



Air Power and Geopolitics in India's Neighbourhood

February 02-03, 2017

INAUGURAL SESSION

The 'Jumbo' Majumdar International Conference is a leading annual event of the Centre for Air Power Studies (CAPS), held in memory of Wing Commander Karun Krishna 'Jumbo' Majumdar – the Indian Air Force's first war hero of World War II. The eighth 'Jumbo' Majumdar International Conference was held on February 2-3, 2017, at the Conference Hall, Air Force Auditorium, Subroto Park, New Delhi. The theme for the conference was "**Air Power and Geopolitics in India's Neighbourhood.**" The opening address was given



by Air Marshal Vinod Patney, Director General, CAPS and Air Marshal SB Deo, Vice Chief of the Air Staff gave the inaugural address. The niece of Wing Commander Majumdar, Ms Devika Dasgupta, was an honoured invitee to the event.

Both the speakers praised the valour of Wing Commander 'Jumbo' Majumdar, with Air Marshal Patney hailing him as a legend in his lifetime. Air Marshal Deo reminisced that it was men like 'Jumbo' Majumdar who inspired him to be a fighter pilot. Speaking on the theme of the conference, Air Marshal Patney noted that air power could not be seen in isolation, but should be seen as a part of comprehensive power of a nation.

The speakers noted that the nature of warfare is evolving rapidly in today's times. The emerging threats that emanate from the cyber world, and the impact of cyber warfare is something that the security forces will have to contend with. While the Director General, CAPS remarked on how the plausible deniability of a cyber attack is a dangerous aspect, the Vice Chief of the Air Staff emphasised on the role of social media in cyber warfare. He said that social media profiles of individuals are increasingly becoming a source of information for an adversary, and that such platforms are becoming the outlet for various propaganda tools.

Air Marshal Patney further spoke about the development and emergence of newer realms of warfare and emphasised that a nation that controlled the cyber world would control the battlespace. The Vice Chief spoke on the role of the defence industry, asking the sector to place passion before profits. He remarked that the Indian private sector has the capability to do much more than just manufacture for offsets. Reflecting on the times, he said that the world has not seen nation-states engage in a full scale war, and hence localised conflicts have now become the grounds to observe, learn, and develop.

The session ended with the release of two books written by the faculty of CAPS – "Weaponisation of Space: An Inevitable Reality and Plausible Fallout" by Group Captain PA Patil, and "Cyber War: Conquest over Elusive Enemy" by Group Captain Ashish K Gupta.

SESSION I: THE CHALLENGE OF INDIA'S NEIGHBOURHOOD

This session studied the impact of recent developments relating to the strategic environment around India that has become challenging due to changing power relations between the US, Russia and China. China has undertaken major steps to transform its military even as its economic trajectory shows a slight slowdown. Its OBOR project has brought in Pakistan as an important player through the CPEC formulation.

Chairperson: Shri Chandrashekhar Dasgupta, Former Ambassador to the European Union and China

CHINA'S MILITARY TRANSFORMATION

Speaker: Lt Gen SL Narasimhan PVSM AVSM VSM (Retd), Member, NSAB, GoI, NSCS and Distinguished Fellow, CAPS

- China's emergence in the military as well as economic spheres has altered its relations with neighbours in South Asia and South East Asia. China is shifting from being exporter of goods to these regions to an investor.
- China is undergoing a major military transformation based upon doctrinal change with every regime change.
- China has also introduced military reforms such as reduction of troops, and an integrated command structure.
- Civil-Military integration has led to CMC's closer involvement in the forces and reduction in oversight of the Chief of General Staff.
- PLA's power and influence has been reduced. Similarly, the entire naval hierarchy is being reshuffled to develop a more professional armed force.
- Beijing's focus would be on integrated operations and asymmetric warfare.

- Areas of concern would be Chinese power projection in the Indian Ocean Region, First and Second Island Chain and threat to CAR states.
- Pakistan is developing into a dysfunctional state with near monopoly of the armed forces in all spheres.
- There is a complex relationship between the State and terror groups in Pakistan.

CHINA'S ECONOMIC TRANSFORMATION

Speaker: Dr. Sanjaya Baru, Hon. Senior Fellow, Centre for Policy Research

- The Chinese economy is the second largest and will emerge as the world's largest in the 21st century.
- GDP gap between India and China is widening, though in terms of PPP, it is less.
- A report by McKinsey and Company on Chinese consumer attitudes in 2016 shows that most Chinese prioritise happiness over wealth and feel an increasing need to save money.
- While the West is speaking of growing protectionism, China is speaking in favour of globalisation.
- China has entered the global financial system in a large way.
- Chinese USD reserves are large and the geoeconomics imbalance will be India's biggest geopolitical challenge.
- Yuan cannot be seen as becoming a dominant currency like dollar.

PAKISTAN: REVIVAL POST-CPEC

Speaker: Dr. Jayadeva Ranade, President, Centre for China Analysis and Strategy & Distinguished Fellow, CAPS

- CPEC is one part of OBOR initiated by Chinese President Xi Jinping in 2013 to make China a global power.
- CPEC will give a fillip to the Chinese economy and put to use capabilities of state owned enterprises.
- Some sections in Pakistan have concerns about transparency of funds, creation of local jobs and issues related to its sovereignty.
- Security of CPEC from terrorists is a concern along with frailties in general.
- There is opposition in Balochistan due to the fear that they will not benefit from the development of Gwadar.

SESSION II: THE 'NEW' ARENAS

The space and cyber domains have been acknowledged as the new arenas where international rivalries will play out. In a similar manner, the threat of nuclear weapons, which seemed to have been capped with treaties, requires a relook post decisions being taken by Russia and the US to modernise them. This session will highlight the trends and future trajectories in the three domains in the international scenario.

Chairperson: Air Marshal Vinod Patney, SYSM PVSM AVSM VrC (Retd) Director General, Centre for Air Power Studies

THE EMERGING GLOBAL NUCLEAR LANDSCAPE

Speaker: Dr Manpreet Sethi, Senior Fellow, CAPS

- While nuclear weapons have been around for seven decades, the context and the manner in which they are used and perceived continues to change, not physically, but politically.
- The international arena is seeing new leaders emerging with new sensibilities about nuclear weapons. Furthermore, new tensions have also emerged, particularly

among the older nuclear weapons states (NWS) and newer NWS. New technologies are also emerging which are intersecting and interfering with nuclear deterrence. There also now exist new philosophies, in which, in the past, NWs were essentially used for deterrence; brinkmanship is now very much a part of the new philosophy.

- The emerging nuclear landscape seems to be in a state of flux. There is a flurry towards reinforcement of nuclear arsenals and this has been noted particularly in the case of the US and Russia. Another aspect to the present state of flux seen in the emerging nuclear landscape is the loosening grip of arms control.
- The emerging scenario is also seeing nations upping the ante with new technologies. Advanced space enabled offensive and defensive capabilities are being used to buttress the nuclear component of national power.
- These factors have led the global nuclear order to extend its arms into uncharted waters, which has given rise to the complications of multiple deterrence equations. Presently, with more players entering the nuclear exercise, it brings in overlapping dyads and cases of collusion, thereby posing a threat of more proliferation.
- How then, does India find its fix in this situation of a surrounding nuclear cacophony? In a time of strident nationalism, with a lack of response being interpreted as weakness, India can find a mould for itself by assessing the nature of nuclear weapons, that is, their scale and scope of damage. At the same time, the role of nuclear weapons for deterrence can carry a connotation of deterring through threat of punishment.
- Furthermore, the requisite capabilities should be competent in both hardware and software, with a reminder to avoid being sucked in to an arms race. Another important reminder while creating these criteria is that there is nothing like a 'small nuclear weapon,' neither is there a 'limited nuclear war.'
- There needs to be an emphasis on strategic stability talks amongst all stakeholders, and India should continue to follow its own policies that best suit India, preferably,

continuing to champion the cause of universal elimination of NWs. By taking objective and clinical views of NWs, India should be able to exercise its choice and refrain from the 'inevitability of response.' Instead, it can continue with its deliberate, calm and calming policy choices.

- Finally, India could perhaps take the road less travelled, avoid wasteful expenditure, and avoid instability traps.

WILL SANCTITY OF SPACE BE MAINTAINED?

Speaker: Gp Capt Ajey Lele (Retd), Research Fellow, IDSA

- Presently, the sustenance of society has become totally space dependent. The current situation in space is that there is no fool proof mechanism for protection of satellites, regardless of the orbits they are located in.
- Space has become an integral part of warfare. In the context of militarisation and weaponisation of space, there is a thin line that distinguishes the two. Since the emergence of this domain, there have been enough indications which point to the challenges of space security.
- Technology is the key in which information would play a crucial role in the battle space. Herein, space has also become an important indication regarding technological development with the existence of the Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR), and other standoff and modern state-of-the-art weapons.
- The current predicament has given rise to questions like - is killing a satellite the only option, and what are the alternative approaches? The answer lies in upcoming technologies, in which BMD can act as a 'Trojan Horse' for the weaponisation of space.
- ASAT has become a global challenge, with space debris also becoming an issue. Specific legal mechanisms by states could increase the concerns of the other states.

Under such mechanisms, even legitimate actions by states could come under criticism.

- As far as warfare is concerned, a country would desire to have full spectrum dominance and space has become an integral part of this discourse. Hence, would the sanctity of space be maintained?
- The future trajectories of the space domain will perhaps see countries using the area in which space power could be used as a soft power, a smart power and/or a destructive power. Deterrence posturing would continue. Also, Space Traffic Management is a challenge while cyber/electronic jamming remains the elephant in the room.
- As for the sanctity of space, the threat is not overwhelmingly definitive but strongly suggestive.

CYBER WAR: FUTURE TRENDS

Speaker: Lt Gen Davinder Kumar PVSM VSM ** (Retd), Former Signal Officer-In-Chief, Indian Army

- Future wars will be fought in the virtual domain. Over the past decade, there have been a fairly large number of cyber attacks by a nation-state on another nation-state.
- Governments across the world aspire for digital supremacy in this new - mostly invisible - domain of war called cyber space. While developed nations consider this as a strategic imperative for security and development, developing and underdeveloped nations seek this ability for asymmetric warfare.
- Cyber threat exists 24/7 through the full spectrum, from cyber crime to cyber war. Further, the landscape is likely to change drastically in the next five years.

- Cyber attacks are tactical as well as operational in nature. As cyber weapons become more reliable, their application on both levels (tactical and operational) is almost certain.
- The current decade is seeing new tactics of hacking in which information is not only stolen, but destroyed. This has far reaching implications, particularly in cyber war and cyber terrorism, which is expected to dominate in the years to come. This would require extremely skilled capability with multiple and diverse threats focussed on human and national security.
- In the execution of cyber war, social media will play a major role. Social engineering, perception management and psychological operations will increase, with possible 'lone wolf' attacks from different geographical locations.
- Militaries, intelligence agencies, corporates and criminal groups will compete. Success depends on intelligence gathering, choosing the correct target, weapon made for the particular vulnerability, and measures to deliver.
- Threats increase exponentially when cyber warfare and electronic warfare are employed in an integrated manner. The capability to launch a cyber attack, remotely, may also see the emergence of smart e-bombs, which would scan the battlefield and deploy electronic activity against the target.
- Nation and society will have to develop a more trusted and robust infrastructure and a comprehensive plan for prevention, response, and the protection of critical infrastructure and existing space assets.
- A pure cyber war seems distant. However, cyber enabled operations have and will continue to occur, and are expected to increase. The situation is complex and uncertain, with technology developing faster than the policies and doctrines to control them.

SESSION III: INDIGENOUS AERONAUTICS DESIGN CAPABILITY

The government's thrust towards setting up a defence industrial base has received a boost through the 'Make in India' programme. An indigenous aeronautics design capability will form a major cog in this effort. This session will dwell on what has been achieved so far in this field.

Chairperson: Air Marshal PK Mehra PVSM AVSM VM (Retd), Former AOC-in-C, SWAC

INDIGENOUS DESIGN CAPABILITY FOR COMBAT AIRCRAFT

Speaker: Mr Knut Overbo, Chief Engineer and Product Manager of Future Air Systems, SAAB

- Indigenous capabilities can be developed by focussing on three critical success factors-
 - Forecasting future needs and looking for the solutions.
 - Harmonisation between the operational need and the capability to deliver it optimally.
 - Cooperation between government, universities and business industries – to create a “triple helix” structure for better and efficient technological growth in the country.
- The paradigm of technology development has seen a shift. Earlier technological advances came from the military, but now it is defined by the commercial market.
- There is a need to adopt and adapt commercial technology and to explore and apply technology for dual as well as triple use.
- The products have to be designed in a manner that they are flexible to incorporate software and hardware upgrades.

ENGINEERING RESEARCH AND DEVELOPMENT AND AIRCRAFT GAS TURBINE ENGINE TECHNOLOGY IN INDIA

Speaker: Mr Rajendra Patro, Vice President and Head of Aerospace Defence Engineering, Cyient Technologies

- The ecosystem in India is favourable to promote research and development of technology, but several challenges remain.
- There is a need for continuous enhancement and the challenge is to remain operationally competitive to be relevant.
- There is a need for international partnerships for merging big commercial bodies with a wider technological base to help develop joint technologies for the long term.
- Indian establishments (government and private) spend very little on engineering research and development (R&D). Companies like SAAB have been known to spend 20 percent of their revenue on R&D, but the amount is less than two percent in India.
- The R&D in India is pushed mostly by the government, with the private sector and universities playing a smaller role. In comparison, R&D in other parts of the world is mostly led by the private sector.
- The private sector in India can be a strategic partner of the government and should not be seen as just tactical service providers. The private sector too should invest more in the partnership.
- Research and development should be undertaken with a pragmatic mind set. The complexity of the product should be understood before estimating schedule, resources and efforts. Companies have been known to fail because of unrealistic planning.

- India needs to develop a Technical Readiness Level (TRL) as per its own technological demands, and needs to focus on strategic collaborations with the private sector.
- A large pool of resources is available to work on gas turbine engineering in India. A strong management system is required to achieve the best results through collaborations. The academia and corporate sector should be leveraged to achieve growth in technology sector.

ON BUILDING A SUSTAINABLE DESIGN, DEVELOPMENT AND PRODUCTION ENTERPRISE: AN MSME PERSPECTIVE

Speaker: Capt (IN) TN Pranesha (Retd), Executive Director R&D, Alpha Design Technologies Pvt. Ltd

- India's indigenous defence production sector is evolving. The emerging technological trend has moved from 'equipment centric' to the present 'system centric' and it has been predicted to gradually shift to a 'network centric' scenario.
- The Indian market trends reflect a vibrant industrial ambience which benefits from a favourable defence procurement procedure and offset policies. The market has shown an inclination towards modernisation and upgradation of existing war assets.
- The Government's thrust towards setting up a defence industrial base has received a boost through the 'Make in India' programme. Indigenous aeronautics design capability is expected to become a major component in this aspect.
- However, moving from a 'product' to a 'system' level and acquiring the required acceptance by the user has proven to be an expensive and risky affair, which involves multiple stakeholders.
- Micro, Small and Medium Enterprises (MSME) have a role to play in the transitional phases, in which technology manifests into a 'product'; which then evolves into a 'system', and eventually to a 'war asset.'

- Multiple domain expertise is needed to resolve several problems. There is scarcity of such expertise in the market. Solicited external support has become a requirement in the contemporary market scenario.
- Recommendations:
 - Proactive technology and product development activity, coupled with opportunity based 'bidding to win' appears to be a viable option.
 - Setting up project specific partnership with Global Original Equipment Manufacturers (OEMs). A move towards globalization would prove to be mutually beneficial.

SESSION IV: AIRPOWER IN RECENT CAMPAIGNS

Air power has become the weapon of first choice, as seen by its utilisation in all major conflicts of the past two decades. The achievement/shortcomings of air power will be analysed by the speakers in this session.

Chairperson: Air Marshal KK Nohwar PVSM VM (Retd), Additional Director General, Centre for Air Power Studies

CONCEPT OF AIR OPERATIONS: INDIAN CONTEXT

Speaker: Air Vice Marshal D Choudhury VM VSM, AOC, COBRA Group

- Role of air power has evolved from a tactical role before World War II, to a more integrated role during World War II.
- Strategic agility is the single most invaluable attribute of airpower.
- Widely studied and implemented air power models of the world, especially of the last two decades, do not hold for the Indian scenario.

- In the Indian Context, air power is vital for conventional, sub-conventional, and non-conventional warfare. India has also used air power for a peacetime role, as seen during humanitarian assistance and disaster relief (HADR) operations.
- As was seen during the Kargil Conflict, use of air power does not lead to escalation of conflict.
- Each operation is seen as unique, and the planning begins by evaluation of the conflict, which is followed by setting out the operational parameters. Accordingly, the planning is undertaken to determine the use of resources and efforts.
- Unlike in other parts of the world, India has a live border and a hostile neighbourhood, and the Indian Air Force operates in a contested air space. The collusion among our hostile neighbours is also a matter of concern.
- The People's Liberation Army Air Force (PLAAF) is developing a more strategic role with former and current PLAAF leaders playing more central roles in the decision making process in the Central Military Commission (CMC) as well as the Communist Party of China.
- China is aiming for air space control over the South China Sea, which is evident with the Chinese build-ups and developments in the region.
- National objectives dictate the level or type of conflict. Level or type of conflict dictates the operation. Each type of operation dictates its 'box' or defining parameters.
- OODA loop speed means that the speed of the process defines every day and future air operations. The process is vital, as it comprises the sensor-shooter cycle.
- There has been a gradual shift from non-alignment towards neo-realism, and geo-economics has become the driver for foreign policy, Further, regional geopolitics has acquired a distinct maritime flavour.

- Airpower's strategic agility, asymmetric capability, kinetic precision, reach and swift response makes it a vital complement for maritime power and this can be vital for future foreign policy prosecution.

FRENCH AIR FORCE IN OPERATIONS: LESSONS LEARNT AND TRENDS

Speaker: Brig Gen Gilles Perrone, Chief of Staff, Air Defence and Air Ops Command, French Air Force

- The French Air Force handles operations in their own homeland, Middle East and Africa. In the homeland, the role is towards preventing a 9/11 type attack, and combatting, controlling and warding off spy aircraft, drones and lost aircraft. Around 11,000 aircraft fly over France everyday requiring a very reactive commitment chain.
- Neutralising drones has become a major issue, and the French Air Force is experimenting with Eagles to catch and take down the drones.
- The active role of mainstream and social media has led to operations being reported in almost real time. Thus, the planning of operations have to take into account the heavy presence of an active media in today's time.
- The French are undertaking Operation Chammal in the Middle East.
- The French are the second highest contributor to the airstrikes in Iraq and Syria. France is at war with terrorism and airpower is a major part of this campaign.
- The Air Force is involved in reconnaissance and surveillance missions before and after an operation. No ground movement takes place without air support.
- Surveillance and reconnaissance is essential for air operations in today's times. There is a massive reliance on drones and reconnaissance pods and light aircraft for this purpose.
- The average strike ratio is one strike for every two sortie.

- The ammunition used in Iraq and Syria consists of GPS guided ammunition. Laser guided options are being looked into as well.
- The French are also involved in Operation Serval in Africa. The operations in Africa showed the swiftness with which the French Air Force can act as the aircraft were mobilised within 48 hours of getting confirmation from the political authorities.
- The large area of operation in Africa has proved to be a major challenge, and robust C4ISR capabilities are required.
- Interoperability in a coalition is important to train and fight together.
- The ability of the air component to produce long term strategic effects has not been sufficiently exploited. An air campaign carried out through a systematic approach of the adversary produces far more strategic effects than any other component.
- France is at war with terrorism and air power is a part of the answer.

THE BRITISH EXPERIENCE

Speaker: Gp Capt Fin Monahan. CO. Central Flying School, Royal Air Force

- The British experience has seen a shift from a Cold War mind set to an expeditionary mindset. They have incorporated lessons drawn from the Falklands War, Gulf War, and the Balkans War.
- The lessons include the importance of AAR, the need for better Joint C2, PGMs, expeditionary skills, and with the media reporting in real time, there is a need for transparency.
- The Royal Air Force is involved in expeditionary missions now, which involves moving out, setting up an airbase, operating it, and shutting it down in case of a return.

- The British Government has developed a Permanent Joint Headquarter to control operations. The decision-making flows from the UK Government to the Ministry of Defence to the Permanent Joint Headquarters, and finally to the Army, Air Force, and Navy.
- With increasing participation in international operations, the need for interoperability is greater now than ever. There is a need to function in a multinational command structure.

EMPLOYMENT OF AIR POWER IN COUNTERING LEFT WING EXTREMISM

Speaker: Air Cmde Ajay Shukla VM(G), Task Force Commander, Anti Naxal Task Force

- Naxal Movement and Left Wing Extremism (LWE) is one of the gravest threats that India faces today.
- The Government of India's strategy to counter LWE involves direct action by the security forces along with improving governance and bringing in development. The Indian Air Force (IAF) is an enabler for both.
- The Central Reserve Police Force is the nodal agency coordinating the role of the task force, and they elaborate on the requirements. The Anti Naxal Task Force (ANTF) roles include providing troop transportation, logistic support, communication, reconnaissance, and also undertake casualty evacuation and SAR.
- UAVs are also deployed to provide intelligence, surveillance and reconnaissance support.
- The task force operates under high risk scenarios, with the dangers of operating under a threat of small arms, high calibre weapons, and Improvised Explosive Devices (IEDs).

- In addition, the ANTF has to face operational peculiarities such as a dynamic environment and poor infrastructure at helipads/landing zones, short notices for operations, limited intelligence, and the need to operate by day and night.
- Sanitisation is a requirement before aircraft land, to ensure minimal damage to aircraft.
- Actions are being taken for threat mitigation and capability enhancement.
- There are arguments for and against offensive employment but the policy is apt for the present.

CLOSING REMARKS: Air Marshal KK Nohwar PVSM VM (Retd), Additional Director General, Centre for Air Power Studies

The Additional Director General, CAPS thanked all the speakers for their valuable contribution and reemphasised the character of air power while complimenting those who undertake challenges in spite of adversities. He also conveyed his appreciation to the CAPS faculty members and staff for organising the seminar in a commendable fashion.

Event Gallery





