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Mailing address

Managing Editor, CLAWS Journal
Centre for Land Warfare Studies
RPSO Complex, Parade Road
New Delhi 110010, India.
Tele: +91-11-25691308, Fax: +91-11-25692347, Army: 33098
Email: clawsjournal@gmail.com / claws.publications@gmail.com
Website: http://www.claws.in

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Note from the Editor

"Victory comes from finding opportunities in problems"

—Sun Tzu

While planning for the *CLAWS Journal* Summer Issue 2020 was in progress, the world was, and is continuing to fight a different battle altogether—'a faceless enemy' in the form of the COVID-19 pandemic. This *Issue* also occurs at the time when a series of transformations in the world in terms of conceptual understandings of various phenomenons, precedence of non-traditional securities over conventional ones, challenges and threats to strategic assets emanating from advancement in technology, empowerment of social media as the fifth state, etc. are at the forefront. All of these changing dynamics are noteworthy especially from a land warfare perspective.

It is well realised that war is no longer restricted to the ground or the air; it has its spread in cyber, electronic, space and psychological domains. Therefore, keeping in mind the wider domain of warfare, the much-needed step towards meeting the future challenges to India's security came with the announcement of the creation of the post of the CDS and DMA. With progressive changes in the organisational structures, greater synergy will be achieved between the armed forces, to bolster the operational preparedness of the "Men in Uniform" as also to provide a robust logistics system to them.

Traditionally, the concept of national security was always associated with protection of territorial integrity of country's borders against any external aggression. Post Cold War, much greater stress has been laid on security of the people through sustainable human development

programmes. All threats and challenges that impact 'human security' are a part of non-traditional dimension of national security. Just as COVID-19 owes its origin to biological sources, environmental security, a part of the non-traditional security challenge, is closely linked with environmental degradation that affects wellness of human beings and all living and non-living organisms. The environmental degradation is leading to climate change, global warming, massive air pollution, water pollution, and loss of flora, fauna, and habitat across the world. Moreover, as the environmental cover degrades, the country becomes vulnerable to security threats like insurgency, cross-border terrorism, internal conflicts, displacement of people, etc. At times, instability also erupts within the country, thus leading to difficulties in maintaining the country's security and stability.

The advancement in drone technology as exhibited most recently in the Middle East makes it vital for India to develop its UAV capabilities and employ them in multi-faceted roles. It is equally important, to advance India's missile defence programme. Considering the 'missile capabilities' of our adversaries, it becomes imperative for India to develop and modernise its ballistic missile defence to address its security concerns.

India's relationship with the Gulf countries seems to be taking a new and more positive turn. This shift in India's relation with the Gulf from transactional to strategic partnership is considering the multi-faceted options the region has to offer and collaborations on various issues of common interest.

The whole domain of cyber is emerging as a new form of warfare in today's world. Usage of internet and social media has become a game changer to manipulate the perceptions of the people. Social media has been used by many non-state actors to indoctrinate and radicalise the people of Kashmir, and induct new cadres in Maoist camps. Phishing emails, calls, has become a new way of creating hazards in people's lives. It is this "Fifth Estate" that is threatening a country's security, both internally and externally.

Discussing beyond the border issues, China's irresponsible behaviour during the initial stages of COVID-19 had left the world unprepared and the world economies are paying the price of China's recklessness. While economically, "Great Lockdown" depression is predicted which will be severe than the Great Depression, the crisis has led to mass displacements, health and food insecurities. Keeping these in mind, it is suggestive that the world takes a note of the situation and indulges in investigations on why China did what it did! From Chinese perspective, accountability is important if it wants to rise as a world power as *with great power comes great responsibility*.

The Issue contains 10 articles and 3 book reviews pertaining to wide areas that require attention of political analysts and researchers as well as practitioners. While the topics covered are wide in variety; there is diversity in authorship as well. The Journal presents a perfect mix of authors from different fields such as: Former Army Commanders, veterans' practitioners, and academics. Such a blending will provide a holistic view of the issues highlighted in respective articles. The Journal is composite, contemporary and committed to provide researched papers on diverse subjects.

Happy reading!!

Editor-in-Chief
CLAWS Journal

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The vision of the CLAWS is to develop a 'strategic culture' to bring about synergy in decision making both at national and operational levels. Since its inception, CLAWS has established itself as one of the leading 'think tanks' in the country. To achieve its vision, CLAWS conducts seminars (at Delhi and with commands), round table discussions and meetings with academia and intellectuals of strategic community both from India and abroad. CLAWS also comes out with a number of publications pertaining to national and regional security and various issues of land warfare.

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CENTRE FOR LAND WARFARE STUDIES
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VICTORY THROUGH VISION

Appointment of Chief of Defence Staff and Creation of the Department of Military Affairs: A Gamechanger*

AK Singh and R Chandrashekhar

The announcement by the Prime Minister, Narendra Modi in his Independence Day address to the nation of Government's intent to appoint a Chief of Defence Staff (CDS) marked the gamechanger event that the country was to embark up on.[1] The subsequent appointment, in December 2019,[2] of General Bipin Rawat, to the newly created appointment as its first incumbent and the simultaneous creation of a Department of Military Affairs as a separate vertical within the Ministry of Defence with the CDS as its ex-officio Secretary are each and together tectonic shifts that have moved the balance in Civil-Military relations to a new normal. It has also disruptively altered the entire edifice of the structure of decision making relating to matters of military.

Lt Gen **AK Singh**, PVSM, AVSM, SM, VSM (Retd) is a Distinguished Fellow at CLAWS, former GOC-in-C Southern Command and former Lt Governor, A&N Islands and Puducherry.

Mr. **R. Chandrashekhar** is a Senior Fellow at the Centre for Joint Warfare Studies and erstwhile member of the Armed Forces Headquarters Civil Service.

* This article was originally published as web article at CLAWS website on 1 May 2020.

The "why" and "why now" for these decisions is best understood from the following excerpts from the Hon'ble Prime Minister's address:

> *"… The world is changing today, the scope of war is changing, the nature of war is changing. It is becoming technology driven; in the circumstances India too should not have a fragmented approach …*
>
> *… Our entire military power will have to work in unison and move forward … things cannot move smoothly if anyone from the Navy, Army and Air Force is a step ahead from the other two forces, while the other two are lagging behind. All the three should move simultaneously at the same pace …*
>
> *… today we have decided that we will now have a Chief of Defence Staff—CDS and after formation of this post all the three forces will get effective leadership at the top level."*[8]

Three aspects stand out in this very deliberately drafted excerpt of the address. First, an acknowledgement that the (then) approach was "fragmented." Second, the need for the three Services to "march in step" with good coordination. Third, and importantly, there was an expectation that "the three forces will get an effective leadership at the top level."

Later, when the decision to create a Department of Military Affairs (DMA) was announced, in a rather direct and unexpected manner, with its notification and list of allocated subjects, it took a while to absorb the sheer gravity and implications of this decision.

The need for a CDS for India's Armed Forces had been felt for several decades and even recommended by various Reform Committees in the past, in more recent times by the Kargil Review Committee (KRC) under the Chairmanship of the venerable K. Subrahmanyam. The committee was set up by the Government of India on July 29, 1999 three days after

the conclusion of the Kargil War *"to examine the sequence of events and make recommendations for the future."* This was followed by subsequent recommendations by the Group of Ministers in May 2001.[4]

The focus here is not so much on the thought underlying the decision or the processes leading to the appointment of the CDS and the DMA, as the need to understand the implications for the future, especially how the Armed Forces will take their long denied space in the decision-making edifice of the Government of India.

Creation of the Department of Military Affairs

The creation of the DMA was encrusted through Government of India (Allocation of Business) Three Hundred and Fifty-third Amendment Rules, 2019[5] by which the **Allocation of Business Rules, 1961 were amended as follows:**

- Inclusion as a separate Department in the First Schedule of the Rules under "Ministry of Defence (Raksha Mantralaya)." These Departments now are:
  - Department of Defence (Raksha Vibhag)
  - Department of Military Affairs (Sainya Karya Vibhag)
  - Department of Defence Production (Raksha Utpadan Vibhag)
  - Department of Defence Research and Development (Raksha Anusandhan aur Vikas Vibhag)
  - Department of Ex-Servicemen Welfare (Poorva Senani Kalyan Vibhag)
- As notified vide Cabinet Secretariat Notification of 30th December 2019, the subjects allocated to the Department of Military Affairs (Sainya Karya Vibhag) are:
  - The Armed Forces of the Union, namely, Army, Navy and Air Force.
  - Integrated Headquarters of the Ministry of Defence comprising of Army Headquarters, Naval Headquarters, Air Headquarters and Integrated Defence Staff Headquarters.

- The Territorial Army.
- Works relating to Army, Navy and Air Force.
- Procurement exclusive to the Services except capital acquisitions, as per prevalent rules and procedures.
- Promoting jointness in procurement, training and staffing for the Services through joint planning and integration of their requirements.
- Facilitation of restructuring of Military Commands for optimal utilisation of resources by bringing about jointness in operations, including through establishment of joint/theatre commands.
- Promoting use of indigenous equipment by the Services.

The critical decision of course is the appointment of the CDS. In addition to his functions as Military Advisor to the Raksha Mantri and as Permanent Chairman of the Chiefs of Staff Committee, is to also be the ex-officio Secretary of the Department of Military Affairs. The point of utmost significance is that it is now a Military officer in uniform who is the Secretary of the Government Department whose work areas include the direct oversight of the administration and management of the Armed Forces of the Nation.

Major Areas of Work Transferred to the DMA

It is the specific subject heads as listed in the respective charters of each of the transferred sections that define the immensity of the transfer. These subjects include:

- Military Operations including CI Ops. Deployment of Forces, Border Intelligence, Air Defence.
- Neighbourhood countries.
- Organisation and Manpower Planning, Pay and Allowances, Defence Services Regulations.

- Personnel Management—Postings, Promotions, Cadre Management and Reviews, Complaints, Discipline, etc.
- Terms and Conditions of Service, Grant of PC, SSC, etc., Recruitment, Policy, Exams through UPSC for CDS/NDA & Naval Academy Examination/IMA.
- Training Matters—CAT "A" Estts., Field Firing Ranges.
- Defence Diplomacy.
- Budget Aspects, Appropriation/Accounts and Annual Training Grant, War and Peace system of Accounting.
- Planning and procurement of wherewithal through Revenue route.
- Development of communication/roads.
- Policy, provisioning and procurement of clothing (including special clothing) and special equipment.
- Maintenance of Platforms—Aircraft, Ships.
- War Wastage Reserves.

Transfer of Work and Personnel to Department of Military Affairs (DMA)[6]

A total of Twenty-two Sections of the Department of Defence stood transferred to the newly created DMA. These were the Sections already executing the Subjects at Sers 1 to 5 of the above list of transferred subjects. Along with the Sections and their respective complement of authorised staff, two posts of Joint Secretary, thirteen in the ranks of Director/ Deputy Secretary and twenty-five in the grade of Under Secretary also stand transferred.

Subjects Retained to be Dealt by the Department of Defence (DoD)

To give contextuality, it is pertinent to also see the subjects that remain

allocated to the Department of Defence. These are, principally, the following:

- Defence of India and every part thereof *including defence policy*, preparation for defence and all such acts as may be conducive in times of war to its prosecution and after its termination to effective demobilisation.
- The Reserves of the Army, Navy and Air Force.
- The National Cadet Corps.
- Remount, Veterinary and Farms Organisation.
- Canteen Stores Department (India).
- Civilian Services paid from Defence Estimates.
- Hydrographic surveys and preparation of navigational charts.
- Defence Accounts Department.
- Cantonment and Cantonment Boards, Defence lands and Property.
- Purchase of food stuffs for military requirements and their disposal excluding those entrusted to Department of Food and Public Distribution.
- All matters relating to Coast Guard Organisation.
- Matters relating to diving and related activities in the country.
- "Procurement exclusive to the Defence services" substituted by "Capital Acquisitions" exclusive to the Defence Services.
- All matters relating to BRDB and BRO.
- Institute for Defence Studies and Analysis, National Defence College and any other organisation within the Ministry of Defence ***whose remit is broader than military matters***.

The highlighted portions, which are both modifications to existing subjects indicate that all policy would be in the realm of the DoD with its role pitched at the level of "defence" of which, by implication, the "military" is a subset.

Organisation of the DMA

The DMA is now one of the five verticals of the Ministry of Defence, headed by the Chief of Defence Staff, who acts as its ex-officio Secretary and reports directly to the Raksha Mantri on subjects allocated to his Department. In addition to the Chief of Defence Staff, the Department staff comprises of two Joint Secretaries, thirteen Deputy Secretaries, and twenty-five Under-Secretaries and Twenty-two Section Officers whose sections had earlier formed part of the Department of Defence and now stand transferred to the DMA vide Department of Defence ORDER dated January 9, 2020.

Is the DMA Adequately Empowered to Execute its Charter?

A persistent apprehension in the strategic community is whether the DMA has been adequately empowered to effectively fulfil its charter. A close analysis of the charter of the DMA vis-à-vis the powers accorded to it would largely dispel such doubts.

- **Control of the Armed Forces of the Union—Army, Navy and Air Force and HQ IDS, Army, Navy and Air HQ and Territorial Army:** All major aspects of Armed Forces functioning have been brought under the ambit of the DMA. These include the organisation, recruitment, training, terms and conditions of service, personnel management including career management of all ranks. The advantage of the flurry of proposals that would need to be taken to reorganise the Forces to roll out integration, etc., now being processed for Government approval through a Department headed by the CDS are obvious.
- **Works relating to Army, Navy and Air Force:** Works planning, sanctions and oversight over execution have been brought under the DMA. This would enable hands-on oversight and close monitoring of several projects.

- **Procurement exclusive to the Services except Capital Acquisitions:** All revenue procurement for the Armed Forces would now be carried out with the oversight of the DMA. The participation of the CDS and the Service Chiefs in the Capital procurement process remains unaltered. Even for Capital procurement, the CDS has been chartered to assign inter-services prioritisation.
- **Promoting jointness in procurement, training and staffing of the Services through joint planning and integration of their requirements:** The powers bestowed on the DMA are adequate for it to assume the role of an integrator of planning, coordination, procurement, resource management and training. Even though the CDS may not have operational control over the three Forces, his role as "Single Point Advisor" would necessarily have bearing on the political approval and guidance to the conduct of operations. More on this later in the Chapter.
- **Promoting use of indigenous equipment by the Services:** With control over revenue procurements, the DMA could, through gentle guidance move the procurement regimen towards one where non-critical procurements are increasingly sourced indigenously. This would require to be done at a "measured pace" item-wise, so as not to cause shortfalls. The CDS would also collaborate and coordinate with the three Services Chiefs at forums like the DAC to make a push for indigenisation of platforms, large equipment and critical spares.
- **Facilitation of restructuring of military commands for optimal utilisation of resources by bringing about jointness in operations, including through establishment of joint/theatre commands:** As emphasised by the Hon'ble Prime Minister in his Independence Day address, this is the very *raison d'être* for the decision to appoint a CDS. The CDS has been empowered with requisite control over entities, organisations and structures that would need to be amalgamated/

reorganised. It is now his alacrity, astuteness and professional wisdom to visualise what the restructured theatres would be and to draw up the roadmap to seamlessly transition without compromising operational efficacy. This has been elaborated in detail later in the Chapter.

Induction of Armed Forces Officers in the DMA

The subjects allocated to the DMA can be grouped into those that have been transferred from the DoD to the DMA and the three "greenfield" subjects (Sers 6-8 of list of subjects allocated to DMA) that have not been in the undivided list of subjects of the DoD.

Work pertaining to the transferred subjects are already being executed in the Sections along with their hierarchies that have been transferred to the DMA.

It is in regard to the "greenfield" subjects, the very nature of which requires experienced military hands with high professional knowledge and understanding that would per force make it imperative for induction of Armed Force officers and personnel into the DMA. Work on these subjects have to be visualised, planned and structures created for execution. By their very nature, these subjects require specialised military knowledge and experience. Accretions to DMA staffing would be required to execute its functions in these "greenfield" areas. These three "new" subjects of work allocated to the DMA would require induction of Armed Forces Officers into the DMA.

Alongside, the prospect of including Armed Forces Officers in the Central Staffing Scheme also merits consideration.

Devolution of Authority and Powers to Services HQ

The GoM Report itself had strongly suggested "decentralisation of decision-making" and "delegation of powers to Services HQ wherever feasible," to commence with on routine administrative issues relating to personnel management of respective Forces up to a particular rank. This would considerably ease pressure on the CDS and allow the DMA space

and time to focus on forward planning. Such a move would again de facto nullify the "Attached Offices" status of the Services HQ.

Restructuring Service HQ in Tandem with DMA

The "mismatch" between various "levels" of functionaries at the Services HQ and the Ministry of Defence lies at the root of issues relating to equivalence, etc., that have caused so much angst in the recent past. There is occasion now to review the structures of the Services HQ to bring them "at par" with those in the DMA—level for level. This would ease the eventual process of the Services HQ themselves becoming Departments of the Ministry of Defence.

Time to Develop a Robust Bench Strength of Competent "Defence Administrators"

Nether Civil or Military Officers can expect or hope to serve in the DMA or the Services HQ beyond stipulated tenures. It is only the AFHQ Civil Service, entirely dedicated to the Ministry of Defence that can effectively serve this purpose. Amongst the early initiatives should be to review the deployment of this Service, train and utilise it to provide the backbone of support to decision-making across the DMA and the Services HQ. A long-standing suggestion to open the cadre to retiring Services Officers to facilitate ploughing back the wealth of their experience for the benefit of the organisation, should be reconsidered.

Shift in Work Culture

Above all, it is imperative for a culture of "Responsibility-Authority-Accountability," as already being practised for operational matters, to be inculcated even for administrative decisions. This is an absolute "must" for effective and speedy decision-making and ensuring a change in prevalent work culture.

Jointness and Integration in the Armed Forces

To ensure true jointness in the armed forces we need to move from symbolism to substance. The philosophy should be—*"Three Services, One Joint Force,"* which should lead to optimum operational effectiveness. Most important, it cannot be a please all effort. Some may gain or lose, so be it. We have been held hostage to such thinking/balancing for too long—not anymore !

The first step towards achieving jointness is for the COSC headed by the CDS to define the threats that the country is likely to face, in the near term, i.e., 5-7 years, as also over the horizon threats in the long term, i.e., 15-20 years. This threat perception should then prompt an updation of the joint services doctrine, followed by individual service doctrines. Capability development and prioritisation will axiomatically follow.

There is great scope to bring about jointness in operations, training, communications and logistics to include supply, transport, as also repair and maintenance within the three services. Whilst operations and training will get greatly enhanced through the creation of "Integrated Theatres," the other aspects also lend themselves to greater optimisation and savings through jointness. Some of the measures that should be adopted are detailed below:

- Establishment of common logistics nodes where the three services can draw on rations, fuel and other miscellaneous logistics requirements.
- Commonality of transport, less specialist vehicles.
- Optimisation of the repair and recovery organisations and facilities available with EME and their counterparts with the IAF and IN. There is a lot of duplication within the three services, based on common equipment like B vehicles, small arms, AD weapons systems, UAVs, helicopters, etc.
- Annual maintenance contracts of commonly held equipment like Herons, Brahmos, etc., can also be optimised. The vast resources and expertise of DGEME can be put to optimum use.

- It may be worthwhile to order a study under the aegis of CISC/VCDS to recommend logistics optimisation within the three services. Similarly, the SO-in-C may be tasked to work out common signal communication protocols, as also standardisation, to the extent feasible, of communication equipment, medium and secrecy protocols, to ensure seamless inter-services communication. A small set-up like "TRAI" may be created under the CDS to coordinate and oversee this critical aspect.

Inter-Services Prioritisation for Capital Acquisition Proposals

In times of inadequate defence budget, especially for capital acquisitions, this role of the CDS has become critical, so that the meagre budget is put to optimum usage. The existing procedure mainly revolves around the LTPP/LTIPP (Long Term Integrated Perspective Plan) prepared by HQ IDS, based on which inter-services allocations are made by the MOD (which will continue to do so, being the charter of the Defence Secretary).

Intra Service priorities are laid down by respective Services, though this doesn't get reflected in the actual procurement. Based on the tedious procurement process, it is possible that quite often, a lower priority item gets through, whilst a higher priority equipment faces hurdles. This anomaly needs to be set right, through the creation of a long-term budget purchase plan, so that the meagre resources are spent on priority items. It is learnt that the Government is already working on a five-year budget for defence capital acquisitions, which will greatly facilitate procurement of priority items.

The CDS, of course, as per mandate will have a major say in inter-services prioritisation of the defence budget for capital acquisition. It is a challenging mandate, the more so because of already existing committed liabilities. The best way is for the CDS to scrutinise all big-ticket items and see how they fit into the joint war fighting doctrine/plans; also, examine

the affect it will have on prolonged committed liabilities, especially for the other two services. A good example is the recent decision to drop plans to acquire a third aircraft carrier, which would have severely curtailed the availability of funds for modernisation of the other two services.

Similarly, the requirement of IAF to build to a strength of 44 Squadrons needs deeper analysis, in light of acquisition of sophisticated aircraft and air defence systems. Unmanned aerial platforms are likely to revolutionise future warfare, that too at a fraction of the cost of 4th/5th Generation aircraft. A deeper analysis is necessary to get the right mix. The Indian Army has already dropped its ambitious plans for the "Battlefield Management System" and deferred some big-ticket purchases, like the FICV and FRCV.

The Robotics revolution is well under way and we haven't even started with a clarity of what that means, both in terms of doctrinal changes as well as development of related technology. We are aware that DRDO is doing some good work, but that's not enough. The book *Wired for War* by P. W. Singer (*New York Times Bestseller*, Penguin Books, 2010) is a compelling and authoritative account of how robots will become integral to twenty-first century conflict in all the four dimensions, land, sea, air and space. In the words of the author, science fiction has turned into science reality. The killing of Iranian General Suleimani in a US drone strike recently has illustrated this starkly. Our recommendation is that this subject be taken under direct aegis of the CDS and a comprehensive task force assigned to take it forward. This must be accorded the highest priority both doctrinally and for capability development, involving both DRDO and the best of private sector.

Desired End State

In our view the best way forward is to adopt regressive planning, i.e., first decide the end state and then work backwards how to achieve it, in

phases, as may be necessary. To achieve true jointness we need an end state based on "Integrated Theatres" under 4-star Generals/equivalent with tri-service/bi-service assets under one Commander. At the apex level, should be a 5-star CDS with integrated staff to support him. The integrated theatres should report to the CDS and through him to the Raksha Mantri and the CCS. The three Service Chiefs should head their services and be responsible for manning, equipping, individual training and other miscellaneous aspects. This should be the long-term desired end state. However, for now, this article will confine itself to what has been sanctioned by the Government, i.e., A 4-Star CDS (First amongst equals), with no operational role and military command, which will continue to rest with respective Service Chiefs.

Integrated Theatres

An Integrated Theatre of Military Operations envisages a unified command of the three/two services within the defined theatre, under a single Commander who may be from the service(s) which has the most prominent role within that theatre. The Theatre will normally be defined by a geographical space and include the land, sea and airspace as applicable, which is likely to get involved in military operations. The Integrated Theatres may also be defined functionally, based on the commonality of role/purpose, i.e., an aerospace/air defence theatre.

So far, the Indian Armed Forces have been functioning as single service commands, which support each other during operations. This at best is an arrangement that may be functional, but certainly not optimal for meeting the requirements of fast-paced synergised operations in the Twenty-first Century.

Based on the threat on either flank or the maritime domain, certain geographical theatres stand out, along with some key functional theatres. A few options exist, each having their own merit. A reasonably viable option is detailed in succeeding paragraphs. Certain specific service commands, for the present, will continue to remain directly

under the Service HQ. Presently, the following Integrated Theatres are recommended:

- **Northern Theatre**
  - Including jurisdiction of current Northern Command, including 14, 15, 16 corps and 9 corps (extended up to Ravi River).
  - Will also be responsible for the China front in Ladakh, HP and Uttarakhand, with an Inf/Mountain Division, suitably located for reaction in HP and Uttarakhand.
  - The IAF will have to designate an Air Command (between WAC and SWAC) to be part of this theatre and provide air support and conduct air operations in support.
  - The Northern Army Commander may be upgraded as the Northern Theatre Commander with HQ at Udhampur.
- **Western Theatre**
  - Will include the Army's Western Command (less 9 Corps), SW Command and Southern Command, organised into two Commands—Western and Southern, with the SW Army Commander being designated the Western Theatre Commander, with HQ at Jaipur.
  - One of the Air Commands (between WAC and SWAC) will look after the Western Theatre with suitable adjustment of boundaries, location and rationalisation of assets.
- **Eastern Theatre**
  - Responsible for the Eastern China border, Nepal, Bhutan, Myanmar and Bangladesh borders.
  - Comprised of Eastern Command, now redesignated as the Eastern Theatre with HQ at Kolkata and the Eastern Air Command, which may be suitably relocated, if considered necessary.
- **Maritime Theatre**
  - Comprising the Navy assets of Western and Eastern Naval Commands, with the WNC redesignated as the Maritime Theatre.

- Southern Air Command, suitably augmented with assets, will be placed under Command to provide the air support.
- 91 Inf Bde, should also be placed under Command to provide the Army component of the amphibious capability.

- **Aerospace and Air Defence Theatre**
  - This will cater for the overall air defence responsibility of the country, with bulk of army and air force AD assets under it.
  - The Central Air Command would be upgraded to a theatre, also retaining a portion of air assets as central reserve to provide flexibility. This theatre should also be responsible for all space assets of the country, providing space support to other theatres.
- The Central Command of the Army will remain directly under Army HQ and be responsible for the hinterland and lines of communication, with ATNK&K, MG&G and MB areas under it.
- The individual services will also retain direct control of their training and maintenance commands (Southern Command in case of Navy).
- Similarly, the Strategic Forces Command and Andaman Nicobar Command will continue as hitherto fore, under HQ IDS/CDS.
- For out of area contingencies, both Aerospace and Maritime theatres should be mandated, with asset allocation for the task decided by the CDS from other theatres also, as necessary.

As far as command and control is concerned, the Theatre Commanders would report to the Service HQ to which the Theatre Commander belongs.

The CDS will of course have a major coordination role and approve shifting of assets as may be necessitated by an operational contingency. The role of the COSC may have to become more prominent, with the military directive to the Theatre Commanders being issued by the COSC, rather than individual Service HQ.

The status of Theatre Commanders will have to be enhanced; could be done either through conferring 4-star rank or even if 3-star, a select rank superior to the status of an Army Commander. This can be decided in consultation with the Government.

Why Are the CDS and DMA a Gamechanger?

For a single significant reason—that the Government has placed intrinsic faith and trust in the capability of the Armed Forces to administer themselves and manage the "military space" in the canvas of Government functioning.

It is however the combination of the three roles the CDS would play that makes his appointment and creation of the DMA a gamechanger. As the Permanent chairman COSC, the CDS can set the agenda and pace for collaborative decision-making on jointness of plans and integration of resources through creation of "Integrated Theatres," as mandated. In addition, based on the likely threat perception (both short and long-term) an updated joint warfare doctrine should be formulated on priority.

Further, optimisation of resources for training, logistics, communication, personnel management and inter-services prioritisation of capability acquisition will get us the desired interoperability and the best out of the limited defence budget.

As secretary DMA and Principal Military Advisor to the Raksha Mantri, the CDS would have the final secretarial word on the administrative processing of these proposals and approval of implementation plans and orders. At each stage, the CDS is the veritable "Shepherd" who will guide and monitor the course and pace of military reform.

It is now up to the Armed Forces to "seize the opportunity" and make the institution of the CDS and DMA a success—not just for the good of the Forces, but also as much for the Nation.

Notes

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Environmental Security:
The Challenge of Future

VK Ahluwalia

Waste management is an essential public service in the fight to beat COVID-19.

—UN Environment Programme, March 20, 2020

Introduction

Traditionally, the concept of national security was always associated with protection of territorial integrity of country's borders against any external aggression. Post the Cold War, Human Development Report (HDR) 1994, introduced a new concept of human security, which was a historic departure from the traditional concept of national security.[1] In this concept, much greater stress has been laid on security of the people through sustainable human development programmes. National security, therefore, has two broad dimensions: traditional and non-traditional. All threats and challenges that impact "human security" are a part of non-traditional dimension of national security. Similarly, the Commission on Human Security (CHS), constituted in 2000, defines human security as protection of the vital core of all human lives in ways that enhance human freedoms and human fulfilment. It means protecting people from critical and pervasive threats and situations.[2] Based on the threats that influence

Lt Gen (Dr.) **VK Ahluwalia**, PVSM, AVSM**, YSM, VSM (Retd) is Director, Centre for Land Warfare Studies (CLAWS), New Delhi.

"human security," HDR 1994 categorised seven main threats to human security: economic security; food security; health security; environmental security; personal security; community security; and political security.

United Nations Millennium Project (2002) defined environmental security as "the relative public safety from environmental dangers caused by natural or human processes due to ignorance, accident, mismanagement, or design and originating within or across national borders."[3]

Therefore, evidently environmental security is closely linked with environmental degradation, which affects wellness of human beings and all living and non-living organisms. The HDR 1994 briefly discusses a wide variety of environmental threats that occur primarily due to pollution of air, water and land, and their impact on countries, people and the ecosystem. All these threats manifest in the form of climate change, droughts, floods, which have a direct and/or indirect effect on human security.[4] Invariably, environmental degradation has a huge impact on non-traditional security, which affects human security in particular. Increase in sea level due to global warming, and internal displacement and mass migration of people due to cyclones, droughts or floods are cases in point. In addition, economic cost of natural disasters like hurricanes and tsunamis are too high: the total costs of Hurricane Katrina amounted to US$161 billion, which makes it the most expensive natural disaster to occur in the US as of January 2019,[5] and in 2019, besides the economic cost, the heaviest monsoon rains to lash India in 25 years had killed more than 1,600 people.[6]

The aim of this paper is to discuss fundamental issues like causes, categorisation and nature of environmental degradation. While it briefly gives a key insight into myriad threats, challenges, their impact on various facets of environment, its security, and the sources of conflicts in South Asian region (SAR), it also gives recommendations at various levels to mitigate the adverse impact of environmental degradation, including military's application to prepare for the emerging challenges.

The nature and character of environmental degradation differ between industrial and developing countries, but most of the effects are near similar with varying intensities, frequencies and impact. Therefore, of the varied definitions being propagated by different organisations and environmentalists, only important terms and organisations have been discussed briefly in the endnotes.[7]

Causes and Categorisation of Environmental Degradation

Humans and their activities or anthropological factors are a major source of environmental degradation, even though naturally induced factors also contribute to the degradation of the environment. In our environment, land, water and air are the primary sources of all living beings, as they provide food, fresh water, oxygen, and sustain other ecosystems and biodiversity. Although causes and categories of environmental degradation have been discussed separately, most of the factors are interdependent, intertwined and have a cross term effect on each other. Hence, there would be some repetition while discussing the causes and their impact.

The main causes of environmental degradation are: rapid increase in population leading to population pressure on resources; accelerated urbanisation which culminates in urban sprawl and slums; excessive pressure on land due to deforestation, intensive agriculture, mining, industrialisation; land, water and air pollution; use of fuels as source of energy; landfills, waste production; illegal dumping; agricultural pollution due to usage of outdated methods, and lack of awareness among the masses. While looking at two prominent factors alone—population and urbanisation—the urban population of the world has grown rapidly from 751 million in 1950 to 4.2 billion in 2018.[8] The Indian urban population increased rapidly from 25.6 per cent (217 million) of the total population in 1991 to 31.16 per cent in 2011 (377 million), an increase of 170 million (74 per cent) over two decades.[9] According to UN's 2018 Revision of the

World Urbanisation Prospects, the population size of India more than tripled since 1950 to 1.35 billion and the level of urbanisation nearly doubled, reaching 34 per cent in 2018 (page 37). India will contribute most to the urban increment with the addition of 416 million urban dwellers, nearly doubling the size of its urban population between 2018 and 2050.[10] As unplanned urbanisation is not safe, resilient and sustainable, it is bound to affect the environment in multiple ways.

Fundamentally, environmental degradation can be broadly categorised into four types, such as land degradation, water degradation, air degradation, and deforestation and biodiversity degradation. For ensuring a detailed discussion, air degradation has been further split into atmospheric degradation and environmental pollution. The effects due to nuclear tests and radiation have not been discussed.

Land Degradation: Land covers 29 per cent of the Earth's surface. The primary causes are deforestation, soil erosion, desertification, intensive agriculture, overgrazing, salination, forest fires, waterlogging, landfills, shifting agriculture in a few areas, excessive use of fertilisers and pesticides, and wastelands. While water and wind are the main contributory factors for rapid soil erosion, it also gets aggravated due to deforestation, overcultivation, overgrazing, and non-scientific farming practices. Desertification and land degradation would finally contribute to local warming due to absence of tree cover. Shifting cultivation or *jhum*, predominantly practised in the hilly areas of north-east of India, is an ancient agricultural practice where a farming community slashes secondary forests on a predetermined location, burns the slash and cultivates the land for a limited number of years.[11] As per UNEP 2019, 74 per cent of the poor are directly affected by land degradation globally. UN pronounced Sustainable Development Goals (SDG) 11 on "sustainable cities and communities," states, "The world's cities occupy just 3 per cent of the Earth's land, but account for 60-80 per cent of energy consumption and 75 per cent of carbon emissions."[12] It means that urban areas are major

contributors to global warming, scarcity of water, pollution and waste disposal.

Water Degradation: According to UNEP, oceans cover three-quarters of the earth's surface, contain 97 per cent of the earth's water, and represent 99 per cent of the living space on the planet by volume.[13] Water is the lifeline of all living beings, plants, marine life and biodiversity. More than 80 per cent of the world's wastewater is dumped—largely untreated—back into the environment, polluting rivers, lakes, and oceans.[14] According to the Composite Water Management Index (CWMI) report released by the NITI Aayog in 2018, 21 major cities (which includes Delhi, Bengaluru, Chennai, Hyderabad and others) are racing to reach zero groundwater levels by 2020, affecting access for 100 million people. India is suffering from the worst water crisis in its history and millions of lives and livelihoods are under threat. It is a matter of concern that 600 million people in India face high to extreme water stress in the country.[15] The causes of water degradation and pollution are: industrial waste, sewage and wastewater, mining activities, marine dumping, accidental oil leakage, burning of fossil fuels, chemical fertilisers and pesticides, global warming and emission of greenhouse gases, radioactive waste, leakage from the landfills, etc. As its degradation has a direct impact on population, urbanisation, marine life, hospitality and tourism industry, industrialisation and biodiversity, it is a major source of socio-economic security concern.

Atmospheric Degradation

In simpler terms, it primarily refers to global warming/climate change, which results in disturbing the atmospheric equilibrium. It is perhaps the biggest challenge being faced by the world at large. According to report on the Protection of Atmosphere, "Atmospheric degradation means the alteration by humans, directly or indirectly, of atmospheric conditions having significant deleterious effects of such a nature as to endanger human life and health and the Earth's natural environment."[16]

Since it is argued that Climate Change is a function of human induced activities as well, its manifold increase since the Industrial Revolution (1750) that led to more heat retention and an increase in surface temperatures cannot be ignored. One of the primary causes of climate change in SAR has been the increased emission of Greenhouse Gases (GHGs) due to rapid industrialisation, urbanisation and other human activities that result in environmental pollution and increase in pollutants. According to the UNEP on Climate Change, a few startling data and facts are: one, from 1880 to 2012, average global temperature increased by 0.85°C; two, from 1901 to 2010, the global average sea level rose by 19 cm as oceans expanded and the Arctic Sea's ice extent has shrunk in every successive decade since 1979; three, global emissions of carbon dioxide (CO_2) have increased by almost 50 per cent since 1990; four, emissions grew more quickly between 2000 and 2010 than in each of the three previous decades; and five, GHG emissions have risen at a rate of 1.5 per cent per year in the last decade.

Climate change affects air and ocean temperatures, the length of seasons, sea levels, the pattern of ocean and wind currents, levels of precipitation, as well as other things. These changes also affect the habitats and behaviour of many different species.[17] Therefore, climate change, with its multiple adverse effects, has been the major player that has increasingly impacted rise in sea levels, food security, land and marine ecosystems, land degradation and induced desertification in many regions of the world.

Environmental Pollution: Environmental pollution refers to the degradation of quality and quantity of natural resources. Pollution is due to harmful substances, products or contaminants in the natural environment, which are detrimental to health of human beings and animals, and survival of natural ecosystems and the man-made environment. Environmental pollution is intense in the developing world, due to traditional sources of pollution such as unchecked industrial emissions, polluted water supply,

greenhouse emissions, pollution due to traffic congestion, insufficient waste management, poor sanitation, and exposure to indoor air pollution from biomass fuels. As per UNEP, energy consumption is the dominant contributor to climate change, accounting for around 60 per cent of total global greenhouse gas emissions. Air Pollution has emerged as the biggest challenge among the developing countries. According to Douglas Broom of World Economic Forum (2020), "Six of the world's 10 most polluted cities are in India; and air pollution kills 1.25 million people in India every year. New Delhi has the worst air pollution of any capital city."[18] India has not addressed air pollution seriously enough, as it acquires serious dimension from mid-October to mid-March every year.

Deforestation and Biodiversity Degradation: It refers to degradation of different varieties of species that inhabit the planet, including genes, species, communities, and their habitats. Biodiversity plays a significant role in maintaining equilibrium in the natural ecosystem, by protecting water sources, reducing environmental pollution, and stabilising climate in a region. Due to human activities of destroying the flora, fauna and habitat of all living beings, it has resulted in shrinking the space of wildlife sanctuaries, biodiversity parks or national parks. For the same reasons, there has been an increase in threatened/endangered species and/or extinction of species. According to UNEP report on Biodiversity (2018), of the 8,300 animal breeds known, 8 per cent are extinct and 22 per cent are at risk of extinction. It is feared that wild life species, with viruses and other pathogens have moved out of 'shrunken forests areas' into/closer to the habitats of mankind, resulting in Ebola, bird flu, swine flu, Severe Acute Respiratory System (SARS) and also probably the pandemic novel coronavirus COVID-19.[19] China was the epicentre of coronavirus—severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)—in late 2019, the root cause of the zoonotic virus, its spread and actions taken to forewarn the world are still under investigation. This notwithstanding, conservation of biodiversity ecosystem is vital to maintain equilibrium in the environment.

Analysis: Environmental Factors and their Impact: Due to near similar geophysical settings, climatic conditions and geographical features in the SAR, several issues pertaining to environmental degradation are common, with moderate changes. While causes have been discussed, the main areas of impact are: health of all living beings, plants, marine life and biodiversity; land degradation results in shrinking per capita cultivated land, and decrease in agricultural production; rise in the sea level leading to mass migration of people and their management; changes in the pattern of rainfall, floods, cyclones and droughts with varying frequency and intensity; prevalence of air and water-related diseases; vulnerability of agriculture, wetlands and ecosystems to desertification; and accelerated urbanisation and industrialisation results in pressure on land, agricultural products, deforestation and disturbance to the natural ecosystem. The changes in climatic conditions have long-term effects on global warming, changing rainfall patterns, increase in the frequency and intensity of cyclones or floods, rise in sea level, melting of glaciers, avalanches and landslides, which result in migration of people and affect overall well-being of a region and its people.

South Asian Region (SAR): Environmental Degradation

South Asian Region (SAR) is perhaps the most diversified regions of the world in terms of geophysical and hydro-meteorological settings, demography, climatic zones, environmental sites, and in socio-economic disparity. Geographically, it is a compact geo-ecological zone, with wide variety of terrains. Though one of the fastest growing regions "with 5.9 percent growth in 2019,"[20] the region has huge socio-economic disparity, poverty, deprivation, and environmental stress, which, put together, contribute to several mass movements , armed conflicts, and instability in the region. More than two-thirds of the world's poor people live in Asia, and nearly half of them are in Southern Asia.[21]

Demographically, South Asia is one of the largest regions in terms of population. As of March 2020, with 1.934 billion (24.89 per cent of the world's population),[22] the region holds only 3.5 per cent of the total land mass of the world. It is bound to have over-dependence primarily on land, water and air sources. It is home to a highly diversified demography in terms of religion, ethnic composition, tribal population, languages, dialects, social norms, and culture. It has a young population; median age 27.6 years,[23] with unemployment rate for the labour force in 2018 at 2.75 per cent.[24]

Environmentally, the region has rich flora, fauna and habitat,[25] with a wide variety of species, on land and in marine life. Environmental degradation has been a matter of great concern to the region, for instance, South Asian countries account for only two percent of the world's forest area. The deforestation rate in the SAR is approximately 1.1 per cent annually, and about 88 per cent of the region's forest cover has been lost due to logging and other human activities.[26] Based on the key geographic, climatic, as well as geological features, the region is prone to environment related natural disasters like tsunamis, cyclones, intense rainfall, floods, droughts and landslides. Environmental factors including climate change (refer Figure 1) have been major drivers of such natural disasters. The disasters have been developing in the SAR, where the number of disasters per year has quadrupled over the past four decades (1970-2010).[27]

Environment, Development and Security

Since environmental degradation affects population at large and the natural biodiversity ecosystem, there is a clear linkage between environment, development and security. While economic development is vital for the growth of a country, it involves large-scale industrialisation, mining, urbanisation, infrastructure projects, deforestation, reduced availability of cultivable land, global warming due to increased use of energy and adverse effects on biodiversity ecosystem. Therefore, these actions also have an impact on

both traditional and non-traditional security threats. All these environmental stresses affect economic growth and stability, political stability, social cohesion and security situation within a country, as also in the neighbouring countries. We could witness, as proven historically, mass movements (driven by politico-social-environmental forces), armed conflicts, and insurgencies.

Depending upon the degree of threats and difficulties experienced in terms of survival needs of people and economic deprivation, there could be a surge in indoctrination, radicalisation, and recruitment of people for joining militancy. The Naxalite movement in central India was a result of abject poverty, exploitation, social discrimination, economic deprivation and consequences of deforestation, and landlessness. It affected the survival needs of the people from the natural sources: *jal*, *jangal*, *jamin aur khanij* (water, forest, land and minerals). Environment was also one of the prominent contributory factors that resulted in a full-blown insurgency by the Naxalites (Maoists), with incidents in 332 districts in 18 states during the peak period in 2009-11. However, as per MHA Annual Report 2018, these have reduced to about 60 districts across 8 states. To counter the threats posed by environmental degradation, India also has witnessed "save the environment" movements at various times. Therefore, a little emphasis on the subject is necessary.

Environmental Movements: There have been several environment related movements globally, as also in India. As a result of environment consciousness, India has seen the emergence of a large number of environmental/ecological movements after the mid-1970s, with a view to conserving the environment, promoting awareness among the people, demanding change in policies, and preventing development/ industrial projects that were detrimental to environmental, economic, social factors and the well-being of society at large. Within India, a few of the major environmental movements that have made an impact are: Bishnoi Movement in Rajasthan (the 1700s); Chipko Movement in Chamoli district, now in Uttarakhand (1973); Save Silent Valley

Movement in Palakkad district, Kerala (1978); Jungle Bachao Andholan in Singhbhum district, now in Jharkhand (1982); Appiko Movement in Uttara Kannada and Shimoga districts of Karnataka (1983); Narmada Bachao Andholan, Narmada River, which flows through the states of Gujarat, Madhya Pradesh and Maharashtra (1985); Tehri Dam Conflict, Bhagirathi River near Tehri in Uttarakhand (1990s);[28] and Siachen Swachh Abhiyan, Siachen Glacier by the Indian Army (1990s). People's movements, led by fair and visionary leaders, have proved to be an effective method to conserve our environment.

Environmental Conflicts at Global and Regional Levels

According to Salomé Bronkhorst and Urmilla Bob, researchers, the key points of conflict are in relation to climate change, conservation, water quality and availability, air quality and management aspects, and the new conflicts emerging due to migrations in receiving areas.[29] Based on their research, Thomas Bernauer et al. provide evidence that environmental scarcity has been a contributing factor in recent conflicts. Examples include violence in South Africa, the insurgency in Assam, the Zapatista rebellion in Chiapas, as well as conflicts in Sudan, the Middle East and Nigeria. They also identify three types of "environmental scarcities" that may result in a violent conflict: supply induced scarcity, demand induced scarcity, and structural scarcity caused by an unequal distribution of access to natural resources.[30]

According to UNEP Information Note 99-16, "growing trend in international and intranational conflict appears to be linked to deteriorating environmental conditions and resources. A vast majority of environmentally related conflicts occur in developing regions, which manifest in both direct and indirect forms. Conflicts over water resources appear to be a major source of direct international conflict. The most common environmental elements around which conflicts can erupt are water flow, diversion, salinisation, floods and pollution."[31] Water is perhaps the most critical environmental asset. Historically, it is known that there have been a number of intrastate and

interstate disputes over water like: "fundamental dispute over water in the Nile Basin among the upstream and downstream riparians; in 2011, acute water scarcity played a significant role in fuelling the political and security crisis in Yemen; Turkey, Syria and Iraq have had tension and conflict over the water of Euphrates-Tigris Basin; and periodically there have been violent protests over water in the Cauvery Basin between the states of Karnataka and Tamil Nadu in India."[32] According to Thomas Bernauer et al., "systematic empirical analyses suggest that transboundary waters are associated with low-level conflicts, but not with full-scale 'water wars.'"[33] Depending upon the severity of scarcity, even low-level conflicts can lead to limited wars.

It is evident that the cumulative effects of environmental degradation and stress are unimaginable, and these can well lead to conflicts within and outside the countries. Despite the fact that SAR has a legacy where histories, geographies, ethnic compositions, religions, languages and politics are closely interlinked, "economically, the region is the least integrated region in the world,"[34] with very low levels of intra-regional trade and investment.[35] It is primarily due to a history of distrust, dispute and the prevailing troublesome political relationship among a few countries. Degradation of land, water, air, biodiversity and environmental pollution and its adverse effects on the neighbouring countries lead to tensions and conflicts. These can result in a conflict situation. The probability and intensity of conflict would depend upon the severity of environmental degradation and its impact. A few cases are discussed briefly.

Being the most prominent country in the region, an emerging power, India's relations with most of its neighbouring countries are less than optimal. Therefore, interstate problems tend to get triggered even with trivial incidents. Periodically, tension builds up due to water scarcity and lack of transparency and hydro information over Indus Water System with Pakistan, and over Brahmaputra-Tsangpo river system with China. Regular communication and exchange of relevant information between countries is important to allay fears and apprehensions.

Pakistan has been facing a series of threats due to environmental degradation and resultantly natural disasters, which have a direct impact on its economic growth and internal stability. Sualiha Nazar suggests that the Pakistani government must prioritise its response to climate change in order to mitigate environmental threats and prevent future calamities.[36]

Afghanistan remains vulnerable to climate change, and the changes in precipitation pattern have its effects on agriculture and biophysical resources. Due to the prolonged internal conflict, conservation of environment also suffers and adds to multiple effects of environmental hazards. Nepal too faces a number of environment related challenges, such as climate change, global warming, deforestation, land degradation, demographic changes and shrinking per capita cultivable land, soil erosion and environmental pollution.[37] Due to global warming and resultant changes in climatic conditions, Bhutan, though rich in biodiversity, may be vulnerable to glacier meltdown, floods, and landslides. Land degradation, biodiversity and habitat loss, high fuel-wood consumption, and human-wildlife conflicts are some of Bhutan's environmental challenges.[38]

Bangladesh is most vulnerable to climate change and global warming due to their geographic locations, large coastal plains and delta region with low elevation that extends deep into the hinterland, and high density of population along the coastal belts. With the rise in sea level or cyclones, these areas are highly prone to flooding and inundation, which may result in mass displacement of people within and outside the country, with attendant mass migration and friction at various levels. Migration also causes socio-economic dislocation, along with psychological trauma to the affected people with young children and elderly people. With global warming and rise in sea level, Sri Lanka and Maldives would remain vulnerable to cyclones, inundation, saltwater intrusion and water scarcity. It would also have an adverse impact on marine biodiversity and ecotourism.

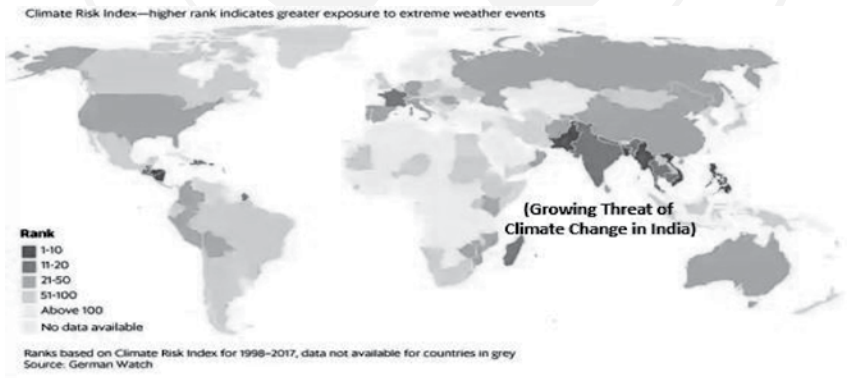
Having discussed the primary causes of environmental degradation, acute scarcity of clean water, the main lifeline of all living beings, and

environmental pollution are the biggest challenges already facing India today. As environmental features have a transboundary character, thus, the impact of their degradation will evidently cut across political boundaries of nation states. Given the nature, frequency and varying intensities of environmental degradation in developing countries, it certainly has an adverse effect on "human security" in terms of health of human beings, and the natural ecosystems. The chain of events impact both internal politico-economic-social-security situation within a country and interstate relations. As such environmental problems become more severe, they, along with other factors, may trigger a conflict with neighbouring countries or the region. A few important environmental issues pertaining to sharing of waters of rivers, climate change and Siachen Glacier have been discussed briefly.

More than ten major rivers originate from the Tibetan Autonomous Region (TAR) of China. The waters from these rivers are not only the lifeline of people, but also serve huge areas with rich biodiversity ecosystems nestled in them. For instance, the River Brahmaputra, with a total length of 2,880 km, is known as the Yarlung Tsangpo in China, the Siang and the Brahmaputra in India and the Jamuna in Bangladesh.[39] Periodically, the issues regarding water diversion projects by China, Indus Water Treaty or river linking projects by India, non-sharing of hydel data by the upper riparian, and construction of hydel dams by both China and India along the Brahmaputra river raises apprehensions about availability of water among the local population in lower riparian states and countries. In the latter case, India is the lower riparian state. Therefore, if there is a serious shortage of water among the lower riparian, it would affect survival needs of all living beings, and could destroy the natural biodiversity ecosystem and deplete natural resources. Water scarcity and its pollution would be a major source of tension and conflict in the future. While India and Pakistan have been fighting over Kashmir, the two countries have cooperated successfully on sharing the water resources of the Indus.[40]

- The World Bank estimates that, if climate change continues unhindered, then average temperatures in India could reach as high as 29.1°C by the end of the century (up from 25.1°C currently). As India still overwhelmingly relies on coal for electricity, 68 per cent of India's emissions come from generating energy. In parts of Rajasthan, Gujarat, Tamil Nadu, Kerala and the North-East, average temperature over the last decade has risen by nearly 1°C compared to the historical average in the 1950-80 period. According to the Global Climate Risk Index (Germanwatch), India is the 14th most climate change-affected country in the world.[41] Rise in temperatures has an immediate and long-term effect on the environment, agricultural productivity, infrastructure development, and economic activities. Due to effects of the climate change, people in poor countries are facing reduction in the quality of life, who, if unable to adjust to the new challenges, are left with two main options: fight or flee.[42] In both conditions, it would result in a conflict in the future. From the map at Figure 1, it is evident that South Asia is the most vulnerable region in the world due to climate change.

Figure 1: South Asia is the Most Vulnerable Region in the World



Source: Germanwatch, Global Climate Risk Index 2020, annotated by the Author, available at www.germanwatch.org/en.cri

- Environment gets affected by multiple factors. The effects of environment on the snow-clad Great Himalayan Ranges (GHR) and its offshoots must be studied with care both for conservation and for military operations. Siachen Glacier, the highest battlefield in the world, is also experiencing the hazards of environmental degradation due to large dumps of waste, garbage, packing materials and human excretion. Due to cumulative effects of global warming and accumulation of wastes, the fragile ecosystem is facing "glacier melting," which in turn will result in scarcity of water in the long run. As part of "Siachen Swachh Abhiyan," the Indian Army has institutionalised systems to conserve the natural ecosystem of the glacier. It has plans to dispose of about 100 tons of waste, including biodegradable and non-biodegradable, every year from the Siachen glacier, along with promoting awareness to identify and classify waste, instructing troops to reduce garbage and facilitate its disposal.[43] However, much more needs to be done by all countries to clean and conserve the GHR.

Out of the five conclusions drawn on environment and security in South Asia by Adil Najam, Pakistani academic and intellectual, the two prominent ones are: "first, the challenge of environment and security in South Asia is, at its core, not only a problem of resource endowments or geography but also a problem of institutions and governance; and second, while the prospects of interstate violence in South Asia over environmental issues are slim, the region's history of distrust and dispute suggests that environmental differences can add to existing tensions and apprehensions and perpetuate the general sense of insecurity that pervades interstate relations in the region."[44] Homer Dixon, a political scientist, argues that "environmental scarcity simultaneously increases economic deprivation and disrupts key social institutions, which in turn causes 'deprivation' conflicts such as civil strife and insurgency."[45] Two important deductions

are: first, if the South Asian countries focus themselves on good governance, take measures to minimise increase in global warming and ensure controlled urbanisation, environment related issues will also start getting addressed to a large extent; second, the environmental stresses need not necessarily result in an open conflict, but it will certainly induce avoidable tension, which could be one of the contributory factors for initiation of one.

Recommendations

The recommendations are based on the environmental stresses, their impact, and the likely causes of conflicts at global and SAR levels, which have already been discussed in detail. Climate change, global warming and increase in seawater level impact the world at large; hence, it requires a global level response. The aim should be to analyse the holistic impact of climate change and other environmental factors on human security, biodiversity ecosystem and mass migration of people; and then formulate policies and suggest a plan of action to manage them. The global environmental conventions and summits like Stockholm 1972, Rio Summit 1992 and Rio+20 Summit, international/regional organisations like UNEP, IPCC, South Asian Forum for Environment (SAFE), and other agencies do lay down guidelines for protection of environment, prevention of conflicts, but their universal acceptance and implementation remains far from satisfactory. According to a Report of the International Institute for Sustainable Development (IISD), in order to enforce globally accepted environmental conventions to minimise environmental stresses, certain countries may impose trade embargoes, non-grant of subsidies, tariff discrimination, the suspension of aid, and prevent capital flows.[46] Therefore, the world bodies must look at measures to promote environmental sustainability and prevent conflicts. Environmental security is the main link between humans, and natural resources cum

biodiversity. Any degradation in the environment would influence all living beings. The environmental security is a dynamic concept, as it affects individuals, society, states, and global community. With ever increasing environmental degradation, it has an impact on political stability, economic development, social cohesion, and peace, both at national and international levels. Environmental factors affect national security primarily on two counts: one, it effects human security and economic growth; two, as a potential source of conflict.

India is working with multiple UN, global, Asian, and South Asian organisations to strengthen cooperation in mitigating environmental stresses and to improve the response mechanism. The signing of the SAARC Agreement on Rapid Response to Natural Disasters in November 2011, ratified in May 2016, was a welcome initiative. Sadly, according to a report published by South Asia Forum on Preparedness for Regional Disaster Response, "… *yet, there have not been any tangible steps to operationalise it.*"[47] When environmental stresses are combined with politico-socio-economic-security stresses, they have the potential of triggering conflicts within and among nation states. This actually means that considering the hazards of environmental degradation, it requires an integrated approach to natural resource management and conflict resolution, knowledge-based partnership, information management and cooperation at global, regional and at subregional (Indian subcontinent) level. It should follow a decentralised format to analyse its overall impact, to put in place the mitigation measures and share relevant information, data and experience.

To minimise the effects of various forms of environmental degradation including climate change, global warming and energy dependence, strategy and action plans are required for: capacity and capability building; management of resources and promoting awareness; and encourage new technologies to innovate energy efficient systems and simultaneously aim to reduce carbon emissions. As establishment of major industries and

infrastructural projects degrade the environment and natural resources, they should be responsible and accountable to the local population to improve their quality of life. A proactive disaster diplomacy would help to keep a check on various agencies including non-state actors indulging in environmental terrorism (destruction, or the threat of destruction of the environment by states, groups, or individuals). Regional organisations must work together to respond to all forms of disasters. In India, National Disaster Management Authority (NDMA) is the apex body which lays down the policies, plans and guidelines for disaster management. It would be useful to hold regional and subregional level multinational disaster management exercises and formal discussions, based on probability of environment related disasters.

Military Application

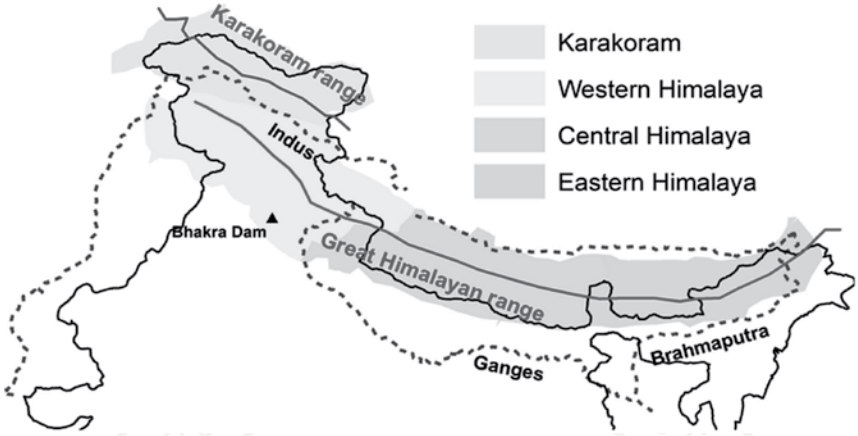
The Indian Armed Forces are operating in varied climatic conditions, and terrains like glaciers, mountains, riverine regions, jungles, deserts, semi-deserts, salt marshes, coastal belts, and island territories, which are prone to environmental degradation. Although armed forces would give always highest priority to their operations, they should be aware of the hazards of environmental degradation and its impact on human security. Given the trend of environmental conflicts the world over, as discussed, it further reinforces the point that environmental stresses and their impact should form an essential part of the national security and military strategy. At national level, a holistic appreciation of impact of environmental degradation on national security is carried out and the essential elements should form part of it. The armed forces must incorporate the actionable points in the military security doctrine/strategy. Further, it would be required to analyse the actions by the militaries at both strategic and tactical levels. Simultaneously, greater focus should be at the tactical level, as troops get more affected by changes in the terrain and weather at the grass-roots levels.

The second edition of Joint Doctrine of the Indian Armed Forces (JDAIF)–2017 has acknowledged that the environment has emerged as a critical area of the security paradigm.[48] JDIAF also highlights that environmental degradation issues like climate change, ecosystem disruption, energy issues, population issues, food-related problems, economic issues of unsustainable modes of production, and civil strife related to environment, can lead to a conflict between countries. As the armed forces are one of the biggest consumers of energy by way of fuel for vehicles, aircraft, ships, and weapon systems, they should also minimise emission of GHGs and pollution. In India, the annual global solar radiation is about 5 kWh/sq. m per day with about 2,300-3,200 sunshine hours per year.[49] The new technologies should look at innovative means to install systems that are energy efficient and minimise GHG emissions. Given the pan-India presence of armed forces, they must exploit non-conventional energy sources as alternate sources of power like solar, wind, hybrid of solar and wind, etc. In order to exploit renewable energy, they should install mega solar energy projects in areas with large number of solar radiation days such as in Ladakh, Rajasthan, Gujarat, Central India, or hybrid solar-cum-wind projects in other suitable areas in southern peninsula and Gujarat.[50]

The IPCC in its Assessment Report 5 predicts an increase in the sea levels that would pose a significant threat to naval establishments located in Mumbai, Vishakhapatnam and Kolkata. Military infrastructure in these bases could be inundated.[51] Climate change should not be considered as an environmental issue, but as a threat multiplier that effects national security. It affects environment in several ways: extremes of temperatures, changes in frequency and intensity of precipitation and snowfall, ozone layer depletion, heat waves, and growth of trees and shrubs. Besides weather related disasters like cyclones, floods, avalanches, landslides and droughts, climatic changes would affect military operations at all levels due to changes in orientation of terrains, cover available, degree of

difficulty in movement of troops due to marshes, increased water channels, desertification or greening of deserts, avalanches, flooding and landslides. "Higher temperatures sensitive weapons, equipment and armament" of all three services should be temperature hardened or measures taken to preserve their operational capabilities. Karwar Seabird, the Naval Base of India has been designed to be Smart Green Naval Base to combat the rising sea levels.[52]

Given our boundary and territorial disputes with two of our adversaries, predominantly in geologically and environmentally sensitive areas in the mountainous and other terrains, the armed forces must specifically study the impact on military operations due to changes in climate and varied terrains like: potential avalanche, crevasses, landslide prone areas in mountains; alternate routes, helipads; shifting sand dunes in deserts; effects of canals in greening of deserts; changes in the courses of rivers, *nullahs*, and capacity of water bodies; and vegetation cover. For instance, GHR and its offshoots are an area of great interest to the army. It has been observed that due to warmer winters and their impact, there has been much greater avalanche activity in terms of frequency and intensity. Therefore, impact of each such environmental stress must be studied and exact areas identified on the ground and dovetailed into military plans. Map of GHR refers.[53] Due to territorial disputes and operational necessity, Indian Army specialises in mountain warfare. Therefore, environmental conservation is even more important in our mountainous terrains in particular. In addition, there is a need to identify strengths and vulnerabilities, structural changes required, and how the emerging technologies can be employed to gather information about environmental stresses, their impact, and leverage optimum operational effectiveness. Technologies should aim at providing early warning about the impending weather changes and natural disasters.



Source: https://india.mongabay.com/2018/04/warmer-winters-in-the-himalayas-triggering-avalanches/

In the long-term perspective, it would be expedient to review our doctrines, strategy, warfighting concepts, tactics and training philosophy to meet the emerging challenges. At the strategic level, armed forces must plan for: actions required to be taken when directed to intervene in Aid to Civil Authorities and Humanitarian Assistance and Disaster Relief (HADR); assisting in mass migration or refugee management; civic action programmes to support the population; to combat non-state actors or terrorists; early warning forecasts, providing soft skills, physical assistance to conserve environment; collection of data and sharing with all stakeholders; work in conjunction with other legitimate environmental organisations; and provide continuous feedback and recommendations to the government for further courses of action.

While the leaders and commanders must be sensitive to the larger issue of environmental sustainability, environmental assets can be used as "weapons of war" like flooding an area of choosing [water stored in upstream reservoirs/dams is actual potential energy (PE), (PE equals mgh, where m is the mass, g is the acceleration due to gravity, and h is the height), which can be released at the most suitable time to exploit

water's kinetic energy (KE) potential (KE equals 1/2 mv^2)]; triggering avalanches and slides; creation of rains by cloud seeding or by using silver iodide and other chemicals into clouds; and creating or dispersing fog conditions. To quote a few examples, historically, "water had become a strategic target in both the Korean and Vietnam wars. In 1950-1951, the US attacked North Korean dams along the Yalu River; North Korea released floods from the Hwachon Dam to damage US floating bridges downstream; in 1963-1964, several hundred people were killed in fighting between Ethiopia and Somalia on a dispute over critical water sources in the Ogaden desert."[54] Similarly, during a conflict, such like hydropower plants and strategic assets could be the targets of physical or cyberattacks to leverage an advantage. On the Indian subcontinent, the Battle of Asal Uttar was one of the largest tank battles fought during the Indo-Pakistan War of 1965. To state briefly, the Indian Army lured the Pakistani tanks inside the "horseshoe trap" in the sugar fields of Khem Kharan Sector, which were flooded a night before. Next morning, over 100 Pakistani tanks (mostly M47 and M48 Patton tanks) were destroyed as they could not move because of the soft soil and muddy slush. It was one of the main turning points of the war.[55]

While undertaking secondary obligations like aid to Civil Authorities and HADR, Indian Armed Forces should be fully aware of the hazards of environmental degradation and the preparations required to be fully effective. Broadly, these include: organisational structure with command & control and communications network, casualty evacuation and medical aid, transportation of relief material, establishment of relief camps, construction and repair of roads and bridges, maintenance of essential services and evacuation of people to safer areas. While undertaking HADR duties, army should also be prepared to operate in contaminated environments. Hence, they need to formulate doctrines and SOPs, and ensure specialised equipment, protection gear and training.

The first of their kind in the world, Indian Army's Ecological Task Force (ETF) battalions have fought against deforestation and ecological degradation since 1982, and have achieved phenomenal results. They have been rightly nicknamed, "Green Warriors."[56] These warriors have remained dedicated to greening arid deserts and barren mountains, exploiting renewable energy and pursuing water harvesting. Indian Army (Kargil Division) was awarded the BNHS National Green Governance Award by the Prime Minister of India on November 10, 2005 for its unique socio-economic-strategic-ecological initiative called "Operation Green Curtain."[57] The vision of a "Clean Siachen-Green Siachen" is another recent initiative of the army. As part of green initiative, Indian Navy also launched its first warship running entirely on bio-fuel at 2016 International Fleet Review.[58] On balance, it must be appreciated that Indian Armed Forces, as a single entity, have made sterling contribution to conservation of flora, fauna and habitat, and to mitigation of the hazards of environmental degradation.

It requires political will to conserve the environment, minimise effects of climate change and manage natural resources for sustainable development. It must be understood that technical ingenuity and capacity building should form part of strategy for effective management of environmental stresses and conservation of natural resources, to prevent conflicts. The national environmental policy should be reviewed periodically, to minimise the effects of environmental degradation. As South Asia is one of the worst affected regions due to environmental degradation and natural disasters, the whole region must work together as one entity to conserve the environment, build capacities and resilience to minimise environmental stresses. The earlier the better.

> "… the world will need to pick up the pace and put greater efforts in finding better solutions to pollution, climate change and biodiversity loss in order to truly transform societies and economies."
>
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   Earth's surface emits infrared radiation, most of which is absorbed and re-emitted by the greenhouse gas (GHG) molecules and clouds. The primary greenhouse gases in earth's atmosphere are water vapour, carbon dioxide, methane, nitrous oxide, and ozone. Much of this thermal radiation emitted by the land and ocean is absorbed by the atmosphere, including clouds, and re-radiated back to earth. This is called the greenhouse effect. Due to this effect, the earth's surface remains warm. (IPCC. https://wg1.ipcc.ch/publications/wg1-ar4/faq/wg1_faq-1.3.html)
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Trump Peace Plan:
A Good Diagnosis but Bad Medication

P R Kumaraswamy

Since the time it was unveiled in the White House on January 28, 2020, *Peace to Prosperity: A Vision to Improve the Lives of the Palestinian and Israeli People*[1] or more commonly known as Trump Plan, is a non-starter. As it was being announced, two main protagonists—President Donald Trump and Prime Minister Benjamin Netanyahu—were fighting for their political survival. The US Senate was deliberating the House Resolution to impeach President Trump and moments before the White House event, Israel's Attorney General Avichai Mandelblit formally filed charges of corruption against Netanyahu in a court in Jerusalem. However, both leaders managed to weather the political storm; if the Senate acquitted the US President, the inconclusive March 2, 2020 Knesset elections—the third within a year—injected fresh hopes for the Likud leader. However, even the little hopes people had about the Plan were firmly buried in the pandemic coronavirus and the unfolding worldwide health emergency, mounting human casualties and the impending global economic collapse.

Under such a circumstance, is the Trump Plan still relevant? Or what portions of the Plan would be useful if and when the Israeli-Palestinian conflict takes the central stage of the Middle East?

Prof P R Kumaraswamy teaches contemporary Middle East in Jawaharlal Nehru University and is an academic member of the Research Council of Centre for Land Warfare Studies (CLAWS).

The Context

The historic Rabin-Arafat-Clinton handshake on the White House Lawns on September 13, 1993 gave hopes for an Israeli-Palestinian reconciliation and an honourable settlement of the century-old conflict. That was not to be. The outbreak of the second Palestinian intifada or the Al-Aqsa intifada in September 2000 largely buried the peace process. The last meaningful negotiations happened when President Bill Clinton brought Israeli Prime Minister Ehud Barak and Palestinian Chairperson Yasser Arafat for the Camp David talks in the summer of that year. The cycle of violence, intra-Palestinian conflict, and hardening of Israel's positions diminished the chances of a negotiated solution. Moreover, since June 2007, the Palestinians were torn between the West Bank controlled by Fatah-led and internationally recognised Palestinian National Authority (PNA) and the Gaza Strip controlled by Hamas. If these were insufficient, the Arab Spring protests, which began in December 2010, added a new dimension; the Arab world is more preoccupied with regime survival and the territorial integrity of the Westphalian state structure than the political rights of the Palestinians and their statelessness.

These, in turn, meant a lesser American desire for the revival of the Israeli-Palestinian negotiations. Then came President Donald Trump. Driven by his inward-looking worldview and with limited interest or experience in foreign affairs, President Trump was not enthusiastic about the peace process. At the same time, he could not ignore the growing international concerns over the Israeli-Palestinian conflict. The economic component of his Plan was unveiled in Manama on June 22, 2019 and the political part in January 2020. The US team led by President Trump's son-in-law Jerad Kushner actively engaged with Israeli leaders and officials. Still, it had no corresponding engagements with the Palestinians, the party whose welfare and progress the Trump Plan sought to champion.

Though hailed by some as the "Deal of the Century," the Plan had a unique distinction of being rejected by everyone except Prime Minister Netanyahu and his supporters in Israel, and the US. Palestinian President Mahmoud Abbas called it "Slap of the century"[2] While the 22-member Arab League observed that the Plan would not lead to Israeli-Palestinian peace.[3] The Hashemite Kingdom of Jordan, closely identified with the West, expressed its opposition despite being given a prominent place in the Plan. If Bahrain, which hosted the economic summit, made friendly noises, the Islamic Republic of Iran called it "treason of the century."[4] Turkey derided it as "absolutely unacceptable,"[5] and the European Union accused the US of breaking all international norms and principles in presenting a blatantly pro-Israeli and anti-Palestinian proposal.[6]

In short, the Trump Plan was a non-starter from the very beginning, and it trampled all hopes of an honourable political settlement between Israel and the Palestinians. Indeed, it was dead on arrival.

Yet, the Plan is noteworthy for some of the political observations which are rare in diplomatic proposals. Indeed, some of its diagnosis is accurate, but it was unable to offer a more acceptable offer.

Undiplomatic Bluntness

The Trump Plan recognises that Israel and Palestinians have "suffered greatly from their long-standing and seemingly intractable conflict … (and despite the passage of time and innumerable efforts) many of the disputed issues have remained largely the same." It admits that the prolonged Palestinian aspirations for "self-determination, improvement in their standard of living, social betterment, and a respected place in the region, as well as among the nations of the world," have "not been realized." Indirectly admitting the centrality of the Palestine question for peace in the Middle East, the Plan declares that the Israeli-Palestinian conflict "has kept other Arab countries from normalizing their relations" with Israel. But reversing the traditional approach, it observes that the "absence of

formal relations between Israel and most Muslim and Arab countries has only exacerbated the conflict between Israeli and Palestinians." Hence, it suggests that the normalisation of relations between Israel and the Muslim world would further "a just and fair resolution" of the Israeli-Palestinian conflict.

The Plan observed that since 1946 "close to 700 UN General Assembly resolutions and over 100 United Nations Security Council resolutions" have been adopted on the Arab-Israeli conflict. Some of them were "inconsistent," and some were "time-bound." These, including UNSC Resolution 242, over which scholars and countries "have differed on their meaning and legal effect" were unable to resolve the conflict. Likewise, scores of "intelligent and dedicated people have devoted lifetime in search of the 'ultimate deal,'" which "has been elusive." Taking cognisance of the present realities, the Plan observes that while "no plan will give either side all of what it wants" it proposes to offer the Palestinians "who do not yet have a state, with a path to a dignified life, respect, security and economic opportunity" even while safeguarding Israel's security.

Two, the Trump Plan offers a "realistic" two-state solution as the endgame. The Trump Plan highlights the prolonged absence of a Palestinian state and pledges "path to a dignified national life, respect, security, and economic opportunity" while ensuring Israel's security. In such a state, the Palestinians will have "all the power to govern themselves but not the power to threaten Israel." The US also recognises emphatically that the Palestinians "deserve a better future." If satisfactory steps are in place, "the United States will support the establishment of a Palestinian State."

The Trump Plan also recognises the Palestinian refugees "have been treated as pawns on the broader Middle East chessboard," and a "just, fair and realistic solution to the Palestinian refugee issue is necessary to resolve the Israeli-Palestinian conflict." The Trump Plan was even blunter and did not spare its Arab allies. It flagged that after the liberation of

the Emirate in February 1991, Kuwait "began a systematic clearing of Palestinians from the country through violence and economic pressures. The population of Palestinians in Kuwait dropped from 400,000 before the invasion to about 25,000." Most scholars tend to sidestep this issue, which highlights the intra-regional tensions over the Palestine question. Brushing aside political correctness and diplomatic niceties, the Plan mentions the treatment of Palestinians by Arab countries. Praising Jordan for its absorption of the Palestinian refugees, it observes that "in Lebanon, Palestinians have been discriminated against and prevented from entering the labour market for decades, even those born in Lebanon. They are, for the most part, barred from owning property or entering desirable occupations, including law, medicine, and engineering. To gain employment, Palestinians are required to receive government-issued work permits, but remarkably few are ever given to Palestinian refugees." Such candid observations usually are absent in scholarly works, which mainly focus on the Israeli treatment and mistreatment of the Palestinian refugees.

Three, the failure and collapse of the Oslo process raised doubts among the Israelis, Palestinians, and the wider international community over the feasibility of the two-state solution. The trust deficit among the principals, growing violence, civilian deaths, and hardening of the Israeli positions resulted in some even proposing the one-state solution whereby the Israelis and Palestinians could live under one democratic political set-up.[7] Though appealing, this is a euphemism for the destruction of the State of Israel, and the Jewish homeland project and hence is not viable or realistic. Partly due to growing violence and lack of trust, Prime Minister Netanyahu has also been moving away from the two-state solution even though international consensus favours coexistence. Hence, the Trump Plan reiterating the two-state solution is important.

Four, the Plan devotes considerable attention to the links between Jerusalem and the three Abrahamic faiths and goes to great lengths to

mention a host of historical events traced to or associated with the city. In recent years, there are systematic efforts by some Islamic countries to undermine and even deny the Jewish association with Jerusalem. Under their diplomatic pressures, the UNESCO adopted resolutions that recognised only the Christian and Islamic associations with the city and not its Jewish links.[8]

Likewise, in cognisance of the Islamic importance, the Plan refers to Quranic references to Jerusalem, the city being the first Qibla (or direction of prayers) and observes that the "Umayyad Caliphate (756-1031), based in Damascus, offered Jerusalem as an alternative place of pilgrimage when Mecca was controlled by a rival caliphate." It also lists at least 32 specific sites that are holy to all the three faiths. Making veiled criticism of the situation before the June War when Israel captured the old city, the Plan recognises Israel's track record in "safeguarding the religious sites" of East Jerusalem. It proposes that the status quo or Israeli control and administration should continue, and all holy sites "should remain open and available for peaceful worshippers and tourists of all faith." Regarding prayers on Temple Mount/Haram al-Sharif, it observes that "people of every faith" must be allowed to pray "in a manner that is fully respectful to their religion." Though the Plan exhibits a pro-Israel bias, it recognises and praises Israel's track-record since 1967.

Five, the "prosperity" component of the Trump Plan is rather interesting as it devotes considerable attention and detail to the economic package. In its view, once "the necessary conditions for investment" are created, the Palestinian GDP "could double in 10 years, create over 1 million jobs, reduce unemployment rate below 10 percent, and reduce the poverty rate by 50 percent." It even seeks to transform the Palestinian territories into thriving "business-friendly countries like South Korea, Singapore, Taiwan, and Japan" and projects the potential regional investments to the tune of over US$ 50 billion spread over ten years. These goals are rather ambitious and, if achieved, would considerably

transform the daily lives of the impoverished Palestinians in the occupied territories.

Six, despite ruling out an Israeli withdrawal to the pre-1967 border, the Plan recognises that the proposed Palestinian state would encompass "territory reasonably comparable in size in the territory of West Bank and Gaza pre-1967." This would be accomplished through a territorial swap, first outlined in Clinton Parameters in January 2001.[9] Besides parcels on the Israel territories adjacent to the Gaza Strip and along the Israeli-Egyptian border, it identifies the Arab triangle within Israel as a possible area for a swap. To support its position, the Plan has a map identifying the possible areas of the territorial composition of the Palestinian state (Map 1). It is emphatic that there would not be any "forced population transfers" of Arabs or Jews. Above all, the territorial division and separation between the West Bank and Gaza Strip remained a challenge for the Israeli-Palestinian negotiators since the Oslo days. The Trump Plan offers an imaginative underground "transportation corridor directly connecting the West Bank and the Gaza Strip through a major road, and potentially, a modern railway."

Despite these remarkable features, why does the Trump Plan invoke unanimous rejection, condemnation, and disapproval? The answer is obvious; it is highly partisan, skewed, controversial, and hence unrealistic.

Wrong Medication

The Plan evolved over a year with limited, if any, Arab-Palestinian inputs. Its demands on Israel were minimal. While admitting Palestinian stateless and prolonged suffering, it is unable or unwilling to recognise the core issue of the Israeli-Palestinian conflict, namely, *occupation*. It depicts the possible Israeli withdrawal from the occupied Palestinian territories as "a significant concession" because, upon these territories, "Israel has asserted valid legal and historical claims, and which are part of the ancestral homeland of the Jewish people." This goes against the international

consensus since the early 1970s, which recognises the inalienable political rights of the Palestinians, including their right to statehood. Both the tone and tenor of the Trump Plan is condescending and not respectful of the Palestinians and their rights and claims.

Two, the Plan makes a clear distinction between the PNA-ruled West Bank and Hamas-ruled Gaza Strip. Reiterating the traditional American position that Hamas is "a terrorist organization," it holds "Hamas's terror and misrule" responsible for the "massive unemployment, widespread poverty, drastic shortage of electricity and potable water, and other problems" facing the residents of the Gaza Strip. Hence, the Plan expects that the government of an independent Palestinian state "will not include any member of Hamas" or any militant groups unless they explicitly recognise Israel, abandon terror, and commit to nonviolence and other agreements and obligations.

Three, on some of the core issues of the Israeli-Palestinian conflict, the Trump Plan moves away from the international norms and consensus. It adopts controversial positions that were in line with the policies pursued by President Trump since he assumed office in 2017. In line with his November 2019 position that Israeli settlements in the occupied territories are "illegal," the Trump Plan observes that Israel "will not have to uproot any settlements, and will incorporate the vast majority of Israeli settlements into contiguous Israeli territory. Israeli enclaves located inside contiguous Palestinian territory will become part of the State of Israel and be connected to it through an effective transportation system." It categorically rules out any Israeli withdrawal from the occupied Palestinian territories. In its view, "Israel and the United States do not believe the State of Israel is legally bound to provide the Palestinians with 100 percent of the pre-1967 territory." If this is not sufficient, the Plan further adds that the "Jordan Valley (which is part of the West Bank that Israel captured from Jordan in the June War of 1967) will be under Israeli sovereignty." Even though

Netanyahu has been making such a suggestion, the Trump Plan gives a green signal to Israel for the annexation of the fertile part of the West Bank.

Four, while recognising the holiness of Jerusalem "to multiple faiths" and the need to keep it "always … open to worshippers of all religions" the Plan declared that in line with the December 6, 2017 decision of President Trump, "Jerusalem will remain the sovereign capital of the soil and it should remain an undivided city." It further urges the international recognition of Jerusalem as Israel's capital. Firmly rejecting the Palestinian claims to the city, the Plan proposes that the Palestinian capital "should be in the section of East Jerusalem located in all areas east and north of the existing security barrier (that Israel has built, in violation of the Geneva Convention on occupied territories) … and could be named Al Quds or another name."

Five, the Palestinian demand for a sovereign state has enjoyed wider international support and endorsement. The Plan visualised not a territorially-constrained and scattered entity but also with limited sovereign powers. Citing security considerations, it suggests that under a peace agreement with the Palestinian state, Israel "must have operational control over the airspace West of the Jordan River," that is, over the entire West Bank part of the Palestinian state. Likewise, Israel "will retain sovereignty over territorial waters" of the Gaza Strip.

Six, the military is one of the visible symbols of sovereignty and taking the development logic, it felt that the Palestinians should not be burdened with maintaining an independent army. According to the Plan, the Palestinian state "will not be burdened with such costs, because it will be shouldered by the State of Israel." The funds that "would otherwise be spent on defence can instead be directed towards healthcare, education, infrastructure, and other matters to improve Palestinians' well-being." Once a Peace Agreement is signed, "Israel will maintain overriding security responsibility for the State of Palestine." In other words, when

it comes to security issues, the Palestinian state would be nothing more than another district of Israel.

Seven, the Plan challenges and overturns the traditional international position on the question of Palestinian refugees. On December 11, 1948, the UN General Assembly adopted Resolution 194 that endorsed the right of the "refugees wishing to return to their homes and live at peace with their neighbours should be permitted to do so at the earliest possible date, and that compensation should be paid for the property of those choosing not to return."[10] Though the expression "Palestinian refugees" did not appear, from the beginning, the resolution was read, interpreted, and anchored as the basis for Palestinian right to return.[11] While there were disagreements over the number of Palestinian refugees since President Harry S. Truman, all American administrations saw it as a reminder of the Palestinian refugees. Many American presidents unsuccessfully tried to get Israel to accept a significant number of Palestinian refugees within the context of family unions. The failure of the Camp David talks in 2000 was partly due to an unbridgeable gulf between Israeli and Palestinian positions regarding refugees.

In an unusual move, the Trump Plan flags the issue of Jews who left their homes in Arab countries and emigrated to the newly found State of Israel after 1948. Since the 1950s, Israel had suggested that there was a de facto population exchange between Arabs who fled Mandatory Palestine and Jews who fled Arab countries. This line of argument resurfaced during the Oslo accords—both to reduce Israel's role in the refugee problem and to reduce the number of Palestinians it would have to absorb within a peace settlement. The Trump Plan adopts the Israeli position and observes: "Nearly the same number of Jews and Arabs were displaced by the Arab/Israeli conflict." While Israel absorbed Jewish refugees from Arab countries, the Palestinian refugees "who were displaced have, in very significant numbers, been isolated and kept from living as citizens in the many Arab countries of the region." In its view, the

issue of Palestinian refugees could not be resolved without considering the Jewish refugees, "including compensation for lost assets, must also be addressed. Additionally, the State of Israel deserves compensation for the costs of absorbing Jewish refugees from those countries. A just, fair and realistic solution for the issues relating to Jewish refugees must be implemented through an appropriate international mechanism separate from the Israel-Palestinian Peace Agreement."

It means that Israel will not absorb Palestinian refugees; Jews refugees also need to be compensated; and any financial package would be an international arrangement. According to Trump Plan, "There shall be no right of return by, or absorption of, any Palestinian refugee into the State of Israel." By absolving Israel of any role in resolving the problem, the Trump Administration once again went against international law and consensus on the refugee question.

The refugee problem has another dimension. Towards mitigating their problem, an agency—United Nations Relief and Works Agency (UNRWA)—was established in December 1949 to deal with the refugees of the 1948 Arab-Israeli War exclusively. This meant that the Palestinian refugees are not the mandate of the other refugee agency, namely, United Nations High Commissioner for Refugees established in December 1950. From the beginning, a large portion of the funds for the UNRWA has come from the US. As the Trump Plan admits, between 1950 and 2017, Washington contributed about US$ 6.15 billion to UNRWA, and in the last decade, it "contributed US$ 2.99 billion (US$ 3.16 billion in 2017 terms), which accounted for 28 percent of all contributions to UNRWA." For quite some time, the UNRWA has been criticised for its role in "perpetuating" and not resolving the problem.[12] Accusing the agency of being "irredeemably flawed," on September 1, 2018, the US ended its funding to the UNRWA.[13]

Israel would not absorb the Palestinian refugees, and the US would not fund the UNRWA to offer even minimal sustenance to

the refugee population. Then, how to solve the Palestinian refugee problem? According to the Trump Plan the solution lies in the Jordanian model. After the 1948 War, when the Hashemite Kingdom annexed the West Bank, it granted full citizenship to all the Palestinian refugees and residents of the area. Likewise, the Trump Plan wants the host countries to absorb the Palestinian refugees residing in their territories, and this is more valid for Lebanon and Syria, which have a large Palestinian refugee population. As of January 1, 2019, there were 475,075 registered refugees in Lebanon,[14] while Syria had 552,000 registered refugees living in nine camps.[15]

However, a vast majority of the Palestinian refugees are scattered in different parts of the Middle East and beyond, and the Trump Plan offers a three-pronged solution for their resettlement; their absorption by the future Palestinian state; possible absorption by host countries; and members of the Organisation of Islamic Cooperation accepting 5,000 refugees each year, for up to ten years (50,000 total refugees) subject to their consent. For its part, the US would work "with other countries to establish a framework for the implementation" of the resettlement plan. Far from seeking a "just and lasting" solution to the refugee problem as visualised by UNSC Resolution 242 in November 1967, the Trump Plan transfers the responsibility to others and categorically asks the Palestinians to give up their right to return to their homes.

Eight, the Plan limits Palestinian sovereign functions in the realm of foreign relations. According to the Trump Plan, the future Palestinian state "will not have the right to forge military, intelligence or security agreements with any state or organization that adversely affects the State of Israel's security, as determined by the State of Israel." It further demands that the Palestinian state "will not be able to develop military or paramilitary capabilities inside or outside of the State of Palestine." While the Palestinian state "will be able to establish diplomatic relations with other countries," its admission into international organisations would

be subject to the Israeli veto. In its view, the Palestinian state "may not join any international organization if such membership would contradict commitments of the State of Palestine to demilitarization and cessation of political and judicial warfare against the State of Israel." This is partly in response to several UN and other international organisations accepting the State of Palestine as a member. Palestine became a full member of the International Olympic Committee (1995); International Federation of Association Football, FIFA (1998); UNESCO (2011); and Interpol (2017); and its applications in several other bodies such as World Health Organisation (WHO) and World Trade Organisation (WTO) are pending. Since Palestinian membership often results in these international bodies adopting positions and resolutions highly critical of Israel, the Plan sought to prevent such possibilities by preventing Palestinian membership in international bodies.

Nine, since the 1950s, the US has been active in limiting and even ending the Arab economic boycott of Israel.[16] The early 1990s witnessed considerable dilution of the secondary and tertiary Arab boycott. Still, the demise of the Oslo process led to new grass-roots-based activism against Israel in the form of Boycott, Divestment and Sanctions (BDS) movement.[17] Based primarily in European Union countries, it seeks to end all economic, political, and academic contacts and engagements with Israel and its citizens.

The growing reach of the BDS movement has resulted in Israel increasing its countermeasures through domestic legislations and political campaigns in the US and other countries. The Trump Plan joined the anti-BDS campaign and observed that the Palestinian state "should cease to support anti-Israel initiatives at the United Nations and in other multilateral bodies … should not lend their support to any efforts intended to delegitimize the State of Israel." The US views "the BDS movement as destructive towards peace, and will oppose any activity that advances BDS or other restrictive trade practices targeting Israel," and

demands that the Palestinian state should oppose the BDS movement "and any other effort to boycott" Israel.

Ten, the most positive aspect of the Trump Plan is its economic component. It proposes a slew of infrastructure projects, developmental activities, and investments to the tune of over US$ 50 billion. But the mute question is, who would fund it? The Arab world is struggling with the economic cost of the Arab Spring amidst falling oil prices, the prime source of revenue for the wealthy Gulf Arab countries. Despite their stated goals, countries like Saudi Arabia, Qatar, and Kuwait have been struggling to move away from their oil-dependent economy. In proposing a grand economic framework, the Trump Administration is not prepared to shoulder the financial burden. Both during the campaign and since assuming office, President Trump has been riding on the popular American revulsion against overseas financial investments and demanding friends and allies to do more. The approach of the Trump Administration on a host of issues such as military engagements (Afghanistan, Iraq, and Syria), economic commitments to the EU, and tax regimes vis-à-vis China underscore the principle of burden-sharing. Hence, despite not consulting allies and other players while it was being prepared, the Trump Plan's economic agenda rests on international financial contribution and participation. Given their overall reservations, Arab or European countries are unlikely to contribute financially to make the Trump Plan work.

The bleak future of the President's Plan was before the onset of the Coronavirus. While the problem began in late 2019, its reach outside China was felt from mid-January, around the time the Trump Plan was unveiled. As Thomas L. Friedman put it brilliantly, *Our new historical divide: BC and AC—the World Before Corona and the World After.*[18] With growing infections and deaths, the virus is setting the international agenda, confining millions inside their homes, amid wrecked economies, institutions, and livelihood. As the world is passing through its toughest socio-economic crisis, it is safe to assume that the already unpopular

Trump Plan would be quietly buried among the scores of unsuccessful peace initiatives.

India's Reaction

Some of the positives of the Trump Plan are in sync with India's traditional position, but the proposed solution is not. Reminding that New Delhi has been "consistently supportive of the Palestine cause," the spokesperson of the Ministry of External Affairs called for "a two-state solution" achieved "through direct negotiations between the two parties and be acceptable to both." It urged both parties to "engage with each other" to consider the Trump Plan in finding "an acceptable two-State solution for peaceful coexistence."[19] The statement came in response to a media query and was made just weeks before India hosted President Trump.

The Trump Plan did not reflect India's approach to the Israeli-Palestinian conflict, nor does it further India's interests in the Middle East. India could not be enthusiastic about it. At the same time, it is evident to seasoned observers that the Plan has no chance of making even minimal impact on the region, and any negative response from India would only generate unnecessary and avoidable reactions from the Trump Administration.

The Trump Plan makes a clinical assessment of the critical problems of the Middle East and underlines the prolonged statelessness of the Palestinians as the core problem. But the remedy it proposes is not only unrealistic but also insulting to the Palestinians and seeks to legitimise the status quo. It considered, addressed, and accommodated a section of the Israeli right-wing represented by Prime Minister Netanyahu. Hence, it invoked only little support in the Middle East and beyond. Even little hopes were silently buried on March 11, 2020, when after considerable hesitation, the WHO declared the Coronavirus as a global pandemic. The Trump Plan is yet another example of a missed opportunity.

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UAVs and Counter UAVs Technologies in the World and the Indigenous Capability

Ajay Sud

Drones ply the liminal space between the physical and the digital—pilots fly them, but aren't in them. They are versatile and fascinating objects—the things they can do range from the mundane (aerial photography) to the spectacular—killing people.

—John Battelle

At any time of history, the concepts of waging a war keep changing by the centuries. It adapts its hue to the socio-political environment and the current military capabilities prevalent in the zone of conflict. Modern wars are characterised by swift and intense conflicts unlike the long enduring battles of the past. The battles are unlikely to be openly declared wars on another nation or entity but border on small intrusions and incursions. The present-day environment has witnessed the concept of multi-state armies fighting under one umbrella as happened in the Gulf War and Global War on Terror (GWOT) in Afghanistan. Moreover, the emerging hybrid nature of warfare beckons use of innovative ways of fighting in conventional as well as unconventional conflicts, as we witness on the Northern borders of our country.

Brigadier **Ajay Sud** is a Senior Fellow at Centre for Land Warfare Studies (CLAWS), New Delhi.

Today, and more so in the future, the battlefield is likely to be highly mobile and extremely fluid in nature, which mandates the requirement of integrating sensor, shooter, Post Strike Damage Assessment (PSDA) and re-strike capability on a single networked platform. This will shorten the Observe-Orient-Decide-Act (OODA) loop and provide a decisive edge to the commanders in operations. This is the niche area where the Unmanned Aerial Vehicles (UAVs) are likely to play a contributory and decisive role.

One way to engage an enemy with minimum casualties is through the use of UAVs. They are the most visible members of the family of unmanned and autonomous systems either employed or under development. These powered aerial vehicles carry no human operators, use aerodynamic forces for lift, fly autonomously or are piloted remotely, are either expendable or recoverable, and carry both lethal and non-lethal payloads.

Currently, UAVs are employed by militaries around the world for intelligence, surveillance, reconnaissance, electronic warfare and strike missions. In future, they could be employed for resupply, combat search and rescue, aerial refuelling and air combat. The availability of advanced navigation and satellite communication technologies has made remote operations of UAV more practical. The changing nature of military operations where it becomes necessary to conduct search and destroy missions in populated areas has increased the demand for UAVs. The capability of a UAV to loiter, search, identify and strike targets while minimising collateral damage, makes it an invaluable weapon system for military commanders. Today's UAVs can remain on mission for 30 to 40 hours, far beyond the capabilities of any human crew. Research into in-flight refuelling and ultra-efficient solar power, could help extend the range of UAVs, limited primarily by maintenance needs.

Technology plays an important role in defining the way various militaries will be employed in future conflicts. All modern armies are trying to incorporate different facets of technology in military operations.

The future battlefield will be a high-technology environment in which diverse technologies, engagement platforms and delivery technologies will enable seamless and timely engagement. Rapid advancement in technology and fast pace of development is limiting the conventional employment of UAVs.

Evolution of UAV Tech

UAVs originated mostly for military applications and have expanded their use in commercial, scientific, agricultural, research and other applications. Recent advancements in UAV technology have ensured high endurance, capable of autonomous flights, high-resolution video transmission and payload. Modern UAVs now include the best technology available in aerodynamics, materials science, control systems, computing and networking and are a result of innovation done in various fields like aerodynamics, materials sciences, telecommunication, artificial intelligence, etc.[1]

Existing World Tech

UAVs have extensively been utilised in military operations during the last decade for surveillance, monitoring enemy activities, collecting information, and even attacking military targets and terrorist hideouts. They are increasingly finding uses in civil applications, such as policing and firefighting, inspection of power lines and pipelines. Furthermore, they are being used in commercial applications such as agriculture, highways and roadways, logistics, delivering small packages to rough terrain locations, and medication to emergency locations. UAVs are often preferred for missions that are too dull or dangerous for manned aircraft.[2]

The combination of greater flexibility, lower capital and lower operating costs of UAVs in the present day have made it possible for them to be deployed in a variety of terrain conditions and without requiring expensive and prepared runways. UAV systems used in ground surveys,

aerial surveys and the satellite images on various parameters have proved that this technology would actually be cheaper than the use of satellites or aircraft.

Globally, countries like USA and China have created a conducive environment for organisations to benefit from the applications of UAV and its associated technologies, and hence these markets have seen much capital invested in these systems, and are driving innovation in this market. UAVs have a wide range of uses in many fields, including commercial or military purposes. While they can be used for several different types of inspection, primarily visual inspection, they tend to be equipped with incredibly high-resolution cameras, which allow them to get a close-up, accurate view of a structure, even from a great distance. There is an increasing trend of adopting UAV technology across industries both in India and abroad and there are multiple drivers pushing for the adoption of UAV.[3]

There are a host of opportunities to leverage UAV systems and associated technologies across some key industries. The focus is mainly on technologies in development, in and across the world, which include alternate navigation low-cost surveillance, sense and avoid, low-cost avionics, hybrid propulsion, GPS denied, secure remote connectivity and autonomous cooperative control.

The rapid advancement in technology has led to a revolution in UAV technology. UAVs being developed range from nano insect-sized UAVs to UAVs large in size like Global Hawk, which is comparable in size to any modern medium-sized passenger jet aircraft. UAVs persistent type which can stay aloft up to three months or more at a time. The UAV technologies which are currently used the world over are enumerated below:

Power and Utility

- GIS data from drones to optimise tower layouts.
- 3D models for effective site planning and estimating scope of work.

- UAVs and its associated technologies can facilitate better scheduling of further work stages while simultaneously highlighting potential delays in construction.

Agriculture:[4] In order to keep up with increasing demand, optimising farm yield in a way that is sustainable and prevents environmental damage becomes critical. Challenges such as climate change make it harder to grow crops due to an increasing number of unexpected weather events all over the world. As an ecosystem there is a need for close collaboration between governments, technology and industry to collectively overcome these challenges. UAVs and its associated technologies today can provide solutions to these challenges.

Highways and Traffic Monitoring: Highway networks by design are complex linkages spread over vast areas. The nature of the assets makes it difficult to monitor them quickly and efficiently. UAVs provide a unique solution to help in better planning of highway layouts and more accurate scope of work estimation at key sites like mountains, etc. Such ground exploration work will lead to accurate contract valuations thus helping reduce costs of the project.

Mining: UAVs provide a faster and more cost efficient solution than traditional methods and the potential for their application in the mining industry cannot be overlooked. UAVs are currently being tested and implemented mostly in open-cast mining, where they are replacing labour-intensive methods of inspection, mapping and surveying, as well as ensuring safety on the extraction site. Information gathered from UAVs can also assist with blast planning at the site and help minimise the risks associated with such activities.

Railways: Like highways, UAVs have a natural application in managing and providing insights across the life cycle of a railway network. UAVs become the natural choice of the platform to provide information about this system in a quick and cost-effective manner.

Military Applications: Military applications include Unmanned Combat Aerial Vehicles (UCAV) with the main features being stealth modes, weapons carrying ability. UAVs are employed on military missions for missile detection, radar based long-range target detection and chemical detection. UAVs have been extensively utilised in military operations during the last decade for surveillance, monitoring enemy activities, collecting information, and even attacking military targets and terrorist hideouts. What makes them lethal and effective for warfare are advancements in video camera techniques, precision operations with improved GPS, stealth operations and faster speeds. Their lethality can be best explained by supposed deployment of 18 low-cost drones (along with cruise missiles) by Houthi rebels in Yemen to attack the Saudi oil facilities, causing oil prices to jump more than 10 per cent in a day. Some of the latest trends in UAV technology are enumerated in succeeding paras.

Satellite Communication: Satellite communication data link system permits UAV to fly beyond electronic line of sight (ELOS) and enhances its operational range. Satellite Communication infrastructure is limited to specific hardware component modification on UAV and AGCS. Capability to operate satellite communications exist within our country as the footprint of our indigenous satellite INSAT-4B covers the entire boundary including parts of neighbouring countries. Reliable satellite communications are a critical enabler for medium and high-altitude UAVs. Increasing demand for UAVs and the employment of sophisticated sensor packages have dramatically increased demand for satellite services. On induction of satellite communication, the basis for classification of UAVs will change from operating range to endurance as there will be a quantum jump in the ranges achieved by satellite communication enabled UAVs and the only restricting factor will be the endurance of the UAV.

Tilt Rotor Aerial Vehicles: Tilt rotor provides a Vertical Take Off and Landing (VTOL) capability combined with efficient forward flight. This technology combines the advantages of rotary wing and fixed-

wing aerial vehicles. They take off and land vertically like a rotary wing; however, after leaving the ground the rotors tilt forward and perform the task similar to propellers in a fixed-wing aircraft.

Flapping Wing Type Aerial Vehicles: These are powered by flapping wings and are being evaluated for micro-UAVs.

Rotary UAV: Unmanned helicopters are perfect for tasks such as surveillance, observation and EW which require hovering of the platform in air. Their advantage is the inherent characteristic of VTOL. A rotary UAV can hover at low altitudes using sensors customised for these types of missions. Rotary UAV can scan difficult terrain with various sensors and day/night cameras. The system is compact and mobile making it suitable for mobile search and rescue units. The ability to hover and move in all directions give the payload operator more time and ease to scan objects and track the required object.

Persistent Stratospheric UAV: These are class of UAVs which fly for extended durations at stratospheric operating altitudes. Their propulsion system is based on solar power or fuel cells (liquid hydrogen powered). The endurance of these devices which are under development is from five days to five years and they operate at an altitude of about 65,000 feet. These UAVs are also known as atmospheric satellites or pseudo-satellites, for example, Global Observer, Vulture, Pathfinder, Pathfinder plus and NASA Helios.

Solar-Powered UAVs: Solar-powered UAV under development could, in principle stay aloft indefinitely, as long as it has a power storage system to keep it flying at night. Solar UAVs under development will provide long endurance operations of two to three months at altitudes above weather and air traffic (above 50,000 feet) offering low-cost persistent military capability. The tasks envisaged for this category of UAVs include surveillance, communications relay platform, remote sensing, mapping and atmospheric sensing mission.

Air-to-Air Refuelling of UAVs: Technological advancements are underway to increase the range and endurance by developing technology

for mid-air refuelling or recharging battery-powered UAVs in air. Converting some UAVs into tankers will greatly extend the range of other mission UAVs. Such technology could lead to high-altitude and long-endurance unmanned systems with hover capability that may extend to many weeks.

Nano UAVs: Nano UAVs measure around 10 cm by 2.5 cm and provide troops on ground with local situational awareness. They are small enough to fit a palm and weigh about 16 grams including batteries, for example, the Black Hornet Nano. It is equipped with a camera which gives the operator full motion video and still images with night vision capabilities. It can transmit video and high-resolution still images through a digital data link up to a range of approximately 1.5 km.

Swarm UAVs: The concept involves overwhelming the enemy defences with a swarm of UAVs which assault the adversary with a cloud of cheap and disposable drones, and paralyse the defences by the sheer quantity of unmanned attackers in the air. Once airborne, the UAVs begin communicating with each other autonomously and begin to fly in formation either to recce or attack an enemy target. The breakthrough technology utilises information-sharing between the UAVs, enabling autonomous collaborative behaviour in defensive or offensive missions.

Technological Advancements in Payloads

COMINT Payloads: COMINT Payloads will enable interception, location and identification of emitters. They can also enable intelligence in respect of Electronic Order of Battle (EOB) by tracking, processing, monitoring and direction finding of the signals.

Foliage Penetration (FOPEN) Radar: FOPEN radar is a SAR system that penetrates through foliage to track people and vehicles on the ground. It utilises Wideband VHF/UHF SAR imagery. It is being developed and fielded as part of the special payloads for UAVs. It can locate man-made structures under dense foliage, peer through

trees to detect slowly moving troops and ground vehicles as well as characterising the foliage itself. These orders can identify targets hidden in a clutter. This capability provides surveillance day and night in adverse weather.

Multiple EO Payload Capability: UAV payload technology developers are developing a wide area surveillance sensor system known as Gorgon Stare. Gorgon Stare payload consists of a 24-inch diameter surveillance turret with 12 cameras which can operate simultaneously. It can cover about four-kilometre radius of ground and can track about 64 targets at a time.

Pico SAR: Pico SAR is an ultra-lightweight SAR based on active array antenna technology. The complete system including waveform generation, two-channel receiver, inertial measurement unit, real-time signal processing and motion compensation is housed in a compact unit weighing less than 10 kg which can be easily installed in a wide range of tactical and short-range UAVs. The system delivers excellent performance with ranges in excess of 20 km and resolutions under 0.3 metre.

Hyper Spectral Imagery (HSI): HSI payload enables remote material detection, identification, characterisation and quantification of any military target including foliage penetration and camouflage detection. The image captured by hyper-spectral sensor can be analysed by correlating it with hyper-spectral signatures of various targets available in the hyper-spectral library, thereby enabling automatic recognition and identification of targets.

Other Civil Applications: UAVs have a role in disaster management solution, early warning rescues and post analysis in rescuing people after a disaster. Other civil applications include monitoring sensitive communal situations for maintenance of law and order, anti-Maoist operations and coastal and maritime security.

Counter UAV Technologies

With the advantage in employment of UAVs and the enhanced utilisation during battle, both of our adversaries have started equipping themselves with a large variety of these assets. The future battlefield is likely to witness an increased employment of unmanned flights in various roles. The potential security threats posed by the UAVs to both civilian and military entities will rapidly create a new market for Counter UAV (C-UAV) technology.

C-UAV technology generally refers to systems that are used to detect and intercept unmanned aerial objects. UAVs are susceptible to both hard and soft kill C-UAV technology. Thus, there is a need to plan and cater for C-UAV measures against enemy UAVs.

Different Counter UAV systems rely on a variety of techniques for detecting and/or intercepting UAVs. The succeeding paras describe the main detection and interdiction methods employed by products currently available in the market.

Detection and Tracking Systems

Radar: It detects the presence of small unmanned aircraft by their radar signature which is generated when the aircraft encounters RF pulses emitted by the detection element. These systems often employ algorithms to distinguish between UAVs and other small low-flying objects, such as birds.

Radio Frequency: Identifies the presence of UAVs by scanning for the frequencies on which most UAVs are known to operate. Algorithms pick up and geo-locate RF emitting devices in the area that there are likely to be UAVs.

Electro-Optical: Detects UAVs based on their visual signatures.

Infrared (IR): Detects UAVs based on their heat signatures.

Acoustic: Detects UAVs by recognising the unique sounds produced by their motors. Acoustic systems rely on a library of sounds produced by known UAVs which are then matched to sounds detected in the operating environment.

Combined Sensors: Many Systems integrate a variety of different sensor types in order to provide a more robust detection capability. For example, a system might include an acoustic sensor that cues an optical camera when it detects a potential UAV in the vicinity. The use of multiple detection elements may also be intended to increase the probability of a successful detection, given that no individual detection method is entirely fail proof.

Interdiction[5]

- **RF Jamming:** Disrupts the radio frequency link between the UAV and its operator by generating large volumes of RF output. Once the RF link, which can include Wi-Fi links, is severed the UAV will either descend to the ground or initiate "return to home" manoeuvre.
- **GNSS Jamming:** Disrupts the UAV's satellite link, such as GPS or GLONASS, which is used for navigation. UAVs that lose their satellite link will hover in place, land or return to home.
- **Spoofing:** Allows one to take control of the targeted UAV by hijacking its communication link (also called Protocol Manipulation).
- **Laser:** Destroys the vital segments of UAVs airframe using directed energy, causing it to crash to ground.
- **Nets:** Designed to entangle the targeted UAV and/or its rotors.
- **Projectile:** Employs regular or custom designed ammunition to destroy incoming aircraft.
- **Combined Interdiction Elements:** A Number of C-UAV systems also employ a combination of interdiction elements—most commonly, RF and GNSS jamming systems that work in tandem.

Platform Types

- **Ground Based:** Systems designed to be used from either stationary or mobile positions on ground. This category includes systems installed on fixed sites, mobile systems and systems mounted on ground vehicles.
- **Hand Held:** Systems that are designed to be operated by a single individual by hand. Many of these systems resemble rifles or other small arms.
- **UAV Based:** Systems designed to be mounted on UAVs which can hover into proximity with the targeted unmanned aircraft in order to employ interdiction elements at close range.

Broadly, the Counter-UAV technologies can be divided into soft kill and hard kill technologies which are enumerated as under:

Soft Kill Technologies[6]

- **Drone Gun:** It jams the signal between UAV and UAV pilot, 1 km is rifle-shaped device that uses RF jamming and GPS jamming to counter drones and UAVs. After breaking the link, it activates the "fail safe" to send the drone home and has the capability to jam signals. Drone gun has been developed by Australian company Drone Shield and has a range of 1 km.
- **Skywall 100:** It is an Automated net launching system that physically captures the drone intact, uses compressed air to launch a projectile using on-board smart scope. It can be used as stand-alone system/integrated using sky link module for highly capable counter-drone package.
- **Drone Catcher:** This is a net gun armed Multi-Copter which eliminates illegal drones from the air. With the help of multiple on-board sensors, a net gun locks on the target and then the drone is caught by shooting a net. In case the target drone is heavy, it drops it with the help of a parachute.

- **Sky Droner:** It detects, distracts and disables drones from flying into a protected area. Range is 1 km.
- **Sky Fence System:** Basically the system is for prison security. It incorporates a number of signal disrupters, designed to jam flight control signal of a drone and prevent it from flying over the installation and disrupt their navigation transmissions. It uses multiple low-power radio transmitters which interfere with radio transmissions of a drone thus preventing their control from the operator.
- **Drone Sentry:** It provides integrated detect and defeat solution by automatically detecting and disabling the incoming drones. It has swarming capability and is weather resistant.

Hard Kill Technologies/Engagement of Hostile UAVs

On positive identification of the flying object or UAV by the Air Defence Control and Reporting network, the hostile UAVs may be engaged in any of the following manners:

- An interceptor aircraft/helicopter.
- A surface-to-air missile (SAM).
- UAVs in Counter-UAV role.
- An airborne/ground ECM Jammer.
- Unconventional means like Directed Energy Weapons (DEWs)/ microwave weapons.

Indigenous Capability in UAV Technology[7]

Current challenges and opportunities for India are stealth features and interoperability, autonomous communications and airspace integration. The development of UAV with a few examples of their work include Black Kite, Golden Hawk, Pushpak and SlyBird mini and micro UAV in collaboration with ADE (Aeronautical Development Establishment). A variety of state-of-the-art Electro-Optic (EO) sensors, Electromagnetic Intelligence (ELINT) and Communication Intelligence (COMINT)

payloads, SAR or maritime patrol radar (MPR), will be fitted onboard UAV to provide multi-mission performance capabilities. The technical challenge lies in the design and development of lightweight airframe and systems that operate reliably for long durations. During development of Nishant and Lakshya, ADE has developed a large number of technologies in the field of flight telemetry, control system, sensors, and composite materials that have aided in the design, testing, analysis, and manufacturing of UAV. The technologies developed and implemented in the UAV subsystems are:

Aerodynamic Design: The country has expertise in aerodynamic configuration design, performance evaluation, and analysis of a UAV using advanced computer-aided design (CAD) tools and powerful computational fluid dynamics (CFD). The country has also undertaken design and development of multi-element airfoil and high lift resulting in enhanced endurance of UAV has been achieved.

Aero Structural Design: Aero structural design includes configuration design, equipment layout, sizing of components, and conventional and finite element (FE) analysis of airframe. Expertise has been developed in the fields of aero-elastic studies, impact studies, power plant configuration. Structural design and evaluation using composites have been extensively used. Gimbaled Payload Assembly (GPA) is a high precision optomechanical system used for reconnaissance purpose. A much optimised design has been achieved using latest CAD tools. This has been widely used in Nishant and Rustom Projects.

Composite Design: The country has developed various grades of synthetic foams for specific aerospace applications like microwave transparent foams (as core material in broadband sandwich redone), electrically conductive foams (as core material in electronic enclosures), and carbon nanotube, and reinforced nano composite foams, etc. The foams are typically used as the core materials in sandwich configurations designed for different applications. Use of improved and environmental friendly non-

contact molding processes like Resin Infusion Molding (RIM) and Resin Transfer Molding (RTM) have been mastered. The processes were first validated by process experiments involving point infusion (radial flow) and directional flow (edge flow) techniques for monolithic and sandwich panels and then demonstrated successfully by developing different prototype UAV parts, and finally extended to develop actual UAV components.

Propulsion: Indigenisation of gas turbine and rotary engines is a major achievement towards propulsion. Development of a jet engine involves a coordinated effort among the designers, certification agency, and the users. Coordinated efforts of ADE have resulted in the development of an indigenous certified airworthy jet engine which meets all mission requirements including high-altitude tests. Indigenous development of a rotary engine is critical for UAV programme. ADE has set up test-bed facilities for testing gas turbines, and rotary and internal combustion engines of UAVs. Online Data Acquisition and Health Monitoring System (DAHMS) have been developed to monitor all engine parameters during engine testing on ground and integration runs.

Actuators: ADE has designed and developed electromechanical actuators for various UAV applications like engine throttle control and control surface actuators. The first indigenously designed, developed and produced actuators are rotary type and have been used in Nishant.

Antenna Design: ADE has achieved self-sufficiency in airborne and ground antennae development, aircraft-mounted antenna pattern studies, and radar augmenters development with antenna location optimisation. ADE has also established computational electromagnetics facilities, which includes Finite Difference Time Domain (FDTD) and designer software. Various passive and active radar augmenters have been developed indigenously.

Payloads and Image Exploitation: ADE has developed two types of scoring systems: Doppler Miss Distance Indicator (DMDI) and Acoustic Miss Distance Indicator (AMDI). The DMDI is used extensively for target

practice applications. The AMDI picks up the shock wave generated by supersonic projectiles.

Ground Control Station and Associated Equipment: Ground Control Station (GCS) is used to track, control, and monitor the UAV. It also helps in mission planning and validation, payload information, exploitation and system diagnostics. The GCS receives telemetry data and generates the parameters display and trajectory display. The parameter display provides the status of subsystems.

Radio Frequency Packages: Some of the radio frequency packages designed include: fixed-frequency data link for UHF command uplink, and "P and l band" telemetry downlink, and FPGA based PCM encoder to transmit the telemetry information in PCM serial stream. Besides, the GCS operates in "l band" to track the UAV during flight.

Flight and Data Acquisition Processing: The flight telemetry data is very important to monitor the health of UAVs. Flight Data Acquisition and processing system is state-of-the-art mobile world class facility for ground telemetry data reception, storage, and processing and display. ADE has developed two such facilities to provide ground telemetry.

Ground Image Exploitation System: The country has developed image preprocessing algorithms for real-time enhancement of low-contrast imagery mathematical models for computing the ground location of targets and terrain measurements and a combination of the two for various applications. The ground image exploitation system has been successfully installed in an advanced GCS of Nishant to acquire, store, retrieve, process, analyse, interpret, display and disseminate information from imagery during UAV mission.

Development of Hardware and Quality Check of UAV

- Architecture-based hardware in the loop simulation (HILS) test facility meant for the complete testing of the FCS before being

integrated on to the UAV has been developed. It is built using high-end industrial PCs with RT Linux as the operating system. The development telemetry link of the FCC

- Quality control (QC) plays a major role in the success of any product. All UAV systems go through tough quality checks before going for integration. Inspection at different stages ensures quality in every phase of development.

The potential of UAVs is vast. In the present scenario, DRDO is working hard to deliver state-of-the-art UAV systems to the Indian Armed Forces. The technologies described above are the base for future UAV development programmes. Predictions for the next decade envisage 50 per cent increase in endurance, silent engines, self-repairing, and damage-compensating structures with real-time monitoring of structural health, rotorcraft of high speeds, multichannel data acquisition systems, full automatic control of flight and mission, etc.

Latest Developments in UAV Technology the World Over

Adaptable Future:[8] A new concept technology for "Adaptable UAVs" is being developed that could see the next generation of mil UAVs be able to alternate between fixed and rotor flight modes within the same mission. Using this method, several individual UAVs can be released from a stick from the ground, surface vessels or submarines, or dropped from larger aircraft in a deployment module hanging beneath a parachute.

V Bat: The V Bat brings the operational convenience of vertical take-off and landing. It is driven by a propulsion unit that uses a single enclosed fan for both vertical and horizontal flight, the UAV requires no launch or recovery equipment and can operate from an area of just 1.8 sq. m.

Autonomous Landing of UAV on a Moving Platform: Developing methods for autonomous landing of UAVs on a mobile platform is an

active area of research in recent years, as it offers an attractive solution for cases where rapid deployment and recovery of a fleet of UAVs and mobile fleet recharging stations are desired.

High Precision Survey Drone: The TRIUMPH–F1 UAV has been developed with high-precision GNSS receiver with 864 channels to track all current and future GNSS signals. It has a state-of-the-art high-resolution camera for taking high-quality photographs, two micro SD slots for image storage, a SIM card slot and a USB port for uploading flight plans and downloading collected images. Research in this field to improve upon the quality of photographs and to block receiver channels of all satellites operating in the area of operation of a UAV are also under progress vigorously.

Shipping and Logistics: Matternet, a Switzerland based company, is developing UAVs to transport small items like blood samples and medicines. A smartphone application is used to authorise pick-up and delivery. The item is then scanned for pick-up, the station automatically installs the item into the UAV for transport, the UAV then departs for the assigned destination and, on arrival, scanning is required to retrieve the delivered item at the other end.

Multi UAV System: Research in the field to enable usage of multiple UAVs for similar or dissimilar tasks is also being undertaken. A particular class of tasks for such multi-agent UAV systems involves surveillance of a region and tracking of targets corporately. Cooperative UAVs are required to handle a task with higher robustness, higher performance which cannot be achieved by single UAVs.

Indigenous Anti-Drone Capability[9]

DRDO is working on Directed Energy Weapons or DEWs which are laser-based or microwave-based weapons which can quietly disable enemy drones/missiles temporarily or permanently without leaving physical debris. The weapons are in the range of 10 kW and 20 kW. DRDO's

Hyderabad-based lab CHESS (Centre for High Energy Systems and Sciences) is the node for all related activities.

The capability was showcased to secure the VVIPs and high-value targets during the recent Republic Day parade to neutralise the growing threat from Unmanned Aerial Vehicles. The technology used is electro-optical laser pulses and radars to track hostile drones, and then either jam the radio frequency between the machine and the operator or destroy UAVs using laser technology. Interestingly, the classified drone weapon was on the day the DRDO showcased the anti-satellite weapon at the parade. The systems are also being considered to be deployed at airports.

Largely, there are no home-grown anti-drone solutions. Anti-Drone technology is mostly indiscriminate jamming technology for GPS and communications. So the emphasis is on customising the work to deeply integrate and reduce system redundancies. The anti-drone technologies being considered are different levels of soft kill and hard kill.

Conclusion

The future augurs well for the growth of the UAVs and UCAVs. The dictum—"Never send a man, where you can send a bullet"—will only get more and more emphasised in days to come. The miniaturisation of equipment, coupled with high cost of state-of-the-art aircraft and cost of training of pilots, has led to the development of UAVs. In the age of shrinking defence budgets and unacceptability of loss of human life, the Armed Forces around the world need to employ this affordable technology.

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Is It Time for India's Rocket Force?

Bimal Monga

Lacking conventionally armed, ground-launched missiles with which to attack enemy forces, or sufficient defences against China or Russia's conventionally armed, ground-launched missiles, American forces routinely lose war game simulations involving China and Russia, and could very well lose a real war.

—Timothy A. Walton, 2019[1]

Introduction

The future battlefield is likely to be largely contactless where unmanned warfare, stand-off weapons and cyber and clandestine operations will take precedence over tank vs. tank or hand-to-hand combat. Towards this effort all major countries are creating assets and organisations to consolidate their space assets, galvanise capabilities in cyber domain, provide a new edge to their special forces and fine-tune their hybrid warfare options. However an equally important focus has been on boosting missile inventories and redefining its employment philosophy. Over the years there has been an alarming proliferation of missiles all across the globe, as the technology to build them has became increasingly prosaic; today 31 countries are known to be in possession of ballistic missiles.[2] It is not without a reason that Ian Williams, a fellow at the Center for Strategic and International Studies

Brigadier **Bimal Monga** is an artillery officer who is posted at the Army Headquarters.

(CSIS) feels that "… we are entering an era of missile renaissance."[3] The missiles, today, are being increasingly envisioned for conventional use, leading to a serious rethinking on their employment. This, to a great extent, has been precipitated by China, who stole a march over the USA and Russia, by building her capacities and capabilities in rocketry—quietly, efficiently and surreptitiously, while both these powers were bound by the stringent provisions of Intermediate-Range Nuclear Forces Treaty (INFT) for over three decades. The breakdown of the INFT has given an impetus to the missile rivalry between the USA, Russia and China; inadvertently pushing many middle-level powers also into a new missile race. A matter of concern, to the world in general and India and the USA in particular, has been the phenomenal rise of China's People's Liberation Army Rocket Force (PLARF), whose burgeoning inventory of missiles, and their intended use, both in the strategic and conventional domains, has made the world take notice and weigh their options.

PLARF

> *I am not interested in nuclear weapons. They are not something to use. The more there are, the harder it will be for nuclear wars to break out. If a war breaks out, it will be a war of conventional weapons. If conventional weapons are used, the art of war, such as strategies and tactics, can be emphasized and commanders can change plans to suit the situation …*
>
> *—Mao Zedong*[4]

Chinese missile forces, which were under the command of the Second Artillery Force/Corps, have changed conspicuously in character over the last three decades; it has evolved into the potent PLA Rocket Force (PLARF) and elevated to the fourth military service. PLARF is today assessed to have approximately 2,500 ballistic missiles[5] in its inventory, and is designed to undertake two major types of warfighting campaigns:

the nuclear counter-attack campaign and the conventional missile strike campaign—to ensure strategic deterrence and conduct precision strikes.[6]

Importantly, while a number of countries maintained strategic assets as a means of deterrence or coercion, China introduced a new dimension to the matrix by deploying conventional missiles alongside the nuclear; embracing the idea that it would fight future wars, where the line dividing nuclear and non-nuclear operations would be blurred. More than half of the Rocket Force is, therefore, deployed to carry conventional loads to "conduct medium and long range precision strikes" jointly with air power against "key strategic and operational targets," such as command and control facilities, communications and transportation nodes, air and missile defences, and airbases.[7] According to the US Department of Defense, the Rocket Force deploys DF-16 missiles with a range of about 800–1,000 km, DF-21 MRBMs, and the DF-21D anti-ship ballistic missile, in conventional role. In addition, it deploys about 1,200 short-range ballistic missiles and a number of CJ-10 ground-launched cruise missiles with a range of about 1,500 km[8] (Table 1).

Table 1: Chinese Conventionally Armed Theatre Ballistic and Cruise Missiles

Missile Type	Range (km)	Warhead (kg)	CEP(m)	Number of Inventory			
				1996	2003	2010	2017
SRBMs							
DF-11	280-350	500-800	500-600	Small Number	175	700-750	1,200
DF-11A	350	500	20-30				
DF-15	600	500	300	Small Number	160	350-400	
DF-15A	600	600	30				
DF-15B	600-800	600	5				
MRBMs							
Df-21C	2,500	500	50	0	0	36-72	108-174
Df-16[3]	800-1,000	?	?	0	0	0	

IRBMs							
IRBM	5,000	500	30-300	0	0	0	Possible
Cruise missiles							
DH-10	1,500-2,000	400	5-20	0	0	200-500	450-1,250
ALCM	3,300	400	5-20	0	0	In inventory	

Source: Compiled from *Jane's Strategic Weapons Systems Data IISS*, *The Military Balance* 1996, 2003, 2010 and 2015; and Office of the Secretary of Defense, "Annual Report to Congress, Military and Security Democracy Involving the People's Republic of China," Washington, D.C., 2010 and 2014.

PLA publications have repeatedly underscored the centrality of conventional missile attacks in joint operations aimed at achieving information dominance, air superiority, and sea control, as well as countering third-party intervention. The conventional missile force will be used against high-threat and high-value targets, either as an independent conventional missile strike campaign or as a key part of joint campaign involving other services.[9]

The philosophy and concept of employment of missiles by China, coupled with its ambiguous No First Use (NFU) policy, has thus upset the predictability of missile deterrence and triggered a re-assessment of options by major powers.

Impact on the USA

> *We can't afford a force structure composed of a small number of silver bullets. It makes good sense to pursue a variety of delivery systems, trajectories, ranges, velocities, propulsion types and basing domains to support broad defense and deterrence goals; the future strike will almost surely include a mix of UAVs, cruise missiles, ballistic missiles and hypersonic glide vehicles …*
>
> *—Tom Karako, CSIS, 2019*

Under the Strategic Command (STRATCOM), ballistic missiles have served as the backbone of the US strategic nuclear deterrence since the late 1950s. The Bush Administration, in the *Nuclear Posture Review* (NPR) 2001, for the first time called for the integration of precision conventional weapons with strategic nuclear forces in a new category of "offensive strike weapons." The Obama Administration, in the 2010 NPR, further stated that the Pentagon "is studying the appropriate mix of long-range strike capabilities, including heavy bombers as well as non-nuclear Conventional Prompt Global Strike (CPGS)…".[10] During the latter years of the Obama Administration and early years of the Trump Administration, the United States expanded the scope of this research and development programmes into hypersonic capabilities.[11] These initiatives are consistent with an expanded rationale for long-range conventional strike weapons, in general, and hypersonic weapons, in particular. Michael Griffin, the Under Secretary of the US Defense for Research and Engineering, feels that while hypersonic weapons would serve as tactical, rather than strategic assets,[12] the Conventional Prompt Global Strike (CPGS) weapons would allow the US to strike anywhere on earth with conventional warheads, in as little as an hour; CPGS weapons, however, would not substitute for nuclear weapons, but would supplement its conventional capabilities. Further the increase in funding for Navy's Conventional Prompt Strike (CPS) Programme, from around US$ 278 million in FY2019 to US$ 593 million in FY2020, is a reflection of the growing priority and interest of the US in moving the programme towards deployment.[13]

It is not that conventional missiles are new to USA, their destructive potential has been demonstrated earlier during the Gulf War, in Yugoslavia, Afghanistan, Iraq and Libya; however, this programme in recent times, to an extent, has been dictated by the potential of PLARF, whose missiles are today capable of targeting ships both at sea and bases ashore, not only in Asia (and India), but also far out at sea,

including the American mainland, Alaska, Guam and the Northern Marianas. Since the end of the Cold War, the US Navy had employed its aircraft carriers to bludgeon weaker enemies, by floating close to their shores to launch air strikes, confident that their warships were invulnerable. However, the PLARF missiles have proved to be a game changer and a great leveller in the power equation; the US now fears that the Chinese will employ swarms of cheap, expendable missiles which have the capability to neutralise their most sophisticated warships; this would not only erode the superiority enjoyed by the US, but also signal a return to highly contested warfare at sea.[14]

Thus, there has been a growing realisation in the US, that:

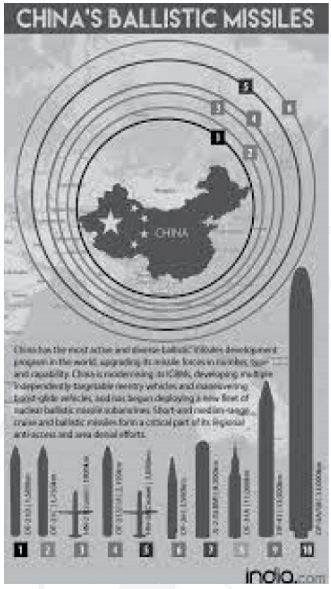
> absence of effective conventionally armed, ground-launched missiles with which to attack enemy, or sufficient defenses against China or Russia's conventionally armed, ground-launched missiles, American forces routinely lose war game simulations involving China and Russia and could very well lose a real war.[15]

Impact on India

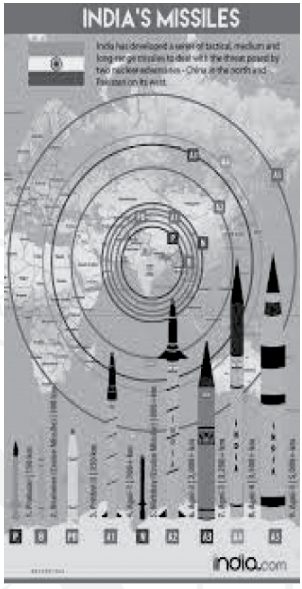
> *The sustained growth of Pakistan's nuclear arsenal and missile inventory, plus China's modernization of its nuclear forces and both nuclear and conventional missiles, presents an unprecedented complication for India's security.*
>
> —*Vinash Patel, 2013*[16]

The Chinese primarily built its missile capability with an eye on the USA and Russia, but now has an intrinsic capability to use them against India too; and by all accounts this undeniably forms part of the Chinese calculus. India thus requires to seriously weigh its response options (Figure 1).

Figure 1: Comparison between Chinese and India Missiles



China's Ballistic Missiles[17]



India's Missiles

Source: Compiled from www.india.com

However, China's short, medium and intermediate range conventional missiles have the entire country and the seas beyond within striking range; and India has no answers to this threat, at present. The Chinese philosophy of warfighting propagates engaging the enemy initially in the cyber, space and information domain followed by (or concurrently) with an intense conventional Rocket Force campaign, to break the adversaries will to fight, right at the outset. While India has initiated some incremental steps in addressing and building capacities for warfighting in space, cyber and the clandestine/special forces domain, it is yet to come up with concrete measures or proposals to counter the conventional might of the PLARF.

The progressively precise PLARF missiles are capable of partially paralysing and disrupting our critical military and civil infrastructure at the very onset of a conflict, while ensuring that the engagement is kept

below the nuclear threshold; this indeed is a worrisome prospect for India. The omnipresent threat of Chinese conventional missiles is in itself coercive, during normal times; and if a war does break out, it can cause unacceptable damage and casualties. It goes without saying, that our existing missiles too *can* be used in conventional role; this however will require a concerted effort in terms of committing resources and building capacities, which is being discussed subsequently.

Imagine a scenario, where China launches an offensive, preceded by an intense missile campaign, targeting and crippling vital military and civil infrastructure, thereby causing widespread destruction, loss of morale and shaping of public opinion against the government. What are the response options available with India? Air strikes? Naval action or blockade? Ground action to capture shallow objectives? Defensive measures over a wide canvas? Diplomatic outreach? Maybe, all of the above. Thus a missile campaign, much expected and in tune with the Chinese warfighting philosophy, will invite a whole of nation (and armed forces) response right at the outset, which however, may still be ineffectual, and come with an attendant risk of escalating the situation. Now analyse the same scenario, if we had own credible conventional missile inventory? Would the Chinese still target us with missiles, fully aware that it may invite a similar and swift riposte?

So what are the options with India? Accept the inevitable and be resigned to live and fight in the shadow of conventional missile strikes, or initiate measures to safeguard own interests…

Options for India

Indian capital New Delhi is only 400 km away from Tibet; and from Indian borders to Beijing the distance is around 4000 km. PLA also holds credible missile defense capabilities, and it is perfectly capable of intercepting Agni V striking important targets in China. China's short

range tactical missiles can also constitute a sizable threat to India. If India wants to challenge China, India has to deploy several expensive ICBMs, which definitely will be a drag on Indian economy.

—*Chinese Strategic Analysts*[18]

While India has articulated a nuclear (and NFU) policy and raised a robust SFC, the options to build capabilities to counter conventional missiles requires serious deliberations.

It goes without saying that defensive measures like camouflage, concealment, decoys, dispersion, duplication of critical assets, hardening of defences and air raids are inherent to any countermeasure; India, however, has primarily two broad options to negate, reduce or counter the impact of PLARF.

Ballistic Missile Defence (BMD)

Missile strikes on air bases would be part of opening salvos of a war by China.

—*Connor O' Sean*[19]

The decision to go in for a ballistic missile defence, to shield ourselves from the adversaries to the North and West, is not an easy one. Conceptual opposition to BMD principally revolves around the idea that a missile shield emboldens the shielded state to take offensive actions on the false assumption that it is completely invulnerable to any retaliation.[20] A number of other pertinent questions too persist. Do we plan for a "Country Wide Deployment" or a "Limited Deployment"? Will Missile Defence upset the stabilising, mutual vulnerability balance, by making the effectiveness of a first strike uncertain? Will this spur the adversaries to develop larger arsenals, better technologies, penetration devices and countermeasures to thwart our BMD system?

And most importantly, does the astronomical cost and unproven technology warrant this endeavour? It is argued that even a successful Missile Defence System can never guarantee a 100 percent interception rate and the astronomical costs are prohibitive. As an example, the US continental system is estimated to have cost about US$ 100 billion from 2002 till date; and though a pan-India system will cost much less, assessed to be anything between Rs. 50,000 crore to a staggering Rs. 250,000 crore, it will however still be unable to guarantee complete protection.[21] Limited and denser BMD deployment to cover important cities, economic centres and vital military and civil infrastructure may therefore be a better option.

Ballistic Missile Defence is thus one of the means, but not the only or the best way, to respond to the PLARF threat. A proactive strategy may therefore be more effective.

Develop Own Conventional Missiles

> *…global (missile) strike capability involves much more than just the delivery of a weapon to a target; it encompasses both the ability to plan rapidly, to apply the precision to the intelligence and gather that intelligence in a very rapid manner, and then to apply that intelligence to the target and understand the effect we want to create.*
>
> —General Cartwright, Commander STRATCOM 2007[22]

It is widely accepted that a limited and state-of-the-art inventory of ballistic missiles, expensive but difficult to intercept, must be optimally employed as a first salvo, to punch holes in the adversaries' defence; a follow-up strike by a large number of cheaper cruise missiles, can thereafter, create opportunities for both ground and air forces to exploit and produce disproportionately effective results, both in terms of casualties and time.

Moreover, precision missiles are considered a particularly useful capability for a weaker nation to deter and create an element of doubt

for a larger and more powerful nation. The potential of conventional ballistic missiles, as a tool for signalling, diplomacy, propaganda, deterrence and retaliation, was validated in Iran's response to the US killing of the Islamic Revolutionary Guard Force Commander, Qasem Soleimani, in January 2020. The precise targeting, which prevented casualties to the US military personnel, not only confirmed the efficacy of Iran's conventional missile capabilities, but also reinforced the view that missiles can be effectively used by a weaker nation to achieve the desired strategic aim; and contrary to popular belief, also for averting further escalation.

India possesses a good expertise in the field of missiles and a dissuasive to credible strategic deterrence is already in place. However, at the same time, there exists no capacity or strategy to deter China from using conventional missiles against us. It is therefore imperative that India explores building alternative capacities, including inducting conventional ballistic missiles, to obviate being held hostage to the threat of long-range precision strikes by PLARF.

Table 2: China and India's Land Based Strategic Ballistic Missiles

CHINA/Type	Number of launchers	Year deployed	Range (kilometers)	Warhead x yield (kilotons)	Number of warheads
DF-4	~10	1980	5500+	1 × 3300	~10
DF-5A	~10	1981	13,000+	1 × 4000–5000	~10
DF-5B	~10	2015	~12,000	3 × 200–300	~30
DF-15	?	1990	600	1 × ?	?
DF-21	~80	1991, 2000, 2016	2150	1 × 200–300	~80
DF-26	?	(2017)	4000+	1 × 200–300	?
DF-31	~8	2006	7000+	1 × 200–300	~8
DF-31A	~25	2007	11,000+	1 × 200–300	~25
DF-41	n.a.	?	?	n.a.	n.a.
INDIA/Type					
Prithvi-2	~24	2003	250	1 x 12	~24
Agni-1	~20	2007	700+	1 x 40	~20
Agni-2	~8	2011	2,000+	1 x 40	~8
Agni-3	~4	2014?	3,200+	1 x 40	~4
Agni-4	N.A.	(2016)	3,500+	1 x 40	N.A.
Agni-5	N.A.	(2017)	5,200+	1 x 40	N.A

Source: Hans M. Kristensen and Robert S. Norris, "Indian Nuclear Forces, 2015," *Bulletin of the Atomic Scientists*, vol. 71, no. 5, 79. http://www.tandfonline.com/doi/pdf/10.1177/0096340215599788?needAccess=true; (December 7, 2019).[23]

Towards this endeavour, India has the twin advantage of a relatively advanced expertise in the field of missile technology and a predominantly indigenous production line. However the decision to go in for conventional missiles is not going to be easy, it will require rigorous operational analysis, a critical cost-benefit appraisal and most importantly, immense political dexterity; it will also come with its own share of challenges—much more demanding, elaborate and complex, than just screwing conventional warheads in place of nuclear ones. An entire ecosystem, interrelated capabilities and checks and balances, will have to be built on or independent of the existing strategic infrastructure, to support induction and employment of conventional missiles. Some important and inescapable prerequisites will be:

- **Intelligence, Surveillance and Reconnaissance (ISR):** There is a requirement to improve our real-time surveillance and target acquisition capabilities to enable quick and precise engagement of targets, ensure effective Battle Damage Assessment (BDA) and follow-up strike capability.
- **Missiles:** Increased precision/accuracy (smaller CEP), improved navigation system, different ranges, a rapid launch capability and survivability are a must for conventional missiles. According to the Chinese military expert Ge Lide, India presently faces many technological difficulties, especially in developing solid-propellant rocket engine and inertial navigation components. In the field of high-performance and high-precision "Inertial Navigation Systems" India does not have independent capabilities. Till the time these technical capabilities are developed Indian missiles' ranges and kinematic accuracy will be negatively impacted.[24]
- **Architecture:** The envisaged Force's architecture, including an efficient Command and Control organisation, doctrine and tactics will require deep analysis and formulation.

- **Logistics:** Life of missiles and warheads, their maintenance, storage and movement warrants special attention.
- **De-risk:** Measures to reduce confusion between launch of a conventional and nuclear missile will have to be instituted.
- **Re-articulation** of Nuclear Policy/NFU?

Sceptics may argue that such an initiative by India may lead to a missile race in the region with Pakistan joining in to counter India with its own conventional missile force. However, this argument may be flawed, as we do not require to launch conventional missiles to target Pakistan, as our Lenticular Re-entry Vehicle (LRVs) and aircraft are sufficient to cover the requisite frontage and shallow depth of Pakistan; launch of a missile towards the west would only be a riposte to a strategic or a conventional strike by Pakistan; this fact is well understood and could be publicly reiterated.

Another red flag by the naysayers could be—that our adversaries may not be able to distinguish between the launch of a conventional and a nuclear missile; this has the potential to result in an accidental or inadvertent nuclear exchange. But the same logic is applicable to China, who has already mixed two warheads with impunity, fully aware of the attendant nuclear escalatory risk. But will nuclear escalation be immediate? A targeted country is unlikely to instinctively assume that a missile launched is nuclear tipped or for a disarming attack and immediately go in for a nuclear riposte; the stakes for any nation are simply too high. It is more likely that a country will absorb the first strike, rule out a worst-case scenario and then retaliate proportionately. A well articulated nuclear policy emphasising on NFU, along with a policy on employment of conventional missiles, with sufficient checks and balances in place, should put to rest such assumptions and fears.

Benefit and Risk Analysis

> *In the China-India context, respect for capabilities enhances the chances of engaging each other in negotiations.*
>
> —Lora Saalman, 2013[25]

Induction of conventional missiles will add a complementary capability and augment India's conventional strike prowess; further, if appropriately postured, it will minimise our vulnerability to an attack. At the same time attendant risks are the same that any country fielding a conventional missile faces. It is finally for the policy and decision makers to judge whether the escalatory risks due to land-based missiles will outweigh their strategic and operational benefits.

Benefits: Developing a conventional missile capability will accrue some of the benefits listed below.

- Deter China from using/threatening India with its conventional missiles.
- Provide an option to use this potent capability to cause damage/destruction in event of an all-out conflict.
- Impose "caution and cost" of developing countermeasures on adversaries.
- Suppress Chinese airbases, target missile launch sites and Transporter-Erector-Launchers (TELs) and interdict communication arteries.
- Ability to acquire and engage opportunity and fleeting targets.
- Conventional missiles require a high state of readiness and reliability (exceeding 90 per cent); they thus will be able to respond promptly after a decision to launch is taken.
- It would not only lead to developing capabilities required for future wars, which are likely to manifest primarily in the non-contact domain, but also send across an important signal of capability and resolve to the adversary.

Risks: A slew of measures will require to be instituted to significantly pare the risks.

- Enunciating a well-formulated policy on employment of conventional missiles.
- No country would use nuclear missiles as a means of war initiation; nuclear weapons, *if used*, would be for war termination by a desperate country at the cusp of defeat. Therefore, though the inability to distinguish between a nuclear or conventional missile is a very important concern and risk, any missile launched cannot be assumed to be a nuclear missile, without positive identification. However, some measures being discussed by experts to mitigate this risk include:[26]
  - High-level and continuous military-to-military and political contact, consultations and discussions to keep adversaries informed about the observable and distinguishing differences between conventional and nuclear ballistic missiles.
  - Deploying conventional missiles on mobile launchers, horizontally in earthen berms, or above the ground, rather than in hardened, vertical silos used at nuclear missile bases.
  - Altering or depressing the trajectory of ballistic missiles armed with conventional warheads so that they do not mirror the trajectories followed by nuclear-armed ballistic missiles.
- Another destabilising concern is the inability to reassure adversaries that such missiles will not threaten or target nuclear forces, as this may invite a strategic response.
- Though conventional missiles contribute towards conventional deterrence, it however tends to be more dynamic than nuclear deterrence as the potency of conventional weapons is much lesser than that of nuclear weapons. It has been assessed that a small force of conventional missiles is not powerful enough to pose a credible conventional deterrence.[27]

- Building of conventional missile capacities and capabilities is an expensive endeavour; it will be taxing and financially draining to maintain such a force, that too in a continuous state of high readiness. Moreover, ballistic missiles are an expensive system to deliver high explosives. During extended and high-intensity wars, it may be cost-prohibitive to rely exclusively on such expendable missiles rather than on reusable delivery means like aircraft. Rough studies have shown that even a high rate of aircraft attrition, of say 5 per cent, i.e., one aircraft lost in twenty sorties, is not sufficient to make the use of ballistic missiles a cost-effective proposition, for conventional deep-strike missions.[28] However, if a number of fixed targets are to be addressed concurrently over a short span of time, ballistic missiles armed with potent payloads, is an effective choice.
- Lastly, as discussed earlier, it may lead to a missile race in the region with Pakistan too joining in; but then, does not Pakistan, by proxy, already have this capability available on a platter?

Prognosis

India requires developing new operational concepts and capabilities, in tune with assessed future wars. To counter the PLARF (and other adversaries' missiles), we must go in for a limited BMD, to cover important cities, command and control, and economic centres, critical infrastructure and strategic assets; concurrently steps to develop capacities facilitating induction of conventional missiles into our inventory, is a must. Strategic, political and financial considerations will dictate the architecture and scale of such a conventional missile force. The decision whether the missiles will be incorporated into the existing SFC structure or in a stand-alone configuration, or as part of any other service or arm, is secondary and presently infructuous. Measures to obviate the identified risks should form part of a well-articulated conventional missile employment policy, concomitantly with a review of Nuclear (and NFU) Policy. Denial and

deception measures like hardening of defences and storages, dispersing and duplicating critical assets, to make it difficult for the adversary to locate and strike key platforms, is a continuous and ongoing process, and must be persisted with.

Conclusion

> *Deterrence is simply the persuasion of one's opponent that the costs and/or risks of a given course of action he might take outweigh its benefits.*
>
> —Alexander L. George and Richard Smoke[29]

India has been a silent neighbour, observing with concern the pace, alacrity and aggression with which the Chinese armed forces have modernised and reorganised. We, however, do not require to mirror or react to all the Chinese military developments, as this would just push us into an "excessive spending and spreading thin" trap; what is required is a prudent and long-term vision to build capacities and capabilities in tune with assessed future warfighting by our adversaries. While India has initiated some measures to keep pace with the changing environmental realities, there have been no concrete steps to counter the formidable capabilities or coercive signalling and intimidation inherent to PLARF. Developing conventional missiles is not an all-encompassing panacea, but one of the many military instruments and options to counter PLARF and prepare for future wars. The long fructification period to raise such a force with the desired capabilities and characteristics necessitates a well-informed but a prompt decision by the policymakers keeping in mind the security of the country.

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Shielding of Strategic Security Interests and Its Implications

P K Chakravorty

Recent Issues which Merit Importance

Drones have the capability of causing disruption and damage to military and economic assets. They are capable of effectively engaging strategic security interests. While they have been used frequently in Afghanistan and decimated a few leaders what shook the world was the events of September 14, 2019. During the early hours as many as 18 drones and seven cruise missiles attacked two Saudi Arabian oil plants destroying nearly 50 percent of the country's global supply crude. The Houthi rebel group in neighbouring Yemen allegedly claimed responsibility for 10 drone attacks. However, the United States and the Arab countries led by Saudi Arabia speculated a major role was played by Iran in it. Iran has denied the charge.[1] Reports state that almost 25 drones were used which points more to Iran than Houthi. The attacks decimated Saudi Arabia's oil facilities and cut the country's oil output by 5 million barrels every day. This led to a surge in oil prices as Saudi Arabia is the world's leading oil exporter.

In a similar fashion on January 3, 2020, armed with a tip from informants at Damascus, the CIA knew exactly when a jet carrying Iranian Major General Qasem Soleimani took off for Baghdad. This

Major General **P K Chakravorty**, VSM (Retd) is a Senior Fellow (Veteran) at Centre for Land Warfare Studies (CLAWS), New Delhi.

was possibly corroborated by intelligence from Baghdad. Once the aircraft landed at Baghdad, three drones of the United States moved into position overhead, each armed with four Hellfire missiles. It was past one in the morning and the General got into the vehicles. As the vehicles moved out of the airport they were engaged by four Hellfire missiles. The entire operation was being controlled from Qatar and the Iranian General was killed. This was done with a high degree of human intelligence.[2]

A response was bound to take place. On January 8, 2020 Iran struck back early in the morning at two American bases. The two bases were the Ain Al Asad base 60 km West of Baghdad and the other at Irbil. The Iranians fired a total of 15 ballistic missiles, 10 hit Al Asad and one the base at Irbil. Initial attacks reported there were no casualties.[3] However a *New York Times* report of February 12, 2020 states that many soldiers have been treated for traumatic brain injuries. The symptoms of mild traumatic brain injuries can be subtle and diagnosis takes time and it is creditable on the part of the United States Armed Forces to examine personnel for these aspects.[4]

Apart from this, Information Warfare has taken an important place in day-to-day activities. Practically every country is impacted by this non-contact warfare. At least 12 of the world's 15 largest military powers are reported to be engaged in building cyberwarfare programmes indicating a Cyber-Cold War is in progress. Important strategic security interests of the country are severely impaired by this aspect. Over the years information about the way we connect with each other has become extremely important. As a digital infrastructure the Internet has broken all barriers. With the ever increasing availability of Wireless Fidelity (Wi-Fi) Internet has entered all aspects of human activity.

As per *Vivekananda International Foundation (VIF) Task FORCE Report* India country has been a target of Cyberwarfare.[5] The Stuxnet malware attack in 2010 affected about 10,000 computers in India, a large

proportion of which belonged to Power Grid and offshore oil rigs* of the Natural Gas Commission. The Nuclear Power Corporation of India by its own efforts blocks at least 10 targeted Cyberattacks per day. Cyber capability is used to cause consternation, espionage, damage to weapons and equipment as also domination of electromagnetic spectrum.

Indian security forces regularly confront cyber-radicalism from extremist groups who use the web to incite violence, spread propaganda and execute violent attacks. India has been targeted on a number of occasions, a few of which are listed below:

- National Informatics Centre was reportedly breached in 2009.
- Defence Research and Development Organisation, Prime Minister's Office and Bharat Sanchar Nigam Limited were hacked in 2013-14.
- Indian Space Research Organisation was defaced in 2015.
- Sporadic incidents of passage of incorrect information and fake news through social media have occurred.[6]

The other aspects are the usage of Direct Energy Weapons from the air against Strategic targets, as also non-state actors. Direct Energy Weapons are currently under development and would be used with a drone carrying a laser or a Boeing aircraft carrying the Champs missile which has the capability to degrade electronic equipment over which it flies. With respect to non-state actors, they are organisations that have significant political influence but are not allied to any particular country or state. Violent non-state actors or non-state armed actors are those which use violence to achieve their goals. Non-state actors have to operate through a particular country and need covert state support. They pose grave asymmetric threats against strategic targets.

Having viewed the threat to strategic targets it is essential to list the Strategic Targets and thereafter work out suitable measures to shield them.

* *Offshore oil rig* is a large structure which has facilities for well *drilling* to explore, extract, store, and process *petroleum* and natural gas that lies in rock formations beneath the seabed.

What Are Our Strategic Security Interests?

National Security involves protecting our land, air and maritime space from external and internal conflicts. Any nation would have to take measures to protect these critical aspects. Our strategic interests encompass a wide canvas but we can broadly assess areas which are vulnerable and need protection. Geographically they would include the following. It is pertinent to note there are numerous vulnerable areas and vulnerable Points. Critical Areas for our analysis are enumerated below:

- **Nuclear Power plants.** These are important areas which are vulnerable and need to be defended.
- **Oil refineries and storage dumps.** The recent attack by drones on Saudi Arabian oil facilities clearly brings out the importance of these facilities and their impact on global trade.
- **Offshore oil platforms.** Offshore installation concerns offshore platforms, oil platforms or offshore drilling rigs and is a general term for mobile and fixed maritime structures. This includes facilities which are intended for exploration, drilling, production, processing or storage of hydrocarbons or other related activities or fluids lying beneath the seabed.
- **Water storage areas.** Water storage supply areas to big cities which are located far away and can cause no collateral damage when the catchment area is affected.
- **Important railway marshalling yards.**
- **All areas which are occupied by security establishments and forces.**
- **Government installations in sensitive areas.**

The next point to be considered is how the attack is to be undertaken. The attack could be undertaken by ground-based militants, militants who land by Sea and from the Air. Let us analyse how we shield them from these three dimensions.

Shielding Our Strategic Security Interests and Its Implications

The preceding portion covers the targets which are critical and they cover a wide canvas. Needless to state, surveillance of air, sea and land on a 24x7 basis is an absolute necessity. There is also a need for warning which would need human intelligence. Human intelligence has to provide inputs of likely targets and modes to be used for the engagement of strategic targets. These inputs must be corroborated before action is taken to act on the inputs. It is normal for these areas to be guarded by a skeleton for physical security. However, in the event of a terrorist attack additional personnel would be needed. An attack by sea would need surveillance by satellites and radars which can direct ships and reconnaissance aircraft to track and engage these targets. It is important to now discuss the most important threat which would be from the air. This we will tackle in two parts. The first would deal with air defence for our Establishments in built-up areas and the second is dealing with drones.

Air Defence for Our Strategic Interests[7]

Air defence of establishments has assumed great importance after the 9/11 attack on cities of the United States. Air Defence of establishments of various countries has often been discussed in the print and electronic media, as also during seminars. The overall responsibility for air defence in our country lies with the Indian Air Force, and in the Tactical Battle Area the Army Air Defence has a critical role to play. Air defence is based on Air threat which could be from aircraft, armed helicopters, missiles, Unmanned Combat Aerial Vehicles (UCAVs) and in the modern context long-range naval guns which have a range of 200 km or more. The defence against these could be provided by a variety of systems which could be aircraft, missiles, guns, the Israeli system of the Iron Dome, David Sling and the Arrow system. Currently India has numerous Air Defence Systems to guard our vulnerable areas and vulnerable points.

For the purpose of this article we will focus primarily on strategic areas in urban areas and avoid the Tactical Battle Areas. The focus would be primarily on systems other than Air Defence fighters. Our main areas of discussion would be the Anti-Ballistic Missile Systems and other systems.

To begin with, India has successfully tested its two types of Anti-Ballistic Missile Systems. These systems provide India with a two-layered shield exo and endo. Exo relates to outside the atmosphere and endo relates to inside the atmosphere. The high-altitude interception is known as the Prithvi Air Defence System (PAD) and the Advance Air Defence (AAD) system for lower altitude interception. The Prithvi air defence missile named Pradyumna Ballistic Missile Interceptor has a maximum interception altitude of 80 km and is capable of engaging ballistic missiles that range between 300 km and 2,000 km at a speed of Mach 5.0. Further work is on for a missile for intercepting weapon systems which range more than 5,000 km and fly at altitudes up to 150 km. The Advance Air Defence (AAD) known as the Ashwin Ballistic Missile Interceptor is designed to intercept incoming ballistic missiles at an altitude of 30 km. Both these interceptors were successfully tested by the Defence Research and Development Organisation (DRDO). Prithvi intercepted a hostile missile above 50 km on February 11, 2017 and Ashwin intercepted a missile on March 1, 2017 at an altitude less than 30 km. Both the missiles are automatically fired on instructions from the Swordfish Long Range Tracking Radar. This is Active Electronically Scanned Array (AESA) radar which is a derivative of the Israeli Green Pine Long Range Radar used in the Arrow Missile System. The radar has a range of 600 km currently which DRDO is upgrading to 1,500 km. Both systems could gradually be deployed to counter Air Defence threats. The system is yet to be inducted and correctly fine-tuned for its task.

The next missile to be considered is Akash which is a medium-range mobile Surface-to-Air missile defence system developed by DRDO. The missile can target aircraft up to 30 km at a height of 18,000 m. The system

is deployed in sub-units of four launchers and one Rajendra 3D passive electronically scanned array radar. Each sub-unit can track 64 targets and attack up to 12 of them. The Akash Mk-II will have an intercept range of 30 to 35 km and increased accuracy of guidance and fire control. The Akash forms a part of the Indian Air Force and Indian Army. *Comptroller and Auditor General Report* released in 2017 stated that 30 per cent of the missiles have failed when test fired. Being an indigenous system it is possible to rectify the defects and have the missile perform effectively. In any case, Akash would be first used to protect our forward Air Fields and other installations. Once the system stabilises it would be optimised in Air Defence of our cities.

The next equipment to be discussed would be the S-400 Triumf which India will soon acquire from Russia. The system uses four missiles to undertake its task: The very long range at 400 km, the long range at 250 km, the medium range at 120 km and the short range at 40 km. It has been described as state-of-the-art Air Defence weapon system. Eight missile launchers form a part of one regiment. It can engage targets flying at a speed of Mach 14. The target can be engaged at a maximum range of 400 km and a minimum range of 2 km. The maximum altitude for engagement is 185 km and minimum is .01 km. The targets that can be engaged are as under:

- Fighter jets and bombers including stealth jets.
- Electronic warfare planes.
- Cruise missiles such as the Tomahawk.
- Ballistic missiles up to ranges of 3,500 km.
- Drones up to a range of 400 km.

India has signed an Inter-Government Agreement for the acquisition of five S-400 systems from Russia.[8] The deployment of the systems would be decided once the system is inducted.

Apart from these, there are reports that the Air Force and the Navy are going for Surface-to-Air Missile with a range of 70 km. These are

being co-developed by DRDO and Israel.[9] Further the Spyder Missile system with a range of 15 km is being inducted for the Indian Air Force and the Indian Army is also possibly interested in the same. DRDO is also co-developing a Quick Reaction Surface-to-Air Missile with MBDA from Europe with a range of 15 km; this could be used on land and naval ships. The Army Air Defence is doing its utmost to procure the state-of-the-art Swedish SAAB RBS 70 NG which has a capability to destroy targets at a maximum distance of 8,000 metres and altitude of 5,000 metres. It is capable of engaging targets in cluttered environments and is a laser beam riding missile with all-weather day and night capability. Apart from this we have Gun systems which have been suitably upgraded.

Other Systems

While we are in the process of evolving how our Air Defence assets are to be deployed to protect our cities, it is interesting to note details of National Advanced Surface-to-Air-Missile System (NASAMS). The NASAMS, as elucidated by Raytheon Defence Industry, is a highly adaptable mid-range solution for Air Defence. The system can quickly identify, engage and destroy aircraft, UAVs and Cruise Missiles. It is produced by Raytheon of United States with Kongsberg Defence and Aerospace of Norway. It guards the National Capital Region of the United States and is currently in service in Norway, Finland, Spain, the Netherlands, Oman and Chile.

The NASAMS is based primarily on the AIM-120 AMRAAM missile integrated to a United States built AN/MPQ-64 F1 Sentinel Air Defence Radar and a C4I system called the Fire Distribution Centre. The range of the missile depends on the version of missile used. The various types are as under:

- AIM-120 A/B: 55-75 km.
- AIM-120 C-5: >105 km.

- AIM-120 D (C-8): >180 km.
- Extended range being developed would increase the range by an additional 40 km.

Each NASAMS battery has three to four Fire Distribution Centres, three to four radar systems, nine truck mounted missile launchers each carrying six missiles. Each launcher can be deployed at a distance of 25 km from the Fire Direction Centre and can engage 54 targets simultaneously within a few seconds.

The Missile system NASAMS is comparable to the Israeli David Sling and Arrow system. Of course both these systems, including the Iron Dome, have been developed by Raytheon of the United States with Rafael of Israel. Arrow flies at hypersonic speed of Mach 9 which enables destruction of any known Ballistic missiles. As regards David Sling, the range is a little more than NASAMS. It is interesting to note that Raytheon Industries in the United States is the primary industry involved in Air Defence products in Israel.[10]

Killing a Drone

A Drone has peculiar characteristics and destroying it is a difficult task. The methods being used are enumerated below:

- A new technology allows you to move at close proximity and hijack drones controls thereafter neutralising it.
- Radio jamming could paralyse a drone if intelligently executed.[11]
- Blighter Anti-UAV Defence Systems is a part of the radio jamming apparatus for decimating a drone.
- Another set-up could use a modern Active Electronically Scanned Array Radar, detect and then shoot it with a missile.
- Overall technology is in the nascent stage and needs to improve in this area.

Our Approach

There is an urgent need to defend our strategic areas. We have been able to list our priorities and focus on equipment. India has an indigenous Anti-Ballistic Missiles Programme which is supported by foreign assistance particularly with regard to its detection systems. Further the Akash Missile is an indigenous product. The Long Range Surface-to-Air Missile, the Medium Range Surface Missile and the Quick Reaction Surface-to-Air Missile are being co-developed by DRDO with foreign assistance. The Spyder and the S-400 Triumf and the VSHORAD are equipment which are being made abroad and if need be, there is scope to Make in India. The moot question is, "Do we need to induct NASAMS for Air Defence of our strategic areas?" The answer is simple. The equipment we are in the process of procuring are capable and systems like S-400 Triumf would in its current state appear to be superior to NASAMS. However, if the United States offers to undertake future development with a private partner in India, it would need to be negotiated as it would open a new technology for design, development and manufacture of Air Defence Missiles in India. Of late, the United States has made good offers for the manufacture of fighters in India in collaboration with the private sector. This means that two of the great US Defence manufacturers, Lockheed Martin and Boeing, would be expanding the Defence Industrial Base in India. Similarly, if Raytheon were to collaborate with one of our private partners to design, develop and manufacture missiles in India, it would be a great opportunity which India must seriously consider as it would lead to greater indigenisation.

How Do We Shield Areas of Strategic Interest?

Air Defence is based on the air threat. Currently our areas are threatened by missiles, aircraft, UAVs and UCAVs. Based on the importance of the installations there would be a need to deploy systems suitably to counter this threat. There are strategic installations in some cities and based on

the priorities the authorities would do the needful. It is indeed creditable that a wide variety of equipment is being procured presenting an array of capabilities to protect against Air threats.

While we have spoken about Kinetic weaponry to meet the threat, it is important to note that detection systems play an important part. Further, Fire Direction Centres ensure that the hostile target is effectively dealt with by optimising the correct weapon-to-target matching and undertaking effective Post Strike Damage Assessment. To undertake Surveillance would entail the use of Satellites, Aerostats, Radars and other devices. For ensuring quick engagement Fire Direction Centres need to provide a real-time automated response to these targets. All this requires Alacrity and Speed. Considering the developments taking place, it is heartening to witness that all these issues are under consideration. However, we need to expedite the speed with which the procurement is being undertaken. In addition, we continue to hone our skills with regard to our protection from Land and Sea.

Conclusion

Shielding of Areas of Strategic Interest in the current environment requires state-of-the-art weaponry which would be capable of detecting, engaging and destroying a wide array of targets. The Indian Armed Forces are in the process of developing and acquiring a wide variety of systems to counter the broad spectrum of threat in these areas. As the areas are numerous, it is essential to dynamically prioritise them. Further we must be prepared for retaliation in defending these areas, thereby needing periodic review of plans.

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Role of Organisations as Non-State Actors in International Relations

Neeraj Trivedi

Introduction

Nation states have traditionally occupied an inviolable position as sole actors on the world stage. States act as rational autonomous entities which follow their self-interest with the goals of security, sovereignty and survival in perspective. In their pursuit of security, states amass resources that allow their military and economic capabilities to increase their power relative to other states. The primacy of states within international relations, however, is now being questioned by the emergence of non-state actors in world affairs and the changing nature of global governance. State power can be exercised along with influence of soft power, economy based decisions and role of private actors or organisations, all of which have now become legitimate mediums of governance in the present-day international system.

Multinational Corporations (MNCs) that operate across borders, International Inter-Governmental Organisations (IGOs) such as the European Union and Non-Governmental Organisations (NGOs) having global outreach, all influence up to various degrees the policy frameworks and regulatory mechanisms governing both the domestic

Col **Neeraj Trivedi** is Senior Fellow at Centre for Land Warfare Studies (CLAWS), New Delhi.

and international affairs.[1] Credit rating agencies and their structural power to influence flow of investment capital in the private and public sectors must also be taken into account when considering the complex paradigm of relationships between states, markets and private actors in the international arena. Despite this, overall the nation state retains the greatest influence in the sphere of international relations. Yet, at the world stage, there are many players engaged in the game of international affairs. While nation states remain the dominant actors, they are by no means the only ones. Therefore, by virtue of their influence, an actor can be a state, it can be an organisation or an individual.

The state was long considered to be the only meaningful actor within world affairs. The realist paradigm, advocated by authors such as Kenneth Waltz, postulated that global affairs take place within an anarchic framework in which states compete economically and politically to gain positions of relative advantage.[2] No consideration was given to the internal structure of those individual states or the influence of organisations outside governmental control. The forms of these new interpretive models of global governance have usurped the supremacy of the state by the non-state actors.[3]

Global Governance

In the complex interactions and modes of relationships between states, markets and private actors within the international system, the concept of governance is certainly of significance. While no universally accepted definition of the term exists, governance is generally referred to as interpretation of order, stability and politico-economic management. Global governance, specifically, refers to the formal and informal sets of arrangements in global politics. The implication is that states alone cannot manage global affairs. The impact of these transnational networks can be seen in numerous achievements, such as the treaty banning landmines, the Kyoto Climate Convention, the International Criminal Court, the

World Trade Organisation, and the UN peacekeeping operations. In essence, global governance is aptly described as regimes or systems of rule, embracing both formal and informal regulatory mechanisms.[4]

The emergence of the global political economy has altered the authority structures that developed with the rise of the state system. The perspective which emphasised the "state-centric system" is now being replaced by a "multi-centric system" in which non-state actors exert an important influence within the sphere of global governance. In response to these developments, the ability of national governments to address and resolve major issues confronting their societies is declining. It must be noted, however, this does not herald the end of state sovereignty, it merely implies that the exclusivity and scope of their influence has changed substantially, narrowing the range within which their authority and legitimacy are operative.

The international system consists of nation states, international organisations and private actors. The rise in number of international organisations is a consequence of the increasing levels of economic, political, social and cultural transactions between individuals, societies and states. The growth of so many kinds of non-state actors challenges and even weakens the "state-centric" concept of international politics and replaces it with a "transnational" system in which relationships are more complex. These Non-State organisations have changed the international political discourse.

Non-State Actors and Characteristics

Non-state actors are non-sovereign entities which may be individuals or organisations that have powerful economic, political or social power and are able to influence at a national and sometimes international level but do not belong to, or have allied themselves to, any particular country or state.[5]

Other than having characteristics such as having power and the ability to influence, non-state actors have a base or headquarters in a certain

state but their activities may not only be confined to operating in the state itself but also beyond the borders of the state.

Types of Non-State Actors and their Roles

Non-state actors can be classified into the following categories: international Intergovernmental Organisations (IGOs); transnational Non-Governmental Organisations (NGOs); sub-state actors; Super-empowered individuals; MNCs; and Terrorists organisations. The first group comprising IGOs consists of the organisations that are created by nation states. They are officially sponsored by government agencies. The second group is that of NGOs which is not established by nation states, but by a certain group of individuals, businessmen and other societal forces which are organisations that are private, self-governing, voluntary, non-profit and task or interest-oriented. This group has no legal bonds with nation states, therefore, they are independent.[6]

Intergovernmental Organisations (IGOs)[7]

Intergovernmental Organisations (IGOs) are one of the international organisations which comprise members of three or more nation states. IGOs are created and joined by states to solve shared problems. This gives these organisations authority to make collective decisions and to address their global agenda. In these organisations, the states' representatives gather to discuss issues which are of mutual interest to the member states.

IGOs are of two types, global and regional. Global IGOs are organisations having universal membership which means many states are members of organisations like the United Nations (UN), World Trade Organisation (WTO), and International Monetary Fund (IMF). Regional IGOs are a subset of states as members based on a particular interest or region, such as the Association of Southeast Asian Nations (ASEAN), European Union (EU) and many others.

States form IGOs keeping common interests in mind. With IGOs, certain problems can be solved easily and in a cost-effective manner. States need to correspond with each other and oversee that other states are honouring their commitments. For example, the World Trade Organisation (WTO) was formed to encourage free trade and resolve tariff disputes, a task which would have been more complicated and expensive to execute without the IGOs.

There are times where IGOs are not only created to solve problems but to provide a platform for discussion. The UN General Assembly has no predetermined agenda but provides a forum for states to discuss and debate issues that are of concern for the larger community or member states. It maintains international cooperation for resolving issues within the states, ensuring peace, security and promoting harmony. Similarly, WTO's goal is to organise meetings at which states negotiate and resolve problems being faced by them in trade, while Association of South East Asian Nations (ASEAN) promotes regional economic, social and cultural cooperation amongst states in South-East Asia.

Multinational Corporations (MNCs)

MNCs are companies which have headquarters in one state but operations and investments are spread out worldwide. In other words, they have global outreach and several branches or subsidiaries operating in other states. In the past few decades, MNCs have increasingly become powerful as independent actors.[8] Many of the MNCs such as Walmart have annual sales of billions of dollars which match most international organisations (IOs) in size and financial resources. The largest IGO (UN) has a budget which is less than some of the MNCs. The power of MNCs does not rival that of the states yet they exercise substantial influence in formulation of policies.

MNCs are viewed as citizens of the world, beholden to no government. MNCs act globally in the interests of their (international) stockholders, owe loyalty to no state and are driven by the need to only

maximise their profits. MNCs also contribute to their host country's development by providing job opportunities for the locals in that state and thus augmenting the economy of that state.

Non-Governmental Organisations (NGOs)

NGOs (Non-Governmental Organisations) are organisations that are private, self-governing, voluntary, non-profit and task or interest-oriented organisations. Within those broad parameters there is a huge degree of diversity in terms of their unifying principles, their independence from government, big-business, and other outside influences. Their operating procedures, sources of funding, international reach, and size are also different. They can implement projects, provide services, defend or promote specific causes and influence policy decisions.[9]

International NGOs are private entities comprised of volunteers who form organisations to promote their shared interests and ideals in order to influence the policies of governments. These organisations endeavour to raise issues of common concern like disarmament, environmental changes, human rights, etc., and seek collective and constructive solutions in the form of treaties. The causes espoused by these organisations are respected and find acceptance on the global stage.

NGOs are now being recognised as legitimate actors in international bodies along with states for their expertise in diverse domains of political, humanitarian, technical and economic issues. The sphere of influence of NGOs transcends borders through cooperation with organisations which are aligned with them in thought, purpose and ideology. This enables them to shape public opinion and build up support for issues of common good and develop consensus between nation states to ink international agreements. Amnesty International, which advocates human rights causes, has been instrumental in bringing norms which are globally accepted to end human rights abuse in the member countries. Some of the other issues of concern have been LGBT rights, welfare of women and children,

environmental degradation and its restoration, freedom of expression, protection of civilians during armed conflicts and conservation of wildlife through organisations like WWF.

Political Groups that Advocate Violence (Terrorists)

Terrorists are members of groups that advocate use of violence against civilian or non-combatants with the purpose of intimidating the population and creating an environment of fear for compelling a government or international organisation in order to achieve their political objectives. These non-state actors wield power in global politics and are even able to influence international relations between states. The attack of September 11, 2001 by members of Al-Qaeda and attack on Indian Parliament on December 13, 2001 demonstrate the increasing power of such organisations and the technology now at their disposal.

International Criminal Groups

Transnational actors pose a significant threat to national and international security. Their actions have a direct effect on democratic institutions, public safety and economic stability. The criminal networks have expanded and diversified their activities to achieve explosive and destabilising effect which poses significant threat to economic and democratic governance. These groups are well financed and able to influence even state policies. These groups function with impunity due to connivance with the political establishment. Most of these groups are involved in drugs, prostitution, human trafficking, firearms and many other such crimes. Some examples of international criminal groups would be the Yakuza in Japan, the Sicilian Mafia in Italy, the Russian mafia and drug cartels of Mexico and Colombia.

Impact of Non-State Actors

The non-state actor's role and influence depends on the political, economic and social leverage that they wield. These institutions have assisted in

building public support to lobby with governments for desired policy formulations. They have challenged the erstwhile state-centric system and emerged as alternate centres of power which may be non-political but with interests in economic or cultural domains at the international stage. It has provided a stimulus to international relations and has also been instrumental in several strong peaceful, developmental and ecological movements transcending borders. States and non-state organisations have a symbiotic relationship as they cooperate and work within defined parameters to achieve order, stability, and predictability.

Credit rating agencies can also be non-state actors playing an important role as financial gatekeepers in the allocation of funds to various governments and organisations. These organisations exert influence in ensuring economic stability by monitoring the governance and proper utilisation of allocated funds for developmental projects. Though there is influence of non-state actors in international relations, it does not imply that the power of the state has in any way been diluted. The non-state actors wield considerable influence in addressing specific issues and their associated challenges, yet they lack legitimacy, authority, decision-making and legal capabilities which are vested in formal state structures.

Non-state actors espouse causes based on their ideologies, geographic locations and the influence that they can exercise. At times, they are instrumental in highlighting issues which adversely affect the world at large, though the resolution to these challenges can only be carried out through collective, political will of nation states to arrive at mutually acceptable solutions which are also enforceable.

The inconsistent and biased policies, as well as diminishing influence of intergovernmental organisations, make them the weakest link in the global governance chain. Numerous organisations were conceived but they lacked the teeth to enforce common policy decisions especially when it did not suit the interests of any powerful member state. These IGOs were inept at being transparent and neutral for impartial implementation

of policies in consonance with the stated aims of their existence. It is imperative to consolidate these international organisations and give them requisite legal authority and autonomy to be effective.

To quote Thomas G. Weiss et al.:

> Without more solid foundations in international law and without robust intergovernmental organizations, global governance mechanisms are limited to voluntary participation, moral persuasion and peer pressure, invoking democratic or market pressures in order to ensure compliance. The fledgling and inadequate contemporary structures of global governance must move beyond mere providing of incentives for self-interested cooperation when it suits or for only a handful of issues.[10]

States unable or unwilling to adapt strategies based on the constructive inputs of non-state actors will not be able to achieve consensual and able governance. Civil society's organisations play an active role in shaping opinions to influence laws and policies. They challenge traditional notions of governance, accountability, and legitimacy. Global governance is certainly not a continuation of traditional power politics in silos but the new dynamics of power play also involves many powerful key non-state actors that have been described. The growth of non-state actors has provided solutions and opened opportunities in global governance that were missing earlier. If the global system has to function better, then these new elements of power must be appreciated and incorporated.

Conclusion

The growth in the influence of non-state actors understates their importance and reflects on the benefits in global governance by their active participation in the changed dynamics of power sharing. The future global governance will require the coming together of these non-state actors with increased legal framework and more robust orchestration

by intergovernmental organisations. The absence of IGOs with the requisite scope, resources and authority means that the global system is deprived of the tools, wherewithal and legitimacy that only universal intergovernmental organisations can bring. What is required is the expansion in the formidable global governance by use of the political and economic measures to consolidate and strengthen the fundamental working of intergovernmental organisations, especially the UN, to make it more effective. The new world order will require infusion of more power to international organisations along with legal sanctity and incorporation of the emerging non-state actors in furthering robust international relations.

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Rise of Fifth Estate:
Challenges and the Way Ahead

Gaurav Gupta

> *I fear the day when technology will suppress human interaction and the world will have a generation of idiots.*
>
> —Albert Einstein

From news to social media, from net banking to e-commerce, online gaming to ordering food at home, technology has paved its way into our lives. Technology has become our nervous system and any disruption to it can cause paralysis to an individual's life. The individual's personal information, which one never shares in physical space, has moved to cloud, and is sold for a few bucks in the market. Technical gadgets have become so advanced that one can get a real feel of a war zone, a robbery scene, terrorist attack or a high-speed jet inside a room wearing suitable gaming kits. The physical meetings have moved to virtual space. Technology is virtually 24x7 with us knowingly or unknowingly. Technology is an enabler and at the same time it has enhanced the potential of lawbreakers. The biggest challenge, as the technology advances, remains that of security and legality in virtual space, because in virtual space there are no boundaries, limited laws can be applied and illegal activities continue through the dark web, albeit in a legal way.

Col **Gaurav Gupta** is a Senior Fellow at Centre for Land Warfare Studies (CLAWS), New Delhi.

Introduction

A decade ago, we typed on computers. Now we talk to them. We used to call for taxis from taxi stands, now an app—an acronym for software application—picks a stranger's car for us to ride. We used to meet people in public places and socialise, now we swipe on photos of their faces. The smartphone is where we communicate with family, do work, record memories and find entertainment. Software literally tells Uber, Ola and other app-based taxi drivers which route to take. Algorithms now make decisions that shape the daily life of any person with a smartphone. Just by searching Google, using a map or talking to Alexa, we feed computers personal data that trains artificial intelligence, and fuels businesses that have made us into a product. Robots are our new human model and social media is our new meeting place. This article analyses how the social media shaped up in the last two decades, its impact on our daily life, its legal challenges and future.

Connecting People

The websites and applications that enable users to create and share content or to participate in social networking form social media—the fifth estate. Facebook was launched in the year 2004 by Mark Zuckerberg with his college roommates and fellow Harvard University students. Since then social media has revolutionised the way we connect, bringing the communities closer. Socio-political changes in society have ensured that the social media has become our new family connecting millions and providing information about one and all in our social circles. A lot in social life today becomes social media first. The status of an individual is now judged by an individual's social media standing. There are a total of 4.5 billion users on social media worldwide out of which 700 million are from India. Facebook, the most popular social media site, has 2.4 billion active users monthly. YouTube, WhatsApp, WeChat and Instagram have over a billion users each. Twitter is yet another social media platform

wherein either you follow or are being followed by someone. Social media has a word or an emoticon for all our feelings. Data—the new oil—from one's consumption pattern helps predict what we want in the future. Consolidated data coupled with Artificial Intelligence has revealed more than what one knows about oneself.[1]

Moulding Public Opinion

Social media has revitalised public debates bringing people together in the virtual space to agree or disagree on a subject. A well coordinated media campaign was launched against corruption in the past. There were war cries against discrimination and scaled up demand for action over climate change. Hashtags broke the silence of sexual harassment. The protests flared up online before hitting the screens and eventually led to clamour by protesters. The Cambridge Analytica—a political consulting firm—employed by the Trump campaign, proved how the Facebook data of millions was used to target and wage a war of misinformation on US electorate in the build-up to the 2016 presidential elections, by micro targeting and influencing its core supporters with ads that were customised to suit individuals. In another western democracy, social media targeted ads, successfully shaped a referendum campaign. Closer home, India witnessed an aggressive social media campaign in its 2019 general elections.

Harnessing social media, data and technologies smartly to activate its core base was the well known game plan of the political parties and its leaders. The political parties use their own data, social media data and Government data to analyse and strategise its politicking. Never before has India seen a political leader so popular on ground as well on Facebook, Twitter, YouTube and Instagram to name a few social media platforms. Through NaMo app and "Mann ki Baat," the PM has connected to the masses cutting through the usual bureaucracy. From promoting Government schemes to attacking the opposition and disseminating

news, social media platforms are now the preferred mouthpiece, perfectly delivering tailored messages targeting specific goals. Social media has played a role of surround sound like an echo chamber, especially for the Millennials, to build communities in support of major parties. Rallies are boosted by online forums. Political and geographical boundaries have shrunk making the world flatter. Manipulation of public opinion and amplification of polarisation has taken over social media platforms. Fake news, watered down stories and propaganda can easily be passed around at lightning speed without check and it would be consumed in large volumes. Human nature, which is to react at times without reflection kicks in which is further accelerated by anonymity of the Internet. Opinions about movies or even gender are enough to catch the troll's attention. Internet blockage to halt dissent and prevent ground forces from galvanising is the latest tool to quell protests. In 2018, 67 per cent of documented Internet shutdown took place in India. Communication was blocked in Jammu and Kashmir UTs as the government revoked the region's special status. Protests were fuelled against the Constitution Amendment Act through social media and the government once again shut down the Internet where and when it felt the need.[2]

Technologies and Products Enhancing Reach of Social Media[3]

Social media is about sociology and psychology more than technology.

—Brian Solis

From the launch of an iPad to the 5G spat between the US and China, technology has never had a more avant-garde, yet tumultuous time in recent history. The app ecosystem has exploded with over 5.5 million apps from a mere 0.14 million in the App Store when Steve Jobs unveiled the iPad in 2010.[4] App explosion coupled with cheaper,

smarter handsets amped up online interactions over a decade, making users connect to even their immediate environment through the mobile phone. In this ecosystem, social media firms like Facebook and Twitter have propped up individuals on digital pedestals built on algorithms driven by engagement, building customised worlds driven by user data. Almost free and quick access to 4G technology has introduced social media to the masses.[5]

YouTube: Internet could be one's launch pad to fame. YouTube was once delimited to watching songs and video clips online. Nowadays, stars are born on YouTube. Some of the individuals rose to fame overnight. YouTube is considered a social media platform because it enables interactions from users by liking, replying, sharing and commenting on each video. Dabbu ji's dance and moves gave Govinda a run for his money. The video of dancing uncle went viral overnight attracting more than four million hits. One wink and the entire country was hooked. Priya Varrier, dabbed as national crush of India, instantaneously became most searched woman in India. Closer home, a heartwarming speech by the mother of a bride, wife of an ex-Army officer, Mrs. Sonia Relia, became viral attracting more than seven million views. Seventy per cent of millennials watched YouTube in the past year to learn how to do something new or learn more about something they are interested in.

Front Facing Cameras and Selfie: "Selfie" was added to Oxford dictionary in the year 2013. The culture of taking pictures of oneself became popular with the rise of front facing cameras in mobile phones, picture sharing and social media apps. This technology—originally conceived to make video calls—opened up a new way of self-expression, enabled by image editing and filtering options provided by popular photo and video sharing apps. This was the part of pre-app ecosystem, a time when most of the online social interactions were on the desktop or laptop and not on mobile. Very soon, with the launch of smartphones, selfies were instantly posted on social media, awaiting likes.

Messaging Revolution: WhatsApp is not a social network but is one of them with its social features like conversations, sharing video, images with friends and groups of like-minded people and much more. It has fundamentally changed the way we interact because of an SMS-like experience without the fees that mobile operators charge and end-to-end encryption. By 2014, when WhatsApp had reached over 1.6 billion users, Facebook bought the company for $19 billion. In recent times the company has come under scrutiny as the platform enabled fast dissemination of fake news.

Digital Payments: Advancing technology has paved the way for digital payments to grow. Today, digital payment solutions dominate almost all industry sectors, and soon, we will witness the exponential growth in mobile-based payments worldwide. The mobile app development companies are integrating the future trends in the digital payment system to make it more secure, quick and user friendly. Future trends of payment are based on emerging technologies like Internet of Things (IoT), Artificial Intelligence (AI) and Block Chain. Most of the digital payments platforms now have an integrated access through social media websites to not just the gaming websites but also e-commerce.

Social Commerce: Use of social network for e-commerce transactions aims to assist companies in engaging customers with their brands according to the customer's social behaviour. It provides an incentive for customers to return to their website and a platform to talk about their brand on their website. It also provides all the information customers need to research, compare, and ultimately choose a product over its competitor. Examples of social commerce include customer ratings and reviews, user recommendations and referrals, forums and communities, social media optimisation, social applications and social advertising. Technologies such as Augmented Reality have been integrated with social commerce, allowing shoppers to visualise apparel items on themselves and solicit feedback through social media tools.[6]

Blessing or Bane[7, 8]

With Social Media you learn the hard way.

—Cameron Dallas

Usage of social media primarily depends upon individual interests. Whether this incredible power of the social media is a blessing or a bane is a big question. The networking websites have given power to the people to invent their own creativity.

Connect with Family and Friends: Social media is an important tool for communication between family and friends who live across the world. Of late this interaction has increased because of social media's free messaging and calling features. People have been able to find their childhood friends and connect with them.

Digital Marketing: It is a huge opportunity for the companies, especially the start-ups who do not want to invest a large amount in marketing initially. Start-ups can now initiate advertising their businesses with less cost or no cost at all. Social media also gives an opportunity to understand customers well and helps boost brand name, enhancing the reach to more and more people simultaneously. Optimisation of the search engine has begun to extend rather localised ads enhancing the reach of businesses.[9]

Public Expression: Expression of public opinion has helped individuals to join for a particular cause. In one such case, in Tamil Nadu, when traditional game Jallikattu was banned, an online campaign was started against it, and soon many joined the protest through social media, which pushed the Government to pass an ordinance to lift the ban completely. Social media helped during a crisis like "Super storm Sandy," which occurred in the US. Social media platform was used by victims to inform their families about their safety and details of destruction for the Government to take note of.

Understand Mood of the Masses: Government and the law enforcing authorities are closely monitoring all online sites to know the mood of the masses and to catch the criminals in physical as well as virtual space.

Virtual World or Real World: The boundaries between the real world and virtual world are diminishing. Individuals, especially the Millennials, are so involved with the social media that they spend more time in the virtual world. The personal touch and face-to-face interaction involving emotions is weakening. Many a time, individuals spend more time chatting than talking to someone sitting next to them, resulting in reduced interaction between family members in their own house. There are more friends online and fewer in real life, and quite a number of them are strangers who are a potential threat.

Haunted Posts: Social media does not have a delete key, even if deleted after making it public. At times such posts, images, comments and likes may come back and haunt the individual.

Social Bullying: Social media gives freedom of expression. At the same time, it gives a chance to others for misuse by social media bullying and abusing. In some cases, social bullying has led to suicide by the individuals. As per a report, 90 percent of teens who participate in social media or online gaming have suffered bullying. Recently Miss Devoleena Bhattacharjee, a Big Boss Season 13 contestant, became the victim of cyber bullying.

Cyber Stalking: Boorish characters, sexual and other predators stalk the individuals online and lure them into dangerous personal happenstances, posting personal information like images of awkward personal moments to their home addresses, at times through bankrolling as award for winning a game online.

Weird Challenges: The "Blue Whale" game challenge was the worst of its time consisting of a series of tasks assigned to players by administrators over a 50 days' period, initially innocuous before introducing elements of

self-harm and the final challenge requiring the player to commit suicide. Yet another challenge, the "Kiki challenge," involved jumping out of a moving car and dancing alongside to Drake's hit "In My Feelings," while the car continues moving. Such challenges are undertaken by GenNext who post their videos online in a run-up to gathering more likes than others.

Infringement of Privacy: The individual's life has become an open book thus compromising privacy. At times individuals share their locations which is taken note of for criminal activities. Exacerbating further, the individuals are stalked regularly to identify potential places for theft by the anti-social elements.

Phishing: Use of emails to trick people into clicking on malicious links and attachments is called Phishing. The same done through SMS texts is called "Smishing." These emails or links pop up and lure individuals to sites that are popular in the dark web. This can be a link to anything from pornographic material to sale of drugs. Some of these emails at times proclaim that a huge sum of money has been won by an individual. Individuals fall prey to such scams without realising that if an offer sounds too good to be true, it is not true. Individuals have also been lured into downloading malware and thus compromising their mobile phones, laptops or computers.

Adverse Effect on Health: As more and more individuals are spending more time online on social media, their physical activities have reduced, resulting in health issues.

Hacking of Personal Information: Since more and more personal information is available in the public domain, the same is compiled and used in profiling of individuals, which can lead to hacking of one's social media and banking accounts.

Creating Unrest: Some of the fake news have created unrest in society. More recently there was a surge of fake news during anti-CAA protests and pandemic COVID-19.

Adverse Effects on Business: A rival can post negative comments which will affect the future business prospects with new clients and tarnish the image of the company.

Social Media on Dark Web[10]

The dark web is a part of the Internet which is not indexed by standard search engines. Dark web is considered as a hotbed of criminal activities. One can buy credit card numbers, all manner of drugs, counterfeit money, stolen subscription credentials, hacked Netflix accounts and software that help break into other's computers. Login credentials of a bank account, prepaid debit cards and such illicit information is available at throwaway prices. The request to dark web pages is routed through "TOR" browser, which routes it through a number of proxy servers operated by thousands of candy stripers across the globe, finding whom is a long shot. There are "hidden wiki" pages and dark websites. These websites use a different naming structure. A popular commerce site called "Dream Market" goes by the unintelligible address of "eajwlvm3z2lcca76.onion." Financial transactions take place in bitcoins, cryptocurrency which is shared between two parties without disclosing their identities to each other. Every communication is encrypted, so even the simplest transaction requires a digital signature. Facebook and many other legitimate social media giants have a presence there too.

Regulatory Challenges of Social Media[11]

This effort of controlling the Internet has led to legal and regulatory initiatives to mitigate risks associated with this new medium, ranging from privacy of users, intellectual property and national security to frauds, pornography and hacking. Some of these regulations and laws and the challenges associated with them are covered in subsequent paragraphs.

Pornography and Obscenity: Social media, because of its fast information dissemination has made regulations more difficult.

Pornography, though brought under the purview of Indian Penal Code (IPC), provides limited scope and jurisdiction to the Government authorities in regulating because of the transnational character of Internet. Internet Service Provider Association of India (ISPAI) has submitted that they cannot block any website, out of approximately 40 million websites containing pornographic material, until approved by Government of India. Also there is no consensus on the definition of indecent and obscene content. The laws related to pornography and obscenity is different in different countries, thus leaving law implementation authorities jumping through hoops.

Identity Theft: Use of one's personal information to create fake profiles and to gain access to one's friends falls in the category of identity theft. The users of social media sites are not taking full measures to protect themselves from identity theft because of lack of technical know-how.

Trade Mark Infringement and Dilution: A quick search for any major brand name on Facebook will often reveal hundreds of results, which include official and unofficial results. The prevalence of various contents/pages in the same name often attempts to tarnish the image of famous brands. There are very few measures to prevent an individual or entity from adopting a user name or sub-domain name that incorporates a third party's registered trademark. Taking remedial action can often be problematic for the trademark owner, both from the sheer scale of the problem, to considering issues of adverse publicity that may make a bad situation worse.

Copyright Infringement: The multimedia world of the social web is littered with copyright material, which may or may not be reproduced with the consent of the copyright owners. Users infringing the rights of copyright owners are liable to be sued for infringement, but determining ownership of User Generated Content and liability is a challenge.

Defamation: A defamatory statement is a false and disparaging statement about another that causes injury to the reputation of the person

to whom it refers. IPC makes it a punishable offence. Fixing the liability between the content publisher and the ISP is a challenge.

Privacy Violation by Social Media: A vast majority of social networking sites set a particular privacy setting as default so that anyone can see a person's information unless privacy settings are actively changed. As a result, a considerable number of users inadvertently allow public access to their personally identifying information merely by failing to actively change their privacy settings. As per a study, 41 per cent children and 44 per cent adults on Facebook have open privacy settings. When any social media user travels, websites and advertising companies are able to track them, on the Internet to assess their personal preferences, habits and lifestyles.

Cyber Bullying and Harassment: The Internet allows the offender to conceal his identity behind a computer, making it easier for the offender to bully the victim. The distancing effects provided by technological devices have its impact on offenders and it often leads them to say and do crueller things compared to a traditional face-to-face bullying situation.

Freedom of Speech and Expression: Right to Freedom of Speech and Expression has been explicitly guaranteed as a fundamental right under the constitution, however it has been curtailed by shut-downs during anti-Government protests like CAA and also against spread of rumours during the recent pandemic.

Laws Governing Social Media[12]

Social media laws in India are regulated by Information Technology Act 2000 read along with IT Amendment Act 2008, laws of the land, that is, IPC and RTI Act. IT Act 2000 was the first legal framework issued by Government to regulate, control and deal with the issues arising out of the IT. Thus social networking sites in India are liable for various acts or omissions that are punishable under the laws of India.

More recently, in December 2019, the Union Cabinet chaired by Prime Minister Narendra Modi gave the go-ahead to the updated version

of the Personal Data Protection Bill. The bill aims to protect the rights of an individual over the data generated by the individual. The bill also defines a framework for all stakeholders with respect to handling, storage, processing and accessing the personal data, thus safeguarding individual and national interests.

Department of Electronics and IT has issued a regulatory framework and Guidelines for Use of Social Media for Government organisations to enable Government agencies to use these platforms more efficiently and reach out to their stakeholders. The advisory covers roles and responsibilities, accountability, content governance and legal provision.

In December 2018, the world's largest messaging app, which has at least 200 million users in India, launched its first ever television campaign, through three 60 seconds video ads focused on educating Indians about the dangers of fake news and spurious forwarded messages. In the recent past, anti-CAA protests saw the surge of fake videos and fake news. Government issued directives to warn all those who forward fake news and videos that they could face a jail term for three years. The Delhi Legislative Assembly has constituted a committee in March 2020 named "Committee on Peace and Harmony" to identify fake news. In an advisory sent on March 20, 2020, the Indian Government has asked social media platforms to start awareness campaigns, remove misinformation from their platforms and promote authentic information on the Corona virus.

Way Ahead

If there is one thing that tech gurus can predict about the digital world, it is that the social media is here to stay. The online social networking platforms have eliminated other more physical platforms of being social. There are more people active on social networks today than there were human beings on the entire planet just 40 years ago, each interacting with more than hours of social content every day. The potential of social media to reach and influence people will grow exponentially. Social media

will have more effective and active space for marketing and corporates will invest more and more of their marketing budget on social media. Social media will see a rise in micro influencers—individuals having lesser numbers of followers but having high influence over their specific niches—for more authentic advertising. Brand discovery will happen on social media threads or public social feeds. Therefore more and more brands will use social media platforms to reach their potential customers. Their public feeds will be used to guide customers to their private channels. In spite of the use of AI and block chain technologies, blend of automation and human connection on social media will continue to build relationships. Cybersecurity and the dark web will continue to challenge law enforcing agencies as the predators will continue to innovate to escape the watchful eyes.

Social media is a reality that will shape up polity, mould our society and guide our individual consumption choices in the foreseeable future. Social media will continue to be the voice of the people. More and more people will have access to smartphones and thus access to social media. Social media will also see a rising trend for its use for news. It will also be used in future for learning essential job skills. It will be a platform to show technological savvy and creativity. Social media will continue to manipulate public opinion in the near future. Social media will be an important communication channel not only between employees within an organisation but also between parents and children, thus bridging the generation gap to some extent. Finally, as the fifth estate, social media will continue to rule this decade of the twenty-first century also, an integrated approach by all the stakeholders will help grow the digital economy faster and achieve the dollar five trillion economy goal for India.

Notes

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COVID-19 and Xi Jinping's Fight and Win Strategy: Implications for China

Amrita Jash

What we [China] fought was a people's war against the outbreak. We have put up a strenuous struggle and made tremendous sacrifices. Now the situation in China is moving steadily in a positive direction. Life and work are quickly returning to normal. Yet, there is no way we will lower our guard or relax control.

—Chinese President Xi Jinping, March 26, 2020[1]

On January 28, 2020, in a meeting with the World Health Organization's (WHO) Director-General Tedros Adhanom Ghebreyesus on the spread of novel coronavirus epidemic in Wuhan (the capital of central China's Hubei province), Chinese President Xi Jinping remarked, saying, "The epidemic is a devil. We will not let it hide."[2] Furthermore, Xi affirmed that China has full confidence and capability to win the battle against the virus outbreak. As noted, on March 10 at Wuhan, Xi declared: "Victory for Wuhan, victory for Hubei, and victory for China!"[3] What is striking to note, as China declared its win over the epidemic, WHO on March 11, declared COVID-19 as a global "pandemic."[4]

Dr. **Amrita Jash** is a Research Fellow at the Centre for Land Warfare Studies, New Delhi.

Table 1: Trajectory of the Development of Coronavirus from nCov to COVID-19 (December 2019-March 2020)

Date	Response
December 29, 2019	Chinese authorities identified a cluster of similar pneumonia cases of unknown aetiology in Wuhan
December 31, 2019	China first reported to the WHO Country Office about the pneumonia of an unknown cause
January 30, 2020	WHO declared the outbreak as a Public Health Emergency of International Concern
February 11, 2020	WHO named the new coronavirus disease as COVID-19
March 11, 2020	WHO announced COVID-19 as a "global pandemic"
March 17, 2020	WHO Reported: Globally Confirmed cases: 179,111; Total Deaths: 7,426
March 25, 2020	WHO Reported: Globally Confirmed Cases: 414,179; Total Deaths: 18,440
March 27, 2020	WHO Reported: Globally Confirmed Cases: 512,701; Total Deaths: 23,495
March 29, 2020	WHO Reported: Globally Confirmed Cases: 575,444; Total Deaths: 26,654; Total affected countries, areas or territories: 201
March 30, 2020	WHO Reported: Globally Confirmed Cases: 638,146; Total Deaths: 30,105; Total affected countries, areas or territories: 202
	WHO Reported: Globally Confirmed Cases: 697,244; Total Deaths: 33,257; Total affected countries, areas or territories: 203

Source: Compiled by the Author in consultation with data available at WHO Website.[5]

However, what called for this change in perception is the transition of the epicentre from Wuhan-China to that of Italy in Europe. This was followed by rapid outbreaks in Iran, Spain and United States (US)—the new epicentres of the pandemic, as outlined in Table 2 below.

Table 2: Major Epicentres of COVID-19 Worldwide (as of March 31, 2020)

Country	Total Confirmed Cases	Total Deaths
China	82,455	3,313
Italy	97,689	10,781
United States of America	122,653	2,112
Spain	78,787	6,528
Iran	41,495	2,757

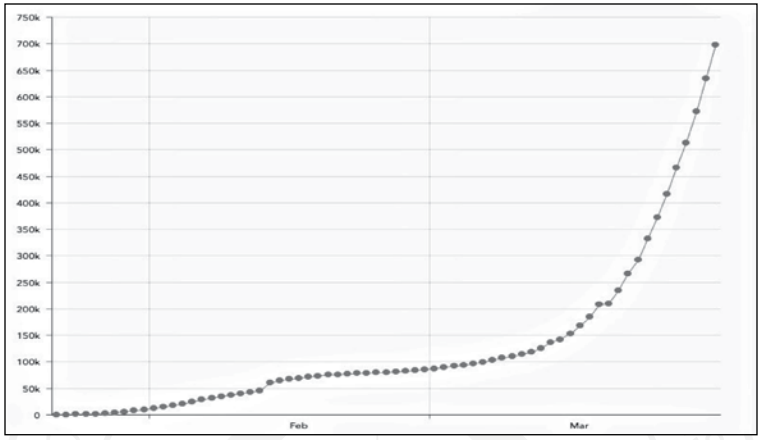
Source: Compiled by the Author in consultation with data available at WHO Website.[6]

What is noteworthy is the trend of duality over impressions of COVID-19 figures between China and the rest of the world. That is, on one end, the number of new cases in China witnesses a downturn despite its significant population size of 1.4 billion; on the other end, the sum of cases of all other countries badly affected exhibit an exponential growth that exceeded China. As noted, China's share of new cases has dropped from being more than 90 per cent to that of becoming one per cent.[7] What explains this sharp fall of COVID-19 cases in China?

Such a discrepancy demands significant attention and calls for speculations over China's transparency in releasing its COVID-19 figures. To suggest, with such voids at play, the pertinent query remains: Did Xi succeed in winning the battle against COVID-19? The answer remains "No," as China has been able to slow the spread of the virus, but has failed to contain it. To argue so, as the outbreak that started in Wuhan in December 2019 rapidly emerged into a global pandemic by March 2020 resulting in greater damage beyond China, as noted in Figure 1.

The graph denotes the rapid outbreak of the pandemic—suggesting the increasing uncertainty over prevention and control of COVID-19. However, China with its "Wuhan win" thinks otherwise, as highlighted in its promotion of the idea that "COVID-19 can and will be contained."[9]

Figure 1: Cumulative Growth of COVID-19 Cases Globally (January 22-March 29, 2020)



Source: WHO.[8]

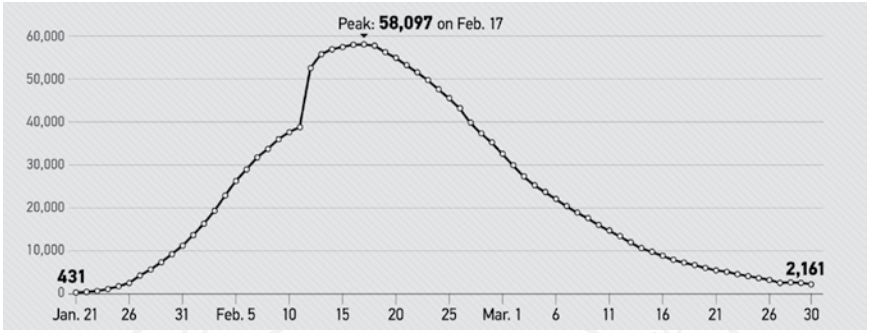
In doing so, China fails to address the key factor "by when" it will and "how" it will be contained. In this context, Xi's "victory call" can be argued to be more "symbolic than significant"—upholding the image of a "strong, confident and responsible" China.

In view of this, the paper seeks to address two key aspects: What explains the Chinese understanding of "win" over COVID-19? Second, what are the implications of the pandemic on China at large and Xi Jinping, in particular?

Ground Zero at Wuhan: *How China Fought the COVID-19 Battle?*

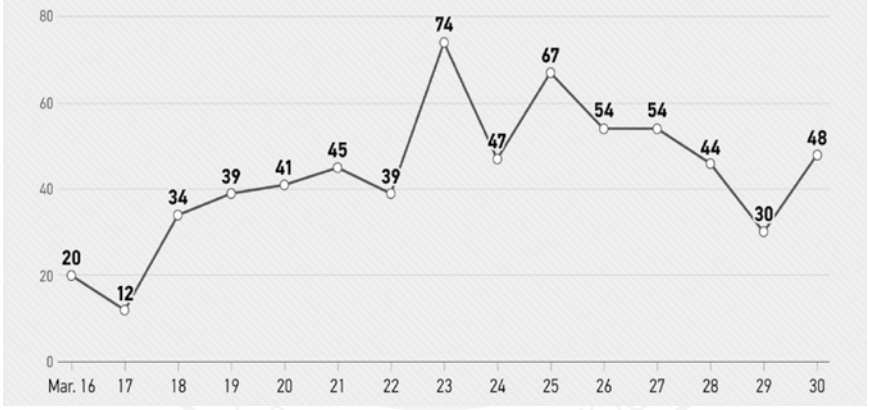
On March 19, China for the first time reported "zero domestically-transmitted COVID-19 cases" in Wuhan,[10] and as of March 31, China has reported 771 imported cases (mostly Chinese nationals returning from abroad),[11] as per the data of China's National Health Commission shown in Figures 2, 3 and 4 respectively.

Figure 2: Downward Trend of COVID-19 Cases in Mainland China (January 21-March 30, 2020)



Source: CGTN.[12]

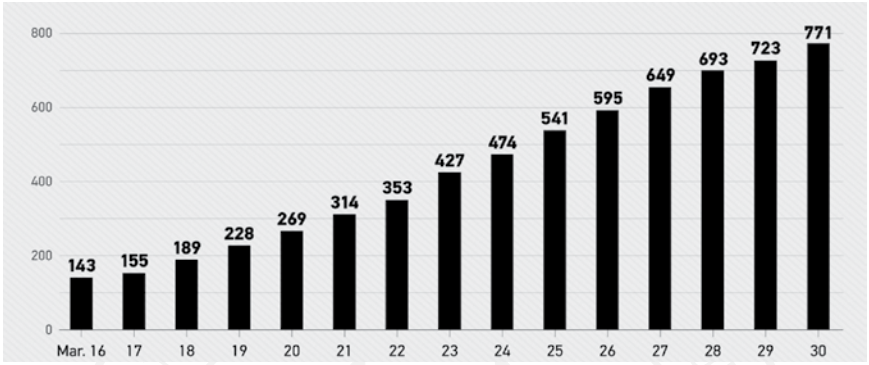
Figure 3: Trend of Imported Cases in Mainland China (March 16-30, 2020)



Source: CGTN.[13]

Given its progression, Chinese government declared to lift the lockdown of Wuhan, as imposed since January 23—removing the restrictions on outbound travel.[15] Does this signify that China is set free of the COVID-19 challenge? To some extent; however, the current challenge lies in controlling the infections imported from overseas as well as that of a relapse of recovered cases—which call for red alarms for the future.[16] To quell the risk, on March

Figure 4: Cumulative Growth in Number of Imported Cases in Mainland China (March 16-30, 2020)



Source: CGTN.[14]

28, Chinese Foreign Ministry temporarily suspended the entry of foreigners with valid Chinese visas or residence permits.[17]

In this context, it becomes imperative to understand the Chinese perception of COVID-19 and the ways China dealt with the epidemic. In Chinese view, COVID-19 epidemic has been:

> "a major public health emergency" considered to have spread fastest, caused the most extensive infection and have been the hardest to contain since the founding of the People's Republic of China in 1949.[18]

Owing to this perception, Xi Jinping called for a "people's war" in fighting the epidemic, with Wuhan and Hubei as the main battlefield. China claims to have "turned the tide," by its fighting strategy under the acronym "PROTECT"—Party leadership, "Renmin" for the people, Openness and transparency, Technology and science, Early treatment, Cooperation with the international community, and Targeted and agile approach.[19] With these measures, China perceives that COVID-19 epidemic situation has been "stabilised" in a "short period of time."[20] What contributes to this

Chinese perception? China traces its success story to the "seven things China has done right to battle coronavirus"—taking full responsibility, mass mobilisation, political determination, timely policy adjustment, easing economic pain while fighting the disease, transparency with coordinated action and power of science and technology.[21] To explain:

First, the political determination of the CPC leadership under the command of Xi Jinping. As noted, on January 25, the meeting of the Standing Committee of the Political Bureau of the Communist Party of China (CPC) Central Committee chaired by Xi Jinping formed the Central Leading Group for Epidemic Response.[22] Furthermore, the Party also dispatched a central guiding team as well as demanded a State Council inter-agency task force to play its full role in coordination.[23] While Premier Li Keqiang headed the Central Leading Group, Vice Premier Sun Chunlan oversaw the work on the ground in Hubei province.[24] These measures highlight the supremacy of the Party in China's decision-making, which Chinese leadership seek to uphold at all circumstances.

Second, draconian measures were adopted to prevent and control the spread of the virus. In doing so, on January 23, China locked down Wuhan—the epicentre, where 10 million people live—and also imposed full and strict control over the outbound population flow across Hubei, which has 60 million people. This called for minimised outdoor exposure, cancelled public gatherings and travel restrictions. Such a quarantine measure was equated with a nationwide prevention campaign, calling on people to wear masks, wash hands, self-isolate, and refrain from gathering. To keep checks, heavy surveillance was adopted.

Third, action-oriented approach with large mass mobilisation, as witnessed in terms of: (a) 42,600 medical staff (both civilian and military) were dispatched to Hubei from across China.[25] Under a "pairing-up support" system, 19 provincial-level regions sent medics to Hubei and one in 10 Intensive Care Unit (ICU) specialists in China

were dispatched to Hubei to treat critically-ill patients.[26] (b) In Wuhan, 86 hospitals were designated to treat COVID-19 patients. While two field hospitals—Huoshenshan and Leishenshan—were built in two-weeks, equipped with 2,600 bed facility. In addition, with 16 public-facility-turned hospitals, 60,000 beds were set up.[27] (c) Factories were mobilised to produce medical supplies. Such that China's output of protective clothing surged to 500,000 pieces per day; the daily output of N95-rated medical masks rose to 1.6 million and regular masks production reached 100 million.[28]

Fourth, China capitalised on the use of science and technology for preparedness, readiness and response. That is, big data, AI and robotics were widely used as measures to fight COVID-19. Wherein, telecom enterprises used big data to analyse the flow of people and tracing the spread of the epidemic by mapping close contacts and also ensured timely supply and distribution of medical utilities.[29] While AI technology has been utilised for no-contact delivery and drug selection as well as vaccine development, 5G-empowered robots have been used for medical services such as remote care, body temperature tests, spraying disinfectants, cleaning and drug delivery.[30] Additionally, drones have been utilised for temperature monitoring and health codes initiated as other ways of "no-contact" measures to reduce the risk of transmission.

In its fight against COVID-19, China did set new precedents by undertaking strong measures to minimise the risks of infections. Wherein, such stringent steps did provide dividends in absence of other alternatives, but failed to address the speculation over China's "hide and bide" at the initial stages of the virus outbreak. That is, if China had taken precautionary measures on time, the virus outbreak would not have evolved in such a large scale and form.

Implications of COVID-19: *For Xi, It Is a Call for Turmoil both Home and Abroad*

Given the scale and magnitude of the damage caused by the coronavirus outbreak, Xi had posited that "[t]his is a crisis for us [China] and it is a big test."[31] This very statement exemplifies the severity of the implications attached with China's COVID-19 crisis, which can be assessed under two perspectives—domestic and international.

At the domestic level, such a crisis in China has affected Beijing's political tradition and mainly has posed a threat to Xi's "infinite" leadership. To argue so: First, changes in China's political tradition. The epidemic disrupted the "Two Sessions"[32] or "*Lianghui*"—the gathering of the National People's Congress (NPC) Plenary Sessions and the Chinese People's Political Consultative Conference (CPPCC) National Committee—the biggest political calendar event of China. As in late February, Chinese government officially postponed the "Two Sessions" to "an appropriate time,"[33] as argued to be a "timely policy adjustment" to fight the COVID-19 epidemic.[34] What makes the delay in the Two Sessions significant is that as the Communist Party prepares for top leadership changes at its next party congress in 2022, the 2020 *lianghui* will definitely shape the political agenda around "Wuhan and COVID-19." This then automatically will act as a pressure point for Xi to defend his leadership, and mostly, his handling of the epidemic.

Second, rise of public discontent against the Party leadership. To note, Party chiefs of Hubei and Wuhan, Jiang Chaoliang and Ma Guoqiang were replaced by Ying Yong and Wang Zhonglin respectively in light of the serious problems exposed in the initial response.[35] The reshuffle came amidst growing Chinese public criticism of the incompetent handling of the coronavirus outbreak. This stringent measure by Xi's leadership reflects the reality of the brimming political instability in China, which poses a risk to CPC's legitimacy. To add further, Dr. Li Wenliang, the

whistle-blower of the COVID-19 epidemic parted with saying: "There Should Be More Than One Voice in a Healthy Society."[36] The criticality to which lies in the fact that being "red" still takes precedence over being "an expert," even in times of crisis.

In the process, the Chinese government silenced and anyone who exposed the failings of the leadership in handling the crisis mysteriously disappeared—as Dr. Li faced a severe clampdown by the Party officials for "making false comments" alerting of danger. Dr. Li's death on February 7 due to the viral infection was the trigger resulting in widespread criticism of the government and the call for freedom of speech in China. Sensing the increasing public resentment, a team of National Supervisory Commission was dispatched to Wuhan to step up measures of surveillance and censorship in social media—exemplifying the need for unquestioned loyalty to the Party and its leader. This Chinese attitude reflects the tendency of putting politics at the helm of affairs, despite the situation. Hence, these faultlines in China's existing monolithic and censored political system do call for a paradigmatic change under China's Wuhan experience. Arguably, COVID-19 does push China for a change in its old thinking; however, it is hard to assess how the change will unfold. But as Minxin Pei argued, the most consequential political implication may be the "erosion of support" for the CPC among China's urban middle class.[37]

Third, the rise of factionalism—a grave threat to Xi's political legacy. China's political landscape remains divided between two cliques: first, the "*elitist coalition*"—the "*princelings*" who come from families of either veteran revolutionaries or high-ranking officials. And second, the "*populist coalition*"—mainly *the* "*tuanpai*," that is, associated with the Communist Youth League (CYL). However, COVID-19 has brought to surface the increasing divide amongst the princelings. As evident from Ren Zhiqiang, a Chinese realty tycoon and mainly a member of the princeling clique, outrightly criticised Xi's handling of the virus outbreak.

Ren called Xi a "clown" in his article titled "An official call to arms against Xi: The clown who insists on wearing the emperor's new clothes."[38] Such polemics shared by China's top leaders reflect the brimming reality of Chinese politics, wherein Xi's political clout is in danger. Adding truth to fact, since his criticism of Xi, Ren as noted seems to have mysteriously disappeared from the public eye,[39] another testament to the Party's crackdown on dissent over the epidemic, as already noted in case of Dr. Li. This also brings to light Xi's increasing paranoia over safeguarding his political authority. The increasing opposition to Xi's legacy is also evident in the form of an open letter in circulation, that has been suggesting the convening of an extraordinary plenum of the Politburo to reflect on "Xi's wrongs,"[40] taking stock of not just handling of the virus outbreak but also on his policy decisions since he took charge in 2012; and demanding a crucial decision on whether Xi should step down as president, party chief and commander of the Chinese military.[41]

Finally, a dent in Xi Jinping's image as "Chairman of All Things"—the biggest setback has been inflicted on Xi's image, as caused by his long absence from China's political scene during the peak of the virus epidemic. Such a political void resulted into Chinese public calling for "experts" to take the lead in fighting the epidemic. As noted, Wang Qishan, the Vice President who was called upon to take the leading role in Wuhan crisis, earned his name as "chief firefighter" in the fight against the SARS epidemic in 2003.[42] Furthermore, even at the forefront, unlike Xi, it was Premier Li Keqiang belonging to the CYL, who was seen steering the frontline battle against the virus outbreak, who also holds a record of dealing with the SARS epidemic. Also, Vice Premier Sun Chunlan, also from the CYL clique was seen overseeing the work in Hubei since January. The hands-on approach of other CPC leaders has somewhat cast a shadow on Xi's active role. To which, CPC propagandists in restoring Xi's image have called him the "man of the hour," "commander-in-chief of China's war against COVID-19."[43] However, it remains indisputable

that Xi's accountability will factor in largely at the leadership change during the 20th Party Congress in 2022.

At the global level, China's biggest challenge is to repaint its tainted global image as a "responsible" actor. On March 26, at the virtual G20 Leaders' Summit, Xi delivered a speech titled "Working Together to Defeat the COVID-19 Outbreak," wherein Xi provided a four-point proposal to fight the pandemic.[44] The proposal called for: (a) resolutely fighting an all-out global war; (b) a collective response for control and treatment at the international level; (c) support international organisations in playing their active roles—a call to support WHO; (d) enhancing international macroeconomic policy coordination.[45] However, Xi's such an action-oriented approach comes only after the global damage has been done. Here, the big-picture question is: Will China take responsibility for this damage? What makes this query pertinent are the ramifications witnessed with the spread of the pandemic. That is:

First, at the foremost is the human cost attached to the pandemic. Countries such as Italy, despite having the best of medical facilities, have witnessed the highest mortality rate. The causal factor being the overburdening of health systems in the countries due to rapid increase in infection rate, as witnessed in the most powerful countries like the US. Such a situation has been a result of four factors:[46] (a) lack of initial awareness; (b) no adequate timely preparedness to control the spread; (c) sudden spike in infections after a stalemate; and (d) shortage of medical equipment and resources (such as masks and ventilators) as well as adequate medical force—calling for the spike. Hence, with sustainability becoming a prime concern, the inability to combat the virus spread has proved that there is no quick fix to the problem.

Second, COVID-19 has caused significant distress to the global economy raising alarms of an approaching financial crisis. The rate of spread of the contagion has become proportional to the stretch of the

impact on the globalised economy. The key disruption has been caused to the global demand and supply chain. Assessing the economic risks, OECD Report has suggested that the annual global GDP is projected to drop to 2.4 per cent in 2020 as a whole, from that of 2.9 per cent in 2019, with an added negative growth in the first quarter of 2020.[47] While the global growth is expected to drop to 1.5 per cent in 2020—almost declining to half the rate as projected prior to the virus outbreak.[48] Not just trade, but investments have also been badly hit, as UNCTAD suggested that foreign direct investment (FDI) will witness a shrink of 5 to 15 per cent, as compared to the earlier forecasted marginal growth for 2020-2021.[49] The sectors that have been greatly hit are: the automotive industry (–44 per cent), airlines (–42 per cent) and energy and basic materials industries (–13 per cent).[50] Furthermore, travel and tourism sector is also faced with a downturn given travel bans, both inbound and outbound. The repercussions of this disrupted economic value chain has also affected the energy supply chain. Fuelled by an ongoing price war, COVID-19 has hit the global demand for oil and gas resulting in oil prices trickling to an unprecedented rate. As Rystad Energy's report suggested, the global oil demand will contract by 16 million bpd in April and 2 billion barrels over the year.[51] With COVID-19 causing a global economic slowdown, it has significantly tarnished China's global image as a "responsible actor."

With these dynamics at play, Xi's "test" logic fits well. As at the national level, with the COVID-19 crisis, the political stakes for Xi are higher than ever, especially, to his "infinite rule" under the new constitution that allows Xi to remain President beyond his two terms. Undeniably, the Wuhan epidemic crisis has shaken China's domestic stability and most importantly, Xi's absolute power as "Chairman of All Things." While at the global level, the already questioned "responsible" image of China has come under severe scrutiny. Hence, only time will decide the fate of China and most importantly, Xi Jinping.

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India-Persian Gulf Relations: From Transactional to Strategic Partnerships

Manjari Singh

India's relations with the Gulf countries have been exceptionally significant since ancient times and are multifaceted. The two have maintained historical ties with each other in terms of trade, energy, security as well as a vast expatriate population. While the Indo-Gulf relations are dominated by energy cooperation, recent years have experienced a shift in their dynamics. Owing to Persian Gulf countries' quest to achieve Vision 2030 through economic diversification, Indo-Gulf relations have seen an expansion in other non-conventional areas such as security cooperation and strategic partnerships. India is not in military alliance with any of the major powers, however, it shares close strategic and military relations with many major countries in the world. Owing to growing stature of India and its clout at the global table, India started to build strategic partnerships with major countries such as France, Russia, Germany, and the US, etc., since 1997.[1] It is noteworthy that India has extended its strategic partnerships with as many as four countries in the Gulf, namely, Iran, Oman, Saudi Arabia, the UAE since 2003.[2] This shows that over a period of time the region holds immense significance for India's ascendance as a growing regional and global power.

Dr. **Manjari Singh** is an Associate Fellow at Centre for Land Warfare Studies (CLAWS), New Delhi and also serves as the Managing Editor of *CLAWS Journal*, Summer Issue 2020.

India shares historical relations with the Persian Gulf which date back to ancient civilisations during the reign of Indus Valley in the subcontinent and Dilmun Empire in the region. This relationship was predominantly trade-oriented which continued to be the case until very late. Pre-independent India under British control showed its imperial interest in the Gulf and trade was monitored, pursued and administered from Bombay Presidency.[3] Until the 1960s, the Indian rupee was a legal tender in most of the countries in the Gulf, namely, Kuwait, Bahrain, Qatar, Oman and the UAE.[4] India traded in rupees which was a special note exclusively printed to be used in the Gulf, hence popularly known as "Gulf Rupee" since the time oil was discovered in Persia (then Iran), by the British on May 26, 1908.[5] The trade basket during these times expanded from raw materials, silk, spices, etc., to majorly energy import. However, relations were still transactional in nature.

Geographically, the Persian Gulf was an immediate neighbour of India and was directly connected to Iran prior to its independence in 1947 and partition. However, the importance of the region still remains the same as it is an integral part of India's extended neighbourhood in terms of geographical proximity, expansion of interests and growing Indian clout in the entire region.[6] Today, Indo-Gulf relationships have expanded at many levels and the Persian Gulf is key to India's growth story. The importance of the region is reflected in India's continued interests and engagements. For instance, towards the beginning of the twenty-first century, India's exports to the Gulf were more than its exports to the European Union.[7] Strategic relations with the Persian Gulf are in many ways responsible for India's economic development, social progress and political ascendance.[8] This importance and recognition is reflected in the increased engagements that India has had with many countries in the region especially over the past decade.

The article delves into the change of perception of the Gulf for New Delhi, changing dynamics, growing terrorism, etc., that has compelled the

latter to expand its relations from transactional to strategic partnerships. Moreover, the present pandemic that has engulfed the entire world calls for more engaged strategic partnerships with the Gulf as terror outfits are likely to take a cue from the current situation and develop Corona-like viruses or biological weapons to target select nationalities. As terrorism is a concern for both India and the countries in the Gulf, coming times will probably see more engagements of the two in this regard.

India-Gulf: Traditional and Transactional Relations

Traditionally, India's relations with the Gulf countries have been dictated by energy imports since the discovery of oil in the region and the cheaper rates available. With a growing population and India's quest to become a fast growing economy,[9] energy security is essential for its growth. Therefore, for very long, Indo-Gulf relations were purely of a buyer and a seller. The foundation of the relationship is based on the 3Es, namely, energy, economy and expatriates.[10] Even though Indo-Gulf relations still rest on the 3Es, nevertheless, the 3Es have acted as a complementary factor in upping the strategic partnerships.

Currently, the countries of the UAE, Saudi Arabia and Iraq are among the top five import sources (as of 2019, Iraq has dropped to the sixth position) for India after China and the US.[11] The UAE is also the second-biggest export destination for the country. The bulk of imports from the region are dominated by oil and gas to fulfil India's energy requirements. Imports from the Gulf are crucial to the country's development. As of 2019, India's energy import dependence stood at 84 per cent,[12] out of which 55 per cent comes from the Persian Gulf alone.[13] If this is not enough, even total trade component with the region is higher than many of India's immediate neighbours. In purely economic terms, India's total trade with the region for the year 2019-20 (till February 2020) stood at over US$ 139 billion or more than 19 per cent of India's total foreign trade. Some of the Persian Gulf countries are top 25 trading Partners,

namely, the UAE (3rd), Saudi Arabia (4th), Iraq (6th), Qatar (22nd) and Kuwait (25th).[14] Owing to recurrent US imposed sanctions and removal of waivers, Iran's place as the third trading partner has come down to 38th position and Oman stands at 35th.

Needless to mention, the trade statistics has not changed over the years. India's Director-General of Foreign Trade, the trade data collecting agency of the Ministry of Commerce and Industry, provides region-wise import-export data from 1996-97 onwards. Table 1 in that regard suggests that India's total trade, both imports and exports, have significantly increased over the period of time. While Persian Gulf's share in total imports increased marginally from 11.15 per cent in 1996-97 to 15.51 per cent in 2018-19, its export share almost doubled from 7.22 per cent to 12.61 per cent during the same time. In terms of imports 2010-14 was the most significant time period owing to lowering of oil prices. The table also reveals that for the past 3 to 4 years, while the imports had started to increase despite Iranian sanctions and removal of waivers for India, exports have seen a decline.

Table 1: Persian Gulf Share in India's Total Imports and Exports

Year	Total Imports (US$ million)	Persian Gulf Share (per cent)	Total Exports (US$ million)	Persian Gulf Share (per cent)
1996-97	39,132.41	11.15	33,469.95	7.22
1997-98	41,484.49	10.49	34,784.98	7.79
1998-99	42,388.71	13.25	33,218.72	9.09
1999-2000	49,738.06	12.39	36,822.49	8.71
2000-1	50,536.45	3.32	44,560.29	8.76
2001-2	51,413.28	3.28	43,826.72	8.66
2002-3	61,412.14	3.07	52,719.43	9.31
2003-4	78,149.11	4.16	63,842.55	11.06
2004-5	111,517.43	6.33	83,535.94	11.74
2005-6	149,165.73	5.23	103,090.53	11.42

2006-7	185,735.24	16.68	126,414.05	11.95
2007-8	251,654.01	17.91	163,132.18	13.33
2008-9	303,696.31	19.59	185,295.36	17.33
2009-10	288,372.88	18.55	178,751.43	17.05
2010-11	369,769.13	20.26	251,136.19	17.00
2011-12	489,319.49	20.88	305,963.92	14.82
2012-13	490,736.65	22.02	300,400.68	16.99
2013-14	450,199.78	22.61	314,405.29	15.33
2014-15	448,033.40	18.84	310,338.48	15.88
2015-16	381,006.62	14.64	262,290.13	15.89
2016-17	384,355.56	14.35	275,851.71	15.14
2017-18	465,580.99	13.76	303,526.16	12.97
2018-19	514,078.20	15.51	330,078.09	12.61

Source: Adapted from Director-General of Foreign Trade, New Delhi, www.dgft.gov.in

In the quest of diversifying the relations, India and the countries in the region have invested in infrastructure development in both India as well as in the Gulf. For instance, in June 2018, Saudi Aramco and Abu Dhabi National Oil Company (ADNOC) signed an agreement with India to jointly develop the largest refinery in the world in Ratnagiri Refinery and Petrochemicals Limited (RRPCL) in Ratnagiri, Maharashtra. The refinery will produce about 1.2 million barrels per day of oil and all the three partners will supply at least 50 per cent of the crude that the refinery will process.[15] Similarly, Indian companies such as HCL, L&T and TCS have emerged as strong potential investors in energy, transportation, food processing, and information technology sectors in the region.

If total trade with the Gulf remains significant for India, energy remains the main commodity for transaction. As stated earlier, presently around 55 per cent of India's energy imports are from the Gulf countries. The countries in the region are not only cheap suppliers of hydrocarbons but due to geographical proximity there is a further cost-cutting involved. Table 2 suggests that the importance of Persian

Gulf energy imports are highly significant and are majorly energy based. This has continued to be the case for many years. However, as reflected in the table, there is a slight decrease in energy imports, this is because owing to the political instability in the Persian Gulf and fluctuations in oil prices India has been trying to diversify its energy import partners and buys oil from the US, Nigeria and Russia as well recently. This is to "cut costs and help shield itself from geopolitical tensions."[16] For instance, owing to Iranian sanctions, in 2019 alone, India imported 4.49 million tonnes (MT) of crude oil from the US while Nigeria took Iran's position as the third largest supplier of crude with 7.17 MT of crude for the same year.[17] India increased its share of oil imports from Russia and bought 2.13 MT of crude from it. Moreover, the countries in the region are also trying to diversify their economy and thus investments in other sectors such as construction, banking, infrastructure development, etc., have increased.

Table 2: India's Energy Imports from the Persian Gulf Region (in US$ million)

Year	Total Persian Gulf	Total Imports	Per cent Persian Gulf Imports to Total Imports
2007-8	54,365.01	86,384.04	62.93
2008-9	62,282.89	103,933.77	59.93
2009-10	55,904.14	96,321.16	58.04
2010-11	66,688.4	115,929.06	57.53
2011-12	105,056.26	172,753.97	60.81
2012-13	105,859.19	181,344.67	58.37
2013-14	106,400.75	181,382.56	58.66
2014-15	85,300.3	156,399.98	54.54
2015-16	50,992.26	96,953.02	52.59
2016-17	56,335.34	103,163.2	54.6

Source: Adapted from Director-General of Foreign Trade, New Delhi, www.dgft.gov.in

Notably, decrease in energy imports from Gulf is not indicative of India decreasing its engagements with the Gulf which has only increased over the years. This is because of expansion of relations from that based on transactions to partnerships.

Of the 3Es, expatriates play a crucial role in making the relations strong and robust. It is estimated that 8.5-10 million Indian expatriates dwell in the Gulf (Table 3). The 8.5 million to 9 million figure is estimated by the Ministry of External Affairs and Ministry of Overseas Indian Affairs, however, Sebastian Irudaya Rajan estimates that there are about 10 million expatriates in the Gulf, many of whom are undocumented.

Table 3: Indian Expatriates in Persian Gulf, 2018

Country	Non-Resident Indians (NRIs)	Persons of Indian Origin (PIOs)	Overseas Indians
Bahrain	312,918	3,257	316,175
Kuwait	928,421	1,482	929,903
Oman	688,226	919	689,145
Qatar	691,539	500	692,039
Saudi Arabia	2,812,408	2,160	2,814,568
UAE	3,100,000	4,586	3,104,586
Total	8,533,512	12,904	8,546,416

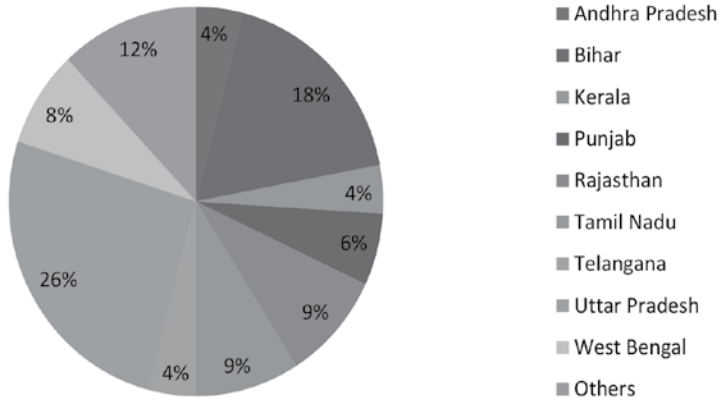
Source: Adapted from Ministry of External Affairs, https://mea.gov.in/images/attach/NRIs-and-PIOs_1.pdf

According to the World Bank, India is the top recipient of remittances in the world which amounts to US$ 83.1 billion and accounts for 2.8 per cent of Indian GDP.[18] This is attributed to India's position as the largest country of origin of international migrants. Since the "oil boom" of the 1970s, migration to the Gulf from southern states of India, especially Kerala, started and that gave impetus to the overall development of the country as remittances began to flow. In return, Indian migrant workers have also made substantial contribution to the development of Gulf States.

Notably, India-Gulf corridor is the second largest migration corridor in the world, after US-Mexico corridor. Of around 31 million non-resident Indians (NRIs), 8.5-10 million work in the Gulf and Indians constitute over 30 per cent of the expatriate workforce in the region.[19]

Southern states of India and especially Kerala have been the major source of origin for Gulf migration. However, over the past decades there has been a decline in Kerala migration to the Gulf and it is pointed out that return migration for Kerala is on the rise and that the "long history of migration from Kerala to the Gulf is in its last phase."[20] As of now, it is the northern states that have filled the space, namely, Uttar Pradesh, Bihar, Rajasthan and in southern states it is Tamil Nadu (Figure 1). It is noteworthy that the first three states are ranked as low-income states in the country and have declining job prospects in the formal and informal sectors alike and this has resulted in mass outflow of population to the Gulf.

Figure 1: State-wise Distribution of Gulf Migrants, 2018



Source: Prepared by the Author in consultation with the Ministry of External Affairs, Annual Report 2018-19.[21]

Nonetheless, due to economic slowdowns, fluctuating oil prices, and changes in Gulf labour policies in the region because of focus on indigenisation, there has been a slackening in the outflow of Indian migrants. Paradoxically, there has been an increase in remittances by 14-18 per cent by 2019. The advent of coronavirus pandemic has created an unprecedented health and livelihood challenge for the Indian migrants working in the Gulf and their dependants and this has led to many returning to India. However, a cross-sectional examination of the profile of the Indians that returned by May clearly indicates that only the dependants, dependants with health issues and the undocumented migrants are the ones that have returned.[22] This phenomenon that will require absorption of returnees in the already shrinking job market in the country will be a daunting challenge for the Indian government.[23] Moreover, it is also pointed by Irudaya Rajan that because of lack of Public Relations (PR) policy in the Gulf for Indians in contrast to the ones in western countries, Gulf migrants by virtue of absence of PR policy have always been return migrants.

This is partly also because of the fact that the majority of Indian migrants in the Gulf are employed in blue-collar jobs in the "3Ds sector," namely, "dirty, dangerous and demeaning," and thus did not receive the due attention of policymakers for long. According to Rajan, "there is no such thing as an Indo-Gulf Person"[24] and therefore India should be prepared to absorb such migrants as and when necessary or should focus on creating a PR policy for the Gulf too. It was only recently, in the past few decades, that Gulf migrants' contribution to the development of Gulf countries—as well as India, because of the remittances that it receives—has been well acknowledged. Therefore, a robust planning in this regard will be necessary to deal with the forthcoming population pressure on the country.

Following the trend, it is clear that Indo-Gulf relations in terms of economy, energy and expatriates have been affected over a period of time.

Even though the number of expatriates in the region has been increasing by number, the proportion of unskilled or semi-skilled workers from the northern states of India which are majorly low-income states, is on the rise (Figure 1). During corona crisis and after that there is a possibility that India will receive more numbers of Gulf returnees. If this is not enough, owing to diversification of economies in the Gulf, drive to achieve respective *Visions*, Gulf being conflict prone as a challenge to India's vast energy demands, fluctuating energy prices and India's own diversification of energy source and types, etc., have been the reasons for the decline in Indo-Gulf's economy and energy transactions.

Therefore, despite the challenges in all the three pillars, Indo-Gulf relations are thriving at a good pace. This is well reflected in India enhancing its relations at strategic levels with over half of the countries in the region, namely, Iran, Oman, Saudi Arabia, and the UAE; with Qatar, India has signed military training and cooperation agreement.[25] This suggests that despite all the traditional challenges to the relationship, the Gulf still remains an important region in India's foreign policy. This is reflected in the number of high-level visits that have taken place to and from the region, most of which took place since the time Prime Minister Narendra Modi was elected in May 2014.[26]

Indo-Gulf: Ascendance to Strategic Partnership

Since 2003, India's relations with major Persian Gulf countries have been elevated to strategic partnerships. Iran not only became the first country in the region with which India established strategic relations in 2003 but also the relations were established prior to Indo-US relations at that level. This shift in attitude towards the region is attributed to the diversification of dimensions between the two. India currently has strategic partnerships with four countries in the Gulf and with Qatar it has a security and military cooperation. It is necessary to understand, despite the instability predicted for the region time and again, what the

reason is behind New Delhi's decision to elevate relations at that level. This is because, as of now, India has such agreements with some of the major countries in the world. Giving that space to the Gulf suggests that unlike the popular notion that India is shifting its focus from the Gulf (in terms of diversification of energy sources, challenges for Indian migrants due to indigenisation policies in many of the Persian Gulf countries and focus on the Indo-Pacific) to other parts of the world is unwarranted.

A strategic partnership entails "a long-term interaction between two countries based on political, economic, social and historical factors. Such partnership manifests itself in a variety of relationships."[27] India has strategic partnerships with around 30 countries in the world of which four are in the Persian Gulf. The US, China, Russia, the UK, Israel, Japan, France, and Germany are some of the major countries with which India has strategic partnerships. However, all the strategic partnerships are not the same and not equally important. Different dimensions play a major role in relationships with different countries. Some have a dominant political element while others may have a prominent economic dimension and security cooperation may be important for a few. Therefore, there is a hierarchy in strategic partnerships. India's strategic partnership with the Gulf countries involves the vital role played by all the dimensions. Owing to the largest number of Indian expatriates and huge remittance flow, the human security angle becomes important. The Gulf, being predominantly Muslim, becomes a political angle in Indo-Gulf relations to keep Pakistan at bay. Energy security and foreign investments are other areas of cooperation. Therefore, Indo-Persian Gulf is a special case and the two share a robust and dynamic strategic partnership.

Increasing incidences of terrorism, sprawling terror outfits and probability of re-emergence of Islamic State (IS) is a matter of concern to both India and countries in the region. Even though predominantly Arab, the Gulf is weary of Iran's activating terror

outfits to conduct proxy wars against them. India maintains a non-interventionist, non-prescriptive approach towards the region but is extremely aware and sensitive to Pakistan's terror adventurism particularly in the Kashmir valley. Owing to these challenges posed by terrorism, Indo-Gulf strategic partnership rests on counterterrorism, money laundering, cybersecurity, organised crime, human trafficking and anti-piracy, traditional dimensions notwithstanding.[28]

The enhancement of relations has reached a fair degree of success and "encompass defence and naval cooperation, including joint exercises, regular Indian ship visits and broad-based MoUs." Indian defence and military academies train Gulf armed-forces personnel and all Gulf countries are members of the Indian Navy-conceived Indian Ocean Naval Symposium (IONS) established in 2008. Additionally, India has played an active role in enhancing the stability and security of the Gulf's sea lanes through its joint participation in anti-piracy patrols off the coast of Somalia since 2008.[29]

Moreover, upgradation of Indo-Saudi relations to strategic partnership took place in February 2010 during the signing of Riyadh Declaration which includes defence cooperation as a major component. Some scholars like Rahul Roy-Chaudhury opine that despite official Indian concerns over "Saudi funding to fundamentalist Muslim institutions in India, the two countries are developing a coordinated approach towards counter-extremism."[30] Additionally, a Saudi-Indian extradition treaty and agreement for transfer of sentenced persons have also been signed by the two. Under this arrangement, an Indian national Zabiuddin Ansari aka Abu Jundal, alleged handler of terrorists in 2008 Mumbai attack, was deported from Saudi Arabia and arrested in New Delhi on June 21, 2012.[31]

Counterterrorism plays a vital role as one of the primary drivers of increased security cooperation between the two regions is terrorism and radicalisation. Historically, both India and the Gulf countries have been

victims of terrorism which continues to manifest itself in various forms. Previously on a few occasions India has been critical of Gulf funding "the madrassas and terrorists groups in Pakistan" and has been wary of home-grown militants seeking refuge in the Gulf.[32] Moreover, as per Indian Intelligence agencies, Indians who joined IS had links with individuals in the Gulf.[33] Given the highest number of Indian expatriates in the region, India is apprehensive of its citizens at higher risks of radicalisation or being victims of terror outfits.

Similarly, in recent years, the Gulf countries have also changed their stance having faced tremendous international pressure and terror attacks in their own respective countries. It is because of these concerns that during the February 2019 visit of Crown Prince Mohammad bin Salman aka MBS to India post-Pulwama attack, the Crown Prince remarked that the common concern for both the countries is to curtail terrorism and extremism. He extended his cooperation in the matter and applauded India's role in combating the issue head-on.[34] Given the concerns, the two countries agreed to constitute a comprehensive security dialogue at the level of National Security Advisors and to set up a joint working group on counterterrorism.[35]

Even though strategic partnerships are not clearly defined certain ongoing collaborations suggest that both India and the Gulf will benefit tremendously in the long run. For instance, evacuation of Indian nationals during the time of crisis is also smoothened owing to the upgradation of relations to strategic levels. Evacuation of Indian expatriates during Yemen crisis was facilitated by efforts that involved countries in the region that otherwise do not see eye-to-eye. Therefore, this is the apt time when India should frame its otherwise absent evacuation policy under the upgraded strategic partnership. Notably, India has conducted the largest number of evacuation operations in the Gulf during conflict situations but yet does not have a robust policy for the same. In fact, during the corona crisis also, India had to send maximum number of flights to the

Gulf to fetch its citizenry. Given the equation with the countries an early warning system can be installed so that the country is not caught off guard and is fully prepared to fetch its expatriates.

To conclude, Indo-Gulf relations have transformed from traditionally transaction-based to strategic partnerships. This shift is despite decreasing trends in commercial and trade relations, energy diversification in terms of source and type, and number of expatriates. Owing to the pandemic, these figures will further drop. However, the elevation of relations to strategic levels will not be affected and relations will continue to flourish because of common concerns to counterterrorism and extremism. This suggests that the Gulf's role in Indian development is crucial and New Delhi should work in tandem with the Gulf nations to achieve its objective of becoming a regional and global power. Additionally, India should use the current circumstances of pandemic to its advantage and invest in framing a robust evacuation and PR policy to facilitate evacuation of its expatriates in the region. Moreover, India also needs to enhance its relations because of growing Chinese and Pakistani clout and this is when its 10 million strong expatriates will act as a leverage point to increase its own clout in the Gulf.

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Book Reviews

Pakistan: The Balochistan Conundrum
Tilak Devasher
New Delhi: Indian Council of World Affairs and HarperCollins Publishers India (2019)
P-ISBN: 978-93-5357-070-5
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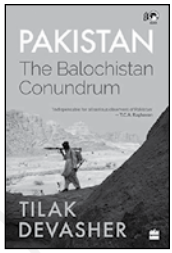


Balochistan, a multi-ethnic region, with 44 per cent of the land area is undoubtedly the largest Pakistani province. Sharing two-thirds of Pakistan's coastline, 40 per cent of the trade transits and 180,000 sq. km exclusive economic zone which lies untapped, gives enough reason for this area to be a zone of future explorations and conflicts.

Tilak Devasher's authored book, *Pakistan: The Balochistan Conundrum* (New Delhi: ICWA & HarperCollins 2019), showcases the complexities of this province which starts from it being amongst the earliest civilisations of the world dating to 4,000 BC, to the present-day scenario wherein it is fraught with conflict and hostility ranging from enduring insurgency, sectarian violence, secessionism, terrorism and human rights violations. Despite its strategic location, Balochistan has not come into the limelight of either the journalists or the academia and strategic community at large. There have been very few books written on this subject. The author's intention of removing the cover of secrecy of this region is indeed laudable and praiseworthy, but by and large it comes across as a play-safe book catering to the readers in both India and Pakistan. Though a must read for those who study and follow the developments in South Asia and Pakistan in particular.

Tilak Devasher's professional career in the Research and Analysis Wing for over twenty years helped him develop a deep interest in the security issues and concerns of India's neighbourhood, Pakistan and Afghanistan in particular. His posting in Pakistan certainly lends credence to his study. Currently, he is a member of the National Security Advisory Board (NSAB).

The launch of the book is correctly timed or perhaps it was more of a coincidence that after the abrogation of Article 370 on August 5, 2019 by the Government of India, there was much noise and news about the future of this region. Hence, a timely and fascinating which gives an in-depth and an interesting insight into the genesis of Balochistan conflict by narrating not only the historical facts and figures but also the varied ethnic, sectarian, secessionist and militant complexities. Abounds not only with numerous data, narratives, anecdotes, but also repetitive arguments in most of the chapters which makes it a tiresome read at certain places. For example, the author has written about the Baloch alienation a number of times. In fact, the word alienation has been used 33 times in the book. Punjabi domination or Punjabi fascism is also an established fact which is overplayed and reflected in the governance or rather misgovernance of this region. Balochis alienation and resentment is well-established and its footprints can be seen in the Pakistan Army as well, which is the most important institution in the country. "It is the Army and arms that rule… There is no place for any other community in this government, be it the Baluch, the Sandhi's, the Afghans or the Bengalis ... total Punjabi Fascism rules supreme everywhere."[1]

A detailed and in-depth analysis of the faultlines of this region has been attempted, but a possible roadmap ahead would have tremendously added to the merit of the book. Moreover, the author himself admits in the preface about the mismatch in data and statistics due to the unavailability of the same. "Unfortunately, no two sets of statistics on the same issue match, hence, I have tried to use the best available and at places, have also

given variations to enable the reader to make an informed judgement."[2] Correctly and aptly titled *The Balochistan Conundrum*, Conundrum means confusing and a difficult problem, Balochistan is too large and strategically very important province for Pakistan to loosen its grip over. The state is trying to resolve a serious political issue militarily. It will remain a perplexing problem and a festering sore for Pakistan in times to come.

The canvas of the book is spread into six main parts, with about three subsections in each part. Starting from the first part, titled as *An Ancient Civilization*, the author begins by discussing the land, people, geography, demography and the strategic importance of the province. The fact that Balochistan covers almost half of the land area of Pakistan while accounting for just 6 per cent of the country's population is a stark reminder that more attention needs to be given to its geographical and demographic peculiarities to understand the province's economic and social development. The main resources of the province are its geography and strategic location but this is also its Achilles heel, i.e., the skewed land to population ratio.[3]

The history of Balochistan till its accession to Pakistan is covered under the next section, titled *Times Gone By*, wherein the author questions the legitimacy of the accession of the Baloch state of Kalat to Pakistan. Most of the Balochi's believe that the Khan of Kalat was forced to sign the instrument of accession with Pakistan, therefore it was illegal and the people felt betrayed and cheated. The author uses the expression "stab in the back" as Jinnah who was Khan's lawyer had argued the case for Kalat's independence from the British, but once the British left, Jinnah became Governor General of Pakistan, and forced the accession of Kalat to Pakistan, betraying the trust reposed in him.

Part three titled *The Roots of Alienation* focuses on exploitation in the political, administrative, economic, social and legal domains; even the most important institution, the Pakistan Army, has only a few hundred

Baloch in the entire Pakistan Army. The famous Baloch Regiment has no Baloch in it.[4] Under-representation in Army, bureaucracy and polity coupled with dismal social economic indicators, only prove the apathy towards this region. For instance, Balochistan was the sole provider of gas to Pakistan for about a decade and a half, but no gas was supplied to this region for nearly three decades till 1982. The town of Dera Bugti itself was supplied with gas only in the mid-1990s, forty years after gas was discovered in the district.[5]

Gwadar and CPEC projects are studied in the fourth part, titled *Chinese Gambit*. Whether Gwadar becomes a new silk route nexus or not is tied to Pakistan's own struggle against becoming a failed state, argues Robert Kaplan.[6] Here interesting facts were given like the floating of Yuan as a legal tender by the Chinese officials in Islamabad on November 20, 2017, which was not agreed upon. This chapter reveals the exclusion of Balochi people in the planning, execution, employment opportunities both in the Gwadar port and the CPEC projects. Chief Sardar Akhtar Mengal's deep anguish is seen in the statement Baloch feel threatened by the project. As the Balochistan National Party-M (BNP-M) chief Sardar Akhtar Mengal put it: "The rights of Baloch people cannot be protected and the dream of a prosperous Balochistan cannot come true unless the control of Gwadar port is handed over to the province."[7]

Excessive human rights violations, enforced disappearances, mass murders, mass graves and relentless persecution of Balochi people, with the judiciary and media also playing to it, is highlighted in part five. This is the most distressing aspect of the situation, so much so that it began to be known as the "Pakistan's dirty little war."[8] Deccan Walsh, in an article in the *Guardian* wrote, "The bodies surface quietly, like corks bobbing up in the dark. They come in two's and three's, a few times a week, dumped on desolate mountains or empty city roads, bearing the scars of great cruelty. Arms and legs are snapped; faces are bruised and swollen. Flesh is sliced with knives or punctured with drills; genitals are

singed with electric prods. In some cases the bodies are unrecognizable, sprinkled with lime or chewed by wild animals. All have a gunshot wound in the head."[9] The subsection on Judiciary reveals that though the legal system has been wanting action on ground they have been only verbally admonishing the state agencies, for example, on March 1, 2012 the Supreme Court reprimanded the intelligence agencies by telling them that they were not above the law.[10] While commenting on the role of the intelligence agencies in Balochistan, he said, "You are an arsonist. You have set Balochistan on fire."[11]

Even the media is not spared, in the chilling words of an analyst, Raza Rumi, "Not being dead is a victory in today's Balochistan if you are a journalist. Worse, there is little or no hope of prosecuting the killers, let along sentencing them. Most deaths of journalists go unpunished as a norm. This is the price our media has to pay for keeping the torch alive."[12]

The last part covers the current insurgency with focus on the separatist challenges, response of government and response of the army under the heading, *Enduring Insurrection*. The author divides the Baloch Nationalist movement into two categories, the moderates and the separatists. Elucidating on the changing dynamics of the conflict from the 1970s when it was limited to tribal pockets, lacking any mass participation, to the 1990s when it transformed into a nationalist movement. It was Pakistan State's repressive response that radicalised most elements of the nationalist movement and the ordinary Baloch is becoming convinced that there is no political solution but the gun is the only way.[13] Baloch women and children too have now become part of the insurgency movement. Even the bordering areas of Iran and Afghanistan having Balochi population are getting affected.

The author poses many pertinent questions but the answers to those remain elusive even after reading the complete book. Balochistan is a treasure land with 1,80,000 sq. km exclusive untapped economic zone, an area of future explorations and brimming conflict. The writer correctly

writes that even after seventy years of independence, Balochistan has been described as an *Edgy Place*, a boiling cauldron of ethnic, sectarian, secessionist and militant violence which is threatening to boil over at any time. Has the time come now, I ask?

While reading the book, it came across very vividly that the Balochis are averse to mixing religion with politics, but then why is Pakistan using religion (under the garb of Islamisation) to curb Baloch Nationalism? The author does not explain why religion is being used as a countermeasure for a society which the author himself mentions in the section, *On Religion*; that historically speaking, the Baloch always have had a more secular and pluralistic view on religion than their neighbours. "It is not by chance that the Baloch enjoy the unenviable reputation of being 'bad Muslims.'" While they accept Islam as an important facet of their life conditioning their existence, they do not see it as the most important part of their identity and have not accepted the ascendancy of religion over sociocultural values. As observed by Nina Swidler, "… religion does not distinguish Baloch identity."[14]

The author mentions the varied and complex narratives of the people of Balochistan, which find their expression in the form of ethnic conflicts, sectarianism, secessionism and militant violence, but he fails to give the constituents of each one of these factors separately. A roadmap as to how to resolve these burning issues is missing in the book. Furthermore, if the sociological and anthropological narratives and evidences had been studied in greater details, perhaps then an insight into the resolution of conflicts could also have been provided.

The Balochi diaspora fears of being turned into a minority in one's own land, the issue of enforced disappearances or extra-judicial abductions, kill and dump policies of the Pakistan Army is also highlighted in the book, but the redressal mechanism, policy options and analysis is not addressed at all. The abysmally low record of social indicators was reflected in the World Bank report of 2008

where it states that this province has Pakistan's most anaemic growth record, worst infrastructure, worst water crisis, and weakest fiscal base. The poor economic performance leads to poor living standards. Balochistan has the highest poverty—along with NWFP (now KPK), lowest social indicators, and, in parts of the province, the weakest state institutions."[15] Amongst these social indicators, the psychological welfare of the people should also have been looked into.

Even when the economic factors are taken into consideration, the average Balochi is twice as poor as an average Punjabi, Pashtun or Hazara resident of this province. Moreover, exclusion of Balochis in the economic projects like the Gwadar and the CPEC has only increased their alienation. Despite being the sole provider of gas for the entire Pakistan for about a decade and a half, it did not have gas for its own consumption till the year 1982, almost three decades later. This highlights the neglect their province was given by successive Pakistani establishments. Even the control of Gwadar port is not handed to the Balochis and 91 per cent of the revenue is being given to China. Gwadar project had led to one of the biggest land scams in Pakistan history, a cover story under the title "The Great Land Robbery," was covered in the 2008 issue of *The Herald*, a Karachi-based investigative magazine.[16]

The book reveals greed for more monetary benefits which made Pakistani authorities divert the CPEC route for at least 400 km inside Punjab to reap the financial as well as political benefits. It is economic exploitation under the garb of development. There was no working group on CPEC formed even at the provincial level, which could highlight the interests of the Balochi people. CPEC is no different than East India Company, the author rightly states that instead of game changer the CPEC signifies game over. The water crisis is also looming large but the government's response as usual is to turn a blind eye to the basic ontological needs of the people of this province.

Intra state rivalry of Punjab vs. Balochistan is explicitly mentioned. For Punjabis it is unthinkable that a Baloch with less than 6% should have special claims to 44 per cent of land whereas the Balochis are the masters of their own destiny or at least this is what they believe in. Punjabi fascism, enforced displacements and kill and dump policies of the Pakistan army is repeatedly mentioned in the book. The author could have mentioned the intra tribal and the inter-tribal rivalry as well to completely understand the tribal dynamics and their interests and grievances. Had the Pakistani government done an in-depth analysis of the same, perhaps the conflict would not have been carried on for so long.

Some pertinent questions remain unanswered. Why Baloch insurgents have started targeting Baloch politicians both inside and outside? Why the control of the Gwadar port has not been handed to the Balochis? It is estimated that half a million white collar Chinese would reside in this region by 2023, is it not the beginning of Chinese colonisation? Economic exploitation or development have different meaning for a Balochi and a Punjabi. Will insurgency dissipate with economic development and improvement in social indicators? Have the Balochis ever been called for any informal or a formal meeting with the establishment to the redressal of their grievances? The author correctly writes that this is Pakistan's dirty little war replete with massive human rights violations and the greatest murder mysteries ever known in human history.

Politically and socially, the Baloch believe that their secular democratic mindset is not compatible with the religious and dictatorial behaviours of the state's ruling elite.[17] Having sustained insurgency for over a decade, Balochistan insurgency has developed a momentum of its own now. Pakistan Military force alone will not be able to break Baloch resistance movement. Every insurgency has a life cycle. What about the Balochi resistance movement? How long will it carry on?

The author correctly assesses that a military solution is not a long-term solution, a just solution is required. A solution that puts the

Balochi interests in the centre rather than the resources of the province. Failure to do so will surely exacerbate the crisis in Balochistan with dire consequences for Pakistan.

The author uses the terms nationalism and insurgency of the Balochis distinctly and separately, aren't they overlapping in this case? Is there a dividing line between the two? It is not possible to clearly demarcate between these two terms and their narratives. Will this threaten the cohesiveness and integrity of Pakistan? These are a few questions which need to be addressed. Is there any meeting ground between the mutually opposing narratives of the Pakistani state on the one hand and the Balochi nationalists on the other?

The book certainly lacks a rigorous framework of foreign policy analysis, especially questions about how do we factor in India. What will be the roadmap ahead? Epistemologically this work cannot be considered to be a work of scholarship but a narrative based on scholastics. Had the information, statistical data and facts collected also been converted into actionable intelligence for assisting the policymakers in formulating a prospective policy, then surely the book would have earned rich dividends and accolades. The book does not touch on these very important aspects at all and an analysis into this would have certainly given a holistic perspective to the Balochistan conundrum. The roots of the problem lie in Pakistan's failure to acknowledge and accommodate its ethnic diversity, economic disparities and provincial autonomy.[18] All in all, the book certainly lifts the veil of secrecy that Pakistan has imposed on this province since decades.

Jyoti M. Pathania

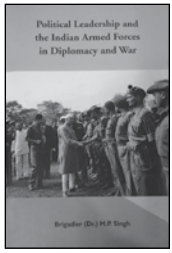
Notes

1. Tilak Devasher, *Pakistan: The Balochistan Conundrum* (New Delhi: ICWA & HarperCollins, 2019). See the Preface, p. xxiii.

Dr. **Jyoti M. Pathania** is a Senior Fellow at Centre for Land Warfare Studies (CLAWS).

2. Ibid., p. xvi.
3. Ibid., p. xxxi.
4. Ibid., p. 112.
5. Ibid., p. 128.
6. Ibid., p. 156.
7. Ibid., p. 156.
8. Ibid., p. 199.
9. Ibid., p. 198.
10. Ibid., p. 215.
11. Ibid., p. 215.
12. Ibid., p. 217.
13. Ibid., p. 239.
14. Ibid., p. 38.
15. World Bank, "Pakistan–Balochistan Economic Report: From Periphery to Core," Report No. 40345, May 2008, https://openknowledge.worldbank.org/handle/10986/8082, 4.
16. Tilak Devasher, *Balochistan: The Pakistan Conundrum* (New Delhi: ICWA and HarperCollins, 2019), pp. 169-70.
17. Ibid., p. 284.
18. Ibid., p. 286.

Political Leadership and the Indian Armed Forces in Diplomacy and War



Brigadier (Dr.) M. P. Singh
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The supremacy of political leadership and apolitical Indian Armed Forces can be traced back to history wherein in 1853 by an Act of British Parliament, superintendence, direction and control of political leadership over the Armed Forces was obtained. However, the mutiny of 1857 led to the realisation that differences between Governor Generals and Commanders-in-Chief were responsible for the breakdown of discipline and administration, both civil and military. Soon after the mutiny was controlled, the efforts were made for re-establishment and improvement of civil administration. By 1895, the three Presidency armies were amalgamated and the resultant British Indian Army was placed under one Commander-in-Chief who was the sole executive head of the army. Throughout this period, the subordination of the army to the civil government was maintained. However, post-independence the C-in-C was replaced by the Defence Minister whose executive powers are shared by the Defence Minister, the three Service Chiefs and the Defence Secretary and has thus ensured the defence forces to be apolitical and subordinated them to civil government and the bureaucracy.

The book has 9 chapters. The details have been covered very comprehensively with numerous examples from history. The book makes an interesting reading and brings out the importance of civil-military relations and apolitical nature of our armed forces.

Chapter 1 covers the period from 1757 till the mutiny (1857) and brings out how the East India Company's Army was controlled by the civil government and various disputes that took place between civil and the military. The lessons that emerged from pre-1857 administration of India were that there should be no confrontation between the political leaders and the defence forces and there should be no interference with the religious sentiments of natives, which lead to mutinies.

The next chapter brings out the post-mutiny relations (1857-1947) and the various changes (Constitutional, political and military) brought about post the mutiny to streamline functioning between the civil and the military. It also talks about the joint civil-military control throughout the country till 1895 because of unshakeable cooperation between the Governor General and Viceroy, the Governors, C-in-C, India and Cs-in-C of the minor presidencies. The author has beautifully brought out how the class composition of units was designed and how the concept of martial races was developed during C-in-C Sir F. S. Roberts' time (1885-93), which was later used for recruiting them into the units of the British Indian Army. The chapter also highlights the civil military reforms undertaken during Lord Curzon and Lord Kitchener Era which meant that the financial control over the Armed Forces which continued even during the Second World War, i.e., financial control over the Armed Forces by the civil government.

Chapter 3 covers the period of independence and the transfer of power from the British to the Dominions of India and Pakistan. Instead of one C-in-C, three independent heads for three services were appointed. The author also talks about the need to have a Chief of Defence Staff for better coordination (Post of CDS has since been created as part of Defence reforms). The author mentions about unification of India into a Nation state and the deliberate British mischief wherein the 1935 Government of India Act on a "Federation" with three categories of constituents would

have left the future Central Government with little control over the Indian nation wherein the British Indian Provinces and Chief Commissioners' Provinces would accede to India and the 562 Princely states would be entitled to decide their own accession.

The next chapter covers the National Security and its economics besides Indianisation of the Army or getting rid of the Europeanisation of the Army as Pandit Motilal Nehru had put it. The chapter also covers dismissal/resignations by various Chiefs on differences with the civil government.

Chapter 5 deals with Kashmir and 1947-48 operations and its uniqueness in the annals of modern warfare, wherein the British Generals commanded the armies of newly independent states of India and Pakistan. The Defence Committee of the Cabinet was chaired by Lord Mountbatten and not PM Jawaharlal Nehru. The chapter also brings out that there were no previous plans to send Indian troops to Kashmir as has been alleged by some historians.

The next chapter covers the political developments and the two quick wars that India fought in 1962 and 1965. It covers in detail how the political establishment ignored the warnings from defence with respect to Chinese Defence preparedness and its intentions. The author also covers the role played by Mr. Y. B. Chavan, Defence Minister after the 1962 debacle and pulling the Indian Armed Forces out of the humiliation suffered during Mr. Krishna Menon's incumbency and making them fit for the next war with Pakistan.

Chapter 7 covers an overview of Pakistan and its governance by Pakistan Army from 1958-71, 1977-88 and 1999-2008. It also talks about how the Pakistan army, government and the people are obsessed with Kashmir, will never give up war and would never want India to prosper and become a regional power. It also highlights the repeated coups in Pakistan because of direct confrontation between the most senior

government and military figures, fuelled by government corruption, warping of constitution and gross economic inefficiency.

The next chapter highlights that Kashmir is the perpetual source of conflict starting from 1947 till the Kargil conflict. It covers various diplomatic initiatives taken by both India and Pakistan, including the Lahore Declaration and Agra Summit.

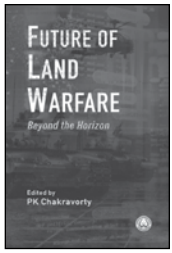
The last and the final chapter covers the political and the military events at the turn of the twenty-first century, including the enigma of a two-front war and relations with China.

Overall, the author has comprehensively tackled all issues of civil-military relations except that there could have been a chapter on Way Forward which could have covered integration of decision-making structures, the National Defence University and revamping of the defence acquisition/production process. Notwithstanding, the author has done an outstanding job and the book is a must read for civil and defence officers and the political masters.

Ajay Sud

Brigadier **Ajay Sud** is a Senior Fellow at the Centre for Land Warfare Studies (CLAWS).

Future of Land Warfare: Beyond the Horizon



P. K. Chakravorty
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ISBN: 978-8194283744 pp. 1-292

Future of Land Warfare: Beyond the Horizon is a multidimensional book which chronicles any future type of war relevant to India's borders. The contents highlight the intrinsic need to synergise and integrate the combined war effort put in jointly by the Army, Navy and Air Force. *Beyond the Horizon* picturises different geographical areas and terrains, emerging military technology, trends in types of conflicts threats and challenges facing the nation and thereafter the way forward. Significance has been given to air, sea, cyber and space domains which will greatly impact future conflicts. The writers in this multifaceted book have closeted their assessments ranging up to 15 years ahead, or as warfare will emerge till about the year 2035. The pace at which new attritional equipment is being articulated and produced necessitates that the present pace and trends can stretch up to about 15 years, after which a renewed assessment will be necessary to format different types of conflicts.

India has huge geographical diversity in terms of varied terrains, climatic imbalances and battlefield environments. Due to unsettled territorial and boundary disputes with our adversaries for the past seven decades and the proverbial stance of no loss of territory on either side, the probability of conventional conflicts supported by technological advances and hybrid tools will continue to play a predominant role in this somewhat volatile subcontinent. It is believed that future conflicts will be triggered by any one or combined reasons such as demography inversion, resulting in flow of migrants and refugees across borders and try to influence domestic politics. A fast trending and enhanced requirement of energy

resources to cater for technological advancement towards destructive purposes is another cause. Religious zeal, fanaticism or extremism is on the rise, often leading to formation of group of non-state actors.

Territorial borders are not unalterable. These borders can be worked, fashioned or manipulated to serve national interests. These borders have an organised army which provides a physical protection to the state; likewise, the population or people provide the emotional connect with their state. Hence the term "Janapada" which literally means Jana (people) + Pada (where they put their feet, territory or land). This book gazes into the future of land warfare in our subcontinent, which perhaps will be a combination of conventional, hybrid, and unconventional means. With the rise in non-state actors, the concept of warfare demands a fresh perspective. In today's scenario we are facing fresh challenges which require specialised focus equipped with real-time intelligence inputs, weapons which are technologically superior, which is required to counter an equally robust enemy.

The Indian army is already shifting gear to form Integrated Battle Groups (IBGs) which are smaller, self-contained fighting units and present quick mobilisation and flexibility to the fighting elements. In our context, Pakistan and China remain formidable military adversaries in our Northern and Western borders. President Xi's statement, "China will not lose an inch of territory" is an indication that it maintains territorial focus against India. The Doklam stand-off had adequate testimony to Chinese designs. Added to the Chinese threat are the Pakistanis in the west who are still licking the wounds of their defeat in 1971, and are waging a calculated Hybrid war against India.

In the book *Future of Land Warfare*, this form of attrition has been categorised as Hybrid Warfare. Well, this is that warfare which strategically uses political and conventional warfare, irregular and Cyberwarfare and dilated with methods such as fake news, diplomacy, legal and foreign electoral intervention. This form of warfare encompasses certain peculiarities which are elaborated as follows.

- Waged by state and non-state actors.
- Employment of all forces and capabilities at disposal of the organisation.
- Targets native domain with population as target and means.
- Limitless in time to achieve overall aim. Therefore "why be in a messy war when you can just light a fire and watch people fight amongst themselves."

In fact Hybrid warfare is the best strategy for Pakistan to take on a much stronger but diverse India in which this diversity and resulting fracture lines are exploited. Therefore, in brief, Pakistan is amply playing the role of desperately threatening to destabilise India without crossing the thresholds to conventional war. Cogent examples are the Parliament attack in 2001 and Mumbai attack on 26/11.

We must continue to upgrade our attritional and countering capabilities to minimise damage, therefore there is a need to formulate a comprehensive national security strategy (CNSS) and progressively transform our entire defence set-up including defence industrial base.

Future conflicts will be short, intense, nonlinear, multidimensional and hybrid. This warfare will encompass land, sea, air, space, cyber and information avenues. Jointness of command and unleashing the desired combat energy will be all important. Air power has to assume a predominant role which will entail surveillance, reconnaissance and selection of targets from Air and Outer Space. This will be followed by degradation of important targets, and protection of ground forces from similar form of warfare unleashed by the enemy. Maritime forces are going to be employed in protecting 1,195 islands of the country, besides launching aircraft and drones to assist the land operations. Our own territorial disputes emphasis on not losing even an inch of territory, necessitates joint forces being used with dexterity. Therefore, the need of the hour is for agile and well-equipped forces capable of delivering

a precise blow at the deduced target. Airborne forces will act as prolific components to speed up decisive results, operate behind the enemy and permit a free view to the ground forces on the other side of the hill. There will be a need for application of forces in real time based on state-of-the-art intelligence inputs. Artificial intelligence, cyberwarfare and outer space will have elaborate role for the ground forces to achieve "Janapada."

Overall the entire book is interesting to read and delves into areas important for future operations. *Future of Land Warfare: Beyond the Horizon* is a thought-provoking book which will be useful for the policymakers, practitioners, training establishments and military personnel to conceptualise the futuristic evolvement of warfare and crystallise the methodology to achieve their aims in future operations. A must read for officials in the Ministries of Home, External Affairs and Defence as also officers from the three services.

Narjit Singh

Col **Narjit Singh** (Retd) was commissioned into 2 Lancers and served in the 8 Mountain division Headquarters in 2005.

Notes for Contributors

General

The CLAWS Journal welcomes professional articles on warfare and conflict, national security and strategic issues, especially those related to the art and science of land warfare including sub-conventional conflict in the Indian context. Articles may be submitted by serving and retired members of the armed forces as well as civilians in India and abroad. Articles on aerospace and maritime issues and those on foreign policy and international relations having a bearing on land warfare are also welcome. The Journal particularly encourages articles from younger members of the armed forces.

Manuscripts: Contributors should submit their manuscripts (main articles, commentaries, review articles and book reviews) by e-mail, with one hard copy being sent separately by post. All material must be original, unpublished and should not have been submitted for publication elsewhere. Main articles must have a length of 3,000 to 6,000 words. Commentaries and review articles must not exceed 1,500 to 2000 words.

Book Reviews: Book reviews must contain the name of the author, the title of the book reviewed, particulars of the publisher, place and date of publication, number of pages and price. Authors who wish to have their book considered for review should ask their publisher to send a copy to the Editor, CLAWS Journal.

Submission: Since manuscripts will be sent out anonymously for peer review, the authors should omit their identity from the manuscript. The author's name, rank, unit/institutional affiliation, e-mail ID, postal address and telephone number should be submitted on a separate cover page. Each article must be accompanied by an abstract of about 250 to 300 words. A four to five line (or 75 words) biographical note describing the author should accompany the manuscript. Manuscripts should be typed in double space, including endnotes and references, with 1.5 inch (3.0 cm) margins, on one side of A4 size paper.

Acceptance and Revision: Intimation regarding suitability of the article for publication will be given within 30 days of its receipt in normal cases. Articles not accepted for publication will not be returned. The Editorial team reserves the right to edit articles for better clarity and to ensure that the style conforms to the style of the CLAWS Journal. However, views expressed by an author will not be altered. Authors should be prepared to revise their manuscript based on the suggestions made by the reviewers and the editorial team.

Honorarium: A suitable honorarium will be paid for articles accepted for publication. The CLAWS Journal may also commission articles from time to time.

Mandatory Certificates

- Retired armed forces officers and civilian authors should submit a certificate of originality, clearly stating that the article is original and unpublished and has not been submitted for consideration elsewhere.
- Serving members of the armed forces must submit the necessary clearance certificates in terms of the relevant rules and regulations pertaining to their respective Services.
- Serving army officers must submit three certificates.
  - ❖ First, a certificate of originality, clearly stating that the article is original and unpublished and has not been submitted for consideration elsewhere.
  - ❖ Second, a certificate from the author stating that s/he has not used any official information or material obtained in an official capacity while writing the article submitted.
  - ❖ Third, a certificate from her/his Superior Officer stating that there is no objection to the publication of the article.
  - ❖ The format of the latter two certificates is given in Para 21 (a) and (b) of SAO 3/S/2001/MI.
- Responsibility for obtaining Army HQ DGMI (MI-11) clearance in respect of articles pertaining to subjects specified in Paras 13 and 14 of SAO 3/S/2001/MI, will be that of the officer herself/himself.

Style of the Journal

Clarity: Articles should be written in a clear and lucid style. Sentences should be kept short. The use of too many adjectives should be avoided. The most complex ideas can be expressed in simple language. Paragraphs should also be short.
Use of Pronouns: Articles should be written in third person. Writing in first person should be avoided completely – unless the author is over 65 years old!

Spelling: Use British, not American spellings. Thus, use "humour," not "humor," and "programme," not "program." Where alternative forms exist, choose "-ise" instead of "-ize" or "-isation" instead of "-ization" spellings. Thus, use "modernise," "stabilise", "modernisation," "stabilisation," etc.

Quotations: Quotations must be placed in double quotation marks, reserving single quotation marks for a quote within a quote. Long quotes (i.e., four lines or more) should be indented, without quote marks, to set them apart from the text.

Abbreviations:

- All abbreviations must be given in full at their first use in the text; for example, Comprehensive Test Ban Treaty (CTBT).
- Abbreviations should include a final stop in words shortened by omitting the end (such as p., ed., vol.) but not in contractions (words such as Mr, Dr, edn, eds) or between capitals, e.g., USA, SAARC, UN.
- Avoid using "i.e." and "e.g." in the text but use them in the notes if you wish.
- Do not use military abbreviations such as "ops", "int" and "adm" as the CLAWS Journal will have a civilian as well as an international readership. However, those such as CI (counter-insurgency), IS (internal security) and CPMFs (central police and para-military forces) may be used after being given in full at their first use.
- Abbreviated military ranks may be used; e.g., Lt Col, RAdm and Wg Cdr.

Headings and Parts: The only centre heading should be the title of the article. Refrain from dividing an article into several parts. Avoid too many headings, as is the norm in Service writing. While group headings are the norm (bold but not underlined), paragraph headings are best avoided.

Sub-paragraphs and sub-sub-paragraphs:

- Avoid writing in sub-paragraphs unless it is inescapable – e.g. a list needs to be provided.
- Even then, write in complete sentences and not in point form under sub-paragraphs.
- Do not write in sub-sub-paragraphs under any circumstances.

Highlighting Words: Use capitals, bold and italics sparingly but consistently. Italics should be used for titles of books, newspapers, journals and magazines as well as for foreign words not in common usage.

Numbers: Numbers from one to nine should be spelt out, 10 and above will remain in figures; hence, "seven" not "7" and "17" not "seventeen". However, figures should be used for exact measurements (such as "5 per cent," "5 km" and "5-year-old child"). Use "thousand" and "million," not "crore" and "lakh" as the Journal will have international readers. Use fuller forms for inclusive numbers in the case of dates and page numbers (such as "1971-72" and pp. "260-65"). In the text use "per cent", in tables the symbol "%."

Figures and Tables: Figures and Tables should be presented on separate sheets of paper and collected at the end of the article while mentioning the location in the article. Figures and Tables must be numbered in separate sequences, i.e., "Fig. 1" and "Table 1" and the titles should be short and crisp. Copyright permission for reproducing figures or photographs that have been cited from other works must be obtained.

Endnotes and References: Endnotes and References should be amalgamated and marked serially in the text of the article by superscript 1, 2, 3, etc.

Referencing Style: References should be typed in the form of the following example on first appearance:

(a) **Books:**
Michael Foucault, *The Archaeology of Knowledge* (London: Routledge, 1989), p. 26.

(b) **Edited Volume:**
James Der Derian (ed), *International Theory: Critical Investigations* (New York: New York University Press, 1995).

(c) **Articles in Journals:**
Samina Yasmeen, "Pakistan's Kashmir Policy: Voices of Moderation?," *Contemporary South Asia*, Vol. 12, No. 2, June 2003, pp. 187-202. In case of two journals having a similar title, the place of publication must be mentioned, e.g., International Affairs (London) and International Affairs (Moscow).

(d) **Articles in Edited Volumes:**
Tom Nairn, "The Curse of Rurality: Limits of Modernisation Theory" in John A. Hall (ed), *The State of the Nation: Ernest Gellner and the Theory of Nationalism* (Cambridge: Cambridge University Press, 1998), pp. 107-34

(e) Articles in Newsmagazines: Gurmeet Kanwal, "Pakistan: On the Brink," *The Week*, November 4, 2007, p. 45.

(f) Articles from Newspapers: M. K. Bhadrakumar, "New Regionalism in Central Asia," *The Hindu*, July 14, 2004.

(g) References to Websites: United Nations Development Programme, "Arab Human Development Report 2003", http://www.undp.org/rbas/ ahdr/english2003.html, accessed on October 27, 2007.

(h) Reports and Documents:
- United Nations, UNCED, The Global Partnership for Environment and Development (New York: United Nations, 1992).
- Canberra Commission, Report on the Elimination of Nuclear Weapons (Canberra: Commonwealth of Australia, 1996). Available on the Internet at <http://www.dfat.gov.au/cc/cchome.html>

(i) Conference Papers:
Michael Williams, "The Discursive Power of Community: Consideration on the European 'Security Community'", Draft Paper presented at the conference on Power, Security and Community: IR Theory and the Politics of EU Enlargement, Copenhagen October 9-12, 1997.

(j) Unpublished Theses and Dissertations:
Christopher Strawn, "Falling of the Mountain: A Political History and Analysis of Bhutan, the Bhutanese Refugees and the Movement in Exile", Dissertation submitted to the University of Wisconsin, USA, 1993, Chap. 4.

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