SCHOLAR WARRIOR

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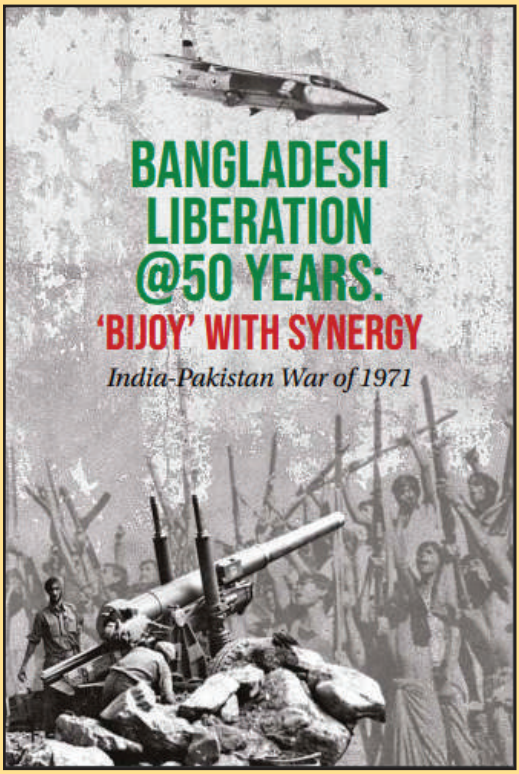

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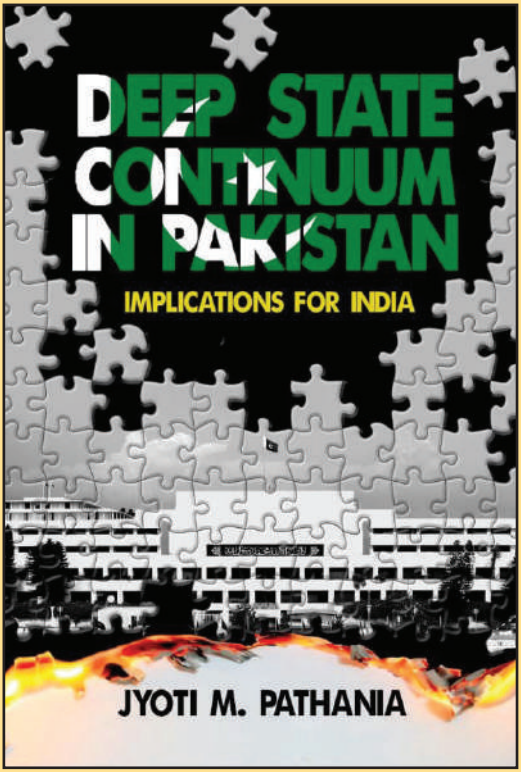

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SCHOLAR WARRIOR

CENTRE FOR LAND WARFARE STUDIES

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SCHOLAR WARRIOR

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Scholar Warrior is published by the Centre for Land Warfare Studies (CLAWS), New Delhi. CLAWS is an independent Think Tank dealing with national security and conceptual aspects of land warfare, including conventional & subconventional conflict and terrorism. CLAWS conducts research that is futuristic in outlook and policy oriented in approach.

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Section IV: Military History and Motivation

Section V: Commentaries and Book Reviews

From the Desk of Editor

India commemorates 50 years of inflicting a crushing and humiliating defeat on the Pakistan Army during the 1971 Indo-Pak War which led to liberation of Bangladesh. Bold planning and execution, bravery against all odds and resolute action led to surrender of 93,000 soldiers of the Pakistan Army. This issue covers two battles, one each on western and eastern front from the war besides the biography of Lieutenant General Sagat Singh, who as Corps Commander of 4 Corps led a bold dash to Dakha which capitulated the Pakistan Army.

The relentless offensive action by our brave soldiers and mounting casualties on the Line of Control led to Pakistan's request for a ceasefire since February 2021. India graciously consented but the subsequent Pakistan's actions like dropping of weapons by drones indicate its intent to continuously ferment trouble in India despite India's benevolence. The intent of Pakistan Army and its compulsions are explored in the first article in Section I. The next article decodes the lessons for future short wars from the Armenia-Azerbaijan conflict due to changing strategic dynamics and influence of drones on the modern battlefield. The third article looks into ways and means to exploit Artificial intelligence in combating terrorism.

The Regional Neighbourhood and Internal Security Section covers articles on diverse topics. The India-Pakistan peace process is analysed through the prism of confidence building measures. The next article covers the growing Chinese intelligence footprints in South Asia in garb of civil and military projects as well as soft targets via education, sister city projects and so on. The third article traces trends in Maoist Movement and ways to bring an end to the insurgency. The last article dwells into the Indus Water Treaty and likely impact of harnessing the allotted water resources by India on Pakistan's economy.

The third section dwells on Military Technology and war systems. The sections covers articles on impact of artificial intelligence and big data on the armed forces, achieving energy sufficiency in far flung posts through renewable energy resources. The third article discusses the effect of quantum technology. The last article of the section traces the nuclear weapons in Pakistan's inventory and collusion of its scientists in nuclear proliferation to rogue nations.

The fourth section speaks about valour and bravery of our soldiers during Indo-Pak War of 1971. Two battles, Battle of Pirgunj on the eastern front and Battle of Wanzal on the western front highlight the planning and capture of key objectives which led to surrender of Pakistan Army against a determined

Indian offensive. In the last section, we cover two book reviews; The Biography of Lieutenant General Sagat Singh and emerging ties between India and Australia.

We solicit articles and battle accounts from all our readers. We look forward to contributions on the unit level operations during the war. The articles can be mailed at claws.publications@gmail.com.

Happy Reading!

Col Ashwani Gupta
Editor

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SCHOLAR WARRIOR

SECTION I

NATIONAL SECURITY, LAND WARFARE AND STRATEGY

CENTRE FOR LAND WARFARE STUDIES

Decoding the Pakistani 'Establishments' Governing Instincts, Compulsions, and Constraints Towards Line of Control Activism

BHUPINDER SINGH

Pakistan's existential crisis is genealogical, as almost no other country in the world is born out of the fount of religiousity as the basis for its sovereignty, i.e. inherent exclusivism of its 'two-nation theory'. For the *Quaid-e-Azam* (Father of the Nation) of Pakistan, Mohammed Ali Jinnah, this bedrock of religiousity was a political strategy (*realpolitik*), rather than a matter of personal belief-thus, bestowing a flawed-at-birth, contradictory, and indefensible construct that would always struggle to 'bind' the nation, with religiousity as a compelling proposition. Unsurprisingly, many of Jinnah's initial ideas of Pakistan sound grossly unhinged and out of place, when contextualised and weighed in with the evolved wiring of the nation, almost 74 years down the line, today.

For a nation that has spent half of its existence under the undemocratic and formal rule of its Military, the *Quaid-e-Azam* had forewarned its Armed Forces that they, 'do not make national policy; it is we, the civilians, who decide these issues and it is your duty to carry out these tasks with which you are entrusted'. He was also clear on the sort of governance spirit that ought to define 'the land of the pure', i.e. Pakistan when he insisted on its aspired constitutional spirit, 'I do not know what the ultimate shape of the Constitution is going to be, but I am sure that it will be of a democratic type'. Today, the Pakistani democracy is rated an abysmal 105th in the *Global Democracy Index* and comes under the category 'Hybrid System' (below even the criteria of 'flawed democracy'), and even though the Pakistani Chief of Army Staff is officially under Article 6 in the Pakistani 'Warrant of Precedence', nothing substantial moves without the approval of the

file by the incumbent of the Army House, in the garrison township of Rawalpindi. The lurking shadows of the Pakistani Generals and their institutional interests are omnipresent, extra-constitutional, and limitless.

Irrespective of an ostensibly civilian government at the helm of affairs in Islamabad, the manifestations of this Hybrid System are best understood in the patently Pakistani expression, establishment-a *Deep-Statist* term and system that conflates the elitist and perpetual interests of the Pakistani Military, Intelligence, and 'compliant' politicos (with the tactical cooption of a certain section of the judiciary, media, and the clergy). This borough of vested interests is predicated on the institution of the Military above all and has 'supporting' elements from the other axis of governance, which keep changing, depending on their utility, to the overall interest of the Pakistani establishment. The former Prime Minister of Pakistan, Nawaz Sharif, who had stormy relations with each of his five Chiefs of the Pakistani Army that he had handpicked (including Pervez Musharaf, who deposed him in a formal *coup*), has described the entrenched status of the Pakistani Military as having regressed from a 'state within a state', to a 'state above the state'!

Pakistan Army needs to create situations and manage the narrative so that its anchorage remains relevant, irreplaceable and beyond questioning.

This establishment needs to create situations and 'manage' the national narrative in such a fashion that its principal elements, i.e. the institution of the Military, and its anchorage remains forever relevant, irreplaceable, and beyond the questioning of its conduct. For the survival of such nefarious intent of the establishment, the free functioning of liberal democracy (as perhaps confusedly envisaged by Jinnah), where hard questions could be posited, would be antithetical to its interests—instead, a beholden and farcical system of ostensibly 'democratic' leadership with a manipulated citizenry, is the ideal formulation for the establishment.

But such a formulation needs two elements to succeed. First, a 'binding' factor that can galvanise emotions beyond the obvious 'divides' of ethnicity, sectarianism, and regionalism that is typically given to the sub-continent, and second, a face and name to an 'enemy' that can irate and channelise popular passions of hate and justify the establishment (especially its nucleus, the Military). The time-tested, ticking-all-boxes, and the powerful solution to this fundamental challenge for the Pakistani establishment is, 'India', as it legitimises the militaristic bluster, cross-border interferences, contextualises the 'two-nation' theory (with misadventures in Kashmir, owing to co-religiousity), and distracts from its implosive tendencies, in the tinderbox of Pakistan.

The creation of Bangladesh in 1971, exposed the hollowness of the 'two-nation' theory if pandered with the requisite openness, liberality, and freedom of expression, as the subsequent fears of a similar uprising in Baluchistan, and with subliminal murmurs of *Pashtunistan,* lingered. The establishment immediately 'course-corrected' and suddenly accelerated the agenda of religiousity from its *Jinnahistic* moorings towards the more puritanical and controlled landscape of 'Shariaisation', through both, politicians like Zulfiqar Ali Bhutto (e.g. declaring *Ahmediyas* as heretics in 1974) and the likes of Military men like General Zia-ul-Haq, in the 1980s. The centrality of 'India' in the popular psyche, political agenda, and even religious discourse, was institutionalised, hereinafter—all of this was intractably conflated, wrapped, and presented with the recurring optics of belligerence on the Line of Control (LoC), and with the support to various insurgencies in India. Amongst these insurgencies, Kashmir, with its geographical contiguity, wounded and complicated past, had an added emotive dimension within Pakistan, that was especially milked towards strengthening and justification of the rationale, of the Pakistani establishment.

In a 1965 speech at the UN Security Council, Zulfiqar Ali Bhutto had spoken about a 'thousand-year war' with India. This thought was then given a militaristic extrapolation and practicality by General Zia-ul-Haq's 'bleeding India through a thousand cuts' doctrine, which played out with its machinations in Punjab, and then later, in Kashmir. The most strategic piece of that seemingly innocuous and rhetorical statement was the word, 'cuts', and not a full-blown war, importantly. The contours of the establishment's formula were tightly drawn, i.e. ratchet enough activity, dissonance, and aggression to keep the popular mood buoyant, distracted, and enraged, but to deliberately stop short of escalating the situation towards a full-blown war. The presence of many terror-camps on the Pakistani side of the LoC, rabble-rousing, and fund collection for 'Jihad in Kashmir' and the frequent firing along the LoC to either afford covering-fire to sneak in terrorists, or to instigate the Indian side, became part of the standard playbook.

The establishment's playbook had some standard operational procedures, e.g. outright denialism of any state support to terrorism, and when caught, to attribute the same to 'Non-State Actors'. Then to dial-up the role of Indian intelligence agencies and their supposed operations in Pakistan, e.g. Kulbhushan Jhadav. Also, it forms a creative admixture of religio-politico-fearmongering to add a layer of Teflon to justify the establishment's purpose, intent, and inseparability from the national discourse. Aiding this surreptitious tact of the Pakistani establishment was the timing of the Cold War necessities in the 1980s that conveniently overlooked the mushrooming Pakistani terror-nurseries, and then in the 1990s, the West got distracted in the shifted theatre of major conflicts, i.e. the Middle East.

Beyond occasional platitudes, the West paid no meaningful heed till terror struck on the United States (US) itself, on 9/11. Suddenly the focus came back on the Af-Pak theatre, as their 'man' was finally found hiding in a Pakistani Military township of Abbottabad. Much before Osama Bin Laden was 'taken out', the duplicitousness of the Pakistani double-game was well-established and understood in Washington DC. To a limited extent, the woes of India which had gone unheeded and ignored for decades, finally found some traction and resonation, in global capitals. But given that the US/Western assets in landlocked Afghanistan still had to meander through Pakistan, the long rope for the Pakistanis continued, even if it was done so, grudgingly. It became increasingly difficult for the Pakistanis to play with the same playbook, without contemporising the chapters, SOP's, and the accompanying 'Do's & Don'ts'. Pakistan's joining of the 'War on Terror' in 2001 was both, ironic and transformational. Rawalpindi (Military HQ) needed to take the visible backseat and allow Islamabad (Political Capital) to maintain the unconvincing optics of a 'Civilian Government'. So, while all post-Musharaf Chiefs like Pervez Kiyani, Raheel Sharif, and now Qamar Bajwa hold the essential reins, they operate from the backroom.

Certain global and regional factors have contributed to the current 'squeeze' on the Pakistani establishment to constraint the old game with the same level of impunity and brazenness, as earlier. A more terror-intolerant world, the spectre of getting blacklisted by global watchdogs agencies like Financial Action Task Force (FATF), relative disownment by traditional allies in the Sheikhdoms, and the strong counter-reactions demonstrated by India (Pulwama followed by Balakote) has ensured that the last significant terror strike of scale and complexity, was the Pulwama attack in February 2019, nearly two and a half years back. While the LoC itself remains testy, tentative and susceptible to stray flare-up's, the larger backdrop of the pandemic hit economies, consequential societal distraction, and the recalibrated focus has contributed immensely towards a seemingly restrained situation on the LoC, along with other serendipitous factors, that led to Pakistan's proposal for a ceasefire, from February 25, 2021.

It is important to understand the genesis of the Indo-Pak crisis, stakeholders involved, and the landscape and constraints that have led to the current lull as neither has the vested interest of the establishment changed nor will it fundamentally alter in its core intent; however, the form and expression of the same may vary, as allowed by the dynamic circumstances, that be. Understanding history and the larger situational context will not only explain the prevailing status, but also the augury of the future.

The current ceasefire at LoC is temporary as neither has the vested interest of the Pakistan Army changed, nor will it fundamentally alter in its core intent

Key Considerations

Regional Dynamics

Contrary to the popular posturing, the exit of the US/North Atlantic Treaty Organization (NATO) troops from Afghanistan, has only increased the security vulnerability facing Pakistan, and not decreased the same. A Taliban-led regime can potentially wreak havoc in the internal security framework of Pakistan, especially across its lawless northern region bordering Afghanistan—a border on paper, not recognised by the Pashtuns on either side of the Durand line, for whom the aspirations for a Pashtunistan can erupt at any time. In such times, escalating tensions across the LoC is detrimental and distractive to the already-stretched Pakistani Military, which will increasingly be required to defend the northern borders with Afghanistan, as opposed to substantial worries from a non-expansionist 'enemy' in India. The unsettled vulnerability across the Durand Line will have a direct and consequential impact on the Pakistani posturing, along the LoC.

Political

Typically, incumbent governments have tended to up-the-ante with India with an eye on electoral prospects, emanating from the projected bellicosity with India. Therefore, the last or the penultimate year of the civilian government's tenures have usually led to a hardening of stances, pandering to extremist elements, and not be seen to be 'giving-in' to India. The current dispensation of Imran Khan was sworn in on 18 August 2018. Still, in its third year of the five year tenure, it faces no urgency of the next electoral hustings. Considering the other parallel and ensuing stakes/crisis for the Pakistani Government, it would rather not open another political front with India, which could either backfire or 'peak earlier than required'.

Circumstantial

For a variety of unrelated (and some related) reasons, the equations with its traditional allies are ruptured (especially with Saudi Arabia and the United Arab Emirates), and it is in a transitory phase of stitching an alternative alliance with Turkey, Malaysia, and Qatar; however, the compensation with the revised 'bloc' is not of the same level, as yet. The inherent sectarian divide and India's geo-political investments will always ensure that Iran remains an outlier in terms of potential 'allies', for Pakistan. The exit of US troops from Afghanistan will also put pressure on Pakistan with the US no longer having to selfishly condone Pakistan for the protection of any tangible assets or stakes, in Afghanistan, hereinafter. Compounding the topical heat for Islamabad is the embarrassing Black/Grey

listing by FATF which keeps dangerously dangling with a hawk eye to record any misstep by Pakistan. Put simply, Pakistan cannot play the violence progenitor with impunity, as it did once. A quiet LoC, as opposed to India accusing, finger-pointing and railing against Pakistani violence, instigations and complicities, is in Islamabad's interest, circumstantially.

Societal

Currently the Pakistani society is mired under the debilitating double-impact of the global pandemic and the accompanying economic crisis, which in the case of the already sliding Pakistan, has been especially severe. There are record-breaking shortages, inflationary trends, employment issues, and sheer survival besetting the beleaguered society – to now posit a distractive agenda of 'India' could be counter-productive. Society cannot afford to lose focus on surviving this phase, as the national resources are woefully limited, and the international lending agencies like the International Monetary Fund (IMF) or China are imposing stringent conditionalities for the bail-out packages. Perceived profligacy via activism on LoC, is avoidable from a Pakistani situation, now.

Capability/Resources

Pakistan is in the sovereign debt 'danger zone' with an estimated liability and debt of over $300 billion (a staggering 110 percent of Gross Domestic Product [GDP]). With this financial extremity, the Pakistani Military would be well-versed with the potential costs of escalating tensions across the LoC, beyond a point. In an unprecedented and out-of-course subject for General Qamar Bajwa, the Pakistani Chief was heard lecturing, 'In order to carve a promising future for our people, it is important for us to embark upon a solid economic roadmap, backed up by infrastructural developments and regional integration'. The criticality and desperation of the existing economic resources were not lost on the Military Chief of Pakistan, in a sign of the times, that be.

Diplomatic/Gratificational

Unlike earlier, the escalation of firing across the LoC will have diminishing negative returns, as the usual gratification in terms of support from the Ummah (read, Saudi-led Organisation of Islamic Countries), may not be forthcoming. With the Arab Sheikdoms normalising relations with Israel (the United Arab Emirates (UAE) and Bahrain, recently established diplomatic contacts), the diplomatic 'binaries' of the past, are more layered and asymmetric, now. The diplomatic isolation of Islamabad in the multilateral forums and platforms (barring Turkey and China) has been stark and telling on Pakistan's need to reassess the governance expressions of the establishment. Reputationally, Pakistan can ill-afford military provocation.

Internal/Intra-Establishment

The internal dynamics of the establishment are going through an introspective recalibration with the realisation of having overused the lever of religiousity—the clergy is already getting restless (e.g. recent case of the crippling street protests by Tehreek-i-Labbaik), the opposition has stepped up the heat with the media, judiciary, and non-governmental-agencies, and lastly, there is no substantial disconnect between the Generals and the Imran Khan government. All this necessitates an element of *status-quo'ism* and stability, above other instincts, as far as the establishment priorities are concerned.

With such a backdrop, any deliberate eruption on the LoC will invariably drain resources, focus, and energy of the dispensation (establishment) beyond its sustainable levels and limits, and more importantly, deliver no commensurate benefit for the establishment, currently. Imran Khan is precariously placed with the full knowledge of the dire situation prevailing, and any further pressure on the Pakistani 'system' can only make it crumble and implode. Since there are no urgent or pressing questions on the establishment*'s* relevance, other than holding it accountable for tiding over this phase of socio-economic-medical distress, the establishment need not amplify the bogey of 'India', via LoC flare-up's, like earlier.

This does not mean that either the composition, intent, or the 'trump card' of 'India' has waned, diminished or lapsed with time but only that circumstantially, Pakistan cannot play the old game from its traditional playbook, as it used to. India was, is, and will always be, the only 'bind' that can force together with the coalescing of the disparate Sindhi, Baluch, Pathan, and a Punjabi, giving up on 'enemising' India tantamount to de-ligitimising the foundational 'two-nation' theory, that frames the logic of Pakistan. Therefore, the relative peace on LoC is only temporary and not permanent. How long this phase survives depends on global factors and internal urgencies that may or may not be in the hands of the establishment, exclusively. The only permanent interest of the Pakistani establishment is that of its Military fraternity, with other elements playing side-roles that often require replacement and re-prioritisation. Essentially, the situation cannot change on either side of the borders, as India will never 'De-Militarise' it's LoC or within Kashmir, just as Pakistani cannot 'De-terrorise' its preference in reactions. It is just that the extent, visibility, and assertion of these two instincts will vary from time to time, nothing will ever be cast in stone. Not even the relative peace, as situationally warranted, like now.

Lieutenant General **Bhupinder Singh,** PVSM, AVSM (Retd) is the former Director-General Military Training and has also served as Lieutenant Governor of Andaman and Nicobar Islands and Puducherry. Views expressed are personal.

Learning from the Armenia-Azerbaijan Conflict

HARSHA KAKAR

Introduction

The 44 days Armenia-Azerbaijan conflict, launched by Azerbaijan, concluded under a Russian brokered ceasefire on 10 November 2020. The result was degrading for Armenia. It lost control over the disputed enclave of Nagorno-Karabakh. In addition, Armenia was forced to guarantee a safe corridor to Azerbaijan for its Nakhchivan Exclave, a piece of Azerbaijani territory to the west of Armenia. This is in vast contrast to the previous war in 1994 when Armenia was the superior force. Over the years Azerbaijan invested in enhancing its defence capabilities, building relations with Turkey, a sworn enemy of Armenia, all with an intention of exacting revenge for its 1994 loss. Armenia, on the contrary, basked in its past glory.

Azerbaijan restricted hostilities to the disputed Karabakh region thereby largely negating Armenian attempts to draw in Russia under Article 4 of the Moscow-led Collective Security Treaty Organization (CSTO). Armenia even targeted, Ganja, the second largest city of Azerbaijan, hoping to expand the conflict beyond the Karabakh region, but to no avail. The war took place when the world was battling the Pandemic, leading to a muted response from the globe. Indicators of increased hostilities were already evident when the two nations indulged in artillery duels and drone strikes in July last year.

Preparing Defence Capabilities

Both nations invested in building defence capabilities prior to the conflict; however, Azerbaijan invested wisely. Most Armenian missile and rocket artillery were of Russian origin, largely inherited from the time of the break-up of the Soviet Union. It procured Russian Iskander missiles in 2016 and more recently the Chinese WM 80 Multi Barrel Rocket Launchers. It had also ordered Indian Swathi weapon locating radars. Armenia's drone fleet consisted of smaller indigenous systems focused on reconnaissance missions.

Apart from what it inherited from the erstwhile Soviet Union, Azerbaijan procured the Israeli Long Range Attack (LORA) ballistic missiles and extended-range artillery guided rockets. Prior to the War, launched at a time and place of its choosing, it also procured Turkish Bayraktar TB2 and Israel manufactured IAI Harop, kamikaze drones. They employed the Harop kamikaze drones to take out early warning and air defence radars of the Armenians. The Bayraktars were utilised to effectively engage Armenian tanks, artillery, and missile systems. In numbers, Azerbaijan possessed over 200 drones as compared to a few dozen by Armenia.

The Armenians, rather than investing in defence, were satisfied with the status quo and banked on their Moscow-led CSTO defence treaty. They possessed a well-trained army; however, lacked the capabilities to challenge a technologically modernised Azerbaijanian army. Armenia ignored the fact that Azerbaijan, apart from possessing oil and gas resources, was the nodal point for the movement of oil from the Caspian to Europe, and thus its geostrategic importance would keep the Russians at bay and the European Union (EU) subdued. Further, Azerbaijan possessed vast funds for enhancing military capabilities.

Armenia possessed a well-trained army, but lacked capabilities to challenge a technologically modernised Azerbaijanian army

Azerbaijan's relationship with Turkey was a major boost in its favour. Oil pipelines transiting through Azerbaijan move through Turkey to Europe, enhancing their ties. Apart from providing air support as also training for employing its purchased Unmanned Aerial Vehicles (UAVs), there were reports that Turkey moved Syrian militia fighters into Azerbaijan to support it in this conflict. Turkey, which has faced global criticism for its 1920 Armenian genocide, recently endorsed by President Biden, does not have any diplomatic ties with Armenia. This relationship tilted the military balance in favour of Azerbaijan. A lesson that flows is that a close ally, willing to risk criticism to ensure support can change scenarios in a conflict. Within our subcontinent, the proximity of Pakistan and China will ensure Pakistan has unstinted support, materially, diplomatically, and also militarily.

Politico-Strategic Lessons

Russia, which is the backbone behind the CSTO, refused to intervene in the War. It also saw this as an opportunity to reduce the grip of the current Armenian Prime Minister, Nikol Pashinyan, who had seized power in 2018. Russia was aware that if Armenia lost, the resultant peace agreement would strengthen its strategic hold over the Region. Russia had announced that it would not get involved unless Armenia was attacked. Azerbaijan confined the conflict to Nagorno-Karabakh, a

disputed region, considered by Moscow to belong to Azerbaijan, though occupied by Armenians. Hence, Armenia was at a disadvantage from the beginning, as its major alliance partner had a varying perception.

Azerbaijan and Turkey, possibly aware of Russian interests, acted accordingly. Turkey moved a number of F-16 fighters into Azerbaijan, as the conflict raged. Russia, which had deployed a few Su-30 interceptors in Armenia, refused to have them airborne claiming it was not seeking a confrontation with Turkey. This led to Azerbaijan being gifted air superiority by Russia. This opened doors for UAVs to dominate the air space and devastate Armenian forces.

The first politico-strategic lesson which flowed from the conflict is that alliance partners cannot always be depended on, especially when interests are not in consonance. This gets pronounced when the nation seeking assistance is neither, by itself, militarily capable nor possesses a strategic location. Russia discarded Armenia for its strategic interests. Turkey, on the other hand, backed Azerbaijan and even participated in the War as it was advantageous for it in the long term.

The conflict showed that alliance partners cannot always be depended upon, especially when interests are not in consonance

For Turkey, proximity with Azerbaijan advances its strategic interests, while its enmity with Armenia is legendary. The EU, despite calls from members of the EU parliament, refused to sanction Turkey for its direct participation in the conflict considering their interests. The United Nations (UN) could not issue any statement but only give calls for a ceasefire as Russia vetoed any such attempts. Hence, as a rule, nations and global bodies will keep their interests foremost and can be influenced by powerful nations.

Another lesson that flowed is that nations must invest in enhancing military capabilities, based on anticipated threats. Azerbaijan, flush with oil and gas income could outspend Armenia at a ratio of 5:1. Linked to the earlier mentioned is a lesson on the failure of strategic intelligence. Armenia should have been aware of defence procurements being undertaken by Azerbaijan, including training being imparted by Turkey. It may have not judged Azerbaijan's intent but would have been aware of the growing capability gap between the two as also of Azerbaijan's proximity with Turkey. It should have attempted to seek allies to counter this threat. While Armenia may not have been surprised by the Azerbaijan offensive, it had no answer to their employment of drones as offensive weapons of choice. India had faced similar strategic intelligence failures during Kargil and Ladakh intrusions. "Unless we learn lessons from our failures, we will continue stumbling in the future."

Employment of Unmanned Aerial Vehicles as a Battle Winning Factor

Azerbaijan invested heavily in drones, missiles, and artillery. Inputs on Armenian deployment were obtained from Turkish and other global commercial satellites, apart from their UAVs. Subsequently, UAVs were employed to exploit accuracy and enhanced range of guns and missiles, interdicting Armenian defences, cutting off reinforcements and isolating defensive positions, and enabling piecemeal destruction of forces. This was adopted as a policy, wherein Azerbaijan chipped away isolated Armenian positions individually. Inputs state that Azerbaijan employed its TB-2 UAVs to destroy a number of Armenian tanks, armoured fighting vehicles, and guns. Turkey even had its personnel controlling its Bayraktar TB-2 Drones, which made them effective. This implies that nations must seek to fight future wars in every domain, land, air, space, and cyberspace. Integration of systems for enhancing battlefield efficiency and exploiting long ranges of missiles and guns is now a pre-requisite for success in operations.

Azerbaijan produced propaganda videos that gave it an advantage and were effective in impacting the morale of Armenian forces. The world is considering lessons from this War for future analysis largely based on these videos. Information warfare in the current age will play a major role in impacting local and global opinion as the battlefield enters the drawing rooms. This was also witnessed during the Kargil conflict.

Reports state that Azerbaijan flew slow-moving, locally converted, old Soviet aircraft into UAVs, over the warzone, compelling Armenia to release its radar and air defence weapon signatures, which they subsequently targeted employing Israeli Harop loitering ammunition. Deception and innovation have always been major tools in warfare, and this was proved by Azerbaijan.

Armenian air defence systems were largely obsolete and of the Soviet era. These proved ineffective against slow-moving drones. Simultaneously, the lack of jammers enhanced the freedom enjoyed by drones. It was only during the last few days that Armenia employed the Russian Polye-21 (Russian electronic warfare system) to effectively disrupt drone operations. Armenia's Buk and Tor M2KM missile systems, also deployed at the end of the War, downed a few drones. Anti-drone measures, including jammers, are now an essential ingredient in future operations and must be enmeshed with forces deployed on the ground.

Permanent fortifications, locations of which are well-mapped, even in peacetime, will always be susceptible to drone strikes. These exist all along Indian borders. Thus, there is a need for theatre-based air defence systems, as also local anti-UAV systems to be part of holding formations. Theatre-based integrated Air Defence Systems, comprising short, medium, and long-range weapons, linked

with jammers and specialised counter-unmanned aircraft systems to render drones ineffective must be deployed as far forward as possible. Mechanised forces will continue to operate, though would remain susceptible to drone strikes. Their employment needs to be integrated with electronic warfare systems, short-range missiles, and counter-UAV systems.

Air War

In the War, both nations employed limited airpower. Armenia is estimated to possess about 18-20 aircraft mainly of SU-25 and MIG-29 categories, apart from a few Mi-24 attack helicopters. Azerbaijan possesses approximately 30 aircraft of mostly Russian origin as also some Mi-24 attack helicopters. It is rumoured that the only Armenian SU-25 brought down during the conflict was by a Turkish F-16. Had airpower been employed, success achieved by UAVs would have been far more restricted.

Drones are Not a Permanent Success Story

Drones have always not been successful. In Libya, Turkey lost a fairly large number of TB-2 UAVs. Drones have also been employed by terrorists including Yemen's Houthi forces, backed by Iran, to target Saudi Arabian oil facilities. In some instances, Houthi's have employed drones in conjunction with missiles. Most Houthi drone strikes have failed, details of which are rarely brought out. Failures are due to active air defence systems deployed by Saudi Arabia. Of those that hit their targets, few have resulted in casualties or major structural damage. A major success was the drone attack in September 2019 which impacted almost five percent of global oil production.

Houthi rebels also claimed to have launched a drone attack on Abu Dhabi Airport back in July 2018 using three armed drones, which has been denied by the United Arab Emirates (UAE). No inputs of success or failure are available. Turkey and Israel have effectively employed drones to target their adversaries in Syria and Lebanon, both of which possess no counter drone measures. Where drone strikes have succeeded, the opponent has either lacked viable air defence capabilities or effective air power. Where the adversary possesses either, drones have had limited to no success. Turkey applied lessons learned from its Syrian campaign to enhance its chances of success for Azerbaijan.

Technology as a Game Changer

This conflict displayed the power of technology on the battlefield, though in a limited manner. While Azerbaijan with support from Turkey exploited it, Armenia failed. Grey Zone or Hybrid Warfare was possibly the only realm of battle, which

was not evident on a large scale, though Information Warfare was visible. This is possibly a precursor to future battles where military power and technology will be fused seamlessly to ensure success. Hybrid warfare will be effectively employed to break key enemy systems, impacting all spheres of activity. There is no doubt that modern armies must invest as much in harnessing technology to exploit every domain of the battlefield as they invest in upgrading weapon systems. Static defences and mobile elements of battle would remain essential in the future too, as they do currently. However, they would need to be integrated with systems that enhance their survivability as also their effectiveness.

In India, Bharat Electronics Limited is the lead agency for developing anti-drone systems for the armed forces. An indigenously developed anti-drone system is currently deployed at the Prime Minister's residence and a portable one as part of his cavalcade. This system was also deployed during last year's Republic and Independence Days. It has a range of two to three kilometre with radar capability to pick up drones and then employs frequencies to jam them.

A similar system developed by the private sector has been successfully tested on the Line of Control (LoC). Electronics and Radar Development Establishment (LRDE) is developing multiple radar systems which can detect drones and be linked to existing air defence weaponry to effectively engage them. The air force is producing a drone policy and integrating anti-drone measures into its air defence plans. These need to be pursued and implemented at the earliest.

Conclusion

There is no doubt that the Azerbaijan-Armenia conflict produced lessons for the world on enmeshing technology to enhance battle-effectiveness. It also projected lessons of politico-military strategy including over-dependence on alliances. Strategic intelligence, where Armenia failed has also been the bane of India, where we have been repeatedly surprised, most notable being Kargil and Ladakh. Future wars will involve the man behind the gun as much as the man behind a computer, sitting in a plush office, supporting the soldier on the ground with technology-based inputs to ensure his success. Seamless integration of technology with weapon systems is the need for the future.

Major General **Harsha Kakar** (Retd) is an avid contributor. Views expressed are personal.

Exploiting Artificial Intelligence in Combating Terrorism

AJINKYA JADHAV

Introduction

The Fourth Industrial Revolution has contributed profoundly to the revolutionisation of the character of a war of the future. Disruptive technologies like Artificial Intelligence (AI) are transforming the world and its dual-use capabilities are proliferating in all domains of the military to make the current systems and products more efficient and reliable, avoiding human intervention, hence eliminating human error. Indian Armed Forces have spent over three decades in counter-terror operations in Jammu and Kashmir (J&K) and similarly in the north-east. They have largely relied on superior leadership and battle-proven tactics to fight terrorists. The security forces have paid the significant cost in the battle. The main focus of capability development is still platform-centric leading to the procurement of modern military hardware like small arms, surveillance devices, protection gear, and mobility resources. Disruptive technologies like AI need to be researched from the Indian context for employment in counter-terror operations to build capabilities of detection, prevention, pre-emption, and elimination of terrorists. AI is software and has scope for integrating with military hardware and a network to enhance the capabilities in combating terrorism. The Indian Army has enormous experience in this sub-conventional warfare. This data, which is in volumes, needs to be exploited by AI to predict the outcomes and stay ahead of the curve. This technology pertaining to the military is being researched and developed by leading countries like the USA, China, Israel, and Russia. There is a void in research and capabilities to employ AI in combating terrorism.

AI can be used to make predictions based on surveillance inputs, financial transaction information, travel and behavioural patterns and internet browsing activity

Employment of Artificial Intelligence in Sub-Conventional Domain

The examples of possible employment of AI technology are in the precision elimination of Iranian General Quasim Solemani by a drone strike in January 2020.[1] Iran-backed Houthi rebels have deployed drones in Yemen's brutal civil war, the coordinated attack of a swarm of drones on Saudi oilfields west of Riyadh in 2019 are examples of possible employment of the technology by terrorists.[2] The assassination of Iranian Nuclear Scientist, Mohsen Fakhrizadeh, by a satellite controlled remotely operated machine gun in November 2020,[3] the employment of drones by terrorists to drop Improvised Explosive devices at the Jammu air base is a recent example of utilising technology by terror groups in India[4] and the recent employment of the technology by Israel to detect, track, and eliminate Hamas leadership and underground terrorist network remotely in May 2021[5] are all possible examples of AI developing into a technological force multiplier in sub-conventional warfare.

Central Idea

The central idea or the ultimate aim of the intelligence agencies and the security forces is to prevent any terrorist attack rather than reacting to them. There is a need to beat the terrorists in time and space by staying ahead of the curve by being proactive. Three tenets of detection, prevention, and elimination thus assume utmost importance in combating terrorism. This article aims at analysing the employment of AI technology in these three tenets towards capability enhancement in combating terrorism and also leveraging the technology in counter-radicalisation.

Detection

- **Situational Awareness:** There is a popular teaching in the training academies which is, *Hamara patrol in sawalon ke jawab layega*. This was a method of obtaining information by the patrols by physical surveillance. Today, the information inflow is augmented by a plethora of surveillance devices, sensors, drones, satellites, human sources, inputs from various intelligence agencies, etc. The data inputs usually unstructured are in volumes and processed through long channels of command and staff. It finally depends on the cognitive capability and the experience of a human mind to analyse and detect any change patterns or suspicious activity. AI is software that can be leveraged to overcome this problem.
- **AI Tools for Situational Awareness:** The Artificial Neural Network (ANN) establishes a high degree of certainty in various deceptive behaviour patterns

like pattern recognition, prediction, optimisation, modelling, and associative memory. This can help to extensively identify terrorists.[6] The facial, voice, object, and language recognition systems can widely be employed in the detection of terrorists or terrorist-related activities.[7] Social network analysis tools can be employed to analyse terrorist networks since they take relationships and behaviour into account, rather than only attributes, which are otherwise difficult to obtain for covert networks.[8] Three decades of experience along with the surveillance data can be leveraged to programme the machines towards detection. These AI tools can be embedded into the system starting from the lowest echelon that is at the battalion level to the apex level. The accuracy and maturity of the information resulting in reliable intelligence will be enhanced by a high degree. AI hence can significantly contribute towards the observe and orient part of the Observe Orient Decide Act(OODA)loop.

Prevention

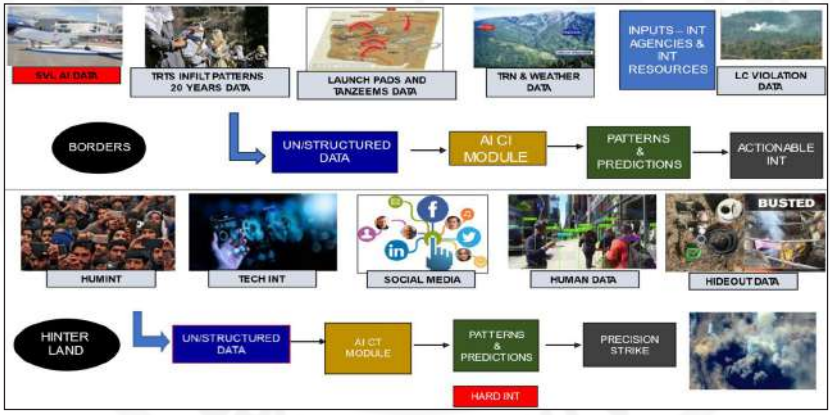
- **Predictive AI:** AI can be used to make predictions about terrorism based on communications metadata, surveillance inputs, financial transaction information, travel patterns, behavioural patterns, internet browsing activity as well as publicly available information such as social media activity. With social media and other online platforms offering mountains of data on virtually every citizen, AI can also be used to detect, influence operations and identify terrorist plots. Predictify.Me, a software company has built a software model and was able to predict timings and location of suicide attacks in Pakistan at 72 percent.[9] Early Model-Based Event Recognition using Surrogates (EMBERS) system incorporates the results of various separate predictive models to forecast events such as disease outbreaks and civil unrest events. The Project is a collaboration between the academic and business communities and is funded by the US Intelligence Advanced Research Projects Activity (IARPA)'s Open-Source Indicators Program.[10] In India, there are porous borders that run along difficult terrain and extreme weather conditions make the task of security forces very complicated; hence, it is essential that predictive AI modules need to be programmed using machine learning and predictive framework which can be integrated with the Geographic Information System (GIS) to identify the location of the suspicious infiltration attempts. The vital data inputs from all intelligence resources, metadata of previous infiltration attempts, terrain, geo-location, and weather patterns could be utilised to program the machines to identify patterns that may be humanly impossible, especially while working with huge digital database moving at a high data rate.[11] Similarly, modules for

the prediction of terror strikes in urban or rural areas could be developed to prevent terror attacks like in Pulwama, Uri, and the Parliament in Delhi.

- **Decision-Making:** Once the target is detected, it needs to be kept under constant surveillance by drones which can be AI-enabled. The target also needs to be confirmed by various intelligence resources. To enable real time decision-making and early elimination of the target before the terrorist strikes, there is a need for real time dissemination of the processed intelligence by an infrastructure less data enabled mobile network at the field area and high-speed data network at higher levels. An AI-based decision-making module can be developed for counter-infiltration and counter-terrorist which can generate various courses of action to assist the commanders and staff to plan the operations. A diagrammatic representation of the counter-infiltration and counter-terrorist AI module is mentioned in Figure 1.

AI based decision making module can generate courses of action to assist the commanders and staff for counter-infiltration and counter-terrorist operations

Figure 1: Artificial Intelligence-Counter Infiltration and Counter-Terrorist Module



Source: Annotated by Author

- **Robotics:** Employment of Improvised Explosive Device Improvised Explosive Device (IED) is a potent tool with the terrorists, Naxals, and terrorists in Kashmir have been employing this technique to target security forces. As proposed above the prediction of IED attacks could be carried out by AI-based applications; however, on detection of an IED, robots can be programmed to neutralise the IED or for bomb disposal thereby not risking a soldier's life.[12] AI-enabled robots can also be programmed to assist in the security of high-value static establishments.

Elimination

- **Lethal Autonomous Weapons Systems:** Employment of Lethal Autonomous Weapons Systems (LAWS) is under an ethical cloud; however, semi-autonomous weapon systems can be developed with the ultimate control with humans. Such AI programmed systems can detect, monitor, and neutralise the targets. Being a high-end technology, it can be leveraged for the precision elimination of high-value targets and terrorist leadership. Developed countries are embedding AI into their drones for executing autonomous flights, accurate detection, and subsequent neutralisation of the targets.[13]
- **Loiter Munitions:** Tactical loiter munitions with limited ranges of up to 15 kilometre and explosive content up to two kilogram are an ideal eye in the sky in counter-terror operations. This technology also known as Kamikaze Drone, has the capability of hovering over the target and on human command seeks and eliminates the target with precision.[14] AI can be employed to detect and recognise the target either inbuilt in the drone or at the operator end. This is by far a path-breaking technology and the most suited for counter-terror operations in all terrains. It gives the unique capability of surveillance and destruction on the same platform with no collateral damage.
- **Swarms:** Swarm or fleet of Unmanned Aerial Vehicles (UAVs) is a set of aerial robots, i.e. drones that work together to achieve a specific goal. The drones can communicate with each other and are programmed with AI-enabled algorithms.[15] The network of swarms along the challenging Line of Control will assist the security forces in detecting the terrorist infiltrating groups but also neutralise them with pin point precision thereby reducing casualties and gaining tremendous moral ascendancy. The detection and neutralisation of terrorists in the hinterland, be it thick jungles or built-up areas, will not only avoid collateral damage but also help reducing terrorism. The technology can also be used in crowd control and anti-riot role.

Protection

- **Security:** Force preservation and protection is a major challenge in combating terrorism. A number of electronic surveillance devices and sensors are used for the security of vital installations in the country. The human mind which is prone to fatigue leading to errors is employed to analyse tonnes of data and then detect a target, This task can easily be taken on by embedded AI tools in the system to detect and raise alarm and prevent any possible intrusion or an attack.

- **Medical:** The security forces operate in inhospitable terrain and adverse weather conditions, casualty evacuation and saving precious lives is a challenge. According to a research, 86 percent of deaths occur in the first 30 minutes post-injury.[16] The immediate first aid currently relies on the intuition of the battlefield nursing assistant and his medical skill. AI tools built into small data tablets enabled by a network of software-defined radios can help in clinical diagnosis and recommend suitable first aid to the injured soldiers in the operational area. These tools can also be helpful in the conduct of complex surgeries and provide advanced lines of treatment to the doctors treating casualties in hospitals.
- **Counter Radicalisation:** The availability of low-cost smartphones and cheap mobile data has brought more Indians online than ever before, posing challenges for social media companies in monitoring and taking action against problematic content. AI is now being employed by a number of social media platforms to stop the spread of terrorist-related content.[17] The fast spread of online recruitment by terrorist organisations is a major challenge. These groups identify susceptible individuals through open Social Media (SM) dialogue and eventually seek private conversations online and offline for recruiting. Automated bots which use AI tools is software deployed on SM to detect malicious content and carry out counter-radicalisation propaganda.[18] The use of AI is an important tool in the information and psychological war. Immediate measures need to be taken to employ this technology to enhance capabilities. A suitable counter-radicalisation AI module can be built tailor-made for each region where security forces are combating terrorism.

Challenges

- **Data:** AI tools require training data to be programmed—more the data better will be the machine learning process and accurate will be the predictive analysis. Sharing of data by various agencies is vital to building AI tools. The data mining and development of AI tools is recommended at the formations which are deployed in counter-terrorism operations and by various intelligence and surveillance agencies. The idea is to start small, learn fast, and evolve into a larger cloud-based architecture.
- **Network:** To achieve real-time situational awareness especially at the tactical level where the operations are executed, there is a requirement of an infrastructure less data-enabled communication network at the battalion level and below, which can be provided by a Mobile Adhoc Network (MANET) created by a mesh of software defined radios (SDRs). At the formation and higher levels, the requirement of data handling is more and perhaps the Network for Spectrum (NFS) project could serve the purpose.

- **Human Rights:** To gather data especially in the urban areas, there is a requirement of mass surveillance. There is a possibility of predicting false results by the machines owing to an error in facial or voice recognition and wrong behavioural pattern analysis leading to mistaken identity.[19] This is a challenge and will lead to human rights and legal complications. Data privacy and misinformation is another associated challenge.
- **Procedures:** AI is software and linked to data. The traditional procurement procedures, which are time-consuming and complicated, impede developing this capability, efforts need to be taken to build counter infiltration, terrorist, and counter-radicalisation modules at the formation level. Immense work is going on in the civil street in the Information Technology (IT) industry. Prototypes can be built and employed to test the efficacy and accuracy. "Atma Nirbhar Bharat", the flagship programme can provide opportunities to young igniting minds in the country to partner with security forces to develop these modules.
- **Tech-savvy Terrorist:** AI opens the battlefield for non-state actors. The terrorists are using digital technology at every stage from recruitment to radicalisation and carrying out attacks as successfully as traditional state actors. The pace at which the non-state actors are using technology is alarming. The use of encrypted data platforms such as Whatsapp for secure communication is another challenge. To fight this asymmetric threat, there is a need to graduate from traditional ways of conducting counter-terrorist operations to smart operations by adopting technologies such as AI.

Conclusion

Terrorism is a menace that the whole world is fighting and so is India. Indian security forces and intelligence agencies have decades of experience in this area. The experience lies in the cognitive minds, operational reports, and case studies. This data is vital for machine learning to program credible AI tools for the future. The three vital areas of focus in building this capability should be data, AI tools, and networks. AI as technology will no way replace the soldier on the battlefield but will only augment his combat potential and boost his confidence and morale. It has to be leveraged to enhance fighting capability, save precious lives, and gain moral ascendancy over terrorists. India has adequate expertise in its IT industry to develop these AI modules of counter infiltration, terrorist, and counter-radicalisation. This is perhaps the lowest hanging fruit that can be leveraged in ongoing efforts to combat terrorism.

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SCHOLAR WARRIOR

SECTION II

REGIONAL NEIGHBOURHOOD AND INTERNAL SECURITY

CENTRE FOR LAND WARFARE STUDIES

India-Pakistan Peace Process Through Confidence Building Measures: Myth or Reality?

JYOTI M PATHANIA

The latest outreach by Pakistan's Chief of Army Staff, General Qamar Javed Bajwa on looking to "bury the past and move ahead" had many Indian commentators professing Pakistan's genuine efforts to bring peace. Can this peace move be looked upon as a baby step towards confidence-building measures for Indo-Pak conflict resolution? The article aims to find an answer to the question with a comprehensive analysis of the concept of Confidence Building Measures (CBMs); contextualising the same in the perspective of few prominent Indo-Pak peace overtures giving special emphasis on the ensuing ceasefire agreement and recommending India's long-term strategic response to such moves.

The Concept of Confidence Building Measures

Defining CBM is no problematic pursuit as it can be understood keeping in mind the literal meanings of the three words, namely, confidence, building, and measures. Implying that any action, measure, understanding or agreement to any treaty, that generates confidence between adversaries can be interpreted as CBM. Hence, they encompass virtually everything from *war prevention* to *peace building* with the primary aim of boosting confidence and trustworthiness between states.[1] It may include both formal and informal; bilateral or multilateral; economic, diplomatic, military, social, and cultural measures, that are meant to reduce tension and build trust between states, primarily with three objectives: *war prevention, war limitation,* and *war termination*. They are tools adversarial states use to reduce tension and avert the possibility of war. Michael Krepon believes that they act as a "springboard" for less risk-averse leaders to move towards peace, and necessary steps towards diplomacy and statecraft.[2]

In the South Asian region, CBM's can be seen as an array of hope for the promotion and maintenance of peace and stability. A region which though has the natural geographical proximity to lead as an economic giant but is marred by the hostilities between the two nuclear neighbours—India and Pakistan.[3]

Indo-Pak Peace Process as Confidence Building Measures

The saga of the peace process between Pakistan and India remains weak reflecting a lack of sincerity due to mutual suspicion. Regardless, peace efforts must continue because of some unchangeable and inescapable truths. As neighbours, they must develop peaceful and cooperative ties for their security, prosperity, and progress. It is in this context that the former Prime Minister Atal Bihari Vajpayee said, "You can change friends but not neighbours." Pakistan's former President, Pervez Musharraf, recognised this too, which enabled them to start the peace process as the composite dialogue process between March 1997 and September 1998. Despite many wars, big and small, and many near-war situations, neither country has been able to achieve its objectives through war or violence.[4] It was a recognition of these facts that compelled the two countries to agree on a ceasefire along the Line of Control (LoC) as stated:

> In the interest of achieving mutually beneficial and sustainable peace along the borders, the two DGMOs agreed to address each other's core issues and concerns which have the propensity to disturb the peace and lead to violence. Both sides agreed for strict observance of all agreements, understandings, and cease firing along the Line of Control and all other sectors with effect from midnight of February 24/25.
>
> – Joint Statement by DGMOs of India and Pakistan, February 26, 2021[5]

The February 2021 announcement of a renewed ceasefire by Pakistan and India was greeted with both a cautious welcome and considerable scepticism. The credit for the thaw in relations has to be given to both the countries militaries, but one must not forget that back-channel diplomacy (informal CBM) had laid the groundwork for the ceasefire agreement (formal CBM) to restart. Both countries have given credit for the ceasefire agreement to the military commanders.[6] Some analysts believe that the renewed ceasefire between India and Pakistan has opened a Window Of Opportunity (WOO) for forging ahead in the direction of peaceful measures. The WOO factor is undeniably present in this latest ceasefire measure but gauging from the past, it is uncertain whether this peace move will not be shaken up or stalled by another terror incident. As reflected in the data in Table 1, all previous peace moves have been undermined by such incidents creating negative repercussions of sorts. With the revoking of Jammu and Kashmir special status in August 2019, the ceasefire violations

Table 1: Tabulation of the Peace Process and its Aftermath

Year	*Peace Process as a CBM*	*Components*	*Aftermath*
February 1999	Lahore Declaration signed between the then Indian Prime Minister Atal Bihari Vajpayee and Pakistan Prime Minister Nawaz Sharif.	Avoidance of nuclear race; conventional and non-conventional conflicts. Reiterating Shimla Agreement.	Kargil War (May 1999) stalled the peace initiative and bilateral ties fell all-time low. Nawaz Sharif was overthrown by General Musharraf in October 1999.
July 2001	Historic 2-day Agra Summit (July 14-16) held between PM Vajpayee and General Pervez Musharraf who visited India.	To reduce nuclear arsenals, Kashmir dispute, cross-border terrorism. Failed Summit.	December 13, terrorist attack on Indian Parliament; Operation Parakram in response to the attack.
April 2003 – First round	PM Vajpayee and his counterpart Zafarrullah Jamali Khan, enhanced bilateral ties and (ceasefire agreement CBMs).	Border disengagement followed by the ceasefire along the LoC, IB, and AGPL.	July 11, 2006— terrorist attack on a train in Mumbai, with series of bomb blasts.
December 2004 – Second round	Path-breaking CBMs under PM Manmohan Singh and President Musharraf, Islamabad Joint Statement (2004) was a positive development.	Expanded CBMs to include: Trade and travel between divided Kashmir. Draft framework for a solution to J&K conflict agreed.	Led to the resumption of peace process and reduction of violence in J&K.
November 2008 - 2011	No bilateral talks after the Mumbai terror attack. Revived by cricket diplomacy, 2011, the Pakistani Prime Minister Gilani and Indian Prime Minister Singh at the Cricket World Cup semi-final between India and Pakistan that the two sides agreed to resume negotiations.	The collapse of even the backchannel diplomacy. Resumption of New Delhi-Lahore bus service resumption of comprehensive dialogues.	2008 Mumbai terror attacks linked to Lashkar-e-Taiba (L-e-T) based terror group in Pakistan.
February 2021	Joint Commitment to 2003 Ceasefire Agreement The Director-General of Military Operations, brokered by back-channel diplomacy-UAE and Saudi Arabia.	Peace at LoC, respite for the civilians staying near the borders.	June 25, 2021, Lahore car bomb blast outside the house of Hafiz Saeed; Two explosions-Indian Air Force base in Jammu.

had plumbed to about 7,000 incidents of gunfire across the LoC accompanied by growing animosity between India and Pakistan. Most of the Pakistani and Indian commentators consider such ceasefires as merely tactical, benefiting both nations' short-term objectives (calming India's western borders while talks with China continue; calming Pakistan's eastern border while Afghan talks gain traction).[7]

India's Long-Term Strategy Response Mechanism

The Indian policymakers need to keep in mind that for a long-enduring and sustainable response towards Pakistan, mere dialogues and negotiations are not enough but a change in the mindsets of the populace as well as the elected leaders is needed. Though the CBMs have been halted many times in the last 72 years, the current ceasefire agreement has rekindled hope of peace. The former Indian Prime Minister Manmohan Singh's statement in 2010, sums it all:

Pakistan supplying arms across the IB and continuing to fund the terrorists to attack either by drones or UAV's, or through trans-border tunnels are spoilers to the peace moves

> If there is cooperation between Pakistan and India and not conflict, vast opportunities will open up for trade, travel, and development that will create prosperity in both countries.[8] The economic CBMs can be the enduring factor for maintaining peace between India and Pakistan, especially when both economies are prepared to reduce their trade deficits. Pakistan has been using rivalry with India as a ploy to deflect attention from its dismal economic state and growing internal security rifts. Given its relatively weaker economy especially compared to India's, it is in Pakistan's interest far more than in India's to have normal trade relations. The latest cease-fire agreement might be a purely tactical move and a small step to de-escalate but must be welcomed, as seen by each country as serving its interests. The civilians living near the border have heaved a sigh of relief after the renewed ceasefire as they have maximum casualties during the cross-border firing. What appears to be a one-step tactical move might expand to a series of small steps, which may together set the stage for bolder measures towards building lasting peace. This must be supported by both governments as they too will benefit from public backing for the steps they have currently taken, as also welcomed by international players. There are already signs of a further thaw in India-Pakistan relations as the two governments have agreed to cooperate on healthcare under the aegis of the South Asian Association for Regional Cooperation (SAARC); there is talk of Pakistani cricketers playing in India later this year, and also reviving negotiations on religious pilgrimages.[9]

Pakistan supplying arms across the international border and also continuing to fund the terrorists to attack either by drones or Unmanned Aerial Vehicles (UAVs), or any other means like secret trans-border tunnels along the borders are spoilers to the peace moves. Last month only a major terrorist attack was averted in Jammu after police recovered an improvised explosive device that belonged to L-e-T weighing around 5-6 kilogram on June 27.[10] Ashley J Tellis in his research paper titled, "Are India-Pakistan Talks Worth a Damn?" argues that the Pakistani Army should be persuaded to acquiesce to the current territorial and strategic realities involving India and, as a consequence, end its relentless revisionism, which threatens to destabilise the Indian subcontinent and the security of Pakistan itself. The international community may never be able to convince Rawalpindi of the benefits of accepting the status quo, but it should certainly avoid reinforcing the troublesome Pakistani behaviour through a premature and futile call for dialogue.[11]

Such peace moves if consistently supplemented by added peace propositions create habits of cooperation and patterns of consistent communication between adversaries, which might over time lead to significant bilateral or multilateral cooperation. But the fact remains that Pakistan needs to prove its commitment to establishing peace with its actions, by stopping support to terrorism and the groups with jihadists flavoured Islamist rightist ideology. It should abide by its existing commitments under the 2004 joint statement to "not permit any territory under Pakistan's control to be used to support terrorism in any manner." India should also take a holistic view for building trust and confidence by treating terrorism as the core issue along with other issues like trade, drug trafficking, smuggling, etc.

It would certainly be an exaggeration to state that the peace process has been reinitiated between India and Pakistan. "Walk the Talk" is the dictum to be followed in India-Pakistan relations, as the peace process through CBMs has been initiated time and again but only to be sabotaged by a terrorist attack or a proxy war by Pakistan. To promote long-term cooperation India and Pakistan must entail cooperation in non-military issues, covering humanitarian, economic, and cultural concerns, which can be used both for conflict avoidance as well as conflict building matters. But for any peace process to turn into a reality rather than remain a myth, one needs to understand that leaders of both the countries need to have political will supported by the populace of their respective countries. In the word of Edward Gibbon[12]: "The winds and waves are always on the side of the able navigators." India

Pakistani Army should end its relentless revisionism which threatens to destabilize the Indian subcontinent and the security of Pakistan itself

and Pakistan need able and wise navigators to carry forward a sustainable peace process.

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Growing Chinese Intelligence Footprints Through Belt and Road Initiative in South Asia

DINESH MAYAL

Introduction

With deep pockets and surplus foreign reserves, China under President Xi Jinping had undertaken a trillion-dollar Belt and Road Initiative (BRI) in 2013, to restructure the global trade through continental and maritime routes for its Westward expansion. On the completion, the BRI will cover more than 60 nations, approximately two-thirds of the world's population, about one-third of the world's Gross Domestic Product (GDP), about a quarter of all the goods and services the world moves, and will also relieve China's overreliance on the Malacca Strait. Four out of six BRI subcontinental projects are located in South Asia, i.e. China-Pakistan Economic Corridor (CPEC), Bangladesh-China-India-Myanmar Economic Corridor (BCIM), Trans-Himalaya Corridor, and China's cooperation with Bangladesh, Sri Lanka, and the Maldives) either run close to or through India, wherein the other small South Asian Nations are more than eager to play the China card against India.

Comparatively, except for Pakistan, the Chinese involvement in South Asia, till the end of the twentieth century was limited. However, the world has witnessed the emergence of Chinese footprints in South Asia from the beginning of the twenty-first century, particularly after the decision to withdraw the North Atlantic Treaty Organization (NATO) Forces from Afghanistan. A strategically located South Asia in the Western periphery of China, with almost a quarter of the global population concentrated in only 3.5 percent of the total landmass provides an ideal opportunity to fulfill the Chinese middle kingdom dream. An underdeveloped, but fertile South Asian region provides ample opportunity to China for ensuring food security, absorb surplus capital, production, and

construction capabilities. A volatile, complex, underdeveloped region of South Asia with the largest youth population, but infested with rampant corruption and illiteracy also provides China a perfect opportunity through BRI to win over the hearts and minds of the largest youth population to overcome the challenge of its ageing population for propelling its growth engine and also establish its control over the Region to secure a line of communication passing through Islamic terrorist infested area (including its Xinjiang region).

Belt and Road Initiative and the Out Reach

China has integrated a wide range of other activities with the BRI project to further strengthen bilateral ties and rejuvenate its middle kingdom dream. BRI encompasses the construction of multiple infrastructure projects of roads, railways, seaports, airports, pipelines, electrical grids, digital communication power generation, industrial park, agro-industry, agro-processing, etc. Superimposition of Digital Silk Road (5G) and Health Silk Road (post-COVID pandemic) has further resulted in the emergence of BRI as innocuous keel, through which China has aggressively launched its peculiar intelligence operations to monitor and control global trade/traffic.

China with surplus foreign reserves has emerged as the world's biggest official creditor. With its international loans surpassing more than five percent of the global GDP, China has now eclipsed traditional lenders, including the World Bank, the International Monetary Fund, and all the creditor nations of the Organisation for Economic Cooperation and Development (OECD) combined.[1] BRI is central to Chinese debt-trap diplomacy, wherein China is encouraging economically weaker nations to undertake unwarranted and inflated infrastructure projects from loans by the Chinese banks and failing which the countries surrender their sovereignty to China. Although, China project's BRI as "win-win" cooperation focused solely on the development and connectivity, in actual the BRI is slowly and steadily transforming China from a mere economic partner of the poorer nation to their economic master. In circular lending of the Chinese BRI model, the loans are released by a Chinese bank to Chinese firms, which employ Chinese labour wherein the money never leaves China. A study conducted by the Center for Global Development in March 2018 evaluated the current and future debt levels of 68 countries hosting BRI-funded projects. It found that of the 23 countries that are at risk of debt distress today, in eight of those countries, future BRI-related financing will significantly add to the risk of debt distress. Another study also analysed the correlation between the GDP and debt before and after the BRI project and reported that these eight nations will find themselves vulnerable to the above-average debt: Djibouti, Kyrgyzstan, Laos, Maldives,

Mongolia, Montenegro, Pakistan, and Tajikistan, which include two South Asian countries.[2] Amongst all BRI beneficiaries, Pakistan is the biggest recipient of BRI for the CPEC.

BRI projects have led to establishment of intelligence footprints by military and civilian establishments abroad at crucial choke points of the world

Construction and maintenance of BRI projects by the Chinese coupled with stringent contract terms invariably have resulted in the establishment of intelligence footprints through a settlement of Chinese military and civilian establishment abroad at crucial choke points of the world. Post-launch of BRI, China has established its first military base—Djibouti (2017), leased Gwadar port of Pakistan for 40 years (2017), and Hambantota port of Sri Lanka (2017) for 99 years for civilian use. Other Chinese investments in crucial choke points of the Asia are new Malaysian port of Melaka Gateway, an industrial park near Duqm port of Oman. China is developing ports with dual-use functionality at strategic choke points and sea lanes.

Chinese laws mandate that even overseas infrastructure be designed to meet military standards. These laws authorize the military to commandeer ships, facilities, and other assets of Chinese-owned companies. China's push for civil-military integration builds in dual-use commercial and military functionality in BRI infrastructure and associated technologies.[3]

Integration of Digital Silk Road and Health Silk Road with BRI has placed China in an unassailable position to monitor, scan, and govern global dynamics. Recent Chinese cyber-espionage activities related to the BRI have targeted many governments, transportation, energy, defence, space, media, and telecommunications sectors. Simultaneously, we have seen Chinese espionage activity evolve to be more deliberate and covert amid a restructuring of the country's intelligence apparatus.[4] A report by the Australian Strategic Policy Institute Initiative also highlighted that through the Digital Silk Road and the BRI Space Information Corridor, Beijing is providing access to its Beidou Satellite network, constructing digital networks, providing surveillance, communications, smart cities, and other technologies. These technologies not only facilitate China in the collection of big data but also in augmenting its intelligence and surveillance capabilities. China is also extensively utilising information collected through its globally established digital software and hardware to control debate, ideas, and clamp down dissent. Under China's new National Intelligence Law (2017), the Chinese business houses and citizens are called to collaborate in the collection and guarding of national intelligence work.

Unlike the United States (US) and the European Union's "Me first policy", China with global distribution of vaccine has presented herself as a generous

responsible global power despite being the originator of a pandemic. In continuation of its preference out of the 56 countries to which China pledged doses, all but one were participants in its BRI.[5] With BRI, China is poised to not only unlock economic dividends through lowering transaction costs for the exchange of goods, services, and capital, but also strengthen communication linkages that facilitate the exchange of ideas, people, and information with other countries in the region.[6]

China has also aggressively pursued varied exchange programmes along with BRI in a subtle manner to promote ties at the grassroots level through education, scholarship, Sister City arrangement, cultural exchange, and Confucius institutes. The number of students from countries along the BRI accounted for 64.85 percent of foreign students in China, up 11.58 percent over 2016, and a number that keeps rising as a result of increasing interest from these countries toward the initiative proposed by President Xi Jinping in 2013.[7] Eight of ten countries with the most Chinese government scholarship recipients in 2016 were BRI partners. Two-thirds of international students studying in China hailed from BRI countries and 61 percent of Chinese government scholarships in 2016 were awarded to students from BRI countries.[8]

China has pursued exchange programs along with BRI to promote ties at the grassroots level through education, scholarship, cultural exchange, and Confucius institutes

The concept of Sister Cities was started in 1973 to promote and strengthen people-to-people contact between cities of China and other countries. Post-2013, a phenomenal increase in the number of new Sister City agreements was witnessed, particularly along with BRI countries. Out of approximately 2,600 Sister City agreements, more than 700 cities are in the countries involved in BRI which also includes 21 capital cities. In South Asia, China has launched its first Sister City with Pakistan in 1984. As of 2018, China has a Sister City Agreement with 49 cities of South Asia which include Afghanistan (01), Pakistan (14), India (13), Nepal (09), Bangladesh (01), Maldives (02), and Sri Lanka (09).

Confucius Institute is a non-profit programme of *Hanban* to promote the Chinese language and culture. Confucius Institute started in 2004 and within 16 years (2004/20) has expanded in 162 countries. Confucius Institutes are set up as partner organisations in foreign universities/schools; however, the Chinese government retains complete control over them through conditional funding for rewarding pro-China views and curbing anti-Chinese publications/conferences. A large number of Confucius Institutes and Classrooms were closed due to lack of transparency, academic freedom, censorship, propaganda, and espionage activities. According to the DIG Mandarin Report, 17 Confucius Institutes are present in South Asia which include Afghanistan

(01), Pakistan (05), India (04), Nepal (02), Bangladesh (02), Maldives (01), and Sri Lanka (02).

As part of the elite-to-elite diplomacy, Chinese leaders have given top priority to nurturing strong relationships with their counterparts in other countries. Comparatively, China lays more emphasis on military interaction than civil interaction as they consider military diplomacy more durable than civil diplomacy. The People's Liberation Army (PLA) military diplomacy places a strong emphasis on Asia, which accounts for 41 percent of all interactions. Southeast Asia (22 percent) and South Asia (9.1 percent) are higher priority sub-regions than Northeast Asia (4.8 percent) and Central Asia (5.2 percent).[9] Within South Asia, Chinese military diplomacy was more focused on Pakistan between 2003 and 2016.

China with the largest Buddhist population, under President Xi, has been striving hard to project itself as a global centre of Buddhism by spending millions of dollars along with Buddhist-populated BRI countries. China has integrated its Buddhist expansion plan with economic activities in a manner, wherein its religious diplomacy is facilitating in winning economic projects in Buddhist Asian countries. China has hosted a two-day conference in Qinghai province during October 2018, to discuss Buddhism with BRI countries and is also planning to develop its Lingshan County as a global Buddhist spot. China has been able to garner the support of South Asian countries towards its Buddhist diplomacy wherein:

Nepal is proposing to link the OBOR with Buddha's birthplace, Lumbini. Pakistan is reviving the 'Gandhara trail' to link the Lahore, Taxila, and Peshawar networks. Taxila relics are being sent to Sri Lanka for a public exposition during the Vesak month.[10]

Exclusive Chinese Intelligence Footprints in South Asian Countries

- **Pakistan:** The exclusive footprints of Chinese intelligence in Pakistan can be traced from the lease of Gwadar port, Gwadar airport construction, shifting of Pakistan military/civil navigation system from the Global Positioning System (GPS) to BeiDou, liquor manufacturing in Islamic Pakistan, manufacturing of military hardware's, lease of land in Gilgit-Baltistan for 30 years, gifting of two Sindh Islands to China, Intelligence sharing agreement, and construction of Chinese-only township in Special Economic Zones (SEZs) including colony at Gwadar. Federation of Pakistan Chambers of Commerce and Industry has also reported that with the current rate of influx of Chinese into Baluchistan, the native population of the area will be outnumbered by 2048 after completion of the CPEC.

- **Nepal:** Chinese exclusive intelligence footprints in Nepal can be identified from their activities which includes learning of Mandarin by Nepali journalists, China's claims on Mount Everest, installation of 5G tower in Mount Everest, the use of China Study Centre for spying, China funding Non-Governmental Organisation (NGO) to undertake a study on Nepal youth joining the Indian Army, a revival of strategic railway project Lhasa-Kathmandu-Lumbini, Lumbini airport construction, compulsory Mandarin language in schools, Tibetans losing haven in Nepal, mediation of Chinese Ambassador between Oli and Prachand, and spying by Chinese diaspora settled in India-Nepal border.
- **Bangladesh:** Chinese exclusive intelligence footprints in Bangladesh can be identified from the delivery of two submarines, training of Bangladeshi Navy submariner by PLAN in the Bay of Bengal and the Indian Ocean, and the construction of a submarine base in Cox Bazar under PLAN supervision.
- **Maldives:** Chinese exclusive intelligence footprints in the Maldives can be identified from the up-gradation of the airport, construction of a bridge linking the airport and Capital Male, 50 years lease to a group of 16 Islands of Feydhoo finolhu to China, and its likely conversion into a military base, development of artificial islands, and 5 G introduction.
- **Bhutan:** China shares over a 400-kilometre-long border with Bhutan; however, unlike other South Asian countries, Chinese intelligence footprints in the country remain insignificant.
- **Afghanistan:** Consequent to the vacuum being created after the withdrawal of the North Atlantic Treaty Organization (NATO) Forces from Afghanistan, China appears to be moving forward to play a dominant role in Afghanistan. Chinese exclusive intelligence footprints in Afghanistan can be traced from the capture of ten Chinese spies in Afghanistan in 2020, China helping Afghanistan to set up mountain brigade, reported PLA deployment in Wakhan corridor, China deepening relation with Taliban, and the creation of the Quadrilateral Coordination and Cooperation Mechanism.
- **Sri Lanka:** Chinese exclusive intelligence footprints in Sri Lanka can be identified from controls over the World Buddhist Sangha Council founded in Sri Lanka in 1996, Mandarin language classes for Sri Lankan Police officers by China, plan to build an artificial island off Colombo, docking of a submarine at Colombo port twice in 2014, and military training and largest supply of arms/ammunition to Sri Lanka since the 1950s.
- **India:** Chinese exclusive intelligence footprints in India can be identified from their involvement in education and telecom, infiltration through

media, education, and Bollywood, funding of political party, collection of influential personalities data, monitoring of Dalai Lama activities, arrest of Chinese spy and an Indian freelance journalist working as a Chinese spy, and spying by Chinese private companies.

Conclusion

Integrated execution of BRI along with other forms of soft power projects has not only facilitated China in overcoming pitfalls of individual BRI projects, but also in influencing the perceptions, preferences, and actions of citizens and leaders of other countries by projecting an attractive image of China and cultivating closer relations with them for advancing its national interest. BRI along with other soft power diplomacy has also created an inherent platform for deployment of its intelligence assets along strategically located choke points of BRI to monitor, control, and govern the dynamics of the South Asian region, that too without drawing global attention.

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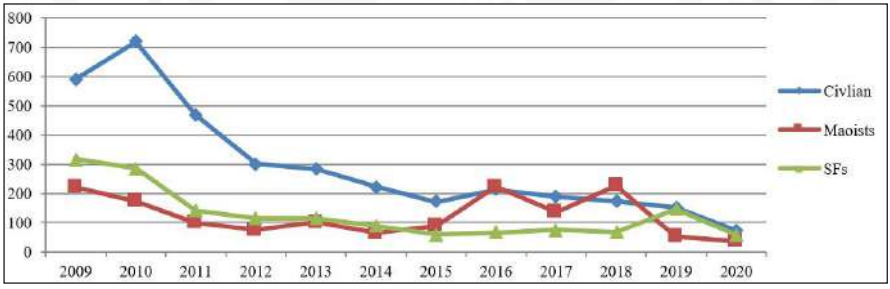
India's Maoist Movement: Trends and Way Forward

P V RAMANA

Introduction

Naxalites of the Communist Party of India-Marxist-Leninist (People's War [PW]), popularly known as People's War Group (PWG) and Maoist Communist Centre of India (MCCI), popularly known as MCC, merged on September 21, 2004 to form the Communist Party of India (Maoist), CPI (Maoist). The Maoists are the largest and most lethal Naxalite group in India. According to an internal document of the Maoists, the rebels lost 4,483 cadres in the past 20 years; of these, 839 were women. The Maoists further claimed that they had looted and seized 3,208 weapons of various makes and 1.52 lakh rounds of ammunition. On the other hand, according to the Union Ministry of Home Affairs (MHA), between 2009 and 2020, a total of 14,844 incidents of Maoist violence have been reported. During the same period, 1,528 Security Forces (SFs) have laid down their lives, while 3,553 civilians were killed by the Maoists (Chart 1).

Chart 1: Maoist Violence Profile, 2009/20



Current Status

Chhattisgarh and Jharkhand are the worst hit, followed by Odisha and Bihar. While the Maoists have been nearly wiped-out in Telangana, but the north coastal Andhra and southern Odisha together constitute the Andhra-Odisha

Border Special Zone (AOBSZ) and Gadchiroli in Maharashtra are the hotspots. The Maoists show-up occasionally in Kerala and Karnataka, while Jhargam in West Bengal is under control. The rebels have a fringe presence in Madhya Pradesh but are completely under control in Uttar Pradesh. In recent months the rebels have constituted a new zone of conflict in the tri-junction of Maharashtra-Madhya Pradesh-Chhattisgarh.[1]

Beginning in 2005, after the formation of the CPI (Maoist), fatalities in Maoist violence peaked in 2010. Thereafter, Maoist violence has seen a gradual decline in the succeeding years until 2014 and has been fluctuating since then. In 2015, for the first time, the SFs suffered a lesser number of fatalities than the Maoists—a trend that continues till date.[2] Also, the highest leadership of the Maoists is ageing. Therefore, the trajectory of the movement would largely depend on its future leadership, which needs to be closely monitored.[3]

Expansion Merger and Militarisation

At the 2001 Congress of the PW, the rebels decided to expand their presence. Thereafter, their presence shot to 150 districts, which has since diminished to 90 districts. The merger of PW and MCC not only brought together the best of military minds in the two outfits, but the combined underground armed strength also rose to 9,000 men and women. This merger enabled "consolidation of forces" bringing-in the best of minds from the two outfits, thus giving more teeth and resilience to the Maoist military machine.[4] With such numerical strength and fine planning, in the wake of a recast Central Military Commission, the rebels executed one notorious attack after the other. Also, they had executed high-profile attacks on political leaders and police officers.

Turning the Tide

Maoist presence and violence have been diminishing over the years. On their part, the movement has hit a plateau and the Maoists have not been able to reach out to newer sections of the society, even as the geographical presence of the rebels has been shrinking. While recruitment has decreased there have been a number of surrenders, while many others have been either captured or killed in encounters with the SFs. Besides, there has been an erosion in the higher leadership. Further, the Maoists have not been able to identify new issues around which they could mobilise the people.

At the same time, security efforts and development measures on the part of the Union government and the various affected States have just about started showing results.

Security, development, ensuring the rights and entitlements of local communities, good governance, and public perception management are the principal elements of the Union government's policy to address the Maoist challenge.[5] Surrender and rehabilitation is another element of this Policy, though not stated explicitly. This Policy and its related action plan was unveiled in 2015, after consulting the governments in the various affected States. In tune with this Policy, the Union government has deployed over 116 battalions of the Central Armed Police Forces (CAPFs) in the various affected areas. The CRPF itself has carved out an elite force named COBRA battalions. Also, the Union government has undertaken various development measures to help the affected States fight the rebels.[6] On their part, the affected States implement various schemes and programmes and provide subsidies. Also, the intelligence machinery is being improved. SFs have been created and are being trained and equipped. Besides, a handsome surrender and rehabilitation package has been evolved.

Role of the Army

There has been intense speculation and occasional demand for deploying the Army in countering the Maoist challenge.[7] Also, there is the apprehension of the inevitability of deploying the Army if Maoist violence assumes greater proportions and is not brought under control at an early date.[8] Media reports of July 15, 2019, said that the then Union Minister of State for MHA issued a stern warning to the Maoists and said, "the Centre will exercise all options, including deployment of Army, to free areas held by left-wing extremists".[9]

On their part, successive Chiefs of Army Staff (serving and retired) opposed involving the Army in anti-Maoist operations. For instance, speaking in Raipur, on April 14, 2015, General V K Singh (Retd), a serving Minister in the Union government said:

> There are lots of things to do to overcome the menace of Maoism. Deploying the Army is not the answer. If armed forces are deployed there they will shoot our citizens. This would tarnish the reputation and image of the Army.

He also recollected that he conveyed his opposition to the then Home Minister when he was the Chief of Army Staff.[10] Thus far, the Army has been advising the MHA and coordinating with it, besides monitoring the Maoist challenge. Also, the Army has instituted a Sub-area Command in Raipur, Chhattisgarh, merely monitor Maoist activities and Army units periodically camp and train in the Narayanpur district.[11] The Army has operational advantages in terms of familiarity with jungle warfare and versatility in the use of infantry weapons. However, it is not its mandate to handle internal security duties. The Central Reserve Police Force (CRPF) is tasked with this function. Besides, the

Army is already over-stretched. More importantly, the Army is not familiar with the terrain in Maoist-dominated areas. It does not have ground intelligence and knowledge of local *Adivasi* (tribal) language, culture, and customs.

Any over-reaction on the part of the Army would have a severe adverse impact. Also, reserves suffered by the Army would dent its image and act as a morale booster for the Maoists. These factors severely handicap the Army's operability in Maoist-affected areas. That apart, deploying the Army would cause a dent in India's international image and might affect investment, including Foreign Direct Investment (FDI), especially so in Central India that has immense potential for investment in power generation, mining, and mineral resources-based industries. Thus, it is eminently advisable to not deploy the Army in countering the Maoists.

Synergy

Synergy is required to face the challenge, at various levels, viz., Centre-State(s), among affected States, SFs among State police, Intelligence agencies, State police, and CAPFs.[12] Addressing the Conference of Chief Ministers of Naxalite/Maoist-affected States, on August 26, 2019, the then Union Home Minister asserted that the Centre and the States have to work together to comprehensively defeat the Maoists. On their part, the various affected States urged the Union government to extend additional support by way of finances and deployment of CAPF. The Union Home Minister said the Maoist movement, "is one of the major internal security challenges faced by the Nation … [it] has no place in Prime Minister Shri Narendra Modi's vision of 'New India'".[13] The Minister further said, "synergy between the Centre and States can effectively address the issue…." Even as the Minister outlined various security and development initiatives being undertaken by the Union Government, he has specifically asked the States to focus on "capacity building of their police forces". This is the sticking point.

On the one hand, the affected States have pleaded for the deployment of additional CAPF battalions and also asked for additional funds under various heads, namely, fortified police stations, training, etc., and waiver of the money they have to pay for the deployment of CAPF battalions. Also, the affected States wanted the Union Government to fully meet/enhance its share of the expenditure on some of the development schemes that have been initiated by the latter. The affected States have repeatedly cited a lack of adequate financial resources for them to strengthen the capacities of their police forces and undertake development work. It is time that the Union Government and the affected States arrive at a meeting point on this issue—finances.

One possible way out is that, while the Union Government could make available some additional finances for a limited duration, the affected States need

to cut down on their populist schemes and programmes and build the capacities of their police forces. Unless the government(s) assure a secure environment the Industry would not be keen to invest in the affected States. Several billions of rupees are at stake in those States. Investment, both domestic and foreign, in eastern and central India in power generation, mining, and mineral resource-based industries have been held-up due to the lack of a secure environment. Further, establishing industries would generate employment—both direct and in ancillary industries, which would result in the economic empowerment of the populace, and thus, wean them away from the revolutionary path; additionally, it would reduce, if not erase, the need for populist schemes and programmes.

Way Forward

- **People-Centric Approach:** People are as central to the government's effort to defeat the Maoist challenge as they are for the Maoists to further their cause. Mao Tse Tung once noted, "If we attend to these [people's] problems, solve them and satisfy the needs of the masses, we shall really become organizers of the well-being of the masses, and they will truly rally round us and give us their warm support…" Therefore, the government would need to: (a) involve the people to resist the Maoists through peaceful means, and (b) every action, scheme, and the programme should be based on the "felt needs" of the people and should benefit them. Both government machinery and political parties should be proactive in this wake. It would be useful if government employees of all departments reside in their place of posting so that they are accessible at all times. The officials should also be empathetic towards the people and quick in attending to their needs. This would send a positive message about government machinery that it is responsive and cares for the people.

People are central to the government's effort to defeat the Maoist challenge and counter Maoist propaganda

- **Public Perception Management:** Of these, not much has been done to create awareness among the people about the futility of Maoist ideology and the various development schemes/programmes being undertaken by the government. Also, a lot has been left to be desired in countering mischievous propaganda by the rebels. Print, radio, television, the internet, and social media could be used to counter maoist propaganda, publicise their misdeeds, anti-development activities such as destruction of roads, bridges, and public property, as well as create a positive opinion among the people by the wide dissemination of the various welfare measures being undertaken by the government. Cultural troupes could also be used towards this end. Early on in its effort to defeat the Maoist challenge Andhra Pradesh had formed

such troupes to stage ballads, dramas, and streetplays. Further, extensive graffiti work could be taken-up by villages using appealing words, in the local dialect. It is equally important to cultivate journalists, particularly in the moffussil. Unfortunately, in many districts, the police at various levels do not see the benefit of engaging with the media, while the rebels are past masters in this. It is also desirable to have a person in district police headquarters dedicated exclusively to liaise with the media.

Unflinching commitment, strict monitoring and implementation of planned schemes by central and state governments will defeat the Maoist challenge.

Development Aspects

The Union government has already initiated various development schemes to improve connectivity through laying roads, erecting cell phone towers, and providing electricity. At the same time, it is equally important and necessary to ensure safe/protected drinking water to the people and provide health care. Further, the public distribution system also needs to be strengthened.

Curbing Maoist Finances

According to a study conducted in 2013 by the Institute for Defence Study and Analyses (IDSA), it was noted that the Maoists have been extorting money from various sources such as businesses—big and small, including beedi (tendu) leaf contractors, traders, and industry—contractors of development works (PWD contractors), transporters, public distribution system (PDS), corrupt government officials. and political leaders, etc. The amount of their extortion/levy is anywhere between Rs 140 and Rs 240 crore, annually. The same IDSA study had suggested some of the following measures to stymie Maoist finances:

- Close monitoring of known sources of finance, including big industry.
- Monitoring of Maoist conduits/front men and interception of their telephone lines.
- Registering criminal cases against sources of finance, irrespective of their social/economic standing.
- Encourage the victims/sources of finance to inform the security forces when extortion notices are served, and, through example, instill the confidence in them that they shall have the protection of the state machinery.
- Ruthless crack-down on illegal mining and timber felling.
- Find ways to make the Revolutionary People's Committees (RPCs) dysfunctional, and then get them dissolved.

- Ensure photographic evidence of the completion of development works and make on-the-spot inspections. Strengthen the social audit mechanism.
- Mines, forests, and land/revenue records need to be rectified and made accurate.
- Penalise government servants paying extortion money.
- Tribal women are quite enterprising. Promote entrepreneurship among tribal women to wean them away from the Maoists.
- Create a separate wing within the intelligence apparatus in each State to exclusively monitor the flow of money.
- Maintain surveillance on bank accounts of suspects.
- Tighten the Public Distribution System (PDS) to halt leakages to the Maoists.
- The MHA could set-up a Special Investigation Team (SIT) to track and arrest the persons responsible for providing finances to the Maoists to restrict the flow of funds.
- Initially, the SIT could focus on two sectors that provide the largest source of funds to the Maoists, namely, the mining sector and PWD.

Countering Urban Propaganda and Urban Movement

- **Propaganda:** The Maoists raise various issues affecting the people. Thus, their demands find resonance with different sections of society. In this wake, the middle class (intelligentsia) speak in a manner that brings legitimacy to the Maoists' demands and implicitly to their objective. The civil rights groups and activists demand that the State (police) should respect the rights of people and should not stage encounters. They exploit every available forum to voice their concerns. The Maoists take advantage of the limitations of the government in being unable to take punitive action against the intelligentsia. The government, while upholding the Rule of Law, should encourage a counter-narrative to Maoist propaganda about how the Maoists have been impeding development through their violent activities and the vested interest they have in not allowing the benefits of various welfare schemes and programmes reaching the tribal population and the rural poor.
- **Urban Movement:** The Maoists have themselves admitted in an internal document that they were caught-up with various organisational issues and did not pay attention to building the urban movement. In 2007, the Maoists had formed a core group known as the Urban Sub Committee (USCO) to take forward the task of forming and strengthening their urban presence and movement. Students, youth, industrial workers, and the working class, in general, are the target groups of the Maoists in urban areas. The police would have to closely monitor the movement and activities of trade union leaders and intellectuals with Left-leaning ideas to have an "early warning" of the

emergence of the urban movement. Bulk purchases of commodities and other wherewithal, including clothing material, medicines, and explosives, would have to be monitored as this could sometimes leave a trail leading to the Maoists in the forests. Also, the police should maintain vigil over hospitals, without causing inconvenience, because the rebels sometimes visit or get themselves admitted for their health issues. Sometimes, the rebels stay incognito in working-class colonies. Some top leaders such as LSN Murthy were arrested from such locations. Besides, an arms-making-cum-Research and Development (R&D) unit was unearthed in Bhopal in January 2007. In the latter case, it was the only house in the locality that had a three-phase electricity connection and an iron shutter instead of usual doors. Besides, the rebels also use the services of printing press to get their literature printed in bulk.

- **Surrender and Rehabilitation:** Unless there is immense pressure on the Maoists, the underground does need to feel the urgency to surrender. Moreover, the higher the rank of the surrendering rebel the greater its demonstrative effect. Therefore, the government should encourage surrenders of top-level leaders. One way this could be done is through facilitating the families of the rebels to make emotive appeals seeking their return to the mainstream. Each State government has an attractive surrender and rehabilitation package. The concerned State government should earnestly implement this package without any red tape. At the same time, it would be counter-productive to insist that a person should surrender along with weapon(s). Two important steps that the government would be advised to take are: (a) provide health care to the surrendering person as many of them surrender because of poor health, and (b) impart skills to lead a comfortable life. Further, the government could facilitate free education/ employment to the wards of the surrendering rebels. In fact, in a number of cases the surrendering person himself/herself was employed by the government itself!

Conclusion

The Union government and governments in the various affected States have got their act together. The change is palpable. Unflinching commitment to, and strict monitoring of the implementation of, the various measures discussed earlier shall defeat the Maoist challenge.

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Notes

1. Interview with2 a senior IPS officer, Raipur, December 2019.
2. See Chart 1.
3. PV Ramana, 'Maoists Remain a Potent Threat', *Telangana Today*, Hyderabad, 1 February 2019; 'India's Maoists: Fading, but Still a Force', *Telangana Today*, 5 March 2018. Interview with K Srinivas Reddy, Editor, Telangana Today, Hyderabad, January 2019.
4. PV Ramana, 'India's Maoist Insurgency: Evolution, Current Trends and Responses', in Michael Kugelman, (ed.), *India's Contemporary Security Challenges*, Washington DC: Woodrow Wilson Centre for Scholars, 2011, p. 32. There were a few other mergers earlier, as well.
5. Available at www.mha.gov.in, accessed on 5 August 2021.
6. Available at www.mha.gov.in, accessed on 5 August 2021.
7. In the preparation of this section, I have borrowed/adapted from P V Ramana, 'Don't Deploy Army Against Naxals', *Telangana Today*, Hyderabad, 19 July 2019.
8. VK Ahluwalia, 'Preface', *Red Revolution 2020 and Beyond*, New Delhi: Bloomsbury, 2013.
9. Available at https://www.newindianexpress.com/nation/2019/jul/14/government-may-consider-army-deployment-to-crush-naxals-union-minister-nityanand-rai-2003850.html, accessed on 5 August 2021.
10. Available at https://www.hindustantimes.com/india/don-t-use-army-against-maoists-says-vk-singh/story-sN5SEneHhCdDxmbLbRXbpL.html, accessed on 5 August 2021.
11. This researcher had the privilege of addressing Officers of this Sub-Area Command in November 2009.
12. In the preparation of this section, I have adapted/borrowed from my earlier article, available at https://www.vifindia.org/2019/september/03/centre-stae-synerhy-shall-defeat-maoist-challenge, accessed on 3 September 2019.
13. Available at www.pib.gov.in, accessed on 26 August 2019.

Indo-Pak Water War: Should India Re-negotiate the Indus Water Treaty

AK CHATURVEDI

Introduction

The Indus Water Treaty (IWT) gives control over the waters of the three "Eastern Rivers", namely, the Beas, Ravi, and Sutlej with a mean annual flow of 33 million acre-feet (MAF) to India, while it gives control over the waters of the three "Western Rivers", namely, the Indus, Chenab, and Jhelum with a mean annual flow of 80 MAF to Pakistan.[1] India has about 20 percent of the total water carried by the Indus system while Pakistan has 80 percent. The treaty allows India to use the western river waters for limited irrigation and unlimited non-consumptive uses for applications like power generation, navigation, floating of property, fish culture, etc. It lays down detailed regulations for India in building projects over the western rivers. An analysis of the IWT brings out clearly that it is one of the most one-sided water-sharing agreements in the world. As Pakistan has continued to support terror activities in India, it is time for India to review its strategy and formulate ways and means to hurt Pakistan economically. Agriculture contributes 24 percent to Pakistan's Gross Domestic Product (GDP) and employs 42 percent of the labour force. Any reduction of water will severely impact Pakistan's economy. Shouldn't India use the threat of re-negotiation of IWT to rein in Pakistan?

IWT is tilted heavily in Pakistan's favour with Pakistan getting 80 MAF of water as compared to only 33 MAF to India

Background of the Indus Water Treaty

The Indus River System is the lifeline of the areas located in the north-west of the Indian sub-continent from time immemorial. Because of the availability of water due to numerous water channels available in the Indus River Basin (IRB) System and fertile soil, this area was traditionally the granary of India. However, the

modern irrigation engineering works, began around 1850 to create infrastructure to exploit the waters of IRB to the fullest. As a part of this exercise during the second half of the nineteenth century and the early part of the twentieth century, large canal systems were constructed and old canal systems and inundation channels were revived and modernised. The transformation of six million acres of rain deficient area into one of the richest agricultural regions in Asia was a stupendous engineering feat that was seen as the colonial power's greatest achievement. Needless to add that the canal system cemented the British control of the region, provided immense profits, and secured for the British the loyalty of the residents who were the beneficiaries of the newly added canal system. The area that benefitted the most was the undivided Punjab's Western Area. However, inherent in the canal system was dependence on a single controlling unit, who could turn off the tap at will. This control system was the problem area between the two countries that British left behind in 1947. The partition created a situation where a monolithic water drainage system was bifurcated with the Madhopur and Ferozepur headworks in India and the canals running through Pakistan. After the expiration of the short-term Standstill Agreement of 1947, on April 1, 1948, India began withholding water from canals that flowed into Pakistan. The Inter-Dominion Accord of May 4, 1948, required India to provide water to the Pakistani parts of the basin in return for annual payments. This too was intended as a stopgap measure, with further talks to take place in hopes of reaching a permanent solution.

The discussion/deliberations and the mediation efforts by the predecessor of the current World Bank, International Bank for Reconstruction and Development are well-documented. David Lilienthal, who headed the Tennessee Valley Authority and the Atomic Energy Commission earlier, after his visit to the Indian sub-continent in August 1951 to find ways and means to resolve the disputes between India and Pakistan, wrote in *Colliers Journal: India and Pakistan* were on the verge of war over Kashmir. There seemed to be no possibility of negotiating this issue until tensions abated. One way to reduce hostility ... would be to concentrate on other important issues where cooperation was possible. Progress in these areas would promote a sense of community between the two nations which might, in time, lead to a Kashmir settlement. Accordingly, I proposed that India and Pakistan work out a program jointly to develop and jointly to operate the Indus Basin river system, upon which both nations were dependent for irrigation water. With new dams and irrigation canals, the Indus and its tributaries could be made to yield the additional water each country needed for increased food production. In the article, I had suggested that the World Bank might use its good offices to bring the parties to the agreement, and help in the financing of an Indus Development program.[2]

Finally, with the consistent efforts of David Lilienthal and Eugene R. Black, the then President of the World Bank, the IWT, brokered by the World Bank was signed on September 9, 1960, at Karachi by the then Prime Minister of India Pandit Jawahar Lal Nehru and President of Pakistan Field Marshal Ayub Khan.[3] William Iliff, the Vice-President of the World Bank signed on behalf of the World Bank. The details of the Treaty are well-documented and hence are not mentioned here but some broad issues of the Treaty were as follows[4]: The Treaty was based on the principle that after a transitional period of 10 years, it was extendable to 13 years at the request of Pakistan.

- The three eastern rivers, namely, Ravi, Beas, and Sutlej, would be exclusively allocated to India, while the western rivers, Indus, Jhelum, and Chenab, would be allocated exclusively to Pakistan except for certain limited uses by India in the upstream areas.
- During the transition period, Pakistan would undertake a system of works, part of which would replace from the western rivers such irrigation uses in Pakistan as had hitherto been met from the eastern rivers. While the system of works was under construction, India would continue to supply water from the eastern rivers according to the agreed programme.
- The Indus works programme was estimated to cost around US $ 1,070 million of which the US $ 870 million was to be spent in Pakistan. One of the last stumbling blocks to the Agreement was concerning financing for the construction of canals and storage facilities that would transfer water from the western rivers to Pakistan. This transfer was necessary to make up for the water Pakistan was giving by ceding its rights to the Eastern Rivers. After due deliberations, the World Bank came out with a plan for external financing. An Indus Basin Development Fund Agreement (Karachi, September 19, 1960); a treaty between Australia, Canada, West Germany, New Zealand, the United Kingdom, and the United States with the International Bank for Reconstruction and Development and Pakistan to provide funds to Pakistan was signed. However, India remained one of the top donors.[5]
- Presently, the role of the World Bank, as per Treaty provisions, is limited. It has to keep the dispute settlement process moving when a party/country is not cooperating to follow the arbitration procedure given in the Treaty in case of a dispute.[6]

Objectives of the Two Countries

It was ironic that people in both the countries, in general, were not very happy with the Treaty. In India, people felt that the Government of India had been more than generous to Pakistan. The then Indian Prime Minister Nehru while

defending the Treaty against a very vocal opposition as well as some of the members of his Party in the Parliament said on November 30, 1960 that it was a good treaty for India.[7] He assured the House that close attention had been paid to each detail. He praised the engineers who, he said, had fought for India's interests strenuously. He conveyed that it was their recommendation that helped him to go for the Treaty.[*] However, he also felt that Pakistan was not fully straight in its approach. He did not feel that the role of the World Bank was alarming or with any agenda, least of all they were not trying to become arbitrators.[†] He blamed the House for being narrow-minded and defended the right of the government to take decisions without referring to the House, based on powers given to the government by the Constitution and the convention laid down in such agreements. He finally concluded: Something is done because it is considered, in the balance, that is desirable… In such matters, there has to be give and take…. We purchased a settlement, if you like; we purchased peace and it is good for both the countries.[‡]

In Pakistan, who all along had been claiming rights on the waters of IRB based on legacy rights, there were voices that questioned the wisdom of signing the Treaty but the merit of the Treaty for Pakistan was best summed up by Field Marshal Ayub Khan himself, who said: *Every factor was against us. The only sensible thing to do was to try and get a settlement, even though it might be second best because if we did not, we stood to loose everything. The very fact that the Pakistan had to be content with waters of three Western Rivers underlined the importance of having physical control over the higher reaches for maximum utilization of the growing needs of West Pakistan. In my mind therefore the only solution to the Kashmir issue acquired a new sense of urgency on the conclusion of the Treaty*.[8]

Therefore, it is quite clear that while India considered it essentially an engineering problem for Pakistan it was always a strategic issue. For them, it was an agreement that could help them to persist with their claim on Jammu and Kashmir (J&K). Pakistan always lived under the fear that India could, at will, stop

[*] In a way he tried to convey that it was engineers who were responsible for it.

[†] In hindsight analysis of the geopolitics of that period shows that probably his conclusion was not based on facts. In 1954, Pakistan joined SEATO, and in 1955 she joined the CENTO. Thus, by 1955 she was fully aligned with the USA, and therefore an assumption that the World Bank, an institution substantially influenced by the US, will act in support of Pakistan might not have been far from the truth. – Author.

[‡] It is amazing that even at that time Atal Behari Vajpayee had raised the question of Indus Commission, quoting Ayub Khan, who had said, "By accepting the procedure for joint inspection of the river courses, India has, by implication, conceded the principle of joint control extending to the upper region of Chenab and Jhelum, and joint control comprehends joint possession." This is probably where the seeds for mischief by Pakistan were sown. – Author.

their water and starve them. As such, they continued to whip up the passion within Pakistan to divert attention from their failure to effectively utilise their share of water. Two examples would suffice. Pakistan has a storage capacity of only 150 cubic metre per capita as against the world average of 963 cubic metre (30 days requirement of the country). The second example is that only 30 percent of the allocated water reached the crop.[9] The lack of national consensus on harnessing their share of water is yet another reason for their water woes. All these years they survived because what was authorised to India was not fully exploited by India.

It is interesting to note that Pakistan who has always been championing the rights of Kashmiris, did not raise the right of Kashmir, though Jhelum and Chenab pass through J&K. Frankly speaking, it shows that the importance of J&K for Pakistan is due to her water resources. However, it is also true that by not making Kashmir a party to the dispute they have accepted J&K as part of India. To further short charge J&K, Pakistan has been using the provisions of the IWT to object to every project on Western Rivers starting from Salal to the latest Kishanganga Hydroelectric Project (all these projects were in J&K and will benefit people of J&K). It again needs to be flagged that none of their objections have ever resulted in the abandonment of any of the projects, though such tactics to delay the projects have only exposed them. Even J&K has understood the duplicity of Pakistan and in 2003 J&K state assembly passed a unanimous resolution for the abrogation of the Treaty and again in June 2016, the J&K assembly demanded revision of the IWT. The legislators felt that the Treaty trampled upon the rights of the people and treats J&K as a non-entity.[10]

Exploitation of the Resources Allocated

To exploit the waters of the Eastern rivers which have been allocated to India for exclusive use, India has constructed the Bhakra Dam on Sutlej, Pong and Pandoh Dam on Beas, and Thein (Ranjitsagar) on Ravi. These storage works, together with other works like Beas-Sutlej Link, Madhopur-Beas Link, and Indira Gandhi Nahar Project have helped India utilise nearly the entire share (95 percent) of the eastern river waters. However, about 2 MAF of authorised water from Ravi was still going unutilised to Pakistan. Post-Uri terrorist attack in 2019, India took a conscious decision to fully exploit its share of water and has decided to resume construction of Shahpurkandi project on Ravi river, construction of Ujh (a tributary of Ravi) multipurpose project, and the construction of the Second Ravi-Beas Link below Ujh.[11] However, these projects are likely to be completed, even on the most optimistic note, not before 2024. Therefore, stoppage of waters of Eastern Rivers, for the time being, is not possible. As far as western rivers (Indus, Jhelum. and Chenab) are concerned, to exploit the full allotment of 3.6 MAF, India is planning to build seven hydroelectric projects on the Chenab river.

These include Pakaldul HEP, Kiru HEP, Kawar HEP, Sawalkote HEP, Kirthal-1 HEP, Kirthai-II HEP, Lower Kalnai HEP, and Burser HEP and has already been handed over to the National Hydroelectric Power Corporation (NHPC). In addition, Wudwan-Burser, Barinium HEP, Shous and Shamkot projects are in the planning stage. Construction of Ratle HEP despite Pakistan's objection is going on. On the Indus river, nine hydel projects have been identified. Although Pakistan has objected to Chutak, Nimoo Bazgo and Dumkhar plants, but India is going ahead with the Tulbul project on the Jhelum river and also planning five more projects at Gandhabal, Lower Jhelum, Mohra, Upper Sindh, and Uri.[12]

Post-August 2019, about ten projects in Leh have been sanctioned. However, even with the cumulative pondage of all three rivers, India does not violate IWT limits. This fact has been acknowledged by Pakistan's Indus Water Commissioner Jamaat Ali Shah.[13] Pakistan, however, is getting nervous because what was till now going to them unchecked will now be denied once all these projects get completed. As explained earlier, Pakistan needs to look within to see why its water crisis is becoming an existential crisis. In this connection, it also needs to be noted that 17 percent of water to Indus is contributed from the Kabul River. Afghanistan is having its plans to exploit its resources and this will further affect the availability of water in Indus.[14]

Pakistan's agrarian economy will collapse without water and India must harness water of western and eastern rivers as per IWT provisions to that end

The current state of shortage of water in Pakistan is to say the least is serious. An agrarian economy like Pakistan cannot survive without the adequacy of water. To make matters worse on one side, population explosion and exotic crop pattern have increased the demand of water, on the other side, poor infrastructure, leakage/seepage, and the lack of national consensus on creating new storage capacity have reduced the availability of water (only eight percent of rainwater is stored in Pakistan). Thus, Pakistan has not done enough to prepare to face the challenges on account of the increasing shortage of water. Instead of finding solutions to its water woes, Pakistan, very conveniently, is blaming India for stealing her share of water which has been proved time and again that this hypothesis of theirs is not based on facts. Even now India is not fully utilising its share of water. It is common sense that when in crisis, nations try to seek help from those who can help them. In the case of water, it has to be the immediate neighbours. Ironically, they want to get water from India beyond their authorisation but pay it back in terms of terrorism and hostility. Their record is no better in case of their water relationship with Afghanistan. They want Kabul River's water uninterrupted by pay back in terms of Taliban and the associated disorder and death.

Options for India

It is time, that India should call a spade a spade in its interactions with Pakistan. While denying water is not only a violation of IWT, it has strategic, technical, and human rights issues. In 2010, the UN had accepted water as a human right and in 2016, the UN had committed to ensuring access to safe drinking water and sanitation in Goal 6 of the 2030 Agenda for Sustainable Development.[15] India which is a law-abiding responsible nation should not do anything which shows that it does not honour her commitment to the UN Charter. Technically also it is neither prudent nor feasible to stop the water. A small statistic would suffice in this regard. If India decides to stop waters of Western rivers the entire Kashmir valley would be under 7 metre of water or 30 reservoirs of the size of Tehri Dam will have to be constructed.[16] Strategically also it may have to be a very thought through exercise, because before taking any such drastic action, India needs to be ready for the repercussions in terms of China doing a similar thing to India, in case of Sutlej and Brahmaputra directly and the Ganges through rivers like Karnali, Arun, and Gandak which originate in Tibet and are a major source of water in Gandak.

Way Ahead

In view of the earlier discussion, the right course of action would be to go ahead with plans to build infrastructure to fully utilise what is authorised under the provisions of the IWT in Phase One. That itself will put tremendous pressure on Pakistan, who has been surviving on India's largess (water which though authorised but is presently not being harnessed due to lack of infrastructure). Such a build-up will also help the Union Territories of J&K and Ladakh to meet their water and power demands. Once that gets completed India can think in terms of renegotiating the IWT during the next phase, wherein the legacy-based rights claimed by Pakistan should be planned to be challenged in terms of need-based requirements. At that point in time, China who is the upper riparian in case of Indus and Sutlej would also be involved in the discussion so that water availability in Indus and Sutlej is not interrupted.

Conclusion

India indeed derives a definite military advantage out of IWT as its scope is confined to the Indus River Basin (both Eastern and Western rivers), located in India and also in Ravi and Sutlej basins located in Pakistan because India controls the flow of water in all the rivers. However, that is possible only in the case India decides to stop the water, but that is where the role of IWT comes, which is meant to ensure the sharing of water available/flowing in Indian part of the IRB between

Pakistan and India except a small portion of Indus water being used for Left Bank Outfall Drain in lower reaches of Indus in Mirpur Khas District and which affects the wetland in Great Rann of Kutch. It may also be noted that according to the IWT, Pakistan attempting to bomb/destroy dams, barrages, power stations, etc., located in the Indian part of the Indus System of Rivers would be a violation of the IWT which can lead to abrogation of IWT. Therefore, Pakistan will never abrogate the treaty notwithstanding the posturing they might do from time-to-time and only India can think in terms of abrogation. It is felt that India knows that she can cause a water crisis in Pakistan merely by ensuring that water authorised to her is fully exploited. Therefore, though there is no need for her to go for abrogation at this stage, however, she can keep her option to go for abrogation/renegotiation on a future date when she would have created enough reservoirs/canals to exploit her share of water as specified in the IWT.

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SCHOLAR WARRIOR

SECTION III

MILITARY TECHNOLOGY

CENTRE FOR LAND WARFARE STUDIES

Leveraging Artificial Intelligence and Big Data for Armed Forces

NEERAJ TRIVEDI

Introduction

Armed Forces across the world are embracing technology, building network-centric defence eco-systems to bolster their combat readiness, modernise battlefield operations, and build up their strategic deterrence. Digitisation and automation have resulted in an exponential increase in the volume and variety of data. There is a surge in data from sensors and shooters, C^4I^2SR applications, information management systems, communication networks, and data centres. This data forms the base for Artificial intelligence (AI) systems to work upon and provide useful patterns and predictive analysis. There is, thus, a growing need felt for having a seamless, secure flow of information, with AI applications and tight security protocols for data-based decision-making. The strategic military future with the enhanced, emerging threats and shrinking defence budgets now requires technology as a central pillar to improve its combat worthiness. Complete dissolution of working in silos and convergence with technology along with cross-pollination of talents to optimally utilise the civil-military fusion has become an urgent need of the hour. Technology is required both for force substitution, as well as, a force multiplier to have a decisive edge.

AI and Big Data Analytics (BDA) needs to be implemented and integrated into all components of Comprehensive National Power (CNP) like military, economy, diplomacy, and information. These emerging technologies have the power to alter the character of conflicts and be instrumental in bringing about transformative changes. Geo-technology will now dictate the strength of national power.

Emerging Technologies: AI/BDA

BDA is the management and exploitation of large or complex data sets being received from multiple inputs to derive meaningful information. Almost eighty percent of our time gets spent in the analysis of twenty percent of data while the rest of the inputs get ignored. These left-out inputs from the analysis could have provided vital considerations for choosing more advantageous options. AI applications can generally be thought of as computerised systems that work and react in ways commonly thought to require intelligence.[1] The use of these AI applications enables analysis of all the available data to carry out a predictive analysis. The field of AI encompasses many methodologies and areas of emphasis, such as Machine Learning (ML), deep learning, robotics, and Natural Language Processing. Data-driven neural networks based on deep learning are used in improvising and aiding decision-making in all spheres.

China is now a technological giant with the People's Liberation Army (PLA) having a well-developed military-civil fusion. It has well-established Research and Development (R&D) centres and an eco-system that supports and strengthens its military by embracing the emerging technologies and assisting them to "leapfrog" the technical divide. China has also raised a Strategic Support Force for domination of the information domain in the future battlefield milieu. India despite having been a dominant global player in software development still has got a lot of catching up to do with its adversary. There is a need for a holistic view of what are the processes, identifying areas where they can be gainfully employed, what will be the required infrastructure, benefits that will accrue from the system, and skill sets required to be developed in the organisation to exploit this optimally. The first step is the establishment of a broad architecture for data management to lay down the framework for data storage, integration, processing, access, movement, and recovery and security of data.[2] Alvin Toffler wrote in *Powershift* way back in 1991, "We make war the way we make wealth—with Information. Wars will be won by information, not industrial power or strength of troops." Benjamin Netanyahu, erstwhile Prime Minister of Israel said in March 2018, "The revolution that's driving today's wealth creation is the confluence of Big Data, Connectivity, and AI."[3]

The restructuring of the Armed Forces to achieve jointness and synergy can only be achieved with the technological embrace. Synergy can only be facilitated by seamless communications, information sharing, and integrated decision-making in all aspects of operations, logistics, and training. This migration to a digital era military requires changes in the people, processes, and technology.

Benefits: AI and BDA

Transformative Technologies

Algorithmic warfare using AI systems which are self-learning, self-correcting, using predictive analysis along with other emerging technologies like quantum computing, lethal autonomous weapons, swarms of drones, etc., can be a game-changer in the battlefields of the future. There is a need to record and institutionalise the information and carry out predictive analysis using AI. The Indian Armed Forces need to leverage AI and BDA and utilise the opportunities it offers. The limitations of exploitation are by one's imagination only.

Employment in Armed Forces

- In the military, it will lead to better decision-making for the commanders on the ground by shortening the OODA loop, better situational awareness, and improved combat capabilities as gaps of analysis get plugged.
- Improve the offensive and defensive combat capabilities with focussed, efficient decision-making post the assessment of audited data.
- Enhanced support in capabilities of operational logistics, infrastructure development, human resource development, as well as medical and financial management.
- Analysis of the social media platforms to discern trends, predict outcomes in societal and human behaviour.
- Assist in suitable Human Resource Management policies for recruitment, training, and career planning.
- We should leverage the knowledge base of R&D carried out by government agencies, academia, private sector, start-ups, Micro, Small, and Medium Enterprises (MSMEs) for driving innovations and to support our military requirements.
- It can aid in the enforcement of legal, ethical, auditable moral safeguards in the system.
- It will provide sound judgement, quick decision-making, cost-effectiveness, synergy, and ensure safety and maintenance of equipments and systems.
- Assist in developing systems of lethal autonomous weapons, autonomous deep learning machines, control of swarms of drones, advanced human-machine combat teaming, autonomous surveillance systems, adaptive communication systems, resilient cyber networks, and robust decision-making systems.
- Data analysis is a critical element in making smart, informed decisions to support military acquisitions by more efficient and effective allocation of resources.

- AI and BDA applications in the military can be used for intelligence analysis, effective surveillance and reconnaissance, cyber operations, information operations, logistics, decision-making at command-and-control centres, medical R&D, training, and Lethal Autonomous Weapon systems which are amongst some of its uses.

AI and BDA applications can be used for intelligence analysis, surveillance and reconnaissance, cyber ops, information ops, logistics and decision making

- Data has to be treated as a resource that utilises scalable networks with centralised data centres which have plug-and-play services in which the legacy networks can get connected.

Challenges for Implementation: AI and BDA

AI technology can, facilitate autonomous operations, lead to more informed military decision-making, and increase the speed and scale of military action. AI and BDA have tremendous potential with a number of advantages for implementation in the military context though it also faces distinct challenges. AI systems may instill or amplify a bias, they may not yet be fully able to explain their decision-making process and often depend on vast datasets that may not be accessible to facilitate R&D.[4] Furthermore, stakeholders often question the adequacy of human capital to develop and work with AI, as well as the adequacy of current laws and regulations in dealing with societal and ethical issues that may arise.[5] Some of the challenges are as mentioned in succeeding paras.

Infrastructure Requirements

- **Inter-linked secure Communication Network:** Convergence of networks requires communication equipments using common waveforms, protocols, and algorithms for secrecy. The implementation requires a core backbone network with no Chinese equipment to meet desired intrusion-free high Bandwidth requirements. This tri-services secure network can later be integrated at the national level with other required verticals of the government. The networks should have no latency, an effective multilayer Network Management System, and standardisation in equipment profiles.
- **Requirement of Data Centres/Cloud Network:** There is an information overload and a deluge of data that is being fed from various sources and in various formats both structured and unstructured. There is a need to establish indigenous cloud networks, institutionalise data sharing mechanisms, ensuring its ownership, integrity, security, and a policy framework for interlinking of various networks with defined access rights. The architecture should have indigenous applications and algorithms. The

systems/applications will automate functionality and assist in achieving a paradigm shift. Plug and play architecture would enable the legacy networks to get interconnected and make their historical data available for better predictive analysis.

Human Resource Challenges

HR policies will need to be modified for personnel trained in AI and Big Data with longer tenures and cross pollination with civilian firms and domain experts

- Development of skillsets to train modern digital era soldiers by revamping the training procedures and curriculum.
- **Talent Management:** The HR policies will need to be modified to meet the career aspirations of the personnel trained in these emerging technologies, with longer tenures and cross-pollination of talent along with civilian firms and domain experts. This will enable "leapfrogging" the digital divide in the military in a timebound manner.

Cultural Transformation

Make centres of excellence for R&D with experts from academia, the Indian Institute of Technology (IITs), military, and industry. The synergy between Defence, Defence Research and Development Organisation (DRDO), academia, and industry needs to be developed. Cross-pollination of experts and talents has become the need of the hour.

- Breaking down the culture of working in silos and attitudinal changes to accept the changes in procedures can be achieved by a top-down approach.
- **Resources Management and Policy Framework:** Build a supportive eco-system with the policy framework and organisational structure to integrate and implement AI. China already has a roadmap of becoming a world leader in AI by 2030, in which the core AI industry is estimated to be worth 1 trillion Yuan and the AI-related industry will be worth 10 trillion Yuan.[6] Deep investments and incentives for R&D are required to be given to Defence Public Sector Undertakings (DPSU), DRDO in synergy with MSMEs and start-ups.
- **Public-Private Partnership**
  - Ecosystem for supplying various indigenous manufactured ICs, components, algorithms required for the implementation of AI systems.
  - Incentives for government-backed R&D to start-ups, MSMEs which have a pool of talent and capabilities.

- Changes in procurement procedures to support and facilitate the R&D and working in AI and BDA projects.
- India is a world leader in software development and there is a need to harness this talent, nurture an army of coders and scientists for making indigenous algorithms and applications.

- **Implementation of a Time-bound Roadmap:** Countries which were nimble in leveraging new transformative technologies have already got a head start. Better collaboration with all stakeholders like Niti Aayog, The Ministry of Electronics and Information Technology, Department of Science & Technology, DRDO, Centre for Development of Advanced Computing, academia, experts from industry and defence will reap rich dividends for a time-bound faster rollout.

Conclusion

Data is the bedrock of AI systems and its reliability is of paramount importance. AI can be applied for forecasting, risk prediction, and aid in better responses in all spheres of functioning. Plug-and-play architecture would enable the legacy networks to get interconnected and also capture their historical data for better predictive analysis. Identification of patterns assists in decision-making with a wide range of applications in military operations, logistics, HR, medical, psychological warfare, disaster management, and cyber operations. Finally, there also needs to be integration at the appropriate level with all the other verticals of government to achieve synergy with all the elements of CNP.

India with its growing aspirations of becoming a global and economic power cannot afford to lag in this RMA of Information and Communication Technologies. A long-term strategic thinking, strong resolve, enabling changes in policies and attitudes along with deep investments will help develop a sustainable eco-system to aid the country in becoming a leader in AI and BDA. Setting-up of a task force comprising representatives from concerned stakeholders and experts along with a separate dedicated set-up which has a single point focus needs to be constituted. There is a need to study the implementation of these technologies in the other defence forces, carry out an environmental scan, pick up the best practices, and utilise the talent pool available within the country for their implementation. This will provide strategic direction in AI-driven transformation, address data sharing issues, and collaborate with academia, industry, and government institutions for a time-bound implementation.

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Energy Assurance Through Renewable Energy Resources for Armed Forces

GAURAV GUPTA

Energy Security for India

Energy remains the mainstay of geopolitics and is central to achieving India's development ambitions and achieving the five trillion economy goal. Oil and Gas will remain strategic assets and India is heavily dependent on imports of oil and gas which at present is 41 percent of its total demand. India's demand for energy will increase three times the present consumption by 2040, driven by economic growth, urbanisation, rising incomes, and industrial activities. India is trying to achieve the target of double-digit growth, but in the absence of energy independence, it is still a distant dream. The best option at present is to invest in renewable energy resources to become independent for future energy needs. The most popular renewable sources currently are solar energy, wind energy, hydel energy, tidal energy, geothermal energy, and biomass energy. In addition to becoming independent, renewable energy resources will reduce carbon footprints of India.

National Initiatives for Renewal Energy

The Government of India has made impressive progress in recent years in increasing citizens' access to electricity and clean cooking. It has also successfully implemented a range of energy market reforms and carried out a huge investment in renewable energy. Looking ahead, the government has laid out an ambitious vision to bring secure, affordable, and sustainable energy to all its citizens. The present peak demand for electricity in India is 177 Giga Watt (GW) which will rise to 300 GW by 2027. The government aims to enhance renewable energy to 175 GW by 2022, i.e. 100 GW from solar, 60 GW from wind, and balance from small hydro projects. This will reduce dependence on imports in the energy sector. India's biggest floating solar power plant with a capacity of 100 MW will

be set up at Ramagundam in Telangana. To be energy independent through solar, wind, and hydropower, the government has undertaken initiatives for its indigenous production. India's 60 percent energy requirements are expected to be met from solar power in the next decade. India has a fully operational power plant in Bhadla Park having a capacity of 2,225 MW.

In addition to traditional solar, wind, and hydel energy, hydrogen-based fuel, Green hydrogen, biodiesel, cryogenic hydrogen, Methanol, fossil fuel, and recycling of fuel are being tested at the national level for industrial and personal use. Alternate fuels like natural gas, Liquefied Petroleum Gas (LPG), Compressed Natural Gas (CNG), and Lithium-ion batteries are in different stages of development. These technologies will reduce emissions, noise pollution caused by noisy and polluting generator sets, the weight of equipment by reducing the weight of the battery, will be very low on repair and maintenance, up to three times longer in endurance, and capable of operating in extended temperatures. Public sector undertakings in the field of oil and natural gas have taken measures to improve the fuel efficiency and reduce pollution. As the automobile market is growing continuously, fueled by economic growth, emissions will rise to 80 GTon. Some of the initiatives undertaken to improve air quality are instituting emission legislations, reduce Carbon Dioxide (CO_2) emissions, improve fuel efficiency of vehicles through technology and fuel quality. BS VI standards have been in place to ensure a lesser amount of Sulphur, CO_2, and Nitrogen Oxide (NO_2) reduction by 89 percent. In vehicle technology, the industry has implemented better technology to reduce carbon, improve fuel efficiency, and exhaust gas re-circulation.

Energy Security for Armed Forces

Armed Forces (AF) are one of the largest consumers of energy. Energy security to AF is assured for its operational needs.The nature of challenges faced by AF are complex and different from the rest of the organisations as AF are deployed in far-flung places and at the end of the national grid and hence, need to plan energy requirements in greater detail. AFs are not yet subjected to conserve energy or change over to renewable energy. However, AF cannot remain aloof of the nationwide developments and need to plan energy requirement in sync with national policy and strategy on energy utilisation and conservation. War is expected to consume energy but the aim of AFs should be to utilise energy efficiently and minimise carbon footprints. At present, all critical equipment and installations

Armed Forces are deployed in far-flung places, at the end of the national grid and need to harness renewable energy resources for operational efficiency

in remote locations are dedicated to generators which is uneconomical. As a result, the carbon footprints of AF are substantial. Renewable resources are used in standalone mode, which leads to reduced mission readiness and reaction time.

A number of initiatives have been undertaken as part of renewable energy projects by AF. As part of the energy conservation initiative, Light-Emitting Diode (LED) bulbs, bulk smart metering have been installed and energy audits and minimum distribution losses are ensured. There is a huge energy requirement in remote locations, which are cut off due to inclement weather and hence require stocking up to eight months. 'Mobile Passive Solar Heated Tent' has been made by an individual which is an example of smart material. An Integrated Advisory Council has been set up to invest in renewable energy. By 2050, CO_2 emissions of the Indian Air Force (IAF) are likely to rise tremendously. To offset the same, tree-borne oilseeds-based aviation fuel has been tested. The first flight which used bio-jet fuel used to fly aircrafts was successfully tested in January 2019. In Andamans, a 109 MW solar power project has been commissioned.

A number of solar power projects have been undertaken by organisations under the Defence Research and Development Organisation (DRDO) and other sister organisations, leading to a reduction of 1.5 lakh tonne carbon footprint during 2020 and 2021. In these organisations, 25 percent of the consumption of electricity is a mix of thermal and solar power amounting to substantial annual savings. DRDO is also procuring energy-efficient machines, enveloping roofs and walls with solar heat reflective paints, and installing solar panels. Water conservation is undertaken to bring down daily water consumption.

Way Ahead

National Landscape

A lot has been done and a lot needs to be done. There is a need to lay down sector-specific targets to switch over to renewable energy sources and reduce emissions and carbon footprints. Partnership with countries who are already way ahead in this field needs to be carried out to share knowledge and transfer of technology. In view of the adverse effects of fossil fuels, there is a need to end fossil fuel subsidies to give a push to the use of renewable energy. The private industry is ready to invest in renewable energy. Hence, Private Public Partnership for energy through solar, wind, and other forms of renewable energy need to be worked out to ensure their sustenance. There is a need to launch a portal by the Government of India through which technology and talent can be brought together. Most importantly, there is a need to change the mindset as there is still a lack of confidence in the use of renewable energy. India can take clues in setting-

up an organisation like the United Work Front of China to enhance its economic growth in which experts from all fields can work together towards a common goal.

Armed Forces Landscape

- AF must create a task force that can formulate a roadmap for the next 10 years to switch AF to renewable energy sources. The use of renewable energy will reduce carbon footprint and military budget drastically which can be diverted for strategic projects. It will also have an operational advantage, i.e. more the military equipment is energy efficient, theeasier it will be to move and cater for logistics. Future AF projects, both mobile and static platforms, must be evaluated for energy efficiency and the use of renewable energy. It will also save on indirect expenditure of maintenance. As an example, the shift from electric to wind energy can make Naval platforms very powerful as it will decrease their administrative burden.
- Energy storage infrastructure requirements for AF for permanent locations, field units, and remote locations need to be worked out and catered for in the road maps of different sectors. Efficiency in distribution, production, storage, and overall management of existing energy available must be improved. AF needs to identify best practices, find ways and means to reduce dependence on imports, and reduce carbon footprints. Defence Procurement Procedures needs to amend to cater to absorb such technologies. A dedicated budget to switch over to renewable energy must be earmarked as a percentage of the overall budget. While planning for energy requirements through renewable sources, mission assurance needs to be ensured by AF at all times. Research and Development for AF can be outsourced to the vibrant industrial base which needs to be exploited to cater to the requirement of AF. DRDO can establish an innovation centre or a Centre of Excellence and provide innovative solutions to AF. Artificial Intelligence and automation can be explored for planning and improve efficiency in the use of renewable energy sources. Modelling and simulation can be used to plan energy requirements for high mobility operations. There is a need to identify industrial and military standards for energy efficiency which needs to be incorporated in all future GSQRs.
- For remote locations which are not connected to the national power grid, independent microgrids which incorporate wind power systems, micro hydel projects, and generator set integrated with energy storage systems controlled by micro-controller need to be explored. Such microgrids can reduce energy needs by 30 percent, increase efficiency by 40 percent, reduce the risk of failure due to long transmission lines subjected to vagaries of weather, and

thus reduce recurring expenditure. The cost of electricity through such projects can come down drastically as the infrastructure requirement of such projects is low. Such grids can enhance energy security and improve sustainability in isolated locations. A blend of the solar-hydrogen solar grid, which is green power even during extreme climatic conditions, can make a military station energy independent, simplify logistics, reduce operational cost, enhance stability and efficiency, and reduce noise and thermal signatures. To formalise energy requirements for operations, an Operational Energy Policy need to be formulated through the energy task force. Existing grids can be modified incrementally for renewable energy penetration in military stations. Total electricity of 25 percent of a station needs to be met through solar electricity by a well-defined road map.

Micro grids at remote locations can reduce energy needs by 30 percent, increase efficiency by 40 percent and reduce risk of failure due to vagaries of weather

- Green building norms need to include natural lighting that can be adhered to for all future infrastructure projects. Emissions maps are required to be worked out by all stations. It is essential to incorporate Corporate Social Responsibility funds by private sectors to invest in renewable energy projects of AF. To combine utility and use of renewable energy for scalable adoption and mass acceptance, the Indian Oil Corporation has commenced a pilot study of an indoor solar cooking system at Leh and Ladakh for a family of four. This Project once successful can be scaled to 100–200 people to cater for the field units and formations of AF. Electric buses, cars, and scooters for short distances and all administrative duties, solar tents for field units, and solar cookers can be procured reducing the energy needs drastically. Long-term planning needs the establishment of hydrogen fueling and battery charging stations in all military stations. SCADA-based water management needs to be implemented for enhancing water availability for hydel projects. Natural daylight for stores, sheds and offices, installation of solar panels on rooftops, new infrastructure as per Green Rating for Integrated Habitat Assessment(GRIHA) norms, sensor-based street lights, solar water heaters, solar charging points, smart electricity supply, and LEDs are need of the hour.

Conclusion

Energy is an important area of research and planning. AF can be the front runner in harbouring technology to convert to solar and other renewable energy sources. There is a long road ahead before AF becomes independent

in its energy needs through renewable energy sources. To provide economic, national, and environmental security, India needs to be self-dependent on all its energy needs.

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Quantum Technology: The Future of Disruption

VIVEK VERMA

The Technology of Future

The advent of Quantum theory happened almost 100 years ago when Planck's work on "blackbody radiation" and Einstein's "description of the photoelectric effect" laid the foundation of quantum mechanics. Quantum mechanics is the Physics theory describing the laws of nature at the sub-atomic particle level. It includes a system's ability to exist in multiple states (superposition) simultaneously or exhibit the connection between particles despite large physical separation (entanglement). The superposition makes it possible to store and process vast quantities of information. At the same time, the entanglement allows sending a completely intercept-proof message. However, the state of superposition is susceptible to disturbances and may diminish, collapse, and disappear. This phenomenon is termed "decoherence".

Scientists have made significant progress in controlling qubits (the quantum version of a bit with many possible states that allow encoding the infinite sequence of digits). They have matured the ability to harness quantum resources significantly. Many widespread existing technologies such as transistors, lasers, and Magnetic Resonance Imaging (MRI) use the laws of quantum mechanics in their design. Although quantum mechanics is embedded in all existing Information and Communications Technologies (ICT), the potential of quantum resources is far greater. At the heart of this game-changing information explosion lies the wedding of quantum mechanics with computational theory. Thus, it has large applications in diverse communications, information processing, simulation, and sensing.

Quantum Technology Evolving Phenomena

The first quantum revolution helped to govern physical reality. It improved computer processing by creating semiconductors born out of chemical interactions and electronic wavefunctions. The photoelectric effect for the

construction of solar cells and photocopying machines results from realisation regarding lightwave treatment as a particle. The concept of the photon helped in creating the laser.

Two imperatives are driving quantum technology. The first is designing miniature devices at length scales of nanometres (nm), and the second is devising algorithms. For Moore's law to remain relevant, the silicon chip design should be sub-7nm, almost half of the existing 13nm chip. However, at sub-7nm, the size of the chip is too small and requires a new design based on Quantum Theory. Second imperative looks at the vastly improved performance framework. Two breakthroughs in 1994 revolutionised Quantum Information Theory and Quantum Computing. The first was the demonstration of making an unbreakable quantum cryptographic key distribution system over 4 kilometre of optical fibre by the British Defence Evaluation and Research Agency (DERA). The second was Shor's Algorithm that is responsible for speeding up the computational power.

The second quantum revolution is set to change the perception of humans about nature. The First Quantum Revolution helped in understanding what already existed. The periodic table could be explained, but new atoms could not be designed. The behaviour of metals and semiconductors could be explained, but their manipulation was not possible. Quantum mechanics allows the surroundings to be engineered and may alter the quantum face of the physical world. With the new artificial atoms like quantum dots and excitons, it is possible to engineer electronic and optical properties. Thus, the new man-made quantum states with enormous sensitivity and non-local correlation have wider application in the development of computers, communications systems, sensors, simulations, and compact metrological devices. Although quantum mechanics has evolved as a science completely, quantum engineering has a long way to go. The world amidst the second quantum revolution will see quantum technology revolutionising future technologies and their applications. Significant progress has also been made in experimental platforms such as quantum photonics, superconducting systems, and trapped ions.[1]

Technological Tools Development and Disruptions

The second quantum revolution will be responsible for most of the key physical and technological advances based on several engineering applications of the different quantum principles like superposition (quantum computing), entanglement (networking, quantum key distribution), illumination (quantum radar), and so on. The uncertainty surrounding the complex phenomena of simultaneously seeing things at more than one place makes the observation challenging. The sci-fi of teleportation may seem a reality, but it hinges on precise engineering, which, in turn, requires high precision measurement. It requires the

development of quantum metrology based on open quantum systems requiring a radical reappraisal of traditional measurement concepts.[2] For the complex quantum technology to function, it needs to incorporate the following:

- **Control Systems:** It is needed to examine measurement records, analyse complex signals amidst the noise, and then use the information harnessed to adapt the system's dynamics or measurement. The development of Quantum Control Theory has added to the future of quantum technology.[3]
- **Communication Protocols and Algorithms:** The quantum interconnected systems are large and complex. Certain fundamental components required are distributed quantum computing, quantum packet switching, quantum key distribution, and error correction. In addition, quantum mechanics enables exponentially more efficient algorithms as compared to classical computers.[4]

Overview of Quantum Technologies

The building of quantum computers is dependent on the development of the principles of measurement, control, error correction, and communication. The explosive growth in quantum computation coupled with huge investments can change the existing platforms altogether. A brief overview of the technological change will put in perspective the disruptions world is likely to face.

- **Quantum Information Science:** There is a worldwide rush to build simple quantum information processors that can alter code-breaking and make electronic warfare equipment redundant. Scientists are looking at various systems like Nuclear Magnetic Resonance (NMR), ion traps, Quantum Electrodynamics (QED), quantum dots, superconducting circuits, and optical systems to build quantum computers. The road to development can be gauged through the patent landscape.
    - **Quantum Algorithms:** These are computer programs that run on a quantum computer and provides a computational advantage. For example, Shor's Algorithm is considered a "killer app" capable of compromising All Public Key Cryptography systems used widely on the internet. Similarly, Grover's algorithm[5] has speeded up database searching and found its application for data mining and code-breaking. The search for such algorithms continues, and their application will impact internet security.
    - **Quantum Cryptography:** The threat to the current internet cryptography has compelled the United States (US) and the European Union (EU) to seek solutions for their investments. Although quantum computing is in its infancy, quantum cryptography is evolving fast to secure commercial

interests. The development of commercial quantum key distribution systems has been made possible by advances in photon optical fibre engineering, enabling the distribution of quantum entangled photons over hundreds of kilometres. The prospects of securing data have propelled the Chinese to dive deep into this technology with many patents. Supremacy in this field by China can eclipse the US domination in situational awareness.

- **Quantum Information Theory:** Quantum computing and cryptography have thrown open an entirely new science of Quantum Information Theory that tries to investigate information processing in a quantum world. It has given impetus to research in quantum data compression, superdense coding, and quantum error correction codes. The related study on the effects of decoherence and noise on quantum circuits and communications channels in a delicate quantum environment can produce robust quantum sensors.

- **Quantum Electromechanical Systems:** A Quantum Electromechanical Systems (QEMS) is a nano-fabricated mechanical system sensitive enough to detect the magnetic moment of a single spin or the deformation forces.[6] It uses single spin Magnetic Resonance Force Microscopy (MRFM) to detect a single spin at a spatially resolved location. Hence, it impacts data storage, quantum metrology, and quantum computing. The current imaging through MRFM is 100 million times superior to existing MRI.
- **Coherent Quantum Electronics:** This technology aims to advance superconducting, quantum computing, quantum optics, and quantum metamaterials.
  - **Superconducting Quantum Interference Devices:** Discovered in the mid-1960s, Superconducting Quantum Interference Devices (SQUIDS) are perhaps the best-known example of coherent quantum electronic devices. Commercial SQUIDs can measure magnetic fields 100 billion times smaller than the Earth's magnetic field. Such sensors are capable of picking even weak signals flowing in the human brain. The Nobel-Prize-winning discovery of high-temperature superconductors in the 1980s, using cheap liquid nitrogen, has paved the way for developing solid-state superconducting components and devices on a chip, using thin-film deposition technology the optical and electron-beam lithographic. The continued progress of decoherence control in SQUIDs could lead to the first scalable quantum computer.
  - **Quantum Photonics:** Light of appropriate frequency, when directed onto a semiconductor, creates an electron-hole pair called an Exciton which behaves like an artificial atom. These Excitons merge the world of

coherent quantum electronics, photons, and quantum optics to create quantum optoelectronics. Such technology will enable secure quantum key distribution and quantum optical computing.

- Spintronics: The field of spin-dependent transport, or spintronics, is the fastest growing area of quantum electronics largely due to its possible applications to conventional information processing and storage besides quantum computing, of course.
- Solid-State Quantum Computers: Mesoscopic electronics are driving the miniaturisation of conventional computing devices. However, a solid-state quantum computer is probably the most challenging quantum technological and will require huge advances in almost all areas of quantum technology.

- **Quantum Optics:** The peculiar particle properties of light help in the engineering of photonic systems with a huge improvement in the sensitivity of optical systems. The breakthroughs and advances in quantum cryptography and quantum computing are based on the newfound ability to engineer and design novel quantum states of light. These are finding their application in the fields of metrology, control, communication, and computation. Quantum Optical Interferometry boosts quantum sensitivity and has been used by the National Aeronautics and Space Administration (NASA) for deep-space inertial guidance and tests of General Relativity. Other applications include orbiting optical interferometers for gravity wave detection, Laser Interferometer-Gravity Observatory (LIGO), the European Laser Interferometer Space Antenna (LISA), and Satellite-to-Satellite laser Interferometry (SSI) proposed for the next generation Gravity Recovery and Climate Experiment (GRACE II). The improved orbital sensitivity to gravity will enable accurate measuring of the Earth's gravitational anomalies from the Space with a resolution of one kilometre or less. Such sensitivity could map the hidden resource reservoir on the Earth and deep-space exploration. Quantum Interferometric Lithography applications have also considerably transformed the lithographic resolution, thereby allowing features to be etched several factors smaller than the optical wavelength. It has the potential to revolutionise semiconductor and 3D printing technology. Further, the technology advanced or invented by LIGO includes laser systems, material science, and cryogenics.[7] Interferometric settings can create non-interactive imaging, which means that it is possible to image objects without making the photons interacting with the object. Hence, one can see what something looks like without shining any light on it. Some interesting applications would be the capability of imaging light-sensitive living cells without exposing them to light. Quantum microscopy techniques can be combined with this non-

interactive effect to perform subwavelength imaging of objects situated in total darkness. It might allow stealth imaging and also provide a certain level of anti-spoofing measures.[8] Quantum Teleportation is another non-intuitive idea that is being explored. Scientists from the Hasso Plattner Institute in Potsdam have invented a real-life teleporter that can beam a scanned object to another location. However, the dematerialisation and reconstruction as captured in Sci-Fi, "The Fly", are dependent on destructive scanning and 3D printing.[9]

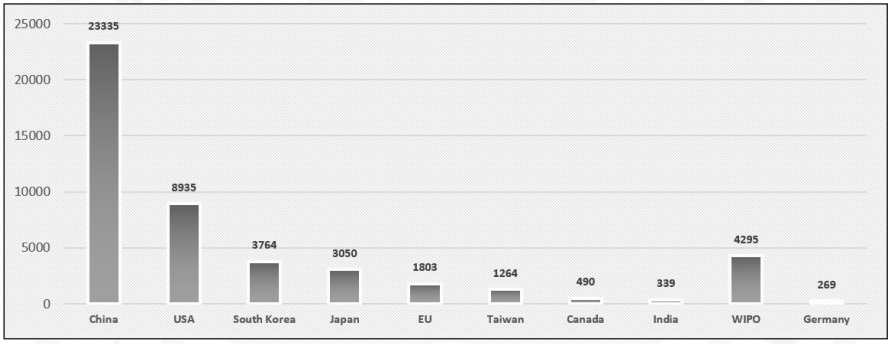
- **Coherent Matter Technology:** This technology is based on the capability of manipulating the coherent wave nature of atoms. It has been simplified due to the advances in laser cooling techniques. However, Interferometric wave devices for atoms are uniquely sensitive to inertial and gravitational effects. The technological breakthrough will advance accelerometers, gyroscopes, gravity gradiometry for applications to inertial guidance, geo-prospecting, tests of General Relativity, and the measurement of the geophysical structure of the Earth from the Space. Atom optics has emerged as a new field of study. It uses combinations of nanotechnology to make exotic matter-wave devices like atom mirrors, atom lenses, atom fibre-optic waveguides, atom interferometers, and atom lasers. Atom interferometers are being developed as a new type of lithographic device for nanofabrication, while atom laser technology is being used for lithography and holograms to write 2D and 3D patterns at the atomic level.

Quantum Application Patenting Landscape

Quantum technologies is an overarching term to describe the host of new technologies penetrating every field and finding new applications every day. Therefore, the patent landscape analysis of quantum technologies is difficult as technologies like quantum communication and quantum cryptography or nanotechnology and semiconductor devices overlap each other. Nevertheless, patents are an excellent indicator to show the pace of innovation. The statistical analyses provide invaluable inputs for the researchers and policymakers to quantify technological collaboration, the evolving technological space, geographical and company-wise predispositions, etc. The Quantum Technologies patenting has remained subdued between 1990 and 2000. It saw a gradual rise in the first decade of the twenty-first century. However, there has been a steady rise in the number of patents since 2012. The country hosting the largest number of applicants is headquartered in the US, followed by Japan, Canada, and Europe. China seems to be making its presence felt in the past five years.[10]

A report published by Relecura, Bengaluru, claimed to have examined 44,394 patents from 2015 to 2020 to understand the taxonomy of patents.[11] The revealing issues about technology taxonomy are: first, nanotechnology and the electric elements share most patents primarily as most modern electronics operate in the nano realm replacing traditional circuits. Second, quantum computing, quantum cryptography, and quantum communication have an almost equal overlap, though more patents are registered for quantum computing, followed by quantum cryptography and quantum communications. With securing commercial interests gaining momentum, in-built security features in quantum computation and communication are gaining prominence, giving importance to cryptography to prevent cloning, copying, and eavesdropping. Countries and corporates trying to create quantum internet are looking at quantum processors too very keenly.

Figure 1: Patents in Quantum Mechanics: 2015–2020



When examining the patents of the past five years, it seems that China has surpassed all with a huge margin. China is leading the innovation in quantum communication and cryptography and the US still hold its edge in quantum computing.[12] However, the importance of a patent is determined by the number of forwarding citations. The citation network provides a representation of the innovation process. This is where the US 8,935 patents score more than China.[13]

China has concentrated heavily on quantum cryptography and the advances could impact future military and strategic balance through non contact warfare

Based on the patents filed by the top ten companies reveal that four of them are from the US (Alphabet, IBM, Intel, and Northrop Grumman), three Chinese companies (BOE Technology, Chinese Academy of Sciences, and TCL Corporation), two Korean companies (Samsung and LG), and one Japanese company (Toshiba).[14] The US companies are mostly invested in quantum computing, nanotechnology, and the semiconductor

industry. Alphabet and IBM dominate quantum computing, while Intel is focused on nanotechnology and quantum processors. Northrop Grumman, the renowned B-2 stealth bomber maker, is exploring new disruptive quantum technologies related to quantum computing and superconducting devices. The Chinese TCL Corporation (the makers of Blackberry phones) and BOE Technology are heavily biased towards quantum dots and fabrication technologies related to lithography, while the Chinese Academy of Science is the only academic institution in the top ten patent holder list and has a well-balanced portfolio in quantum technologies. South Korean LG and Samsung are more swayed towards semiconducting devices and nanotechnology due to their foray into consumer electronics. Toshiba, surprisingly being in the consumer electronics business, has shown diversified interest in quantum cryptography besides quantum computing and communication. However, China has concentrated heavily on quantum cryptography to help it secure its digital frontier. Out of the top five companies invested in cryptography, four are from China (Alibaba, Quantumctek, Huawei, and Ruban Quantum Tech), while Toshiba is the fifth leading company.[15]

Conclusion

Quantum technology creates innumerable possibilities through unparalleled computing and impactful applications that make current encryption redundant. China sees it as the future space where it can counter the US dominance in situational awareness. These advances by China could impact the future military and strategic balance. In January 2019, the Worldwide Threat Assessment report to the US Senate acknowledged this fact. At the current funding rate, China will spend more on Research and Development (R&D) by 2030 than any other country.[16] China's shift in military, governmental, and commercial communications to quantum cryptography networks could frustrate the US cyber intrusion and signals intelligence capabilities. It has prompted the US to authorise the National Quantum Initiative Act (NQI) to invest US$1.2 billion in quantum information science over five years. The US Department of Energy has announced $80 million in funding for quantum research. The 2020 US DARPA budget of US$3.6 billion is devoted to critical technologies like Artificial Intelligence and Quantum.[17] The disruptive potential of quantum sciences is evident to China as it may allow greater independence from space-based systems. The realisation of quantum radar, imaging, and sensing would enhance situational awareness and targeting, potentially disrupting the US investments in stealth technologies or deep-sea explorations. It enables the Chinese People's

Quantum technology creates innumerable possibilities through unparalleled computing and applications that make current encryption redundant

Liberation Army to alter the strategic balance and orchestrate a more nuanced non-contact warfare.

In 2016, the EU has pledged US$1.13 billion for quantum technologies while India in February 2020 budget showed the governmental push by allocating US$1.12 billion over five years as part of a new national quantum mission. The funding boost will help in building key experimental and infrastructure facilities. Army Chief General MM Naravane, during the seminar on "Impact of Disruptive Technologies and Fighting Philosophy in Future Conflicts" in August 2020, has already pitched in for indigenous technology to fight the battle of disruption posed by quantum technology. Quantum technologies will lead the change and may cause obsolescence of equipment even before its life cycle. Therefore, the Indian Armed Forces will have to evolve a doctrinal approach to force designing and capability building to fight the battle of disruption.

Brigadier **Vivek Verma** is the Commander of an Artillery Brigade in Counter Insurgency Operations. Views expressed are personal.

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Pakistan Nuclear Weapons: A Regional Threat

ASHWANI GUPTA

Preamble

Pakistan is one of the nine countries to have developed nuclear weapons primarily to offset India's superiority in conventional forces. Pakistan's nuclear programme began in the 1950s but it gained momentum after its humiliating loss to India in the 1971 war. The peaceful explosion by India in 1974 accelerated Pakistan's efforts to acquire a nuclear weapon. The effort was aided by Dr AQ Khan using stolen blueprints from the Netherlands to establish a uranium enrichment facility in Kahuta. By the early 1980s, Pakistan had established a uranium enrichment facility and acquired the capability to assemble a nuclear weapon by 1984. Pakistan carried out six nuclear explosions in Chagai Hills on May 28 and 30, 1998. It is estimated that Pakistan has 150 to 160 nuclear weapons and produces Highly Enriched Uranium (HEU) for 10 to 15 warheads per year.[1] Pakistan's nuclear weapons are primarily aimed against India. Its key policy goal is to deter Indian conventional and nuclear threats. The secondary goal, if deterrence fails is to deny Indian victory in event of a war.[2]

Nuclear Facilities

Kahuta is Pakistan's main nuclear weapons facility and missile development centre. Pakistan produces HEU at Kahuta, Golra Sharif, near Islamabad and Wah facilities while Dera Ghazi Khan located in southern Punjab is a uranium extraction facility. The heavy water reactors for the production of plutonium are located at Khusabh district in Punjab Province with the first reactor commissioned in 1998. Khushab has four functional reactors and it is estimated that they can produce 50-60 kilogram of weapon-grade plutonium annually. The fifth reactor is under construction with Chinese assistance. Both Kahuta and Khushab facilities are not subject to International Atomic Energy Agency inspections. Pakistan has received clandestine assistance from China and North Korea, especially in terms of missiles and guidance technology and it transferred nuclear technology

to North Korea, Libya, and Iran. In addition, Karachi and Chasma have nuclear plants for power production where additional reactors have been built with Chinese assistance.

Nuclear Doctrine

Pakistan does not have a formally declared doctrine. Pakistan claims it has achieved minimum credible deterrence against India and as no numbers are specified, it can go on increasing its nuclear arsenal citing the growing Indian threat. In 2002, then President Musharraf claimed that Pakistan's nuclear weapons were aimed at India. His statement was further corroborated by Lieutenant General Khalid Kidwai, who was the Director-General Strategic Plans Division (SPD) for 15 years that use of nuclear weapons could include Indian conquest of Pakistani territory or military, economic strangling, or domestic de-stabilisation.[3] Scholars have pointed out that military reversals where Indian forces have breached the first line of defence would lead to Pakistan using tactical nuclear weapons on advancing mechanised forces and Pakistan may use nuclear weapons even in their territory to halt Indian advance.[4] Pakistan's nuclear doctrine rests on three primary assumptions, namely:

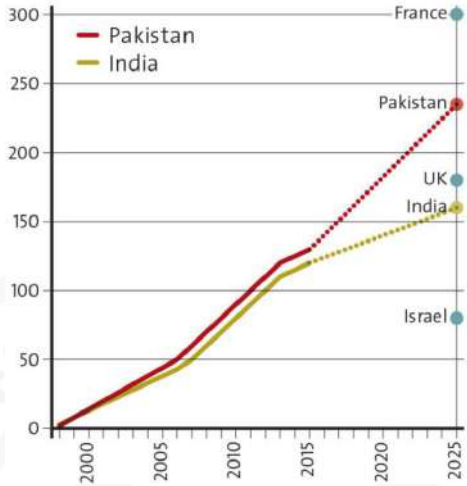
Pakistan claims it has achieved minimum credible deterrence against India and as no numbers are specified, it can go on increasing its nuclear arsenal citing growing Indian threat

- Nuclear deterrence has worked to prevent Indian aggression.
- Pakistan lacks strategic depth; thus, the first use of nuclear weapons may be necessary.
- Ambiguity about what may trigger the first use is valuable in maintaining peace.[5]

Nuclear Weapons and Delivery Systems

Pakistan has strategic and tactical nuclear weapons which can be launched by missiles. The air delivery platforms are the United States (US) acquired F-16 and French Mirage V aircraft. It is believed that Pakistan had modified 32 F-16 aircraft to carry nuclear weapons and has 36 air nuclear weapons (Figure 1).[6,7] Pakistan Navy presently has a submarine-launched cruise missile, Babur-3 but would be working to acquire a nuclear missile capability to complete a triad and have a second-strike capability. It had carried out two launches of Babur-3 from a submerged platform in January 2017 and March 2018.[8] Pakistan has signed an agreement with China for the construction of eight Type-39B submarines and these submarines are likely to be equipped with Babur nuclear-capable missiles. Also, Pakistan has assembled nuclear-capable land missiles which have

Figure 1



Source: Federation of American Scientists and Bulletin of the Atomic Scientists

been sourced from China and North Korea. Pakistan declared in October 2015 that it had developed tactical nuclear weapons. The ground arsenal consists of approximately 102 land-based missiles with yields of 5-40 kt.[9] The missile production facility is said to be located at Fatehjung, 50 kilometre west of

Table 1: Inventory of Pakistani Missiles

Missile	Range (Km)	Type of Fuel	Payload (Kg)	Warhead (K)	Launch Weight (Kg)	Size (m) Length × Diameter	CEP (m)	Operational Since
Ghaznavi (Hatf-3) *(Chinese DF-11)*	300	Solid	500	12-20	4,650	8.5 × 8	250	1995
Shaheen-I (Hatf-4)	750	Solid	1000	35	9,500	12 × 01	200	2003
Ghauri (Hatf-5) (North Korean Nodong-1)	1250	Liquid	700	12-35	15,850	15.9 × 1.35	2500	2003
Shaheen-2 and 3 (Hatf-6)	1500-2000	Solid	700	15-35	23,600	17.2 × 1.4	350	2014
(Chinese M-18)	2750	Solid	700	MIRV	NK	19.3 × 1.4	NK	Under development
Babur (Hatf-7)	350-700	–	450	10-35	1,500	6.2 × 52	350	2010
Ra'ad (Hatf-8)	550-600	–	500	NK	1,100	4.85 × 5	NK	2007
Nasr (Hatf-9)	60	Solid	400	NK	1,200	06 × 4	–	Under development

Source: Available at www.missilethreat.csis.org/

Islamabad and National Engineering and Scientific Commission (NESCOM) is also the missile manufacturing entity working under the administrative control of SPD.[10] The present inventory of Pakistani missiles is given in Table 1.

Command and Control

The National Command Authority (NCA) came into being in February 2000 for integrating a command and control systems of nuclear weapons. The NCA is chaired by the Prime Minister and includes Ministers of Foreign Affairs, defence, interior, and finance besides the Chairman of Joint Chiefs of Staff and chiefs of the three services as per the NCA Act of 2010. The NCA is a three-tier structure and operates through two committees, namely, the Employment Control Committee (ECC) and the Development Control Committee (DCC). The ECC is the main policy and decision-making organ of NCA. Its functions include establishing command and control system over the use of nuclear weapons. The DCC exercises technical, administrative, and financial control over all strategic nuclear organisations.

The Secretariat of the NCA is the SPD which is the second tier and the single authority with day-to-day oversight of the nuclear sector.[11] Its functions include formulating nuclear policy, strategy, and doctrine; developing a nuclear chain of command; and formulating operational plans for movement, deployment, and use of nuclear weapons. SPD is headed by a Lieutenant-General from the Pakistan Army and is responsible for the protection of the nuclear assets. Thus, de-facto, the nuclear weapons and sites are under the control of the Pakistan Army. SPD's security division is responsible for the external and internal security of all nuclear installations, sites, and assets. The third tier is the services strategic forces command. The Army Strategic Force Command is responsible for ballistic and cruise missiles while the Air Force Strategic Command operates the aircraft capable of delivering nuclear warheads. The Naval Strategic Force Command was formally established on May 19, 2012 and is likely to develop a sea-based nuclear deterrent in the future, which would guarantee the second strike capability.[12]

Security Concerns

Since 1998 when Pakistan carried out nuclear explosions, there have been worldwide concerns on the safety of nuclear weapons as increasing radicalisation and close ties of the Pakistan Army with Taliban and Al Qaeda have led to fears of nuclear weapons or technology falling into terrorist hands. The 2004 revelations of the international proliferation network run by Dr AQ Khan and his subsequent national pardon by General Musharraf indicated that the proliferation could not have been undertaken without Pakistan Army's concurrence. Also, Sultan

Bashiruddin Mahmood, the former Director-General of Pakistan Atomic Energy Commission (PAEC), and Majeed Ali, the former senior scientist in PAEC were arrested in October 2001 on suspicion of acquiring a nuclear device for Al Qaeda and the Taliban strengthens the likelihood of proliferation of nuclear weapons. Though Pakistan authorities claimed that both scientists lacked the know-how to build a nuclear weapon, Mahmood was a Project Director during 1998 explosions and had headed the Khushab nuclear plant till 1999 whereas Majeed was a technical director at Pakistan's main nuclear design facility.[13]

A major concern in the development of tactical nuclear weapons relates to challenges if Pakistan intends to use them early on the battlefield. The first aspect is their physical security as the warhead must be mated with the delivery system and deployed close to the battlefield due to the short range of Nasr missile. Also, given the fluid nature of the battle, the decision-making authority may have to be delegated to the local commander. This may lead to unauthorised use or even physical theft given the increased radicalisation within Pakistan Army.[14]

TNWs pose a serious threat due to their security and decision making authority with the local commander. This may lead to unauthorised use or physical theft

Conclusion

Pakistan is way behind India economically or in defence expenditure. Its Gross Domestic Product (GDP) is the US $263 billion compared to the US $2,709 billion of India. Pakistan's defence expenditure was the US $11 billion in 2020 compared to the US $65.8 billion of India. Its conventional Armed Forces are about half of India, hence the only way Pakistan can seek parity is with the threat of nuclear weapons. In its quest to achieve minimum credible deterrence, Pakistan is developing nuclear weapons at a fast pace, terror threat remains a challenge as previous examples of PNS Mehran and attempted hijacking of a naval ship in September 2014 pointed to insider assistance. The radicalisation of Pakistani society is not limited to the tribal areas but is now a countrywide phenomenon. Its close links with the Taliban and rogue elements within can lead to a nuclear weapon in the hands of terrorists. Also, the thought of "Use it or Lose it" may lead to premature use of tactical nuclear weapons leading to a catastrophic tragedy in the sub-continent.

Colonel **Ashwani Gupta** is the former Senior Fellow CLAWS. Views expressed are personal.

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SCHOLAR WARRIOR

SECTION IV

MILITARY HISTORY AND MOTIVATION

CENTRE FOR LAND WARFARE STUDIES

The Battle of Pirganj: The Key Battle in North-Western Sector in Erstwhile East Pakistan

RS THAKUR

Background

The year 1971 began with the emergence of a political stalemate in Pakistan when Awami League won a clear majority in the first general elections held on December 7, 1970 and President, General Yahya Khan and Zulfikar Ali Bhutto refused to share power with Mujibur Rehman, the leader of the single largest party.[1,2] Consequently, on March 25, 1971, General Yahya Khan commenced a military crackdown, called "Operation Searchlight" to crush the civilian opposition in East Pakistan by the use of force. For the same purpose, the deployment of Pakistan forces was increased from just one infantry division strength to three regular and two adhoc infantry divisions.[3] From April 1971 to October 1971, while thousands of Bengalis were massacred, about 8 million persons from East Pakistan had migrated to India.

In the second half of 1971, Pakistan Army was busy preparing to tackle the Indian offensive, should India decide to intervene in East Pakistan. Lieutenant-General AAK Niazi, the Pakistani Eastern Army Commander had allocated his forces based on the "fortress defence" concept centered on ten important towns. It was in this situation that the Eastern Command, under Lieutenant-General JS Arora was tasked to undertake offensives in North-Western, South-Western, and Eastern sectors of East Pakistan to destroy the Pakistani forces and occupy most of the territory there.

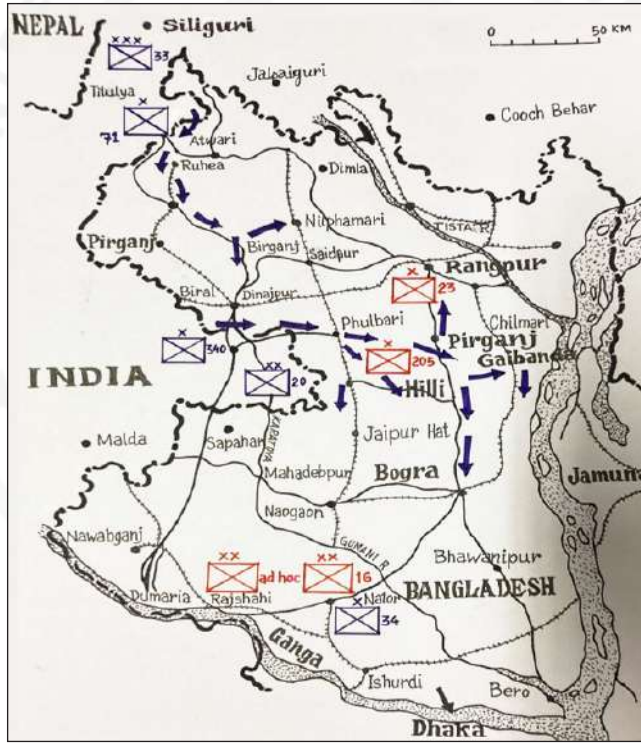
Situation in the North-Western Sector

The North-Western Sector which was enclosed on the East by the Jamuna (also called the Brahmaputra) river and on the South by Padma (Ganga) river, was

of much importance to India due to its proximity to the narrow Siliguri Corridor. It also housed the largest chunk of the Pakistani Army including the bulk of their armour. The Sector covered an area nearly one-third of East Pakistan and 16 Infantry Division commanded by Major General Nazar Hussain Shah, with his Headquarters (HQ) located at Rangpur was tasked to defend it.[4] On the Indian side, 33 Corps, under Lieutenant-General ML Thapan was tasked to carry out operations in the North-Western sector. It is in this sector that the Battle of Pirganj was fought by 2/5 GR and elements of 69 Armoured Regiment.

North Western Sector enclosed by Rivers Jamuna and Padma was of importance to India as it housed the largest chunk of Pakistani Army including bulk of their armour

North Western Sector



The Battle of Pirganj: Overall Plan

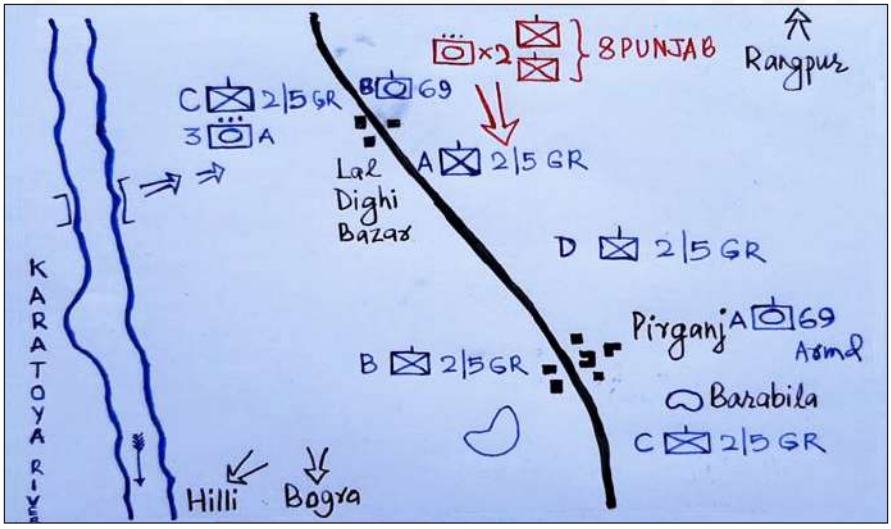
20 Mountain Division under Major General Lachhman Singh Lehl, an Artillery Officer, who had earlier been awarded Vir Chakra for gallantry during the 1947/48

conflict, was tasked to first secure the Hilli-Gaibanda axis which lay exactly in the middle of the Sector and later capture Bogra,[5] the main communication centre. 340 Mountain Brigade, with Brigadier Joginder Singh Bakshi at its helm, was placed under the command of 20 Mountain Division and given the responsibility to advance towards Pirganj, Palashbari, and Gaibanda. The Brigade Group comprised 2/5 GR (FF), 5/11 GR, 6 GUARDS, 63 Cavalry less two squadrons, "A" Squadron, 69 Armoured Regiment, two artillery regiments, one medium regiment less battery, two light batteries, and two engineer regiments. 2/5 GR (FF) which was commanded by Lieutenant Colonel FN Billimoria (who later rose to the rank of Lieutenant-General and became the 15th GOC-in-C of Central Command) was placed under the command of 340 Mountain Brigade. One combat group of 2/5 GR and "A" Squadron, 69 Armoured Regiment were tasked to establish a road block on the other side of Karatoya river at Pirganj, to cut off the all-weather Rangpur-Bogra road axis.

Advance to Pirganj

In the morning of December 7, the elements of the 340 Mountain Brigade started the advance from the bridgehead over the Karatoya river.[6] One squadron of 69 Armoured Regiment led the advance and the A Squadron, which was following up, carried 2/5 GR on tanks. The combat group made quick progress[7] and effectively engaged several RCL jeeps of the enemy's recce and support batallion on its way to Pirganj. In the afternoon of December 7, 1971 at about 16:45 hours,

The Battle of Pirganj: December 7-8, 1971



"C" Company, 2/5 Gorkha Rifles (FF) mounted on the PT 76 tanks of No 3 Troop of "A" Squadron of 69 Armoured Regiment were approaching the highway in the vicinity of Lal Dighi Bazar. Suddenly, they sighted few vehicles about 500 metre away coming from the direction of Rangpur along the Rangpur-Pirganj road and the tanks opened fire at them.[8] As a result of the fire, two Pakistani vehicles were hit but others turned and sped back to Rangpur. The occupants of the damaged vehicles quickly jumped out and ran away towards the high embankment.[9] The troop commander, Lieutenant Sunder Singh immediately reported the movement to his Squadron Commander and the Commanding Officer, Lieutenant Colonel Pavittar Singh, and suggested that he should close in with the enemy but was asked to speedily continue his advance to Pirganj and establish a roadblock at the earliest in conjunction with 2/5 GR. Lieutenant Sunder Singh obeyed the orders. His troop turned South and proceeded towards the objective. Little did he realise at that moment that the occupants of the vehicles included none other than the GOC 16 Infantry Division, Major General Shah, Commander 203 Infantry Brigade, Brigadier Tajammul Hussain Malik, and two more officers.

Establishment of Roadblock at Pirganj

The "C" Company moved ahead, cleared the opposition at Pirganj without a major fight and took up a position astride the road South of Pirganj.[10] On seeing the tanks of "A" Squadron going into a harbour 500 metre East of Pirganj, few enemy troops fled the town. "A" Company of 2/5 Gorkha Rifles led by Major Jagota established a roadblock North of Pirganj near Lal Diggi Bazar. In the South, the roadblock was established close to Barabila Lake by the No 7 platoon of "C" Company, which was commanded by Naib Subedar Sher Bahadur Thapa and was located to the farthest extent of the roadblock towards Bogra. "B" and "D" companies took up positions on either side of Pirganj. "B' Squadron of 69 Armoured Regiment reached Lal Dighi Bazar and established a roadblock on the road, north of the Bazar.[11] 2/5 Gorkha Rifles with its HQ at Pirganj was, by the last light of December 7, well-positioned to defend Pirganj and to prevent any movement through the area.

Response and Counterattack by Pakistan

Meanwhile from the site where the two Pakistani vehicles lay abandoned, Major General Shah and Brigadier Malik and some of their men quickly disappeared into the cover of the trees, but the buddy of Major General Shah and another Pakistani jawan were captured. It was from their interrogation that the identity of the escapees was revealed to the Indian Army. Subsequently, both the senior

Pakistani officers remained hidden in the trees for the bulk of the night and evaded capture. Lieutenant-General Niazi, after realising that the GOC 16 Infantry Division was missing, acted swiftly. He sent Major General Jamshed, GOC 39 Adhoc Divison to take over the command of the 16 Infantry Division. However, Major General Jamshed returned to Dacca after two hours of flying as his helicopter could not locate the HQ 16 Infantry Division location at night. As such, Major General Shah managed to reach the division HQ soon after.

Later, when Brigadier Tajammul reached Bogra he reprimanded Lieutenant Colonel Sultan Mahmood, CO 32 BALUCH, for not effectively safeguarding the lines of communication of the division. With a view to avoiding the splitting of their defenses, two Pakistani task forces launched a counterattack—, one each from the North and the other from the South.[12] The attack in the North by two companies of 8 PUNJAB and two troops of armour had petered out by 08:00 hours on December 8. However, the attack in the South, by 32 BALUCH less two companies, led by their CO, Lieutenant Colonel Sultan Mahmood lasted longer. While the attack was in progress, two companies of 32 BALUCH along with their two medium machine-gun posts, were attempting to isolate No 7 platoon locality. The Gorkhas rushed the first machine-gun post, killed the crew, and damaged the gun. At this moment, Captain JN Sud rushed to the second machine gun post and killed five soldiers of 32 BALUCH. He, however, also died in the fight and was awarded Vir Chakra for this gallant act. In the early hours of December 8, Lieutenant Colonel Sultan Mahmood was killed by Rifleman Man Bahadur Gurung in close combat, who also died in the fight. In addition, eleven other ranks of 32 BALUCH died, and another 45 Pakistanis were wounded. On the Indian side, Major Bharpur Singh and 2/Lieutenant Varughese were wounded while CHM Duwa Gurung, L/Nk Tek Bahadur Thapa, and Rfn Nand Prasasd Pun were killed.

Importance of the Battle of Pirganj

The successful establishment of a roadblock at Pirganj resulted in breaching the main line of communication of the 16 Infantry Division and thereby isolating the forces at Rangpur (23 Infantry Brigade) in the North from the force at Bogra (205 Infantry Brigade) to the South. This battle divided the defenses of the 16 Infantry Division and hastened the capture of Bogra. It is, however, highlighted that the Battle of Hilli (a small town to the South West of Pirganj) fought in the same sector witnessed the greater intensity of the fight and is renowned for the same.[13]

Battle of Pirgunj divided the defences of Pakistan 16 Infantry Division and hastened capture of Bogra

Surrender Ceremony at Bogra

On December 16, 1971, a surrender ceremony was held at Bogra, where Major General Lehl, GOC 20 Mountain Division accepted the surrender of Major General Shah, GOC 16 Infantry Division, thus marking the end of hostilities in this Sector. After the completion of the ceremony, Lieutenant Colonel Pavittar Singh, CO 69 Armoured Regiment took Lieutenant Sunder to Major General Shah and told him that his life was saved by this young officer on the night of December 7.[14] To this General Shah replied that throughout that night, he was praying to Allah for his safety, however, now he wished if Allah had disregarded his prayers. In that case, he would have been saved from the humiliation of participating in the surrender ceremony.

Lessons Learnt

- *Employment of Manoeuvre Tactics by Using Infantry Mounted on Tanks:* 340 Mountain Brigade decided to discard the Second World War concepts and instead adopted the tactics of using 2/5 GR mounted on the PT 76 tanks of 69 Armoured Regiment. This provided requisite mobility by overcoming the constraints of terrain and also momentum thereby paid rich dividends on the battlefield. The arrival of the combat group at the roadblock site at Pirganj, two days earlier than expected by the enemy, resulted in its easy capture and subsequent build-up.
- *Junior Leadership in Battle Actions:* The junior leaders of both 2/5 GR and 69 Armoured Regiment stood the test of the battlefield during the establishment of the roadblock as well as the fierce counter-attack by Pakistani troops. Their responses to emerging situations were swift and correct. In the vicious hand-to-hand fight, the Gorkhas excelled themselves and got the better of the adversary. The young officers led from the front and identified with their men by setting a personal example.
- *Fatigue Due to Sustained Deployment and Hostile Environment:* The Pakistani troops deployed in East Pakistan since 26 March 26, 1971, were operating in a hostile environment. In addition, uncertainty over their return to West Pakistan coupled with the sense of isolation from their homes and increasing guerrilla activities by Mukti Bahini led to increased mental stress and lowered their morale.

Conclusion

The Battle of Pirganj was indeed a significant battle of the Indo-Pakistan War of 1971 that severely restrained the Pakistani response in the North-Western sector by splitting their forces into two halves. It proved the superiority of the tactics

employed by the Indian Army elements as was evident from the outcomes of various tactical actions in and around Pirganj.*

Major General (**Dr.**) **RS Thakur** is the former GOC Uttarakhand Sub-Area. Views expressed are personal.

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14. I have discussed this incident with the officer, Colonel Sunder Singh, SM, Retired, on June 13, 2021 and he gave me a detailed account of the events of that fateful day.

* To give a true historical account, free of distortion and bias, the author referred to the narratives given by the various Indian authors and also spoke to the witnesses of that era, who willingly shared the details. Reference was also made to the narratives given out by the Pakistani authors to give an all-encompassing account. The author acknowledges the useful inputs/suggestions by Colonel Vishal Goindi, 69 Armoured Regiment, Colonel Vipul Saini, 84 Armoured Regiment, and Colonel Nikhil Kapoor of 129 AD Regiment.

Battle of Wanzal (15/16 Night in December 1971)

RAJINDER SINGH

Introduction

On December 3, 1971, when the Indo-Pak war started, 3 Bihar was part of the 104 Infantry Brigade, commanded by the then Brigadier MML Ghai. The brigade was deployed in the Tangdhar-Tithwal sector of North Kashmir. The Infantry Brigade had four Infantry Battalions and a Border Security Force (BSF) Battalion, deployed as under:

- 6 Raj Rif, deployed in Chhamkot-Tithwal sector with Battalion Headquarter (HQ) located at Chhamkot.
- 9 Sikh, deployed in Naugaon sector, the other side of the Lipa Valley.
- 3 Bihar, deployed on Kulsuri Ridge in 13 platoon posts such as Ravan, Vayu, Gonda, Ajit, etc. Battalion HQ was at Tangdhar, along with Brigade HQ.
- 8 Raj Rif, Brigade Reserve, located at Karnah, High Ground.
- BSF Battalion, deployed on the Sari Ridge, in platoon posts, with Battalion HQ at Baghbela.
- Brigade HQ and Battalion Rear echelons at Chowkiwal.

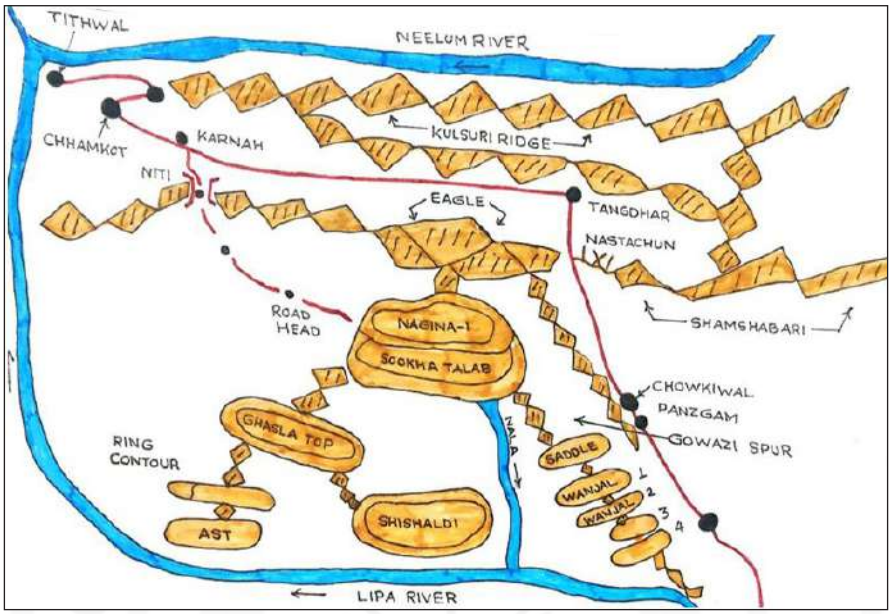
Topography

Tangdhar-Tithwal valley is enclosed by Kulsuri Ridge in the north as well as the west. Towards the east and the south was Shamshabari Range (Figure 1 and Map 1). On the right and south-east of Nastachun Pass, as one looks from Tangdhar, on the Shamshabari Ridge, there is the highest rocky feature. At that time, it was known as "Eagle".

Defensive to Offensive Role

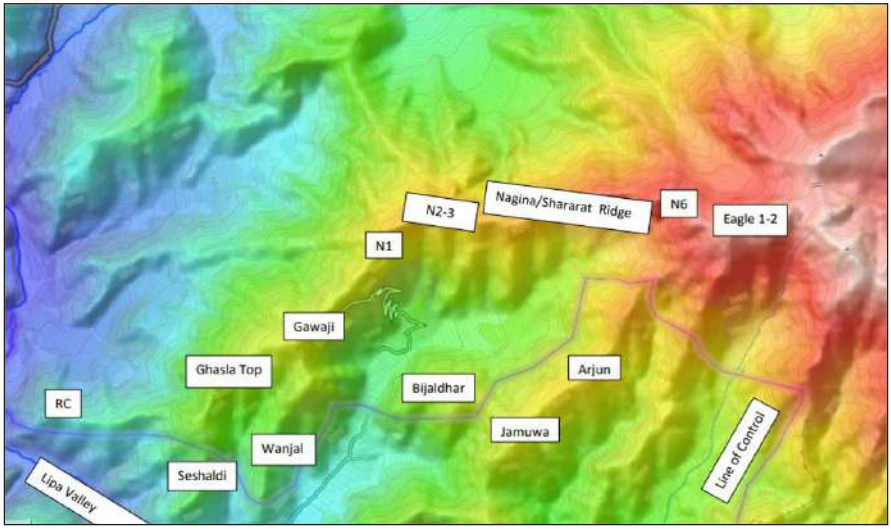
When the 1971 Indo-Pak War started, 3 Bihar was deployed in a defensive role on the Kulsuri Ridge, in 13 platoon posts, such as Vayu, Ravan, Gonda, Ajit, etc. The Battalion HQ was located at Tangdhar along with the Brigade HQ. The turn

Figure 1: Tangdhar-Tithwal Sector and Lipa Valley



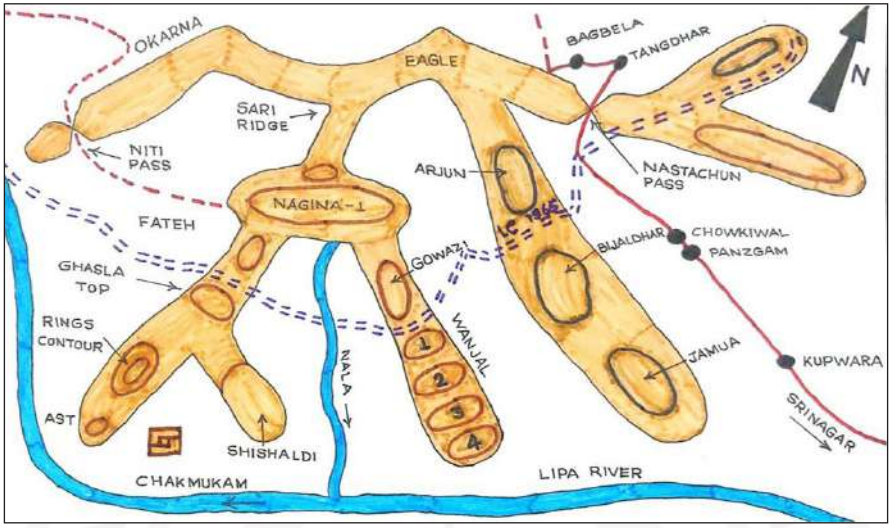
Source: Author's own

Map 1: Sari Ridge, Wanjal, Ring Contour (RC) and Eagle Post



Source: Google Maps, Annotation by Author

Figure 2: Sari Ridge, Wanjal and Lipa Valley



Source: Author's own

of events moved so fast that in the second week of the War, 3 Bihar was switched from defensive to the limited offensive role. This was due to the failure of an earlier attack by the brigade on the Shishaldi feature of Lipa Valley. Post the failure, 3 Bihar needed to capture Wanjal, an adjoining ridge line of Shishaldi. The feature was 1,400 metre long and around 600 metre wide. This feature had four bumps, named Wanjal 1 to Wanjal 4. Wanjal 1 and 2 almost merged, as one defensive locality. Wanjal 3 was some 25-35 metre away from Wanjal 2, and Wanjal 4 was some 100-150 metre away from Wanjal 3.

On December 13, 1971, Commanding Officer (CO) 3 Bihar gave orders to the Battalion to assemble at Forward Assembly Area (FAA) by the first Light of December 15, 1971. Nagina 1 (Shararat) of the Sari Ridge was designated as FAA. It meant vacating Kulsuri Ridge and concentrating at Tangdhar Battalion base by the early morning of December 14, 1971. The Battalion was relieved from defended localities by the reserve battalion and by the early morning on December 15, 1971, it had arrived at FAA at Nagina 1.

Operational Briefing and Plan I

In the afternoon of December 15, CO gave Operational Briefing to "O" Group from the forward most bunker of Nagina 1. The estimated strength of the enemy at Wanjal, as given by Brigade HQ, was approximately a company minus, deployed in platoon blobs each at Wanjal 1 and 2. The adopted approach was along the Gowazi ridge line, which was expected to be heavily mined at the Gowazi Saddle.

In addition, Gowazi Spur was well covered with enemy Artillery fire. It was also expected to be covered with heavy automatic fire from Wanjal 1.

The Plan

The plan was as follows:

- ***No Move Before:*** 8 PM, December 15, 1971.
- ***Forming Up Place (FUP):*** 200 metre short of Gowazi saddle. To be secured by "B" Company by 10 PM on December 15, 1971.
- ***H Hour*** (Time of Attack): 11 PM, on December 15, 1971.
- ***Attack in Company Echelons in Three Phases:***
  - *Phase 1*
    - "D" Company to capture Wanjal 1 no later than 1.30 AM on December 16.
    - Reserve: "C" Company.
  - *Phase 2*
    - "A" Company to capture Wanjal 2 no later than 3.30 AM on December 16.
    - Reserve: "B" Company.
  - Phase 3
    - "C" Company to secure Wanjal 3 by 5.30 AM on December 16.
    - Reserve: "D" Company.
- Commando Platoon under 2 Lieutenant (Lt) AD Singh and beefed up by Commando Platoon of 6 Raj Rif, was tasked to establish a road block between Wanjal 3 and Wanjal 4 by 11.30 PM on December 15. An Artillery OP, Captain Pathak from 3 Field Regiment was allotted to provide fire support to the Commando Platoon. Link up with Commando Platoon to be established by 6 AM on December 16.
- Re-organisation group to fetch by 8 AM on December 16.
- Control HQ under 2IC, Major VP Sachdeva at FUP to coordinate the launch of echelons. Battalion HQ with CO at Ghasla Top and the Mortar Platoon was at Nagina.
- Fire support was coordinated by 3 Field Regiment affiliated with the Brigade.

Conduct of Operation

"B" Company left FAA exactly at 8 PM. It had to move in a single file, on a dark night and a rocky Gowazi Spur with limited deployability. The FUP was secured by 10 PM but exactly at that time, the enemy began shelling the Gowazi Spur, which led to the death of two jawans due to heavy shelling. Earlier in the day, two jawans had died due to enemy shelling of Nagina 1 (FAA). The rest of the

Battalion under 2IC, Major VP Sachdeva, following "B" Company, half an hour later, reached the FUP by 10.45 PM. Leading Company had a number of casualties due to enemy shelling.

Commando Platoon under 2 Lt AD Singh, along with affiliated Commando Platoon of 6 Raj Rif and Artillery OP left Nagina-1 at 8 PM. Their route was via Bijaldhar village. As they came closer to the Village, they were fired upon from the Village, which may have been early warning elements. Artillery OP and the Commando Platoon of 6 Raj Rif were pinned down there. However, 2 Lt AD Singh carried on with his Platoon to his road block site between Wanjal 3 and 4.

Progress of Attack

At 11 PM, a leading platoon of "D" Company moved from FUP but was pinned down by accurate and extensive fire as it reached the Saddle. The men of the other two platoons tried heroically to make way from the other direction but were caught in a hastily laid mine field. It seems that anti-pers mines were just strewn around in the Saddle and Gowazi Spur. There were extensive mine casualties and as a result attacking echelon was pinned down. 22 men of "D" Company had been injured by mines and artillery shelling.

Attack was Thus Stalled!

The Alternate Approach

As further progress of the attack was held up, the leading Platoon Commander, 2 Lt IN Jha, realised the gravity of the situation. He quickly carried out a mental appreciation and with some five to seven jawans, slid down into "Wanjal Nallah", on the right of Gowazi Spur. It was a right hook, of a few daring men, under 2 Lt IN Jha to get behind Wanjal 1. The men who accompanied him were Naik Ram Chander Pandey, Sepoy Dharam Nath Singh, a reservist, Naik Raj Roop Bhagat, and two-three more men. Reservist, Raj Roop Bhaga, had joined the Unit just 10-15 days before the War.

After 45 minutes of an arduous journey through Wanjal Nallah, men under 2Lt IN Jha turned towards Wanjal feature. It took them another 30 minutes to make an arduous climb from the rear of Wanjal 1. Surprisingly they landed on the bunker from where machine gun fire was holding up the attack. 2 Lt IN Jha, Naik Raj Roop Bhagat, Sepoy Dharam Nath Singh, and Naik Ram Chander Pandey crawled towards the loophole of the Bunker that was firing relentlessly. While Naik Ram Chander Pandey threw the grenade in the Bunker, Naik Raj Roop Bhagat pulled out the barrel of a machine gun. While doing so, he got a full burst on his chest and achieved martyrdom. 2 Lt IN Jha, too, got shot in the arm but he continued to lead his men.

Through the daring action of these men, the machine gun was silenced. Enemy, badly wounded, in the Bunker tried to escape. Two of them were engaged by 2 Lt IN Jha and Sepoy Dharam Nath Singh in a hand-to-hand fight and were killed. With the silencing of automatic fire, Major SP Bakshi, with the rest of his men rushed through the saddle to Wanjal 1. In this melee, most men became casualties due to extensive anti-personnel mines strewn in the saddle. Enemy trying to escape were engaged in close combat and most of them were killed. Around 1:45 AM, Wanjal 1 was captured and in the hands of "D" Company.

The Attack Continues

As Wanjal 1 was captured, 2 IC, Major VP Sachdeva launched "A" Company under Major CM Dubey to capture Wanjal 2. (This was part of Wanjal 1.) As the leading elements of "A" Company approached Wanjal 2, they were surprised to note that the enemy soldiers had vacated it. There was one bunker, one overhead store shelter, along with a few freshly dug trenches of two to three men, and a communication trench. Fleeing enemy soldiers had thrown their arms, ammunition, and food items. "A" Company had no problem in capturing it. By 2:30 AM on December 16, 1971, Wanjal 2 was with "A" Company.

At the same time, Major CM Dubey immediately passed the information of fleeing enemy to 2 IC at FUP, who launched the third echelon of "C" Company under Major SN Ojha.

Wanjal 3 was vacant. Other than enemy shelling, there was no enemy there. "C" Company, under Major SN Ojha quickly organised and got down to digging of trenches to be prepared for any counter-attack. Thus, by 3:30 hours on December 16, 1971, Wanjal 1, 2, and 3 were with 3 Bihar.

Commando Platoon Actions

In the meanwhile, Commando Platoon, under 2 Lt AD Singh had established a road block between Wanjal 3 and 4 by 11.30 PM on December 15, 1971. Having tactically deployed 2 Lt AD Singh was ready to block reinforcement attempts by the enemy. At around 2:10 AM on December 16, they heard a group of men running towards them. On orders of 2 Lt AD Singh, the fire was opened towards the area from where voices were heard. Voices went silent. This probably had created fear amongst enemy troops at Wanjal 2 and 3 and they panicked. So, men decided to run away, thinking they have been cut off by a surprise attack from the rear. It seems there was no commander of enemy troops on the Wanjal feature.

After 15–20 minutes of firing by Commando Platoon, they heard someone shouting in Punjabi, *Oye Saalo, fire na karo, main bhi Pakistani haan* (You idiots do not fire. I am also a Pakistani).

2 Lt AD Singh responded in Punjabi, *Aa ja, Aa ja fir* (come over, come over then). As he came closer to the "block site", 2 Lt AD Singh sprang upon him and overpowered him. Thus, a PoW had come into Commando Platoon's Griffith.

After the capture of Wanjal 3, Major VP Sachdeva launched the Adhoc Company under Captain HL Manchanda and 2 Lt SS Sohi to link up with Commando Platoon between Wanjal 3 and 4, which was completed by 5 AM on December 16. At the same time he moved with the re-organisation stores and by 6 AM, 3 Bihar was in full control of the Wanjal feature.

Casualties: Enemy and Own

Pakistan lost 18 jawans and an unknown number were injured, who would have been evacuated. One young soldier, while escaping from Wanjal 2 was captured by Commando Platoon. On the Indian side, 3 Bihar suffered 14 casualties. Two were also killed at Nagina-1, during enemy shelling, making 16 martyrs of this Operation. Names of 16 martyrs are engraved on the War Memorial in Tangdhar base of the Battalion. One officer and 58 ORs were wounded primarily due to mines. Most of them had their legs/feet blown. Out of 58, 22 were wounded during the shelling of Gowazi Spur by the enemy.

Mailed Fist Through Most Obvious Approach

It is no doubt that heavy casualties suffered by 3 Bihar were due to the "Sledge Hammer" approach to ensure victory at any cost. The attack along with a most expected approach, well covered by the enemy, both by artillery fire and automatic fire, contributed towards an unusual number of casualties against a weaker enemy. "Victory" at any cost, was the principal theme of Wanjal Attack.

Attack by 3 Bihar along the most expected approach, covered by artillery and automatic fire led to large number of casualties against a weaker enemy

Honours and Awards

The gallantry awards bestowed upon 3 Bihar were not commensurate with the territorial gains of the victory at Wanjal and the fact that Wanjal victory was the only major victory in the entire 19 Infantry Division. 3 Bihar had got one Sena Medal (Naik Ram Chandra Pandey) and three Mentioned In Dispatches (MIDs), which are minuscule as compared to sacrifices made by the Unit. MIDs were awarded to 2 Lt AD Singh, Naib Subedar Inder Dev Singh, and Sepoy Dharam Nath Singh. An explanation is generally given that this victory came almost at the time, when cease-fire had taken place. Another reason extended was that there

was a delay in forwarding and processing of citations at the Battalion and Brigade level.

As a result, some very deserving candidates such as Major SP Bakshi, 2 Lt IN Jha, and Naik Raj Roop Bhagat were left out of their share in the gallantry awards pie. Adding salt to the wounds is the fact that Artillery OP, Captain Pathak, who was with the Commando Platoon walked away with Vir Chakra (VrC), the third-highest gallantry award.

Achievement and Impact

Wanjal is a massive feature protruding into the heart of Lipa Valley. It was 1,400 metre by 600 metre. Its capture roughly added seven square kilometre of hard assets to the nation. This feature along with Ghasla top-RC ridge line, towards the south, sandwiched Shishaldi and makes it untenable.

Capture of Wanjal, a massive feature protruding into the heart of Lipa Valley added seven sq kms of territory to India

In the battle of Wanjal, 3 Bihar had captured two Light Machine Guns, two Rifles, one Rocket Launcher, one 2-inch Mortar, one Wireless Set, and a large number of ration stores. Some of the main items of ammunition captured were 22,000 point 303 cartridges, 118 anti-personnel mines, 23 2-inch mortar bombs, 43 grenades, and 16 rockets.

Important Lessons

- A well-trained infantry Battalion should have the flexibility to switch to different roles at short notice as shown by 3 Bihar in December 1971. The Battalion had no time to do any training or carry out proper reconnaissance of the objective.
- *When things go wrong, a few daring men matter*. This is the most important lesson of the Battle of Wanjal. An accurate automatic fire and extensive mine field along the most obvious approach had stalled the entire Battalion, within 100 metre from FUP. It was left to 2 Lt IN Jha and his few daring men who surprised the enemy and charged from the rear.
- *A Failure should never be reinforced*. The capture of Wanjal as a fresh objective was the right decision. However, the decision to attack it frontally via the most likely approach was not an appropriate one. Pitfalls of adopting most obvious and most expected approach, for "victory at any cost", are obvious, as casualties suffered were exceptionally high.
- *Faulty plans too can lead to victory*, if officers and men are well-trained. Plan to attack along a most expected approach was faulty but those who executed it were soldiers of steeled mind.

- *Recce of the objective is mandatory*. It is mandatory to allow time for subordinate commanders to carry out their recce of the objective to choose a proper option of attack. It seems that CO and Brigade Commander raced against the time. They had no luxury of additional day because the war in East Pakistan was almost over.

Conclusion

Victory at Wanjal, by 3 Bihar was unprecedented against all odds. Battalion had been pushed into the offensive role within two days of its vacating defensive localities. No time was allowed for a recce of the objective or carrying out some coordination for the attack. Though the Battalion suffered unwanted causalities, yet the size of victory in the entire 19 Infantry Division was much bigger than any other gains. As mentioned earlier, an area of seven square kilometre was added to the national territory. It can only be said that though not well-recognized by appropriate gallantry awards, this was an operation very well-executed on a faulty plan. To say the least, well-trained and motivated soldiers can switch from defensive to offensive mode with the twinkle of an eye as proven by soldiers of 3 Bihar and the *Capture of Wanjal continues to serve like a dagger drawn into the heart of Lipa Valley.*

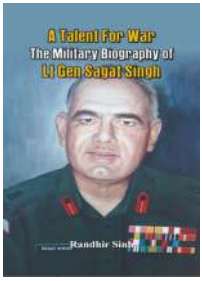
Colonel **Rajinder Singh (Retd),** was part of "B" Company during the Operation and has provided detailed insight. Views expressed are personal.

SCHOLAR WARRIOR

SECTION V

COMMENTARIES AND BOOK REVIEWS

CENTRE FOR LAND WARFARE STUDIES



A Talent for War
The Military Biography of Lt Gen Sagat Singh

Randhir Sinh

Vij Books, 2013
Rs 850, pp. 332
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On December 9, 1971, during the India Pakistan war, Lieutenant General Sagat Singh, the General Officer Commanding of the Indian Army's 4 Corps stood at the edge of history. The mammoth Meghna river lay between an advancing Indian Army and a probable victory. The Pakistani Army, having destroyed the Ashuganj bridge, had effectively ruled out the advance of the Indian Army over the 4,000 feet wide river. The General thought otherwise and decided to use heliborne operations to take a brigade across the river – an unprecedented historical action that would change the course of the war overnight.

The crossing of Meghna, against all odds, was one of the pivotal moments that decisively swung the advantage in India's favour and resulted in the capture of Dhaka. The objective laid out by the Army leadership for 4 Corps was to secure the area east of river Meghna. The situation, however, had changed at the political level. President Nixon, the then US President, a staunch ally of Pakistan, had stepped up America's pressure on India and was threatening to interfere in the war. Hence, India needed to finish the war quickly and thus, avoid a protracted tussle. Lieutenant General Sagat believed that the capture of Dhaka was critical to the outcome of the war. There were several Indian generals and military leaders who combined to achieve victory for India in that war. However, in the context of its outcome, Lieutenant General Sagat's decision to cross the Meghna and surprise the Pakistani Army was of critical significance. The war was over by December 16—a week after the Meghna was crossed by Sagat's forces. Noted American political scientist John Mearsheimer called it India's blitzkrieg.

Major General Randhir Sinh has penned an authoritative and compelling biography of one of the greatest generals of war the world has seen in the century. This action in the 1971 India-Pakistan war, which was the coup de grace in an illustrious and intriguing career of Lieutenant General Sagat, is described through a lucid narration in *A Talent for War*. As the General's ADC during the war, Randhir's close understanding of the General's personality and thinking is apparent in his observations in the book. The Author believes "his (Sagat's) knowledge of operational war was perhaps without parallel". For a military leader who had never lost a war, the Author believes "he can be compared with the best generals of the first and second world wars."

Major General Randhir has put in commendable work in bringing out multiple facets of General's personality in each of the wars and campaigns in the book. What makes for a cherished reading is the engaging, narrative style of the Author that keeps the cadence even and the pace alive. The Author uses anecdotes mined from different sources to pepper interesting exchanges and incidents involving the central character. The book begins with the journey of the protagonist in his younger days with the Bikaner State Army. In the Bikaner State Forces, there was no proper accommodation available and the young Major Sagat, as Brigade Major, was living in a tent. One day, when Maharaja Sadul Singh asked him why he had not gotten married, the young man replied that it would be criminal on his part if he brought a bride into tented accommodation. The Maharaja immediately ordered a bungalow to be built—which is where Major Sagat brought his newly married wife.

The liberation of Goa, one of the underrated military actions in Indian history post-independence (more so because it was projected as police action rather than military action), reveals the impact of Sagat as a Brigadier on the operations and people. The Author recalls how Sagat had managed to rile up the Portuguese premier Salazar so much that he declared an award of US $10,000 to anyone who could help apprehend him.

Randhir describes in scrupulous detail how Sagat led the 50 Para Brigade and conducted offensive advance operations during Operation Vijay which led to the liberation of Goa. The Author pulls no punches while also critiquing the tardiness of 17 Mountain Division during the conduct of operations. "The lack of momentum and other inadequacies should have raised the hackles of the leadership. Instead, they were willing to bask in swift victory over the demoralised Portuguese Army," points out Randhir, hinting at India's subsequent disappointing show in the 1962 Sino-Indian war.

Thereafter, during the 1960s, Sagat's career ran parallel to the revival and rise of the Indian Army after the setbacks in 1962. The book builds up the tensions between India and China at Nathu La in Sikkim and describes Sagat's role in rebuffing Chinese ambitions in the period leading up to 1967. In the course of the narration of the Nathu La battle, the Author focuses on Sagat's leadership that broke the myth of Chinese invincibility. Five years after the Indian army had suffered substantial setbacks against the Chinese in the war, Sagat restored the nation's pride through sterling leadership in thwarting the People's Liberation Army (PLA) in 1967. The Author further states that the leadership wasn't too pleased with him after the action at Nathu La, but doesn't elaborate further. It would have helped to understand more about the reaction of his bosses towards Sagat's ingenuity and heroics at Nathu La and Cho La. Another area the book could have examined further was Sagat's favourable relations with the Sikkim

royalty, despite the latter's difficult relations with the Indian bureaucracy and the political class. Barring a couple of such omissions, the book makes for riveting reading.

The book moves adroitly into the challenges faced by Sagat in his subsequent posting in Mizoram, where the Author describes his clever handling of the insurgency. Sagat's tenure in 101 Communications Zone in Mizoram was expected to be a low-profile one. But the General wasn't one to be associated with an unremarkable tenure and thus, was instrumental in tackling the Mizo insurgency. The book describes the ingenious means used by the Indian Army such as clustering of population enclaves to contain insurgency. The chapter brings out Sagat's sensitive side, for he believed that uprooting villagers from their homes to create clusters wasn't a correct approach. He differed with Sam (Field Marshal Sam Manekshaw) on the concept but conducted the execution of the plan with utmost competence. Later, Sagat was of the view that the approach of segregating villagers was instrumental in taking on the insurgency effectively. One of the significant but underrated achievements of that tenure was his establishment of CIJW school at Variengte, a pioneering counter-insurgency school.

Lieutenant General SK Sinha, who has written the Foreword to the book, sums it up aptly:

> Lieutenant General Sagat conducted operations during the liberation of Goa, handled insurgency in Mizoram, broke the myth of ten feet tall Chinese soldiers by getting the better of them during a big skirmish in Sikkim, and provided dynamic leadership to his Corps against all odds, leading his formation from the front in the Indo-Pak War of 1971. His outstanding leadership was a major factor contributing to the unprecedented victory of the Indian Army in over a millennium.

The Author weaves painstaking research and extensive oral source commentary into a narrative style speckled with stories and experiences. The book has an extensive bibliography and footnotes, along with maps and photos that add credibility and context. Major General Randhir has done yeoman service to the cause of military history with this book, which is recommended to readers and students of history, battles, and military heroes. A few aspects stand out in the book. The Author, using his proximity to the General, can shed light on his decision-making dilemmas, preferences, and daredevilry in executing improbable objectives. In Goa, aware of the tactical realities on the ground, he led the troops from the front.

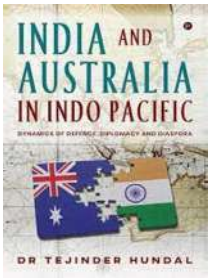
As BGS of 11 Corps, he was aware of the portents of a developing conflict and disagreed with his boss. In Sikkim, he knew of the limitations of the Indian Army against the Chinese Army and therefore, understood the importance of

dominating the Himalayan watershed. Since a lost ground could never be won back (he was proved right since Nathu La remains with India whereas China has occupied Jelep La—a feature India withdrew from under Chinese pressure). In 1971, Sagat sensed at an early stage of preparation that there was an inherent flaw in theatre plans and understood the importance of going for the jugular, which was Dhaka.

Military commanders that challenge the status quo hold thankless prospects of either having a proverbial Damocles sword over their necks in case of failure or of leaving behind an envious, grudgingly appreciative fraternity in case of success. The Author subtly indicates a comparison with General Robert Lee when he mentions the gift to Sagat by the Maharaja of Bikaner of a biography of the famed American general in the erstwhile civil war. A key aspect that Randhir doesn't shy away from documenting is the archetypal Damocles sword throughout his career: Sagat's constant differences with seniors runs the course of the book and includes several instances of such difficult relations. Using an anecdote, the Author substantiates the nuances of Sagat's relationship with his boss in 11 Corps, after which he was posted out. Whether during the Goa operations or during his interactions with Brigadier (later General and Chief of the Army Staff [COAS]) GG Bewoor over decisions at Nathu La or in the course of his relations with Lieutenant General Jagjit Aurora or while differing with the leadership's plans in Bangladesh, Sagat believed he had a firm understanding of the situation developing on the ground. More importantly, he acted on his instincts and beliefs, sometimes defying expected protocols. Could he have worked on repairing his relations with his bosses? What would have happened if he had not thought differently during the Goa operations or at Nathu La? (when he chose to occupy the forward post despite tremendous pressure to pull back) or if he had decided to stick to the brief and hadn't crossed the Meghna river in 1971? History might have turned out to be different. Is brilliance in war a function of having the courage to explore the unanticipated? The Author has an irreverent but apt title for the book that perhaps responds to the question.

Which leads us to a pressing question that emerges from the book? Why have we not produced more Generals like Sagat (and a few other distinguished, memorable ones)? The answers could be many. One of which might be that *though physical courage is rare, moral courage in military leaders is rarer*. The credibility of this virtue rests in the words of a war veteran whom the Author quotes in the book, "(Sagat's) His leadership was not only on the battlefield but over the minds and will of the people he commanded."

Major **Probal Das Gupta (Retd),** author of *Watershed 1967: India's Forgotten Victory Over China*. Views expressed are personal.



India and Australia in Indo-Pacific: Dynamics of Defence, Diplomacy, and Diaspora

Colonel (Dr) Tejinder Hundal

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The recent strategic paradigm shift and the geopolitical developments in the Indo-Pacific have poised both India and Australia to play a significant role in the balance of power in the Indo-Pacific. Historically, both countries have not constructed a strong bilateral relationship. One of the most critical and impelling factors in bilateral and multi-lateral relations has been the strategic imperative of balancing a hegemonic and belligerent China. The two countries have come together in multitude levels not only to enhance military prowess through exercises like Malabar Naval but also as the founding members of the Quadrilateral Security Agreement (QUAD) which is gaining traction with the prospects of enhancing the width and depth of its expected mandate, role, and the possibility of incorporating other countries that have high stakes in the peace and development of the Indo-Pacific region. *India and Australia in Indo Pacific* written by Colonel (Dr) Tejinder Hundal articulates the need and the reason behind the growing relationship between the two countries. It tries to bring to fore importance and the significant role India and Australia can play towards an open, peaceful, and inclusive Indo-Pacific region.

Dr Tejinder Hundal with his more than two decades of military experience and academic background to include an M.Phil. in International Relations and Doctorate in Defence and Strategic Studies has crafted the dynamics of Defence, Diplomacy, and Diaspora behind this elevated, constructive and significant relationship between India and Australia.

The author has divided *the book* into five fundamental parts, each linking to the other through the prism of necessity. Dr Hundal in the first chapter brings to the reader the historical perspective behind the reason these two countries did not have stable relations. He tries to deal with an important aspect of both countries trying to preserve and protect their core interests. The author has tried to relate the facts and figures behind his statements and they emerge very well.

In the second chapter, the author has attempted to deconstruct the notion behind Indo Pacific from the perspective of India and Australia individually. He links the collapse of the cold war and severe financial crises with India's Look East

Policy in the early 1990s and then the emerging traction behind the concept of Indo Pacific facilitating acting East by India, in the last two and a half decades. Dr Tejinder further also analysis the Australian realisation of the geostrategic construct and the massive economic and military cooperation potential of India. He tries to reason out the emerging diplomatic and defence compulsions of the region which has catalysed India and Australia to propel their bilateral relationship.

The third chapter has been devoted to the increasing frequency of dimensions of transnational education and knowledge partnerships between the two countries. In the third and the fourth chapters of his book, the author upon the diaspora and its effect on relationships. He covers the quantum and diversity of research collaboration at the university level well-supported by the knowledge agreements and the memorandum of understanding at the apex level. This field of understanding the relationship between the two countries opens the pandora for the political and diplomatic experts as to how the countries can harness the "brain drain" into "brain gain". The author has highlighted the contribution of the Indian diaspora to Australian society and how it has been widely acknowledged and recognised. He highlights the dynamics of diaspora involvement and intervention in the soft power aspect of the foreign policy and how it has yielded encouraging results in emerging contexts. The fourth chapter specifically highlights the immense benefits bilateral relationships between the two countries have reaped due to the Indian diaspora to Australia.

In the last chapter, Dr Tejinder highlights the past decade of cooperation and mutual understanding the two countries have enjoyed and what should be expected in the next decade. He covers a large number of initiatives both countries have taken in the fields of defence, diplomacy and diaspora, which has the potential to make this relationship work.

Dr Tejinder Hundal has skilfully dissected the dynamics of defence, diplomacy, and diaspora in the Indo-Australia comprehensive strategic relationship. The book encapsulates a seamless narrative that is supported by exhaustive references. The author has succinctly captured the ebb, flow, and nuances of bilateral relations and mapped emerging challenges and opportunities. He has displayed masterly skill in dilating the elements of defence, diplomacy, and diaspora in an inter-related manner. On the whole, *India and Australia in Indo Pacific* presents a very authoritative and plausible account of the historical background, the present state of bilateral relations, and its future potential.

India and Australia in Indo Pacific is a must-read for researchers, academicians, and practitioners of strategic studies and international relations in both India and Australia. More significantly, the book will provide policymakers well-researched inputs for the formulation of a policy framework

for strengthening the India-Australia bilateral relations in a wider strategic framework. His scholarly work is easy to read and grasp, especially for the young mind who will be able to comprehend the text with related abbreviations, facts, and figures given in detail by the author.

Lieutenant Colonel **Gagandeep Singh** is an avid contributor. Views expressed are personal.

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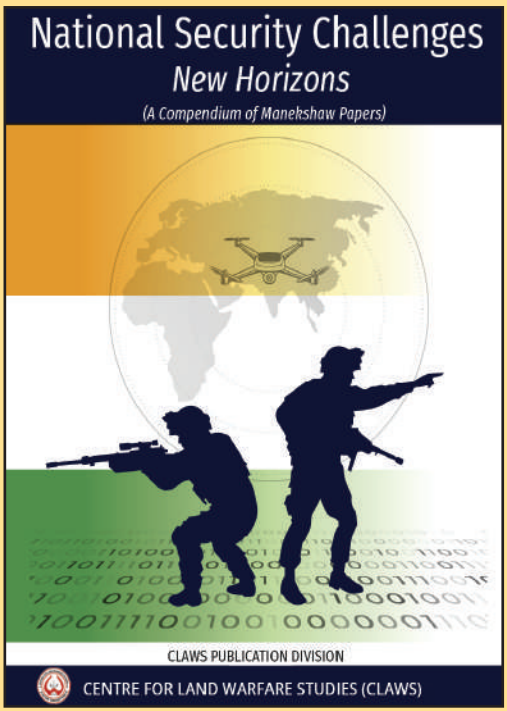

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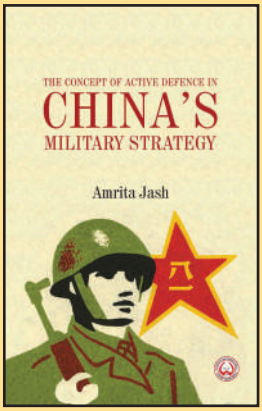

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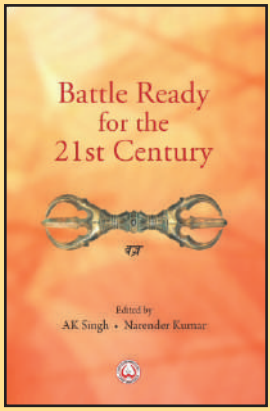

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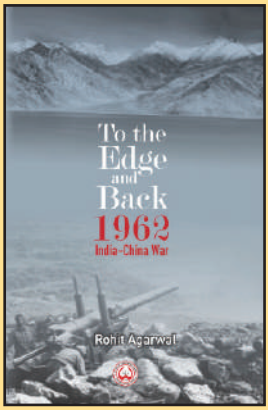

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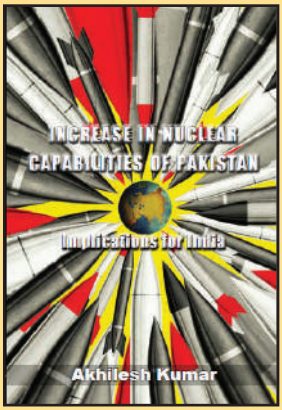

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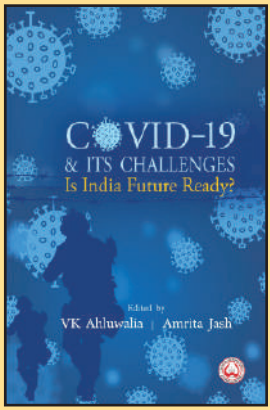

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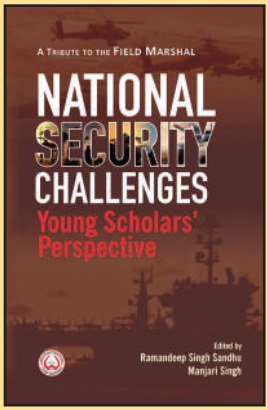

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