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MANEKSHAW PAPER

Preparing Infantry to Fight and Win Future Wars

Gaurav Sharma

CENTRE FOR LAND WARFARE STUDIES

Field Marshal Sam Hormusji Framji Jamshedji Manekshaw, better known as Sam "Bahadur", was the 8th Chief of the Army Staff (COAS). It was under his command that the Indian forces achieved a spectacular victory in the Indo-Pakistan War of 1971. Starting from 1932, when he joined the first batch at the Indian Military Academy (IMA), his distinguished military career spanned over four decades and five wars, including World War II. He was the first of only two Field Marshals in the Indian Army. Sam Manekshaw's contributions to the Indian Army are legendary. He was a soldier's soldier and a General's General. He was outspoken and stood by his convictions. He was immensely popular within the Services and among civilians of all ages. Boyish charm, wit and humour were other notable qualities of independent India's best known soldier. Apart from hardcore military affairs, the Field Marshal took immense interest in strategic studies and national security issues. Owing to this unique blend of qualities, a grateful nation honoured him with the Padma Bhushan and Padma Vibhushan in 1968 and 1972 respectively.

Photographs courtesy: The Manekshaw family/FORCE

Field Marshal SHFJ Manekshaw, MC
1914-2008

CLAWS Occasional Papers are dedicated to the memory of Field Marshal Sam Manekshaw

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Preparing Infantry to Fight and Win Future Wars

> I love the Infantry because they are the underdogs. They are the mud-rain-frost-and-wind boys. They have no comforts and they even learn to live without necessities. And in the end they are the guys that wars can't be won without.[1]
>
> – *Ernie Pyle*

Introduction

Future of warfare remains a conundrum for armed forces across the globe. Despite rapid advances modernisation and employment of scientific tools, most of the armed forces across have failed to predict nature of future wars.[2] While some estimates about technology and Tactics,Techniques and Procedures (TTPs) can be made, their application and effect on outcome of wars can at best be assumed. Capabilities and envisaged role of Infantry under such modern and Hi Tech environment have always been a subject of debate amongst the scholars and warriors alike. Some think tanks have gone to the extremes of predicting that future Infantry would be devoid of humans with machines taking over the human fighting tasks. On the contrary historian David Edgerton in his book 'Shock of the Old' argues that our collective obsession with rapidly changing technology blinds us to the older tools and techniques that actually drive most of what we observe around us.[3] This led a group of US analysts and defence officers to conclude that diffusion of 100-year-old combat techniques coupled with readily available technology may create unprecedented threats which were not being envisaged. They argue that basic military tactics have remained unaltered over last 100 years, with minimal changes to the small arms, despite technological advances. As a result of simply being really good at basic infantry skills, the U.S. military has enjoyed a significant asymmetry over its enemies at tactical level, which appears to be completely lost amidst the current debates over cutting edge technology.[4] While the nature of warfare has essentially remained the same over the years, the character of war has been ever changing and evolving.

Other variable which bothers the infantry leaders is the residual permeation and impact of technology at sub tactical level, especially in hostile terrain and weather conditions. Tim Marshall in his book 'Prisoners of Geography' mentions an anecdote of helplessness of technology from his time with US Army in Afghanistan in 2001, when an operation had to be postponed by 72 hours due to a storm which immobilised the best equipped and most advanced army of the world with best technological support.[5] Ironically 'Infantry, the Ultimate' knows no barriers and is expected to deliver when vehicles refuse to move and equipment fails to operate. Unsurprisingly, reach of any Army in the Battlefield is the reach of its Infantry. It is in light of such divergent circumstances, unquantified variables and unpredictable future, Infantry would need to prepare, plan, operate and most importantly win in future battle fields.

Scope

Though study of military history and recent conflicts to correctly predict the future battlefield has its own limitations, they still remain the most important tool to crystal gaze future alongside emerging military concepts and theories of warfare. This paper, thus attempts to analyse important lessons of recent and ongoing conflicts as relevant to infantry, identifying best practices and game changers. The paper shall then proceed to briefly understand the existing and envisaged operational environment in an Indian context, before bringing out the requirements of future infantry. Though it would be lucrative to make recommendations at operational levels, the paper shall restrict its scope to tactical level as the first step and thus attempt to suggest way forward for preparing infantry to fight and win at tactical level. Only when our TTPs at the lowest levels are refined, can we consolidate our operational concepts and organisations.

Lessons Learnt from Recent Conflicts

Russia-Ukraine War

- **Failure of Battalion Tactical Groups**. Russia's Battalion Tactical Groups (BTG) had been one of the outcomes of Russian Armed Forces' restructuring which culminated in 2012. Number of Russian BTGs increased from 66 in 2016 to 168 in August 2021. It is estimated that around 100 of the total 170 BTGs possessed by Russia had been employed in the war against Ukraine. A BTG is self sustained and does posses heavy fire power and mobility with around 700-900 soldiers and roughly 75-90 vehicles.[6] The BTGs have been main stay of Russian Operational planning and were expected to execute a 'BLITZKRIEG' style campaign. However the nature of terrain and its bulky size turned its strength to weakness,

raising doubts over its efficacy in modern day warfare. It appears Russia decided to reduce strength of motorized infantry units from 539 or 461 personnel to 345. Even this reduced strength was only 2/3rd or 3/4th at the onset of war. This reduced the strength of a rifle squad to five or six, which was grossly inadequate to fight or hold the ground.[7] This implies that while basic fighting unit needs to be small to avoid detection yet it has to be capable enough to fight and hold ground.

- **Reorganising of Infantry.**[8] In second year of war, Russian Infantry formed into task - organized groupings by functioning as line, assault, specialized and disposable troops. Line Infantry held the ground for defensive operations, disposable infantry were used for continuous skirmishing to identify Ukrainian firing positions which were then used by specialized infantry to find weak points in defences for ultimate assault. This change contributed towards Russian success in holding on the ground despite counter offensive maneuvers by the Ukrainians. **Thus Infantry would need to have inherent capability to hold ground and undertake offensive maneuvers independently to decimate the opposition.**
- **Drones**. Effective use of Drones for surveillance and assault in recent conflicts needs no further elaboration. The Ukrainian infantry decided that drones needed to be deployed as close to the frontline as possible, within front-line platoons. This not only provided the forward troops flexibility for employment of drones but was also advantageous to drone operator to bypass the electronic jamming carried out by Russian troops. Close proximity of the operator to the drone facilitated drone operations and situational awareness, even when long range sophisticated drones lost signals and were effectively jammed by the Russians. Frontline drones will need to be treated as disposable assets, which requires a major mindset change.[9] **Infantry needs to acquire low cost drones for battles at tactical and sub tactical levels and then develop capabilities to operate them.**
- **Tactical Drone Fleets**. Russia-Ukraine and Gaza wars have illustrated that drones are emerging as a weapon of choice for standing armies. While military grade platforms offer much higher capacity, commercially available drones with limited capacity are being efficiently used in the battlefield. Ukraine has gone as far as establishing an unmanned systems force, since it is easier for the field commanders to carry a cheap easily available drone in his backpack. Similarly HAMAS in initial days of conflict unleashed fleet of cheap drones, which prevailed in battlefield, till such time Israel rapidly diffused such tactics & techniques.[10] **Tactical drone fleet and capability to handle it needs to be developed**

by Infantry on its own, without much reliance on technical support arms.

- **Tactical Cyber War**. Russia has been penetrating devices used by Ukrainian front line soldiers. Ukrainian emphasis on 'data driven combat' has turned smart phones and devices used by front line soldiers as a source to geo locate combat positions for the Russians.[11] **Infantry needs to develop capability of offensive and defensive cyber warfare at tactical level.**
- **C2 and Communications**. The Russians have been relying on insecure networks for their communication, which were regularly intercepted by the Ukrainians, thus compromising security and causing heavy damages to them. The Ukrainian Armed Forces have been piggy backing on 'STARLINK' space communication, provided by Mr. Elon Musk. The communication system has been the main stay of the Ukrainian Govt and Armed forces, enabling them to communicate within and outside the country, despite total destruction of communication networks established in initial days of war. Around 10,000 dish antennas alongside addl network terminals were provided to Ukraine, which helped to blunt Russian attempts to jam signals and helped provide seamless communication during the campaign. Jamming of ground based communications at operational levels by enemy seems an inevitability, which is forcing the troops on ground to learn to operate without these systems and compelling them to resort to age old tactics. **Thus infantry or Indian Army in whole would need to develop satellite based communication systems which remain unaffected by enemy attempts of jamming. Simultaneously, tactical level communication systems would need an improvement to enable visibility of battles to the commanders.**
- **Success of MANPADS**. (Man Portable Air Defence Systems) have been the main stay of Ukrainian air defense against Russia. Since the initial days of conflicts, these MANPADS effectively engaged the aerial assaults of Russian Air force. According to an estimate 5,000 MANPADS were delivered to Ukraine within weeks of the Russian invasion[12]. Success of MANPADS is not new. The US supply of stinger to anti-Soviet Afghan Fighters in 1980s was a game changer. An estimated 269 aircraft and helicopters were brought down between 1986 and 1989 by Afghan forces, using these missiles.[13] The figure highlights efficacy of these force multipliers in mountainous terrain against superior technology. It is also a rare example of relevance force multiplier even after three decades, thus bringing to fore the importance of tactical application of a technology,

than the technology itself. **Infantry needs to develop inherent capability against air threat at tactical level, with ability to see and monitor overall air intelligence picture.**

- **Javelins on Ukrainian Battlefield**. The shoulder launched anti tank weapon system allows its operator to remain undetected, being a 'fire and forget' weapon and improves survivability. The missile can also be used to target Bunkers, buildings and helicopters.[14] By Jan 2024, The US has equipped Ukraine with more than 10,000 Javelin anti armour systems, according to pentagon. The shoulder fired system has been helping the Ukraine's light infantry take down formidable Russian Mechanised forces.[15] The new generation fire and forget weapon is likely to give Field dividends. As per media reports India and USA discussed joint production of the missile system during security Advisor Jake Sullivan's visit to India in June 2024.[16] **Infantry needs to be equipped with game changing low cost man pack force multipliers which can change the course of future wars inflicting heavy damage to enemy.**

Lessons from Israel HAMAS Conflict

- **Tactics and Technology**. The unexpected attack on Israel by HAMAS forces was unprecedented with waves of fighters breaching the seemingly impregnable Israeli defense, rudimentarily bypassing the technology by sheer useage of infantry tactics, with support of rocket fire to blind the iron dome. Approximately 5,000 rockets were fired from Gaza, quickly exhausting the Israel's vaunted Iron Dome.[17] The breaching of border saw HAMAS coordinate blinding of surveillance and reconnaissance capabilities using low cost UAVs, snipers and Anti Tank Guided missiles to destroy cameras and communications antennas along the Gaza border. This was followed by breaches of border fence at 50 points using bulldozers, frame charges and Bangalore Torpedoes.[18] **The assault serves as a gentle reminder of potence of tactical acumen to overcome technological superiority at the point of application.**
- **Mounted and Dismounted Close Combat**. IDF launched Offensive with two combined arms brigade on one axis one km wide, with D9 bulldozers (unmanned) leading the armour to negate threat of IEDs. Each brigade had one Battalion of Armour, Mechanised Infantry and Infantry.[19] Israeli Defence forces used a networked system for situational awareness, which provided lateral situational awareness to all elements of combat. Extensive use of micro UAVs in Built up Areas prior to physical assault

helped force preservation, by ascertaining the presence of terrorists or otherwise. Similarly, fighting in Built up Areas has been a major challenge for Infantry on either side in Russia Ukraine war. **Infantry needs to innovate and evolve its capabilities to fight in Built Up Areas. Tactical application of technology on battle field to complement infantry can yield dividends out of proportion.**

- **Boots on Ground Matter**. Despite the fact that Israelis have been fighting a relatively weaker and technological inferior enemy in Gaza, the war has extended beyond 18 months on date. Even possession of most advanced technology has not been able to absolve infantry of the responsibility of ground clearance and occupation of held areas. Similarly in Russia, its Russia's ability to hold the captured areas which has provided it the advantage in the ongoing war. **A major determinant of success in battlefield will continue to be attributed to the ability of any Army to hold ground, primary responsibility of which lies with the infantry.**
- **Hybrid War**. The original perspective on hybrid threat reflected a violent blend of regular capabilities and irregular tactics. This mode of conflict was defined as an adversary that simultaneously and adaptively employs a fused mix of conventional weapons, irregular tactics, catastrophic terrorism and criminal behaviour in battle space to obtain desired Political Objectives. Violent conflicts are increasing by the day and chances of them being hybrid are more likely due to desire of great powers to avoid direct confrontation.[20] Use of cyber, misinformation, proxies and non state actors are some of the common tools which have been used in recent conflicts. These hybrid efforts can precede, substitute or complement the conventional approach adopted by a state. Employment of Wagner group, Hezbollah and HAMAS are few of the examples of recent times. **Hybrid actions at tactical levels do have operational and strategic consequences, thus necessitating conventional forces to develop capabilities to create such threats for the enemy both in times of conflict or competition.**

Defining Future Battlefield

Failure of Predictions. Future predictions and defining of battlefield comes with a caution. A caution and gentle reminder of failures of greatest of powers and armed forces ahead of their times to forecast the future. European countries had failed in entirety to calculate the magnitude of World War I, with German Chancellor claiming just before the war that future

wars would be "decisive" and "brief storm".[21] Similarly French 'Magniot Line' proved to be totally ineffective against the German Blitzkrieg during World War II. Global superpowers USA and USSR failed completely to define the battlefield and predict the nature of wars in Vietnam and Afghanistan respectively. While USA and allies did achieve success in Operation Desert storm, subsequent endeavours in Afghanistan, Iraq and rest of Middle East could not bring desired results owing to failure to foresee first and second order effects of a complex insurgent environment. Modern conflicts in Ukraine and West Asia have simply reinforced history, proving geo-political and military experts completely wrong, yet another time. Be it full scale wars, limited or low intensity conflicts or skirmishes, rarely have we managed to proactively control the battle space. Positive results have been yielded with gradual adaptation reactively.

Challenges to Predictions. Military History though an effective tool also poses risks of channelising the military commanders to a stereotype thought process, with biases emerging from repeated study of previous wars and their experiences. Similar dangers are posed by the lessons drawn from contemporary global conflicts, thus channelising our plans to prepare for the '**last war fought**'. While deriving lessons is an essence, superimposing the same on future without fusing them with the existing and envisaged future operational environment is counterproductive**.** This, alongside our failure to visualise effect of technology, ineffective red teaming and inability to bridge operational and tactical level planning contribute towards failure of predictions and inaccuracies in defining the future battlefield. Nonetheless no preparations for future can be made without attempting to predict future and define battlefield.

Defining Future Battlefield for Infantry

Multi Domain Operations. The concept in US context has been enunciated in US TRADOC pamphlet 525-3-1, which hinge on the rapid integration of all domains of warfare to compete short of armed conflict. In case of failure of deterrence in competition stage, Army Formations, operating as part of Joint force, penetrate and disintegrate enemy, exploit the resulting freedom of maneuver during conflicts and then finally return to a competition. Multi domain operations have been conceptualized to fight in a highly integrated environment, with reliance in initial stages on long range systems, and maneuvers over operational and strategic distances. Subsequent phases of 'disintegrate' and 'exploit' legislate independent maneuvers by the ground forces to exploit the shaping carried out by long range vectors and the enablers of land forces will need to continue conducting

traditional tastes of seizing terrain, destroying enemy forces and securing friendly population.[22] While the integrated structures and environment is a work in progress, capability development by respective echelons is an indispensable requirement, which should subsequently converge to achieve operational goals in an integrated environment. **Infantry in specific will need to develop capabilities to achieve psychological superiority in competition phase and then carry out swift maneuvers with or without armoured and mechanized forces in penetration and disintegration phases.**

Grey Zone Warfare. The uncertainty surrounding definition of Grey zone is quite similar to the concept of Grey zone itself. For quite long, Grey zone was misunderstood as a form of warfare akin to hybrid or asymmetric. On the contrary, Grey Zone is a conceptual space that exists between two definite extremes peace and war. It can be defined as operating environment in which aggressors use ambiguity and leverage non attribution to achieve strategic objectives while limiting counter actions by other nations.[23] Strategy of "fait accompli" for territorial gains in Grey Zone has the most significant and direct implications on Infantry. Fait accompli can be broadly understood as a way of unilaterally changing the status quo in the initiator's favour in a quick time with small quantum of change, which precludes the responder to escalate. The uniqueness of 'fait accompli' lies in its conscious efforts to make post-hoc escalation cost inefficient response.[24] Grab actions by our adversaries to change the status quo of our existing boundaries in a 'No war, No Peace' scenario would certainly qualify as fait acompli for territorial gains. In wider understanding of fait acompli, actions have limited aims and response is considered cost inefficient. In an Indian context response would be guided by our stated policy of 'no loss of territory' and political compulsions enshrined in parliamentary resolutions. Modern nation states do realise the cost of escalating conflicts on going for an all out war. Actions below the threshold seem to be a widely accepted norm across the globe offering a viable exit strategy by creating an acceptable narrative for domestic and global audiences which provides a sense of victory to both sides. Prompt tactical actions with low impact and higher visibility are viewed as workable solutions to defuse tense situations having potential to escalate. **This dictates Infantry to be ever ready for prevention of such actions, in first place and give a befitting response in case prevention is unavoidable. Infantry would also used to prepare itself as an initiator rather than looking to respond all the time. Preparation to counter other threats in Grey Zone need to be pursued with an equal intensity as well**.

Operational Realities in Indian Context. Defining battlefield for infantry in an Indian context is further complicated given the unpredictability of two adversaries on our North and West alongside unresolved border issues with both of them. China's global ambitions and India's growing regional influence have contributed towards enhanced possibility of a conflict in the region now than ever before. On the other hand Pakistan remains an unpredictable irrational player, which has the capability and interest in keeping the tensions simmering.

- **Western Borders**. While we do enjoy numerical superiority over our Western adversary, recent conflicts reflect that numbers may be misleading and over buoyancy be best avoided. Indian Armed Forces rank fourth while the Pakistan military has been ranked ninth as per Global Power Index report 2024.[25] The relative difference between the power is much less than what existed between Russia (second) and Ukraine (22nd) at beginning of the war. The mere fact that Ukrainians were able to hold out Russians and cause significant degradation of their combat potential in initial days of war, implies that even in a strength v/s strength contest, results would be determined by optimal exploitation and correct use of resources at the point of application. In a conventional scenario, unlike Ukrainians who decided to withdraw from some portions of their border during initial days of war, our western adversary would not accept losing a single inch of territory, thus increasing the resistance manifold. Pakistan has been offsetting asymmetry by enhancing terrain friction and extensive use of hybrid elements. **Infantry would thus need to innovate its TTPs and develop a credible hybrid capability to offset the terrain advantage.**
- **Northern Borders**. Our border dispute in the North has been getting complex for last few years with some unprecedented incidents involving the two Armies. Though there may be a marginal difference between the rankings of two Armed Forces (China - Third and India - Fourth) the technological gap may actually be wider than mere reflection of these numbers as the same is also evident from defence spending. Limitations of certain technologies in such high altitudes and extreme weather conditions need to be correctly identified and means adopted to offset these. **Terrain specific organisation and equipment based on enemy threat is likely to pay more dividends, rather than clinging to standard organisations. Small well equipped detachments with optimal training can cause heavy damage to enemy by tactfully using the terrain to own advantage.**

- **Primacy of Territorial Control.** The situation along our borders necessitate an indispensable requirement of controlling and dominating territory while denying its control to equally capable adversaries. Constraints of geography and weather add another layer of complexity to this already seemingly challenging ask for an infantry soldier. Control of territory legislate presence of boots on ground, supported by enabling technology in form of ISR and fire power resources, duly integrated at tactical and sub tactical level. **Thus Infantry needs to not only retain but enhance its ground holding capabilities by infusion and absorption of technology down till sub tactical level.**
- **The Curse of Numbers.** Varied geography and operational conditions as mentioned above dictate our infantry to be maintained in large numbers. Large size is our strength which helps overcome the constraints of geography and contribute towards maintaining numerical superiority but they come with a curse. They bring with them challenges to plan, implement and absorb changes. Not only this size creates a huge pressure on the budget for modernization, but also hinder quick absorption of doctrinal and structural changes. This over a period of time, creates a cultural barrier towards embracing changes whether technological or tactical. **Thus Infantry needs to adopt a phased theatre specific modernisation programme, rather than attempting to modernize en masse.**
- **Infantry and Technology.** Infantry and technology complement each other on the battlefield and none can be viewed in isolation. Neither can technology be superimposed on infantry tactics, nor can infantry be detached from it. While technology enhances the staying power of infantry, infantry enhances the reach of technology by taking it deeper to the battlefield. Similarly, by adopting carefully crafted tactics an infantry soldier has the capability to deceive, by pass and offset technology to shape the battlefield. **Thus future battlefield requires a crafted fusion of tactics and technology for optimal exploitation of either.**
- **Varied Terrain & BUAs.** Our long land borders stretched across varied terrain and differing character of adversaries preclude adoption of uniform organisations and TTPs. Development of road networks along borders and simultaneous increase in dense BUAs alongside facilitate use of vehicles on one hand and pose challenges of clearance of BUAs on the other. **Hence Infantry would need to adopt terrain specific organisations and TTPs, while augmenting its ability to move speedily and prepare for intense fighting in BUAs.**

Desired Capabilities of Infantry. To summarise, Infantry would need to operate and win in an unpredictable, multidomain environment with varied terrain conditions against equally capable adversaries. The infantry would thus need to be mobile, agile, lethal and most importantly survive the complexities of future battlefields. It would thus need to reorganise itself and develop capabilities to meet future challenges. Some of the tenets and desired capabilities are tabulated below:

	Factor	Requirement
(a)	**Mobility**	Light Weight Equipment Quick Reaction Force Vehicles (QRFV) to carry upto a section strength (minimum two Company & Ghatak lift capability with each Battalion)
(b)	**Fire Power**	Fire and Forget A/Tk launchers Advanced/ Light weight Inf Mortars at Battalion level Precision/ smart munition for Rocket Launchers Tactical armed drones with capabilities to attack vehicles, persons and bunkers Anti Material Rifles
(c)	**Surveillance**	Surveillance Drones Battalion level – 10-12 km rg Company level – 8-10 km rg Platoon level – 5-8 km rg Section Level – 2-5 km rg LORROS at Company levels HHTI at Platoon level Hand held Night Binoculars at section level
(d)	**Communication**	Satellite based communication upto Company HQ Software Defined Radios – Upto Platoon HQ Secure VHF Communication and data link upto Section level
(e)	**Force Protection**	Anti Drone Jamming system – Protect Battalion HQ & Company HQ Handheld Anti Drone systems at Company levels/Platoon Levels Unmanned Mine Clearing Drones/Eqpt Light Weight Personnel Protection Equipment
(f)	**Grey Zone**	Hybrid capabilities at Tactical level Flexible organisation structures at Tactical levels to adapt to be equally effective in competition, confrontation and conflict stages
(g)	**Multi Domain Operations**	Inherent capabilities to undertake operations in a multi domain environment Fusion of Tactics and technology to offset enemy capabilities

Way Forward

Infantry Vision Document. Infantry needs to study, research and deliberately create a comprehensive vision document for 10 years to include restructuring, procurement, doctrinal and cultural changes. The changes thus should be systematically introduced facilitating evolution rather than overnight transformation based on hastily conducted studies. As also, a culture of perspective planning needs to be incorporated at unit and subunit level.

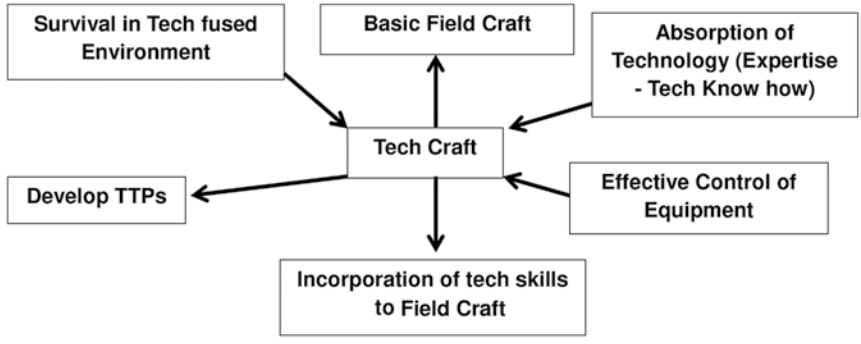
- **Modernisation Cycle & Pockets of Excellence**. Ideally, modernisation should be uniform across all formations and units. Modernising and reforming Infantry as huge as ours is not only economically expensive but time consuming as well. Thus specially equipped Pockets of Excellence need to be created within Formations, to act as the cutting edge and be a decisive factor. Similarly, Infantry will require to adopt **three modernisation cycles of three years each**, implying that one Brigade in a Division undergo modernisation in first cycle and the other two in second and third respectively. This would ease out the stress on finances and also facilitate keeping abreast with the changing technology, since the second and third brigades will have an upgraded version of the equipment from the first one. Similarly, once the first brigade comes up for its modernisation revamp after nine years it would be better equipped than other two brigades. Thus the modernisation would form a cyclic process ensuring constant improvements for a particular unit or brigade every nine years. However this cannot be achieved with the present arrangement of constant move of Infantry Units, for which static locations are desired.
- **Static Locations for Infantry**. Diverse nature of terrain and multiple Operational fronts with different character of adversaries necessitate a stable fighting force, for a particular theatre to develop continuity in operations. Ever changing nature of warfare and technology also dictate development of theatre specific TTPs. Present System of two/ three year rotation and turnover of an entire unit from operational areas does not contribute towards addressing these important operational requirements. Though there would be arguments of HR and regimentation against such concepts, which are not without concerns but these can be balanced by devising well planned systems. The Rashtriya Rifles model of 'semi - regimented unit' at specific locations can serve as a base for further development of the concept. As an illustration four Battalions of a particular regiment can be allotted two peace and two field locations. A pool of four Battalion worth of manpower can then

be rotated (including officers) in these four locations, with 24-30 month tenure at a particular place, akin to the present system of RR Battalions. Some specialised sectors like Siachen Glacier would need to be kept out of such rotational plan for which a special Force HQ and mechanism would need to be devised akin to present ERE model. Undoubtedly, such an exercise would take six to eight years to stabilize, but would enhance operational efficiency multifold. This would also facilitate development of expertise on theatre specific operational equipment.

- **Precision Tactical Weapons**. Precision weapons at tactical level can prove to be force multipliers and game changers. Indigenous development of such weapons to replace vintage weapons like Rocket Launchers (RL), Mortars and Anti Tank Guided Missiles (ATGM) are strongly recommended.
- **Satellite Based Communications**. No modern war can be won without foolproof, seamless communication architecture. With influx of Artificial Intelligence (AI) based platforms to the modern day battle field satellite based voice and data communication is an inescapable requirement without which victory cannot be ensured.
- **Attrition vis-à-vis Manoeuvre.** Attrition Warfare v/s Manouvre Warfare debate has long echoed the walls of planning rooms. The Russia Ukraine war has highlighted the inevitability of attrition, should the adversary decide to fight for every inch of ground. Given the nature of border conflicts with both our adversaries and our ethos of fighting till 'last man last bullet' attrition will continue to form part of our operational doctrines and tactics. However, we need to devise our own TTPs to use attrition at tactical level for achieving maneuvers at operational level
- **Change in TTPs.** Our present day Infantry TTPs rely too much on bayonet strength, thus over exposing infantry to risks and dangers on one hand and reducing the speed of operations on the other. Availability of modern day technology in form of surveillance devices, third dimension (drones), precision fire and sensors will need to be organically integrated into Infantry organisations. Autonomous equipment like drones, AI based surveillance and precision shooting will have to be incorporated to reduce the foot prints of infantry soldier from the battlefield, thus reducing the risks posed to him. Some of the changes are as given below
  - Technology needs to be exploited for tasks such as close target recce, mine field detection and breaching, by employing drones.
  - Infantry units and sub units will have to be capable to undertake independent sensing and shooting in their Tactical Battle Areas, reducing their dependencies on operational resources.

- Enhanced communications and battlefield transparency facilitates dispersion of troops. Subunits need to be equipped, trained and empowered to undertake independent tasks thus reducing concentration of forces.
- Precision fire weapons, MGLs and armed First Person View (FPV) drones should replace an infantry soldier for bunker bursting drills. Enhanced fire power for destruction of target before the assault should reduce the number of infantry men needed for final assault.
- Micro surveillance drones like black hornets need to precede the final assaults to provide clear tactical picture to the assaulting soldier.
- Battalion surveillance drones need to monitor the move of enemy reinforcements and degrade them using organic infantry mortars, alongside artillery fires.
- AI based surveillance devices integrated to obstacle systems, alongside long range weapons can facilitate reduce the number of infantrymen needed to hold the defences.

- **'Tech Craft' Rather than Field Craft**. Field Craft remains a quintessential survival skill, which needs to be integrated with technology being conducted. Hence Infantry soldier will have to develop skill set fusing the basics with technical skills and incorporate technology to his tactics. Similarly a tactical commander will need to develop and group his resources to not only command his troops but also effectively control the technology to dominate the battlefield. Just as field craft encapsulates survival skills, tech craft requires soldiers to develop tactical and technical capabilities to navigate the complexities of applying modern technology on the battlefield. Hence basic teachings and training of infantry will need to graduate to 'Tech Craft' rather than field craft alone. Figure below illustrates the components of tech craft.



- **Human Capital Dilemma.** Technology should be looked as a mean to complement an infantry soldier and not to substitute him. Over emphasis on technology and undermining human factors be done at own peril with disastrous consequences. Modern day battlefield poses a significant challenge of selection and training of an infantry man. While an Infantry **man needs to be wise and intelligent to embrace and infuse technology, he needs to be insane enough to fearlessly walk in line of fire**. This dichotomous requirement poses a significant challenge and dilemma for the infantry commanders. Harnessing and exploiting human capital is an art which can only be developed and not legislated. A few recommendations are appended below:
  - **Specialisation**. Basic and advance levels of desired individual skills be institutionalised and the scope be enhanced to all dimensions of warfare, rather than being restricted to physical and firing standards. Specialisation in one of the fields be made mandatory after six years of service for jawans e.g. a rifleman may be a drone specialist, cyber specialist or medical specialist. Similarly officers be mandated to develop domain expertise after two years of service, for which special courses need to be mandated.
  - **Junior Leadership**. History is witness to outcome of conflicts and wars being decided by tactical battles led by junior leaders. Infantry junior leadership needs to reach the next level in order to be a decisive factor in future conflicts. A platoon commander in particular needs to be prepared to fight independent battles. Though ample efforts have been made to enhance the training standards, yet we have not been able to create a culture and legacy of Júnior leadership as required. This needs immediate attention.
  - **Back to Basics**. Meticulous, tactical level execution of most complex operational plans are pivotal to achieve success. Unsurprisingly, a large number of Battalions have accomplished most challenging tasks, with minimal resources owing to strong regimentation, exemplary leadership and high morale and motivation, which remain embedded deep into our ethos. These intangibles should not be taken for granted, but rather be strengthened to support the Battalions and Commanding Officers who have the capability to achieve the impossible with little support. Impact of changes and new policies at unit/sub unit levels needs to be studied in depth before implementation.

Restructuring and Equipping Infantry Units and Subunits

- **Size of Fighting Subunit**. Lessons from recent conflicts allude to optimization of fighting units, which are potent enough to counter the enemy and at the same time not large enough to present themselves as targets for detection and destruction on the battlefield. Present organisation of an infantry section needs further refinement. Employment of a complete section with its organic fire power (Rocket Launchers) elements is not only a remote possibility but also denudes mobility. In most of the operational plans, fire power resources of section are needed to be pooled to achieve desired operational outcomes, Thus, there is á need to reorganize infantry platoon to achieve, greater flexibility in employment and enhanced lethality. Redistribution of existing resources at platoon level into two strike teams of ten persons each (including one driver and one operator) with organic mobility on wheels is recommended. These Strike teams could be employed independently or coherently as Strike group, depending on Task. This would be supported by an integrated Fire support team at Platoon level. Hence an **Infantry platoon will need to emerge as an organic potent fighting unit capable of undertaking independent tasks, with little support from Company resources.** Similarly Company will need to develop enhanced organic capabilities to operate independently with little reliance on Battalion resources.
- **Mobility.** One Quick Reaction Force Vehicle per strike team, two for support team in a platoon is recommended, which are also inevitably required for command and control mobile posts by unit and sub unit commanders for monitoring the battle field. However this would be dictated by Terrain, state of Infrastructure and communication in a specific area. As also the operational role viz, offensive or defensive would dictate the number of allocation of these vehicles. While utilization of these assets for quick move is envisaged, their utility as fighting platforms need careful examination since they present a viable and clearly identifiable target for the enemy forces.
- **Fire Power Resources**. Existing fire power resources within a Platoon can be reappropriated to form a Fire support team, with two RL Detachments. Third RL Detachment needs to be replaced with a fire and forget missile (JAVELIN or similar capabilities). One Automated Grenade System (AGS) per platoon is recommended to be part of the Fire support alongside one surveillance drone and one armed drone. Each strike team needs to be allotted Multiple Grenade Launcher (MGL) and one low cost armed First Person View (FPV) drone in addition to one

quad copter for Tactical recce. At company level, two AGS, two MMGs and two sniper rifles are recommended to be allotted with one Anti Material Rifle. At Battalion HQ level four vehicle based Anti Tank Guided missiles, four sections (12) x Vehicle/man pack (Dual role) 81 mm mor with smart Munition and a range of six to eight Kms is recommended for either sub allotment to Companies or concentrated deployment. Drone based Loiter Munitions (six birds) per Battalion are recommended.

- **Surveillance and Communication**. Surveillance at tactical levels needs to be augmented by tactical aerial platforms like drones, importance of which has already been amply highlighted in the preceding paras. The existing surveillance devices need an increase in numbers and enhancement in their capabilities to meet the modern day and future challenges. However this cannot be achieved without a reliable and stable communication grid based on satellite and ground based communications. Suggested surveillance and communication capabilities have already been highlighted in the desired capabilties tabulated above.
- **Enhancing Hybrid Capability**. Since a large number of combat actions are likely to be undertaken in grey zone, whether in competition or conflict phases, hybrid capabilities of Infantry need a quantum jump so as to be able to present a 'threat in being' and acquire the ability to act proactively or reactively independently at the point of decision without time delays. Infantry Ghatak platoons need to be restructured and re equipped for their optimal emp in the War Z, with following suggested changes:
  - Enhancing the strength of Ghatak platoon to 36 pers, thus ensuring availability of 24-26 persons at any point of time. Brigaded Ghataks can then be a Company worth of potent force available at Brigade level.
  - Equipping and training of Ghatak platoon needs to be at par with Special Forces teams with special skills training at Formation level.
  - Deep selection procedure at Battalion level along with a monetary benefit (20% of basic pay) is recommended to attract the best talent in Battalion to join Ghatak platoon.
  - The hybrid resources along with Force Multipliers like armed drones/ fire and forget launchers need to be integrated to form organic 'Hit and Run' Squads.
- **Technical Monitoring**. A tactical commander will be severely challenged to exercise control over technical elements, while tactically controlling the battlefield simultaneously. While Artificial Intelligence may facilitate his decision making to a large extent, he would still need

human support to control and dominate the battle space. Induction of technical advisors to tactical commanders as direct entry NCOs/JCOs need a serious consideration. These NCOs/JCOs will be combatants with technical skills who would act as assistants to tactical commanders (Company Commander and above). They will also be responsible for manning of Command and Control centres, providing seamless situation awareness.

- **Force Protection**. Organic measures to adopt force protection need to be instituted and incorporated in procurement plans. Mine detecting drones with AI systems need to be provided at Company levels for easy identification of mines. Anti drone systems at Company and Platoon levels are quintessential requirements to ensure survivability. In defensive battles, infantry will have to fight sub surface, which necessitates hardening and improvement of existing defences and adoption of modular technologies to create new defences.
- **Cyber and Information Warfare**. Infantry Battalions need to develop inherent capabilities for defensive cyber and Information warfare. The signal platoon needs to be restructured to a communication platoon with a section of corps of signals, which is recommended to be posted abinitio to an Infantry Battalion.

Suggested organograms are attached as Appendices.

Conclusion

Role of infantry in future conflicts is likely to be challenging, difficult and unpredictable. Despite advert of technology and plethora of equipment, infantry will continue to be a decisive element in deciding the outcomes. However it will need to equip, train innovate and adapt to the future battlefield conditions in order to survive, fight and win. Planning to modernize remains the quintessential requirement to kickstart the process. Best time to initiate modernisation programme for infantry was five years back, second best time is 'Now'.

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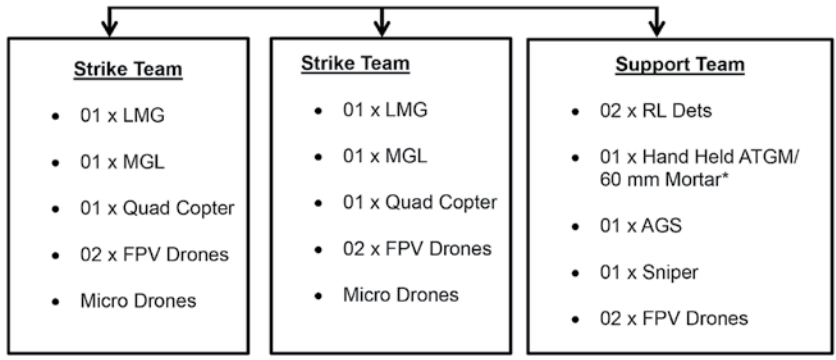
Appendix

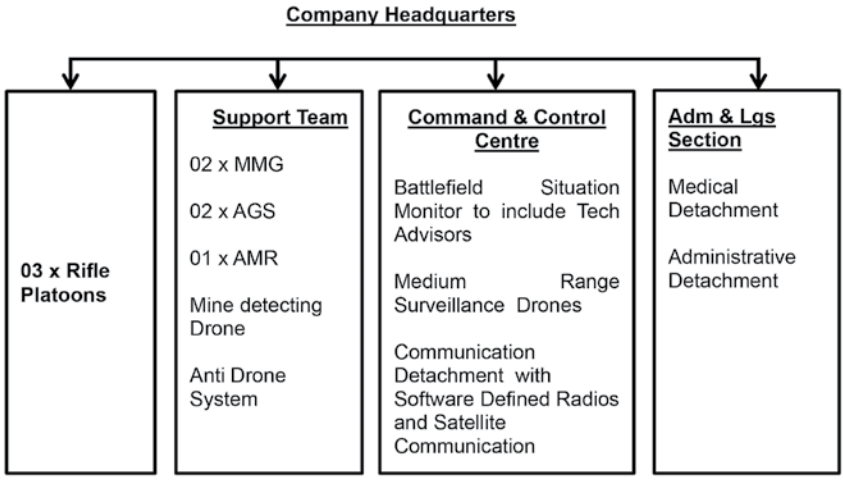
Suggested Organograms. Suggested organograms of Units and subunits are as tabulated below.

Figure 1: Suggested Organisation of a Platoon



- One Quick Reaction Force Vehicle (QRFV) per team
- One Light Armed Vehicle for Platoon HQs
- High Mobility Vehicles (HMVs) in deserts in lieu of QRFVs
- Vehicles in Mountains based on role, terrain and road space management

Figure 2: Suggested Organisation of a Company



- One Quick Reaction Force Vehicle (QRFV) for Support Team and C2 Centre each
- One Light Protected Vehicle (LPV) for Company HQs
- Protected Load carrying vehicles for Administrative and Logistics elements
- High Mobility Vehicles (HMVs) in deserts in lieu of QRFVs

Figure 3: Suggested Organisation of a Battalion

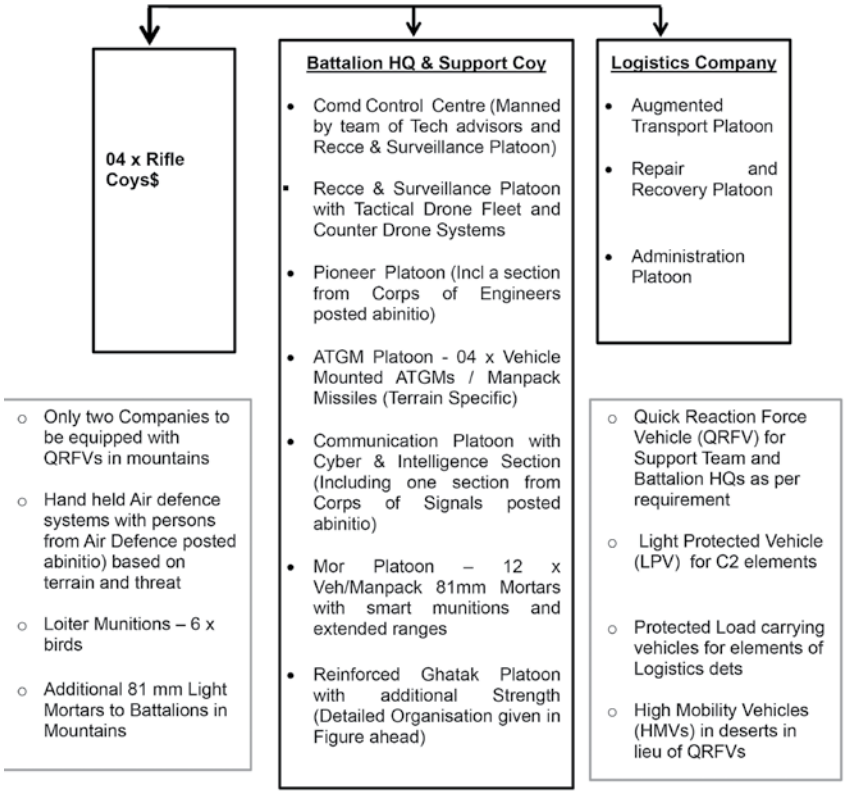
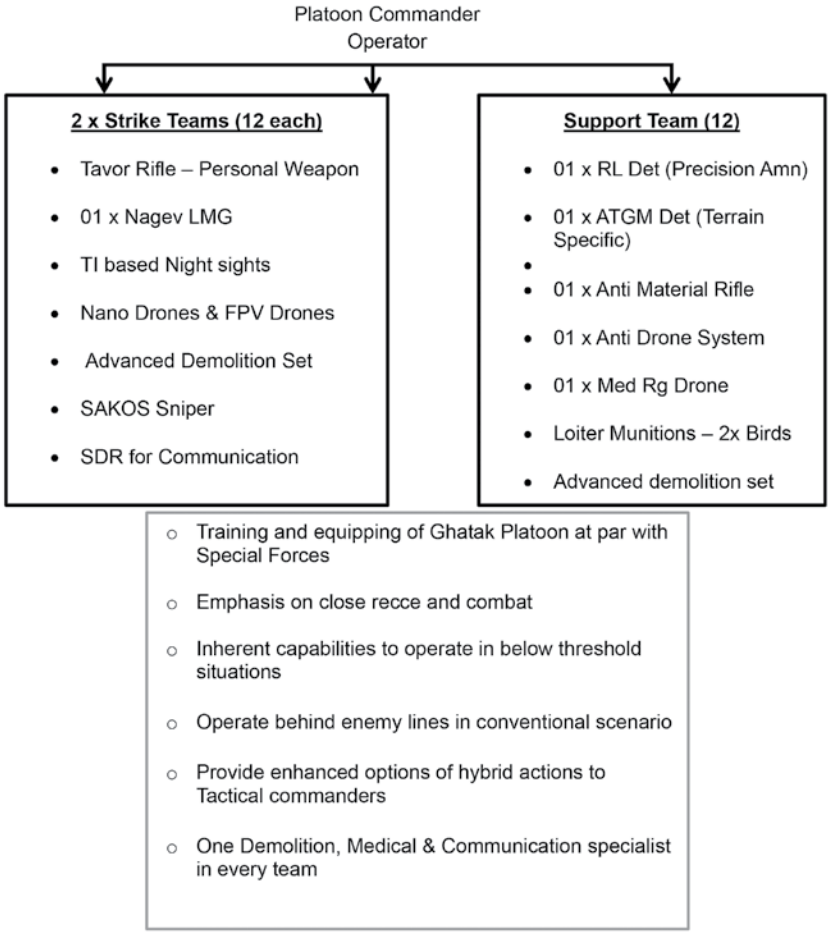


Figure 4: Suggested Organisation of Ghatak Platoon



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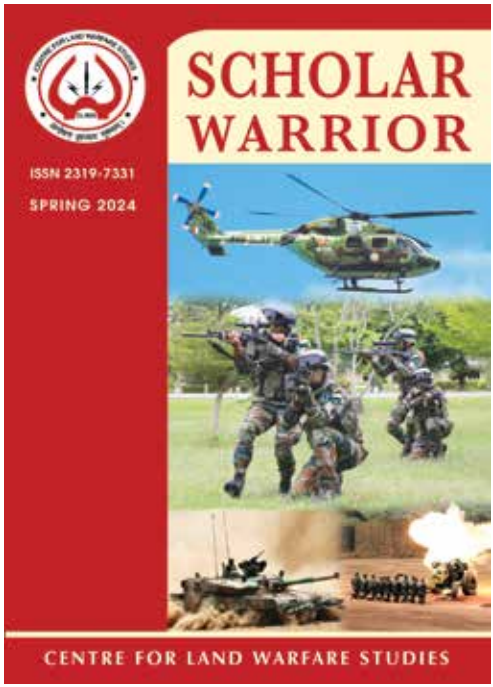

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The paper "*Preparing Infantry to Fight and Win Future Wars*" provides a comprehensive analysis of the challenges faced by modern infantry and proposes strategies for adaptation to future warfare scenarios. The paper begins by acknowledging the difficulty in predicting the nature of future wars, despite rapid advancements in modernisation and scientific tools. This uncertainty has sparked debates about the future role and employment of infantry in armed forces across the globe.

The paper then delves into the concept of multi-domain operations and grey zone warfare, emphasizing the need for infantry to achieve psychological superiority and conduct swift manoeuvre. The author stresses the importance of terrain-specific organizations and equipment, as well as the need to enhance ground-holding capabilities through the integration of technology down to the sub-tactical level.

• • •

Colonel **Gaurav Sharma** was commissioned into the Infantry in June 2004. The Officer has served along the LAC, Western borders and the Line of Control. He commanded a Rashtriya Rifles Company and later a Rashtriya Rifles Battalion in highly active area of South and Central Kashmir. He has been a staff officer in Foreign Division at the Army HQs and later at HQ Army Training Command. The Officer is presently attending Higher Command Course.

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