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The Ukrainian Conflict : Heavy Metal still Rocks the Charts

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Introduction

For decades, tanks have been the core of most militaries. Their presence has been paramount ever since their first appearance on the battlefield of Somme in 1916. However, more recently, their centrality is being challenged. Some of the most striking images of the Ukrainian conflict display the large number of Russian tanks that have been destroyed, abandoned or broken down. The damage to the tanks appears to be horrific. In fact, while condemning the brutality of the war in Ukraine, Pope Francis, in an interview with the Italian newspaper Corriere Della Sera said Russians are discovering that their 'tanks are useless'.

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Since the beginning of the Ukrainian conflict, the internet has been flooded with videos of Russian tanks bursting into flames. Expressions like, 'tanks being ripped to pieces', 'being shot apart' or 'Jack in the Box effect' are frequently used. The Ukrainian military is employing a variety of weapons to destroy these tanks, including land mines, Stugna-P guided missiles, and shoulder-fired missiles like Javelins and next-generation light armoured weapons (NLAWs). In addition, Ukraine is also using AT2 anti-tank mines delivered by HIMARS rockets, as well as Remote anti-armour mines (RAAM). RAAM can block critical routes and slow down or halt counter attacks by giving remote minelaying capability in depth. [1]

During the Azerbaijan – Armenia conflict, the unmanned Turkish drones; Bayraktar TB2 were inflicting the damage. This is a medium altitude, long endurance unmanned combat aerial vehicle capable of being remotely controlled, and it carries precision guided Smart Micro Munitions (MAM-L). The question is whether the ongoing conflict is proving that advances in guided missiles are making it much easier for combatants, even inexperienced volunteers to destroy tanks and whether Javelins are emerging as the iconic weapon of this war.

The tank, one of the defining symbols of modern warfare - has both its critics and defenders. Are we now at the 'tipping point'? Are tanks confronted with an existential threat from new tools of war that are easier to use, in the sense that they are nimbler, lighter, cheaper and more flexible?

Emerging Anti-Tank Weapon Systems

From the day of its introduction in 1916, the utility of tanks has been questioned. It is a platform that is incredibly heavy, difficult to design and produce, and needs highly skilled manpower to operate. It has the unique ability of spurring advancements in the anti-tank weaponry used to defeat it, be it mines, attack helicopters, aircrafts, and missiles, including the new top attack version. In addition to this, reliable and robust command and communications have been technologically developed. This has ushered in a new era of destruction from drones, sensors, and Electronic Warfare.

The Javelin was first deployed in 1996. It is a portable anti-tank missile system that can be carried and launched by a single person. With a range of 2500m, it traces its target's thermal picture, and is useful against tanks because it can strike from the top. Javelin is a fire-and-forget missile, with a lock-on before launch and automatic self-guidance. The system takes a top-attack flight profile against armoured vehicles, attacking the usually thinner top armour. It can also make a direct attack, for use against buildings or targets too close for top attack. It is equipped with an imaging infrared seeker. The tandem warhead is fitted with two shaped charges: a precursor warhead to detonate any explosive reactive armour, and a primary warhead to penetrate the base armour.

The NLAW was inducted into service in 2009. It is a man-portable, soft-launch, and confined-spaces system, which allows the missile to be fired from almost anywhere. The missile is first shot out of the launcher with a low-powered ignition system, after which its main rocket ignites and propels it to the target. The guidance uses a predicted line of sight (PLOS) system. For a moving target, the operator maintains tracking for at least 2–3 seconds, the software embedded in the missile's Inertial Navigation System (INS) system simultaneously makes a record of operator's aiming movement and computes the flight path which will intercept the target. After launch, the missile flies autonomously along the pre-programmed flight path, controlled by an inertial guidance system. Tanks and other armoured vehicles are attacked using the overfly top attack (OTA) mode - the missile flies about one metre above the line of sight, detonating the warhead above the target's weaker top armour via proximity fuse and magnetic sensors. The question is whether the effectiveness of these two weapon systems of US and UK origin will lead to them being viewed as a historical legacy, rendering the tank 'useless'.

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Are these weapons fundamentally changing the manner in which this war is being fought and 'pushing the tank into obsolescence'? There are images of Russian tanks fitted with a semi cage-like canopy welded over the turret, which suggests an overall increase in its silhouette. Some analysts have labelled them as 'cope cages' that cater to the psychological fear of tank crews to top attack threats, as they felt that the ERA panels needed to be augmented. However, data of their efficacy remains doubtful, particularly against the newer generation of anti-tank weapons which use thermal or optical homing and

trigger the shaped charges. The decision to fit these cages could be ascribed to combat experiences in Syria, and even Chechnya, where the anti-tank grenade launcher was aimed from windows of buildings onto tank turrets. There is, however, no doubt that the significant threat posed by handheld anti-tank weapons and loitering munitions means that any armoured vehicle entering the direct fire zone will need some form of active protection to survive.

Active Protection System

The necessity for a new system that could protect the tank from incoming projectiles was felt due to a multitude of new weapon systems on the battlefield aiming at the tank. This led to the emergence of the active protection system.

Even the Indian T-90 was to come with the Shtora System, but was later dropped due to the additional cost factor.

An active protection system is a system designed to prevent anti-armour line-of-sight weapons from acquiring and/or destroying a target.

Soft Kill Measures. Electronic countermeasures that alter the electromagnetic, acoustic or other signature(s) of a target, thereby, altering the tracking and sensing behaviour of an incoming threat, are designated soft kill measures. Pre-emptive action of countermeasures is generally directed to prevent lock-on of a threat sensor to a certain target. It is based on altering the signature of the target by either concealing the platform signature or enhancing the signature of the background, thus minimizing the contrast between the two. Soft kill countermeasures can be divided into on-board and expendable countermeasures. On-board measures are fixed on the platform to be protected, while expendable measures are ejected from the platform.

Hard Kill Measures. Measures that physically counterattack an incoming threat, thereby destroying/altering its payload/warhead in such a way that the intended effect on the target is severely impeded, are designated as hard kill measures. The hard kill measure in general physically affects the incoming warhead/missile by means of either a blast and/or fragmentation action. The action may lead to:

- Disturbance of the stability of a kinetic energy penetrator which will decrease its penetration ability as the deflection angle increases
- Premature and improper initiation of a shaped charge, thereby impeding optimum jet development of the metallic lining, usually copper, in the shaped charge
- Destruction of the airframe of an inbound missile or shell

An example of the Active Protection System is the Russian Shtora (Russian: “curtain”) System. Shtora-1 is an electro-optical jammer that disrupts semiautomatic command to line of sight (SACLOS) anti-tank guided missiles, laser rangefinders and target designators. Shtora-1 is a soft-kill, or passive-countermeasure system. The Shtora system can also locate the area within 3.5–5 degrees of where the laser originated from. It will automatically slew the main gun to it, so that the tank crew can return fire and the stronger frontal turret armour is facing it.[2] [3] The system is mounted on the Russian T-80 and T-90 series tanks and the Ukrainian T-84. Even the Indian T-90 was to come with the Shtora System, but was later dropped due to the additional cost factor.

Another example is the Israeli Trophy designed to protect armoured vehicles from Anti-Tank Guided Missile (ATGMs), Role Playing

Game (RPGs), anti-tank rockets, and High-explosive Anti Tank (HEAT) rounds. A small number of explosively-formed projectiles destroy incoming threats before they hit the tank. Its principal purpose is to supplement the armour of light and heavy armoured fighting vehicles, and is developed by Rafael Advanced Defence Systems Ltd. The Israeli military have exhaustively researched this area, especially since 2006 when their tanks were conquered by Hezbollah's IED's and skilfully deployed anti-tank missiles in South Lebanon. In the future, advances in counter-drone measures will reduce the effectiveness of drones that are deployed in the battlefield looking for easy targets.

One more example is Arena, an active protection system (APS). It was developed at Russia's Kolomna-based Engineering Design Bureau for the purpose of protecting armoured fighting vehicles from destruction by light anti-tank weapons, anti-tank guided missiles (ATGM), and missiles with top attack warheads. It uses a Doppler radar to detect incoming warheads. Upon detection, a defensive rocket is fired that detonates near the inbound threat, destroying it before it hits the vehicle.

The Russians also have the Afganit, which is a complex radio-electronic system that combines active electronically scanned array (AESA) radars, a computer subsystem and dischargers, firing special rounds whose fragments destroy incoming projectiles. Pictures of T-14 Armata and T-15 BMP both show the peculiar tube-shaped sub-munition dischargers sitting at the base of the T-14's turret and on the T-15's sides and the radars resembling small plastic plates. This active protection system caters to repel all kinds of anti-tank projectiles, including top attack munitions.

Surprisingly, there have been no reports of the Shotora, Arena or Afganit having been used by the Russians in Ukraine, nor have tanks like the Armata been deployed. The Russians seemingly haven't felt the need to deploy their top-end inventory. Instead, there have been reports of mothballed T-62s being taken to the front to supplement the tank numbers.

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Drones

The Bayraktar TB2 and designs similar to it have let all hell break loose on the battlefield. The drone effect on the tank has been similar to what the ATGM effect was in the 70s and 80s. Most assumed that the tank's days were numbered, but it overcame over all odds and emerged as the victor. The drone vs tank episode is similar to this.

The servicing, maintenance and operative costs of military drones is prohibitive. The infrastructure needed to carry out such operations is similar to the standards required for operating fighter aircrafts. Although the present trend is to develop anti-drone weapon systems, the answer lies in targeting the bases. In case the basic flight infrastructure is damaged, it would lead to reduction or complete cessation of drone operations.

The Relevance of the Tank

Ironically, the tank versus anti-tank saga dates back to the appearance of tanks on the battlefield. The 106 mm Recoilless gun, ATGM's, attack helicopters, the top attack cluster munitions, the anti-tank mines, drones, fire and forget top attack ATGM, and electronic warfare systems, have all been developed and used to deter and destroy the tank. However, with its inherent firepower, mobility, and protection and flexibility in employment of both, offensive and defensive tasks over varied terrain, there is no platform that has been able to replace it and there seems to be no replacement on the horizon. It will subsequently continue to remain the pre-eminent platform to determine the outcome of a conflict.

Most analysts want to talk about the demise of the tank. The prediction has been made and proven wrong earlier. There is also a Western narrative that talks about the weakness in design of the Russian tank, particularly its ammunition stowage and auto–loader, which leaves the crew vulnerable to a direct hit. In fact, the Washington Post ran an article headlined, "How a 'jack in the box' flaw dooms some Russian tanks" on 30 April. It's also a paradox that while the Ukrainians want more tanks, they are being given anti-tank weapons. The truth is that there will always be a fierce competition between anti–tank weapons and tank protection; thus, making room for R&D for more effective Active Protection Systems (APS).

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Arguments regarding the 'sunset' of the tank range from the changing characteristics of the battlefield, exorbitant costs of production and maintenance, vulnerabilities, increasing focus on a sub-peer enemy, delivery of firepower by aerial means, lack of strategic mobility, complexities of terrain, and its ineffectiveness in mountains and urban built-up areas. Apart from this, there is a necessity of a high level of integrated training required by the crew manning this destructive predator.

Mechanised Forces due to their mobility, fire power, and shock action pre-empt, dislocate and destroy the enemy forces by manoeuvre and the tempo of execution of operations. They have the ability to paralyse the enemy physically and psychologically in an unparalleled manner that impacts the will of the enemy.

Land warfare Defence Analyst Nicholas Drummond believes there are many factors that contribute to its failings and that the tank is still crucial in warfare and can still be used successfully. "You need to support infantry with indirect fire, artillery, but also the direct firepower that tanks offer," he said. 'And that's why they're so important still. And that's why the infantry needs them'. 'And if you say tanks are obsolete, you are saying that all armoured vehicles are obsolete'. If we are not going to use tanks, how are we going to protect our troops?' he asked.[4] He also said; 'most NATO armies learned long before Russia's invasion of Ukraine that tanks advancing without infantry, artillery and air support pay a heavy price for not following the combined arms manoeuvre playbook. Russia's supposed failure does not mean tanks are redundant'. [5]

But the question still looms large. Did Russia really fail in tank warfare and is the changing nature of war pushing tanks into

obsolescence? If we were to believe the Western media, then in reality, more tanks have been lost in the Russian-Ukraine conflict than those that were actually committed to battle. There is a mismatch here. How does one recognise a Russian tank or a Ukrainian tank? For the common man it is impossible, mainly due to the fact that both the chips are made of the same armour. The basic shape of the turret and hull is the same or similar, be it the T64, T72, T80, T84 or T90 tank. The subtle differences can be noticed only by an experienced eye in the placement of various night vision devices around the turret, the shape of the surge vane plate, the position of the Smoke Grenade Dischargers (SGD), or the tool boxes and the snorkel tube. Lesser known but more obvious is the shape and size of the exhaust manifold. It is interesting to note that most photographs of destroyed tanks are taken at an angle that does not show the exhaust manifold in the picture. Therefore, there is no proof that these are Russian tanks that have been destroyed in the war.

The hard fact of the matter is that the very sound of this monster, leave alone the dust, shock and awe and thunderous firepower, is enough for even the most battle-hardened soldier to start looking for cover.

While significant improvements have taken place in firepower; (most guns are now 120mm or 125mm, with advanced fire control systems); breakthroughs in armour protection, traditionally focused on the classical frontal arc, appear to have plateaued after the Rolled Homogeneous Armour (RHA) was first replaced with composite armour or Chobham in the Challenger. An anticipated 360-degree threat has its limitations, as an increase in the weight of the tank (Challenger 2 is 74.8 tons) has multiple effects apart from increased maintenance requirements. However, new technologies could change this paradigm. Further, upgrades of a tank during its lifespan often leads to an increase in weight, generally without the commensurate upgrading of the engine and running gear, resulting in a reduction of the power to weight ratio.

Irrespective of mindsets, the tank is the 'king' of the battlefield. It is that one solid piece of metal that can constantly create criticalities for the enemy in all phases of operations. In the modern complex battlefield, it is an armoured formation that is the most dreaded weapon in the enemy's arsenal.

An armoured formation is structured around the 'king', to provide the necessary military wherewithal to help the 'king' achieve its aim. While the tank remains the primary weapon, the armoured formation is organised as a 'combined all arms team', consisting of mechanised infantry, self-propelled artillery, air defence, combat engineers, attack helicopters, armed drones, surveillance and EW means and logistics. The entire behemoth is provided with matching mobility. This mix of weapons has to be a tailor-made package, based on the visualised threat and terrain, the components of which must complement each other. The hard fact of the matter is that the very sound of this monster, leave alone the dust, shock and awe and thunderous firepower, is enough for even the most battle-hardened soldier to start looking for cover.

To partially digress, how does the Javelin fit into this debate? Undoubtedly, the Javelin is a state-of-the-art anti-tank missile capable of destroying any known tank at ranges in excess of two kilometers. However, it is essentially a man portable weapon system. The number of

missiles would be limited. Other drawbacks include no overhead protection, no tracks, and no cross-country mobility. Therefore, if you are very determined and brave, you take a shot at the approaching armour and then move out as fast as you can or as fast as your light vehicle can take you.

Now, take the tank. A highly agile and a potent weapon system, fully enclosed in armour protection with 1000 plus HP engine. With over 40 rounds in the turret, it is capable of firing up to 08 rounds a minute from a highly sophisticated all weather, day/night fire control system. A track can propel the tank over the most rugged of terrains. More than that, tanks don't operate alone. In the Indian context, the smallest tactical unit is a tank troop comprising of three tanks. So, when one is moving the other two are on the lookout for enemy movement or action. Besides, as a part of basic training, an objective is pulverised prior to the tanks moving into the attack, thereby reducing the chances of any Javelins hanging around in ambush. However, a few brave men will always achieve success. We in India have had our share of brave men too. During the Indo-Pak War of 1965, 4 GRENADIERS was tasked with defending a crucial position on the Khem Karan–Bhikhiwind line. On 9–10 September 1965, during the Battle of Asal Uttar, Company Quartermaster Havildar Abdul Hamid, displayed exemplary bravery by firing a jeep mounted 106 mm Recoilless Launcher, destroying many Pakistani tanks before being killed in action.[6]

A tank is required to seize and hold ground in the plains. The most challenging phase of warfare is the attack—seizing and holding contested territory. The penetration of enemy defences is difficult and dangerous. It invariably requires the shock effect and brute force that only armour supported by artillery can bring. It is for this reason that the tank has endured and will continue to remain a key component in any land conflict.

Inadequacies in Russian Tactics

There have been some questionable tactics employed by the Russians. Most pictures reveal tanks lined up one behind the other, in what is referred to as 'line ahead' formations, vis a vis spreading out into other tactical formations with adequate distances. Ironically, Tukhachevsky, the driving force behind the Soviet development of the theory of deep operations, talked about combined arms as a concept that was applied by the Germans in World War II but is not evident in the present conflict. The inadequacies have been visible even to the untrained eye.

Faulty tactics, incorrect training, and lack of motivation of the crew could be a major factor as to why Russian armour performed sub-optimally.

Training of crews is also extremely important, as there is a unique skill set required to operate armoured fighting vehicles and function in an integrated manner. It not only calls for professional competence of the highest order, but also the mindset to function in an environment that is both, physically and mentally extremely demanding and challenging. Faulty tactics, incorrect training, and lack of motivation of the crew could be a major factor as to why Russian armour performed sub-optimally.

Tanks are among the most logistic-intensive pieces of equipment. They require routine maintenance, spare parts, repair and recovery, and substantial fuel to keep them operational. They also require replenishment

of ammunition and food for the crew. Because of these demands, logistics planning is more important for mechanised forces, and Russia's invasion highlighted the weaknesses in their logistics.

Russia's plan involved many axes of advance, most of which were not mutually supporting, and Russian Ground Forces units were tasked with advancing at an extremely rapid rate. As a result, Russian forces often moved beyond artillery, electronic warfare, and air defense coverage, further exacerbating logistics issues. The rapid advance also meant that Russia had longer and more exposed supply lines, and its logistics convoys were not prepared to handle ambushes.[7] It is therefore not surprising that tank units performed comparatively poorly.

The primary fighting arms of the army of any country are the Infantry and the Armoured Corps. The tanks go in first, followed by and supported by the Infantry. These two components were conspicuous by their absence.

As per an article in Royal United Services Institute (RUSI) dated 27 April 2022, which talks about the technical aspects of Russians tanks in Ukraine; 'the war in Ukraine does not reveal anything fundamentally new about the tank. It confirms old lessons and reflects the challenges of armoured warfare'.[8]

Prevailing Narrative

The western media narrative wants us to believe that poor tactics and below par training is prevailing in the Russian Army, and is the primary reason behind Russian failures. The question is how they managed to seize the majority of Eastern Ukraine, if they were so poorly trained? The Ukrainian Army in itself is not a rag-tag force. Ukraine has 250,000 active-duty troops, additionally 290,000 reserve personnel and 50,000 Paramilitary. On the other hand, Russia has more than one million active-duty personnel, and also has 378,000 reserve personnel, and 250,000 Paramilitary.

However, while Ukraine can afford to commit all their troops against Russia, Russia cannot afford to do the same. Russia can only deploy a part of its military resources against Ukraine. So, the classical military superiority of 3:1, required to attain victory in attack, is not readily available to the Russians. It will be required to be building up on a case-to-case basis. Let us examine the military hardware too. Russia has more than 12,000 tanks, 30,000 armoured vehicles and 12,000 self-propelled artillery. In comparison, Ukraine has over 2,500 tanks, 12000 Armoured Vehicles and just over 1,000 self-propelled artillery. The comparative figures in all spheres of military equipment would be similar too.[9] Therefore, is Ukraine truly such a weak force? We can draw our own conclusions from this argument.

To take this argument further. On 28 February 2022, a large column of Russian military vehicles stretching some 64 kilometres (40 miles), comprising of 15000 soldiers was sighted.[10] The column of vehicles crossed into Ukraine from Belarus, and moved south through Prybirsk, and then Ivankiv. The convoy was apparently heading towards Kyiv, the capital of Ukraine, as part of preparation for the projected Battle of Kyiv, presumably with the aim of besieging and threatening Kyiv. Satellite photographs of the convoy indicated that the column was composed of Russian supply trucks, troops, weapons, and artillery. But then the convoy halted

due to unclear reasons. Commentators have suggested that the large number of soldiers and vehicles may have led to issues like fuel and food shortages, and may have also been delayed by attacks from the Ukrainian military.[11]

Even if a junior military officer of any country is asked a question as to how he would prepare for attack on a capital city, I doubt if even one would come up with a 64 Km long convoy suggestion. The primary fighting arms of the army of any country are the Infantry and the Armoured Corps. The tanks go in first, followed by and supported by the Infantry. These two components were conspicuous by their absence.

The lumbering, slow moving convoy was right there in the show window, larger than life to be missed. By 02 April 2022, there was no sign of any troops, and whomsoever had brought in these vehicles in had disappeared. In the army, there is a concept of Launch Pad. Just prior to crossing the international border, attacking formations take a break. They regain command and control, carry out last minute briefings, fill up fuel tanks, eat, and be self-contained for a minimum of 72 hours. All soldiers, especially vehicle bound, store some kind of dry rations and water that keep them going for weeks. Even vehicles have fuel tanks and provisions to carry spare fuel that should give them the endurance of at least 500 km. It is highly unlikely that this convoy in question was stuck due to lack of food and fuel. It was in all probability stuck as part of a larger plan. It may be possible that this initial pincer movement towards Kiev might have been only a deception, with the primary aim of tying down Ukrainian Forces to defend the capital city of Kiev, while the main agenda was planned elsewhere in the Donbas region.

It is also assumed that because they expected little resistance, Russian forces made minimal attempts at executing a coherent combined-arms operation, which would have required careful coordination and planning between air, ground, and naval forces. Russian ground forces simply drove toward cities, unprepared for a fight. In addition, they may have been given insufficient time to prepare for such a complex operation.

The tanks themselves were not the problem — they were simply employed poorly, which led to their high losses.

Of the 994 Russian tank losses documented by the Oryx blog; which uses open-source tools to count destroyed Russian equipment, at least 340, or 34 percent were abandoned. (The figure jumps to 38 percent if damaged tanks are included.) In addition, many of the tanks listed as destroyed were first abandoned by their crews and then destroyed by Ukrainian soldiers who either could not or chose not to capture them. This means that as many as 50 percent of Russia's documented lost tanks may have been first abandoned by their crews. The tanks themselves were not the problem — they were simply employed poorly, which led to their high losses.[12]

It's important not to draw the wrong lessons from what we have witnessed over the past several months. The Russian tanks in question were typically poorly employed, as per Lt Gen Ben Hodges, who until recently commanded US land forces in Europe. His views are echoed by retired British Army Brigadier Ben Barry, now senior fellow for land warfare at the International Institute for Strategic Studies.

'The defeat of the Russian attack on Kyiv shows what happens when tanks are inexpertly deployed by a force that cannot do combined arms warfare (combining tanks with infantry, artillery and aircraft) and has weak logistics.' A competent NATO battle group would push out infantry to stop tanks being ambushed'.[13]

Conclusion

The real lesson we need to draw is that the combined arms concept along with joint operations synergy will lead to force optimization, and is critical for success. To quote Lieutenant General Ashok Shivane, a former Director General Mechanised Forces writing in CENJOWS has stated, 'tanks as mobile protected firepower platforms lead the spearheads of the combined arms team. The need is for an inclusive force structuring and integrated joint force application, not an exclusive parochial outlook. What makes combined arms manoeuvre potent is not the collective employment of multiple arms, but the cumulative, integrated and complementary effect along with integrated logistics'.[14]

Tanks in the Indian context were last used against a peer enemy in 1971 Indo-Pak war, and against a sub peer enemy during Op Pawan in Sri Lanka in 1987. Currently, they operate in all types of terrain including; deserts, semi- developed, developed and mountainous. The subtleties of their employment differ. However, to guard against similar problems, a multi-dimensional protection of this platform against both aerial and ground threats is imperative.

Instead of demonstrating the obsolescence of the tank, Armenia's losses depicted how important tanks are in modern warfare. Once Armenia was unable to effectively employ its tanks, it was at a significant disadvantage. Their heavy tank losses preceded Azerbaijan's breakthrough. Indeed, the absence of tanks was critical to Azerbaijan's success in penetrating Armenian defensive lines and exploiting that success.

While the tank is neither dead nor dying, it still needs to learn to adapt in future battle spaces. This is not only as far as mitigating its threats is concerned but also with regards to its employment, by ensuring increasing inclusivity with other platforms such as a combined arms team.

Since this article is primarily about tanks, let me say in plain words that the primary weapon to destroy a tank is a tank. We all saw the dramatic difference the tank made recently; post the Galwan episode, when the T90s suddenly appeared on the Kailash Range in Eastern Ladakh. A professional army cannot think of reducing its tank fleet when the enemy forces are building up more and more. It has been reported by various sources that the PLA of China has approximately 5400 main battle tanks and 750 light tanks. Pakistan has a large number of tanks, although of various vintages and origin with varied modernisation. China has recently provided Pakistan with 176 latest VT4 tanks. Therefore, in the foreseeable future, there is no room for reduction of tanks.

David Willey, the curator at the Tank Museum at Bovington has rightly said: "Because the tank is such a symbol of power, when it's defeated people jump to the conclusion it's the end of the tank". There may be chinks in the armour, but there is no doubt that heavy metal still rocks the charts and we should not rush to draw sweeping conclusions.

End Notes

1 David Hambling, New Types Of Ammunition Make Ukraine's HIMARS Far Deadlier, Forbes, 05 October 2022. https://www.forbes.com/sites/davidhambling/2022/10/05/new-types-of-ammunition-make-ukraines-himars-far-deadlier/?sh=3c0466e56dbc

2 T-72BU / T-90 (Obiekt 188) Tank, Global Security, https://www.globalsecurity.org/military/world/russia/t-90.htm

3 SHTORA-1 Active Defense System, Defense Update, 12 October 2005, https://defense-update.com/20051012_shtora-1.html

4 Tim Cooper, Are tanks to blame for Russian failures in Ukraine? Forces, 13 April 2022, https://www.forces.net/russia/russias-failings-draw-attention-whether-tanks-are-now-obsolete

5 Nicholas Drummond, twitter Post, 18 March 2022 https://twitter.com/nicholadrummond/status/1504534408715513857

6 Man Aman Singh Chhina, The 1965 Battle of Asal Uttar and the role of Abdul Hamid, the Indian Express, 11 September 2012. https://indianexpress.com/article/explained/battle-of-asal-uttar-anniversary-ceremony-abdul-hamid-7500645/

7 Rob Lee, The Tank is Not Obsolete, and Other Observations About The Future 0f Combat, War on the Rocks, 06 September 2022. https://warontherocks.com/2022/09/the-tank-is-not-obsolete-and-other-observations-about-the-future-of-combat/

8 Sam Cranny-Evans & Dr Sidharth Kaushal, Technical Reflections on Russia's Armoured Fighting Vehicles, RUSI, 27 April 2022, https://www.rusi.org/explore-our-research/publications/commentary/technical-reflections-russias-armoured-fighting-vehicles

9 How big is Ukraine's military compared to Russia's? How long could Ukrainians hold off an attack? Michael Collins, USA Today, February 13, 2022, https://www.usatoday.com/story/news/world/2022/02/12/ukraine-russia-military/6766995001/?gnt-cfr=1

10 Huge Russian military convoy stretching 64 km spotted north of Ukraine capital Kyiv, The Print, 01 march 2022 https://theprint.in/world/huge-russian-military-convoy-stretching-64-km-spotted-north-of-ukraine-capital-kyiv/853086/

11 Russian army base sees scramble for war supplies, locals and soldiers say, The Reuters, 08 June 2022, https://www.reuters.com/world/europe/russian-army-base-sees-scramble-ukraine-war-supplies-some-locals-soldiers-say-2022-06-08/

12 Rob Lee, The Tank is Not Obsolete, and Other Observations About The Future 0f Combat, War on the Rocks, 06 September 2022. https://warontherocks.com/2022/09/the-tank-is-not-obsolete-and-other-observations-about-the-future-of-combat/

13 By Frank Gardner, Ukraine war: Is the tank doomed?, The BBC, 07 July 2022, https://www.bbc.com/news/uk-61967180

14 Lt Gen AB Shivane (Retd), Tanks Shall Endure and Prevail Over All Future Challenges, Centre for Joint Warfare Studies, 19 April 2022, https://cenjows.in/wp-content/uploads/2022/04/Tanks-Shall-Endue-Prevail-by-Lt-Gen-AB-Shivan-Retd-on-19-Apr-2022.pdf

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