



PREPARING FOR TECHNOLOGICAL SURPRISE



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The responsibility of a nation is to ensure that its armed forces are kept abreast of technological developments taking place in the military field, particularly among the militaries of adversary nation(s). This will ensure that in case of a conflict own forces do not face a technological surprise, or are in any way disadvantaged due to a technological asymmetry. Acquisition of state-of-the-art technology should under ideal conditions be a home-grown effort through the various R&D organisations available in the country. Where there are gaps in technology – serious enough to handicap own armed forces in meeting their war aims (as laid down by the national polity) – induction of foreign technology remains an inescapable necessity. Despite this constant endeavour, recent events in our neighbourhood indicate that the armed forces are likely to soon face technological asymmetries that would be of a serious nature and could inhibit their performance in a future crisis.

During the Zhuhai Airshow in Nov 2016, China displayed the J-20 Stealth fighter (with technology supposedly ‘stolen’ by Chinese hackers from Lockheed Martin, the manufacturers of the US F-22, stealth fighter)¹. Although the J-20 is supposed to have been officially commissioned into military service with the PLAAF in late September 2017 (as per the official release by the Ministry of National Defence), it will be some time before it can achieve Initial Operational Capability (IOC). Own efforts at co-development of the FGFA with the Russians has been on the back burner for several years for one reason or the other. Any further delay would only be to the disadvantage of the IAF. For future projects like the AMCA, joint ventures with countries like South Korea (that is making the KFX Stealth fighter and which is slated for completion by 2026) could be considered by HAL.

Also displayed at the airshow was the Caihong CH-5 UAV that has an endurance of almost 60 hours and can carry a payload of 1200 kgs comprising sixteen guided anti-armour missiles. It is stated

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to have a service ceiling of 30,000 ft. With a data link, the line-of-sight range for the CH-5 is 250 km; this can be extended to 2000 km with the use of Satcom equipment. It can also be used for designation of targets not only for its own weapons but also for other manned/unmanned aircraft. It is now understood that China has commenced commercial production of the CH-5, which possibly is an indication that the UAV is being planned to be exported. With the reported unit cost of the CH-5 being less than half that of its US counterpart – the MQ-9 Reaper – the CH-5 is sure to find many buyers.² Pakistan has also shown keenness to buy the CH-5. What should be of concern to the Indian armed forces is that the CH-5 has the ability in the future to carry out attacks against military dispositions in the Northern and Eastern sectors. The CH-5 could also be modified as a 'low-cost airborne early warning system', as reported by CNBC Defence.³

China is also building its stealth UAV – Lijian – which is expected to enter service by 2019-2020. The Lijian can carry up to 4,400 lbs of ordnance in its internal bomb bays. This stealth UAV would enable surveillance of areas that are known to have a dense AD set-up. Also, such UAVs enable strikes to be carried out against targets of strategic importance in the opening rounds of a conflict, as was demonstrated during the Gulf War of 1991 when the F-117 A stealth fighters of the USAF carried out successful strikes using 2,000lb GBU-27 laser guided bombs to hit telecommunications, power and command and control centers, along with other strategic targets over Baghdad. The dense Air Defence environment provided by the Iraqi Air Defence System was unable to detect the F-117As as they flew over their targets to release their weapons.

Microwave weapons on UAVs?

One may recall that as early as Oct 2012, the US demonstrated the capability of a stealth cruise missile to sneak into 'enemy' airspace and fire bursts of microwave energy at selected targets to disable command and control systems in a test carried out over the Utah Test and Training Range.⁴ The missile destroyed the electronics of the 'enemy' C2 system without any collateral damage to the structure. The recently announced success of the scientific team from the Northwest Institute of Nuclear Technology in Xi'an in producing a microwave weapon (very similar to the one carried by the USAF cruise missile) that could potentially fit inside an aircraft/UAV is another technological surprise that could be in the offing from China.⁵ Considering the fact that except for the small arms carried by troops in the battlefield virtually all other systems depend on electronics to some extent, the danger from a microwave weapon carried by an aircraft or mounted on a UAV is significant.

China's Electronic Warfare capability

With the need to gain ascendancy over the Taiwan Straits the PLAAF has in recent years concentrated on ECM exercises that emphasise operations under severe communication jamming conditions. It has also taken steps to strengthen its aircraft to withstand the effects of Electronic Warfare by the ROCAF. This turn-about that the PLAAF has been able to achieve has resulted in the PLAAF gaining electronic air dominance over the Taiwan Straits. This has prompted western military writers to comment that *"China's EW capabilities could be used against far less sophisticated nations such as Vietnam, India, Taiwan or Japan, and could complicate those nations' abilities to command and control their own forces"*⁶

During the Doklam stand-off, it was often reported that the Chinese had put into practice the tenets that had been propounded by the CMC in 2003 in their document meant for the People's Liberation Army called "Three Warfares". The document called for applying pressure on the enemy through a combination of Media warfare, Psychological warfare and Legal warfare, reminiscent of exactly what the Russians had carried out in Ukraine in 2014 and where they were successful in annexing Crimea after a phony referendum. The Chinese tried using the Three Warfares strategy as follows:

Media Warfare: Using its State controlled media to influence international opinion and whip up national sentiment in favour of the Communist Party of China's actions.

Psychological Warfare: Aggressive use of state run media to undermine the morale of Indian troops by reminding them repeatedly about the defeat India suffered during the 1962 war with China.

Legal Warfare: Resorting to discussions at various domestic and international forums to portray China's 'legitimate' position on the issue and thereby gain acceptance from the international community in anticipation of a situation that degenerates into war.

Of course, the action by the Indian polity, Indian diplomacy and the Indian Military was in unison and the Chinese were forced to abandon their attempts at changing the status quo in the Doklam area, much to their embarrassment.

The technological capabilities of China that we have discussed above would be the silver bullet in the armoury of the PLA that it would aim to use in any future confrontation. Of course, these technological capabilities are only indicative and are by no means the only technological advances that have been made by the Chinese in recent years. Their efforts at launching a quantum

communications satellite can be considered significant although the satellite itself would be vulnerable to attack/disruption; these vulnerabilities (of the Quantum communication satellite) would need careful study by our defence and scientific community.

What then is the course of action for us as a nation to adopt to meet the challenge of likely technological asymmetry and ensure that our armed forces are not surprised technologically in a future 'short swift war fought under conditions of informatisation'?

The first is to ensure that a collegiate approach is adopted between the Services, DRDO, academia (IITs, IISc and Think Tanks) and the MoD to ensure creation of a 'Most Critically Needed Technologies' list. Next is to ensure that the private industry is quickly inducted – alongside the DRDO – to come up with solutions within defined timeframes. Assistance to the private industry to utilise available testing facilities of the DRDO should receive the approval of the MoD. The next important step – till such time that own FGFA aircraft are inducted, and with an aim to fill the technological void that would be created in the region after the J-20 is operational – should be to concentrate on inducting radar that can detect stealth platforms. Besides carrying out indigenous efforts to develop V/UHF radars, outright purchase be considered or a JV with such radar manufacturers be formed for development and production of these radars within country. Finally, the Services be continuously updated on advances in technology worldwide having a bearing on military operations.

Being reactive has been our wont as can be discerned from what has been written above. Is it not time that we apply our collective academic, industrial and military genius to be on the side demanding others to think of overcoming the technological surprise that India could unleash during a future confrontation, and sufficiently intimidate others in the process?

(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS])

Keywords: Air Power, new age warfare, UAVs, Chinese Electronic Warfare

Notes

¹ *Airshow China: A Thieves' Bazaar*, Anders Corr, Nov 10, 2016; Forbes, Opinion/ #ForeignAffairs; accessed on Oct 05, 2017

² *'China's New Killer Drone Ready for Mass Production'*, Franz Stefan Gady, The Diplomat, July 18, 2017; accessed on Oct 05, 2017

³ *New Chinese military drone for overseas buyers 'to rival' US' MQ-9 Reaper*, Stephen Chen, CNBC Defence, Mon, 17 July 2017, accessed on Oct 05, 2017

⁴ Boeing and the U.S. Air Force Research Laboratory (AFRL) Directed Energy Directorate, Kirtland Air Force Base, N.M., successfully tested the Counter-electronics High-powered Microwave Advanced Missile Project (CHAMP) during a flight; *CHAMP - Lights Out*, October 22, 2012 in Defense, Technology; <http://www.boeing.com/features/2012/10/bds-champ-10-22-12.page>; accessed on Oct 05, 2017

⁵ 'China's new microwave weapon can disable missiles and paralyze tanks', By Jeffrey Lin and P.W. Singer, January 27, 2017; Popular Science; <https://www.popsci.com/china-microwave-weapon-electronic-warfare>; accessed on Oct 05, 2017

⁶ Mark Pomerleau, 'Breaking down China's electronic warfare tactics', C4ISRNET; accessed on Oct 05, 2017

