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Controlling the Air Space Over the TBA

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Introduction

The nature of conduct of war is changing with induction of technology and AI. Weapon systems have enhanced lethality, accuracy and range, while detection capabilities are improving, thereby making survivability of weapon platforms in the combat zone challenging. The battle zone is being saturated with Unmanned Aerial Systems (UAS) with both, surveillance and kill capabilities, making them primary weapons for troops deployed on the frontline. Presence of satellites (including commercial) linked to AI based decision-making systems alongside UASs make surprise difficult. Nations, like India, which face multiple threats, have begun catering for future warfare.

The conflict in Ukraine served as a laboratory for use of drones in a high-intensity battlefield. These systems are now indispensable, reshaping doctrines, saturating defences, and driving a permanent technological war of attrition.[1] A report in Army Technology mentions: 'With hundreds of tactical attack drones deployed by Ukraine and Russia daily, current understanding states that 70-80% of daily combat losses from both sides are now caused by drones.'[2] Drones are the future and would only improve in capabilities and increase in numbers. Nations are now concentrating on developing and inducting anti-drone technology on their frontlines. The Indian Armed Forces are also in the process of doing the same.[3]

The Russian Air Force, far superior to Ukraine's, changed its philosophy of operational employment, once it encountered multi-layered Ukrainian air defences, resulting in losses. It began avoiding contested air spaces to prevent attrition and instead relied on its accurate long-range weapons, including cruise missiles and glide bombs, releasing them beyond range of Ukraine's air defences.[4] Missiles and long-range drones will, in future conflicts, be used in conjunction with air power. This is the future of air power, including in the Indian sub-continent.

India has also had experience of impact of technology in Operation Sindoor. Pakistan, possessing Chinese and Turkish weapons, including Chinese layered air defence systems, compelled a change in the pattern of airstrikes and strategy. From Balakot to Sindoor, there was a marked change in own aerial operational concepts. In Balakot, the IAF ventured forward to engage its targets, while in Sindoor, exploited longer ranges of its aerial platforms. Dog fights are now a thing of the past.

Earlier airfields located close to the border were a boon as they reduced reaction time for countering hostile aircraft. With current technology, including AWACS, aircraft departing from forward bases would be detected as soon as they get airborne. Surprise is not easily possible, hence the need to switch to long-range air-to-air and air-to-ground munitions, while targeting the adversaries air defence systems utilising UAS and missiles.

Catering for the Future Battlefield

Media reports mention that DRDO is developing an indigenous Active Protection System (APS) for T-90 tanks intending to defeat anti-tank guided missiles, drones, loitering munitions and top-attack weapons. The aim is to enhance armour survivability in an increasingly UAS dominated battle space.[5] The army is developing Land Vectors Control and Coordination System (LVCCS) to unify observation, target acquisition, strike planning, fire delivery and post-strike battle damage assessment into a single integrated command architecture for all land-based weapon systems operated by them.[6] Increasing numbers of self-propelled artillery pieces, including the K9 Vajra, are being inducted to enhance shoot and scoot capabilities at the operational level to avoid being targeted by counter-artillery and loitering munitions.[7]

The Director General, Infantry mentioned in an interview last year that, the infantry is 'modernising around six pillars: lethality, mobility, communication, transparency, survivability, and training, and the results are already visible in the field.' He added that each battalion will possess an Ashni drone platoon comprising of surveillance, combat, and logistics drones, supported by emerging technologies such as anti-tank guided munitions, AI-enabled reconnaissance tools, and foliage-penetration radars.[8]

On restructuring within the artillery, post Operation Sindoor, the army chief mentioned the raising of Shaktibaan regiments and Divyastra batteries. Shaktibaan regiments would be equipped with surveillance and loiter drones to engage targets upto 500 Kms. Divyastra batteries will be part of select artillery regiments and will possess UASs with both, surveillance and strike capabilities, in addition to artillery guns. Their structure would be dependent on the formation they support.[9]

Over all, the emphasis is towards enhancing UAS capabilities at all levels alongside counter UAS capabilities, implying these systems would proliferate the battle zone.

Addressing the press prior to Army Day in January this year, the army chief, General Upendra Dwivedi, mentioned that India, based on lessons from ongoing conflicts and Operation Sindoor, is creating a rocket cum missile force. He added, 'Pakistan has established a rocket force, and China has also created one.' A pending decision is what would be its command and control, implying whether it would be under the army or centralised under the CDS.[10] While he did not specify what would be the structure of this force and the ranges it would be tasked to engage, it is likely that the artillery would handle ranges upto possibly 100-150 Kms and the rocket force beyond that. Centrally controlled and deployed in depth, it would operate in close coordination with airpower and strategic missile units.

The IAF too, learning from the Ukraine conflict, as also post assessing capabilities of Chinese air defence systems, currently deployed with Pakistan or likely to be in the future, changed its concept of operation during Operation Sindoor. It employed long-range munitions such as the BrahMos, SCALP, Rampage, and Crystal Maze missiles—each capable of striking targets well beyond 200 km. These systems enabled the IAF to neutralise enemy air bases and strategic assets from standoff ranges of 250 to 450 km, effectively bypassing Chinese HQ-9 air defence systems.[11] Building on this, the IAF is now seeking early enhancement of ranges of the Astra air-to-air missiles and induction of the Russian R-37 missiles.[12] Reports also suggest that the air force is planning to induct Smart Anti-Airfield Weapon (SAAW) and Glide Bombs into its inventory to enable targeting enemy infrastructure from distances, reducing exposure of air assets to enemy's air defence systems.[13] This implies that air platforms would avoid operating in congested battle spaces, exploiting their range and accuracy.

The Future Battlefield

In the Indian context, land is the determining factor, since disputes with neighbours are territorial, hence warfare would be land dominated, with the army playing a predominant role. Victory would be determined by gain or loss of territory. Disputed borders are held in strength to prevent adversaries from taking advantage. India has witnessed occupation of un-held frontiers along both, the LAC (Line of Actual Control) as also the LoC (Line of Control). Aerospace and maritime capabilities expand options and provide protection. Still, they cannot replace the need to hold ground, secure approaches, and support forward troops amid altitude, weather, and infrastructure challenges.[14]

Future warfare will witness a change from platform-centric, as was the norm, to system-centric warfare. Low-cost FPVs (First Person View), reconnaissance platforms and one-way attack systems would be visible in vast numbers, alongside C-UAS systems. Surveillance through drones and satellites would make surprise and concealment difficult. EW in the form of jamming and spoofing will be the order of the day. Cyberattacks will be ongoing. Fibre-optic drones immune to radio-frequency jamming, AI-assisted targeting systems, and autonomous navigation technologies will be direct outcomes of this electronic contest. Warfare will no longer be confined to kinetic exchanges; control over the electromagnetic spectrum will become central to operational success.[15]

Future conflicts are unlikely to commence with employment of large mechanized columns following assaulting infantry, or infantry attacking adversary's defences with numerical superiority backed by massive firepower. While Grey Zone warfare including cyberattacks and EW accompanied by narratives will always be continuing, a trigger to initiate the conflict is essential. The trigger could be anything, a major terrorist incident or a large clash along disputed borders.

The conflict will, in all probability, be initiated by aerial assaults involving airpower as also missiles, rockets and UAS aimed at degrading the adversary's air defence and other strategic assets. The intention would be to keep strikes below levels of nuclear threshold in the case of Pakistan and limited in scope in case of China. Aerial strikes would be launched from distances beyond the range of the enemy's air defence weapons.

It is hoped that this would result in closure before operations involve the ultimate phase which would be an all-out offensive across traditional domains of land, sea and air, in addition to cyber and space. Operation Sindoor cannot be a benchmark for the future and preparation for an enhanced conflict involving multiple domains must remain.

Hostilities, at any level, would require land forces to remain at high levels of alert aimed at preventing the adversary from taking advantage. Thus, the region between the two forces, would be active with employment of UAS, C-UAS, artillery and rocket firing. The adversary too would be adopting a similar approach. This would impact the control of air space in the Tactical Battle Area (TBA).

Control Over the Air Space Over the TBA

Historically, the air space over the TBA was always under control of the army. Air power ventured in to provide support to ground forces based on pre-planned or immediate air support demands. For them, primary input was the FLOT (Forward Line of Own Troops), as it enabled them to determine their bomb release and lift-off points. Orders for 'Weapons Freeze' were given by the army to forces deployed within the TBA. This was because reaction times in the TBA are very short. However, there was always the risk of the message of 'weapons freeze' not reaching every detachment deployed due to multiple reasons including jamming.

Currently too, as soon as operations commence, irrespective of the manner they do, troops on the front lines would employ all resources at their disposal to monitor their areas of interest to ensure their defences are not compromised. This implies that the air space in the TBA would be congested. Not only own UAS and artillery but also the adversary's weapon systems would be active in the region. Thus, control of this air space with the army under a weapons free zone is essential.

This was highlighted by the army chief, who mentioned while addressing a Tri-Services Symposium in September 2025, stated, 'Conflicts in the recent past have demonstrated the effectiveness of the UAS, and C-UAS for exploiting the airspace, just above the land battle area. The effective management and exploitation of this space, known as the air littoral, has become imperative.'[16]

Control over the air littoral shields ground forces from surveillance and strikes, enables rapid targeting, and synchronises multi-domain operations. This shift highlights the increasing significance of the air littoral as a distinct and critical battlespace. Without dominating this space, land operations would become difficult, especially those involving manoeuvre forces. In the Russo-Ukraine conflict, Ukrainian forces adopt a weapons free zone for the front lines.

The reality remains that troops on the frontlines cannot bank on any institution in the rear controlling the air littoral directly above the combat zone, even for short periods. Nor can they bank on close air support in the traditional manner as the TBA would be within range of the adversary's air defence systems. Their reliance would be on UAS, C-UAS, Short Range Air Defence Systems and accurate artillery fire, with the air force providing air support from distances.

The air littoral, a term disputed by the air force, includes heights upto 10,000 ft. The air force believes that the term is adapted from 'Western narratives and lacks conceptual validity.'[17] The term may be questioned, but there is a need to understand that land forces must control the airspace directly above the battle zone for enabling operations to succeed.

The height may also be questioned but it has to be realistic enough to ensure that own flying platforms are not accidently targeted. Similarly, air power has to accept that this is a need for ensuring success of the land battle and the intent is not aimed at diminishing their capabilities. The other factor is that the same space would also involve an equal or greater number of UAS employed by the adversary targeting own artillery and mechanised columns as also troops in defences, adding to congestion. These will always remain an equal threat for own low flying aircraft, even if own systems are on freeze for a limited duration.

The doctrines referred to by the air force to dispute this concept, including the Indian Armed Forces Joint Doctrine and the IAF Doctrine[18] are of 2017 and 2022 vintage, a time when this change in warfare did not emerge. Doctrines take time to change, while nature of warfare does so rapidly with induction of technology. Reality needs to be accepted and amendments to ongoing procedures adopted.

The air force also compares success in Operation Sindoor during which army units did not deploy for land operations nor were UAS inducted into the field in the manner they are now being. However, the Indian troops on the frontlines faced UAS swarms and loitering ammunition. The air space above the TBA remained under the control of the army. It was a perfect example of army led Command and Control of the air littoral. This may not be the case in the future, especially when battle has joined.

Hence, there is a need to re-consider air space control over the TBA or the air littoral (depending on the terminology preferred) in a de-novo manner. While no single service can single-handedly assure victory, there is a need for all to work for a common goal, which is gaining or denying territory, the sole factor to determine victory or defeat. Expecting an organisation in depth to control the air space over the TBA solely to meet requirements of current and future generation aircraft achieving optimal engine performance appears outlandish.

Possible Solution

The TBA possesses depth. This would be known based on terrain and ongoing operations and details of the same shared between the forces in multiple joint forums. Behind the TBA, control of the airspace could remain in the traditional manner with the air force, which remains responsible for the nation's air defence. This should be the area which the air force should exploit for its current and future generation aircraft to gain optimal engine performance. It is also possible that the army can impose weapons freeze in specific instances, however, operating in an intense EW environment expecting it to be fully implemented remains a question.

In addition, with possession of adequate air defence units, including short range systems with the adversary, it is unlikely that air platforms would fly close to the adversary in the TBA, irrespective of height. Russian Air Forces in Ukraine as also own Air Force in Sindoor preferred exploiting distance weapons rather than flying close to the border, exposing themselves to being targeted by the adversary's layered air defences.

Assuming that the air littoral is also controlled jointly, led by the army, orders for 'weapons freeze' would only be effective to own resources. This, apart from keeping the air littorals over the TBA still partially dense by the adversary's flying objects, the danger to own land forces operating in the region would increase.

There are already multiple agencies where the army and air force interact. The same will become more dynamic with the establishment of theatre commands. Creating additional forums for ensuring joint command and control, as being suggested by the air force,[19] would not provide any additional benefits.

Conclusion

The nature of warfare has evolved rapidly in the past few years and will continue to evolve. Air space over the TBA will remain the most congested as also reaction time would be in seconds. While air power would play a major role in any future conflict, emphasis would remain on success of ground forces. To succeed in their mission, ground forces must possess the freedom to operate freely in the air space over the TBA. This flows from the logic that control of air space in any region must be with the force responsible for operations in it. Even if there is to be joint Command and Control over this air space, it should be army led.

Works Cited

[1] Fried, T. (2025, November 13). The Impact of Drones on the Battlefield: Lessons of the Russia-Ukraine War from a French Perspective. *Hudson*. https://www.hudson.org/missile-defense/impact-drones-battlefield-lessons-russian-ukraine-war-french-perspective-tsiporah-fried.

[2] Thomas, R. (2025, April 8). Drones now account for 80% of casualties in Ukraine-Russia war. *Army Technology*. https://www.army-technology.com/news/drones-now-account-for-80-of-casualties-in-ukraine-russia-war/?cf-view.

[3] Indian Army inducts indigenous Saksham Counter-UAS grid to secure Tactical Battlefield Space (2025, October 9). *The Hindu*. https://www.thehindu.com/news/national/indian-army-inducts-indigenous-saksham-counter-uas-grid-to-secure-tactical-battlefield-space/article70143459.ece.

[4] Kakar, H. (2026, May 26). Armed forces must adapt to tackle future battles. *The Statesman*. https://harshakakararticles.com/2026/05/25/armed-forces-must-adapt-to-tackle-future-battles-the-statesman-26-may-2026/.

[5] India Developing Indigenous Active Protection System For T-90 Tanks To Counter Missiles And Drones (2026, June 21). *IDR*. https://www.indiandefensenews.in/2026/06/india-developing-indigenous-active.html.

[6] Indian Army Developing Indigenous LVCCS to Automate Precision Artillery Strikes After Operation Sindoor Lessons (2026, May 23). *IDRW*. https://idrw.org/indian-army-developing-indigenous-lvccs-to-automate-precision-artillery-strikes-after-operation-sindoor-lessons/.

[7] Singh, S. (2026, June 12). Army gears up to order 300 more K9 Vajra self-propelled artillery guns under Rs 23k crore modernisatioon programme. *Times of India*. https://timesofindia.indiatimes.com/defence/news/army-gears-up-to-order-300-more-k9-vajra-self-propelled-artillery-guns-under-rs-23k-crore-modernisation-programme/articleshow/131671394.cms.

[8] Shankar, R. (2025, October 22). Indian Army Accelerates Infantry Transformation: 'Bhairav' Battalions Deployed, 'Ashni' Drones Integrated Across Units. *Bharat Shakti*. https://bharatshakti.in/indian-army-accelerates-infantry-transformation-bhairav-battalions-deployed-ashni-drones-integrated-across-units/.

[9] Kakar, H. (2026, June 18). Exploiting artillery in future wars. *Raksha Anirveda*. https://harshakakararticles.com/2026/06/18/exploiting-artillery-in-future-wars-raksha-anirveda-18-jun-2026/

[10] Ibid.

[11] Trivedi, S. (2025, August 12). IAF prioritises induction of long-range missiles after Operation Sindoor success. *The Hindu*. https://www.thehindu.com/news/national/iaf-prioritises-induction-of-long-range-missiles-after-operation-sindoor-success/article69925407.ece.

[12] Ibid.

[13] IAF to induct advanced indigenous glide bomb SAAW across fighter fleet (2025, June 17). *The Telegraph Online*. https://www.telegraphindia.com/india/iaf-to-induct-advanced-indigenous-glide-bomb-saaw-across-fighter-fleet/cid/2108374#goog_rewarded.

[14] Shivane, A.B. (2026, June 24). Preparing for the Future Conflict in the Era of Multi-domain Warfare. *CLAWS*. https://claws.co.in/preparing-for-the-future-conflict-in-the-era-of-multi-domain-warfare/.

[15] Pant, H.V. (2026, June 20). The Future Battlefield: Lessons from Ukraine, Iran and China's Strategic Posture. *ORF*. https://www.orfonline.org/english/research/the-future-battlefield-lessons-from-ukraine-iran-and-china-s-strategic-posture.

[16] https://www.journeyline.in/newsdet.aspx?q=273011

[17] Singh, S.P. (2025, October 13). Control of Air Littoral by Land Forces A Doctrinal Misstep in the Making: An Indian Perspective. *CAPSS*. https://capssindia.org/control-of-air-littoral-by-land-forces-a-doctrinal-misstep-in-the-making-an-indian-perspective/.

[18] Ibid.

[19] N. 18.

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